DELTA

OWNER'S GUIDE

OBSESSED WITH PROVIDING THE BEST RV OWNERSHIP EXPERIENCE!



ALLIANCE RV

OFFICE: (574) 218-7165 / SALES: (574) 281-9869 / SERVICE: (574) 226-0140
EMAIL: service@alliancerv.com / WEBSITE: alliancerv.com

WELCOME TO THE ALLIANCE RV FAMILY!

Congratulations on the purchase of your new Alliance RV. We are honored that you have placed your trust in the Alliance RV Team, and it is our privilege to help you enjoy a great RV ownership experience!

One of the best ways to begin enjoying your Alliance RV experience is by taking time to read and familiarize yourself with the contents of this owner's manual along with the individual component manuals included with your new Alliance RV. Knowing how to properly operate the various systems, appliances, and components will make your first trips even more enjoyable. We would also encourage you to review the general maintenance recommendations, as these will help keep your RV in great working condition for years to come.

Your new Alliance is backed by a Limited Base Warranty and Limited Structural Warranty as outlined on the following pages. While we work to build Alliance RVs to a higher quality standard, if a warranty or service concern arises, our priority is to get you back to camping as promptly as possible. Your Alliance RV Dealer is authorized and trained in servicing the many systems unique to your Alliance RV and is a great "Ally" to assist you in finding a resolution. If for any reason it is not feasible to work with your local Alliance RV dealer, please don't hesitate to reach out to the Alliance Customer Service Team directly. Our ability and willingness to keep open lines of communication and find creative service solutions will help us navigate thru finding the best way to assist your specific circumstance. The Alliance RV Customer Service Team can be reached at:

- Phone: (574) 226-0140
- Email: service@alliancerv.com
- Address: Attn: Customer Service - 301 Benchmark Drive, Elkhart, IN 46516

Thank you again for being a valued member of the Alliance family. The entire Alliance team wishes you safe travels and looks forward to enhancing your RV ownership experience!

Happy camping,



Bill Martin
Vice President of Customer Experience

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MY INFO:

Alliance RV Model (ie. Paradigm): _____

Floorplan or Model # (ie. 370FB): _____

VIN (17 Digits):

Dealership Name: _____

Dealership Address: _____

_____

_____

Dealer Phone: _____

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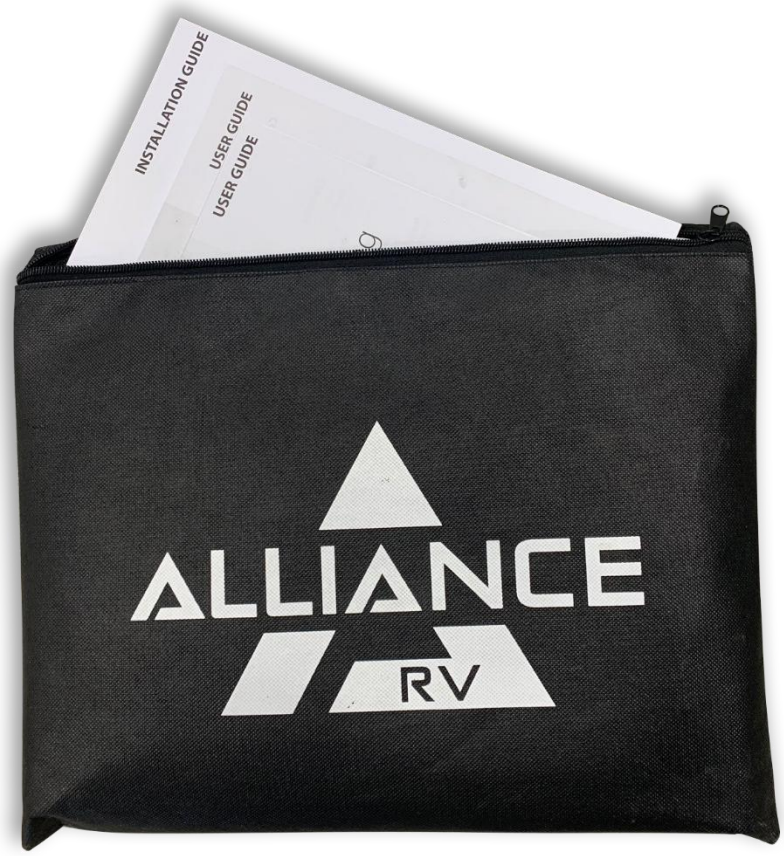
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OWNER'S INFORMATION BAG

You will find the manuals and registration cards for individual components in your Alliance RV Owner's Information Bag.

It is important that you take time to register and activate each component warranty according to the information and timelines provided. Doing so will help any potential delays in the event your RV requires warranty service. Failure to register these warranties will not dismiss warranty coverage, although it could cause delays. Please contact Alliance Customer Service with any questions.



Alliance RV Customer Service Contact Information:

Phone: (574) 226-0140

Email: service@alliancerv.com

OWNER SUPPORT RESOURCES

Alliance RV has provided many resources for owners to obtain information about their RV, ranging from simple tips to in-depth videos, manufacturer links for installed appliances and equipment, how-to summaries of systems called Tech Tips, and owner-supported forums for discussion.

Contacting Alliance Customer Service

The three primary methods to contact customer service directory are:

- Phone: (574) 226-0140
  Especially useful for urgent situations during business hours. After hours, a message can be left. This should be followed up by an email with specific information as noted below. *You may also use this number to contact our Parts team, following the voice prompts accordingly.*
- Email: service@alliancerv.com
  - This is the preferred method of contact. When writing, please be sure to include the last six (6) digits of your VIN, a clear description of the issue(s) to be addressed, and if possible pictures of the issue(s).
  - Response time is typically 1-2 business days.
- In writing:
  Alliance RV
  Attn: Customer Service
  301 Benchmark Drive
  Elkhart, IN 46516

Social Media

Alliance RV can be found on the following social media channels: Facebook, Instagram, X and Tik Tok. You can find all current links at https://jointhealliance.com/.

It is worth noting that the Facebook page “Alliance RV Group” is a particularly focused point of contact that is monitored by not only many Alliance employees, but also several Owner Empowerment Ambassadors – non-employee owners who have extensive experience with the Alliance RV products and are available to assist other owners.

AllianceRVOwners.com

Outside of the social media outlets mentioned above, this website provides the most comprehensive starting point for finding information about:

- The National Rally
- Other Owner-hosted events around the country
- Alliance RV Apparel
- Alliance Academy: Training videos, short video tips on a range of topics, Owner’s Manuals for equipment and appliances installed in Alliance RVs, and Tech Tips. See the next section.
- And Alliance Owners Forums: focused areas of discussion on a very wide range of topics, all related to the Alliance RV ownership experience (maintenance, specific systems, upgrades, etc.)

Alliance Academy

The Alliance Academy is a collection of resources dedicated to helping the interested owner find all documentation and videos related to learning about RV care and use, and the specific components in Alliance RVs.

Some of the available resources are:

- Alliance RV Training: Over 4 hours of videos produced in partnership with the NRVTA covering RV Electricity, Propane Systems, Water Systems, Air Conditioning, Leveling Systems, and Slideouts. This also includes new owner walkthroughs of interior and exterior components!
- Owner Empowerment Video links: Alliance-produced videos on in depth topics such as the Super Solar System components and use, the TV system, plumbing, and more.
- What'cha Know Wednesday Video links: Snippets of information addressing the most common questions fielded by Alliance Customer Service
- Tech Tips: Documents focused on how to perform certain tasks or work with certain sets of equipment. Examples include Winterization, the All TV System wiring, a master Torque Guide for running gear, and how to use an Automatic Changeover Regulator.
- Product Support/Vendor Information: Owner's Manuals and links for advanced information on specific products and vendors of equipment installed in Alliance trailers.

	While every effort has been made to include useful and relevant video and document links throughout this manual, there are videos and documents beyond what is shown here, and new resources are being produced. As such, the well-informed reader will visit the Alliance Academy, and monitor other online resources, to keep aware of all new information between User Manual updates.

VEHICLE IDENTIFICATION NUMBER (VIN)

Alliance RV vehicles all have a unique 17-digit VIN. You will find your VIN listed on the Federal Certification label located toward the front of the RV on the off-door side. The following VIN decoder identifies each digit location and its function.

DIGIT LOCATION	FUNCTION	KEY
1st, 2nd and 3rd	WMI (SAE Assigned)	**7M5**
4th	Trailer Type	F = Fifth Weel / Gooseneck T = Travel Trailer / Bumper Pull
5th	Model Designator	P = Paradigm (Active 2021 Model Year) V = Valor (Active 2021 Model Year) A = Avenue (Active 2022 Model Year) D = Delta (Active 2024 Model Year)
6th and 7th	Length of RV	Length of RV (2 digits regardless of length)
8th	Number of Axles	1 = 1 Axle 2 = 2 Axles 3 = 3 Axles
9th	Check Digit	Calculated
10th	Model Year	M = 2021 T = 2026 1 = 2031 6 = 2036 N = 2022 V = 2027 2 = 2032 7 = 2037 P = 2023 W = 2028 3 = 2033 8 = 2038 R = 2024 X = 2029 4 = 2034 9 = 2039 S = 2025 Y = 2030 5 = 2035
11th	Plant Location	A = Plant 1 - Location Elkhart, IN B = Plant 2 - Location Elkhart, IN C = Plant 3 - Location Elkhart, IN D = Plant 4 - Location Elkhart, IN
12th thru 17th	Serial Number	Sequential Six Digit Number (001000)

REPORTING SAFETY DEFECTS

In the United States:

If you believe that your recreational vehicle has a defect which could cause a crash or cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA), and Alliance RV.

If the National Highway Traffic Safety Administration (NHTSA) receives similar complaints, they may open an investigation. If they determine that a safety defect exists in other vehicles, a recall and remedy campaign may be ordered. NHTSA does not become involved in individual cases between you, your dealer or Alliance RV.

To Contact NHTSA:

Website: www.safecar.gov

Address: NHTSA Headquarters

Attn: Administrator
1200 New Jersey Avenue, SE
Washington DC 20590
Toll Free Vehicle Safety Hotline: 888.327.4236
TTY: 800.424.9153

For additional information, please refer to the NHTSA website at www.safecar.gov.

In Canada:

If you believe that your recreational vehicle has a defect which could cause a crash or cause injury or death, you should immediately inform Transportation Canada's Defect Investigations and Recalls Division, and Alliance RV.

To Contact Transportation Canada:

Website: www.tc.gc.ca

Address: Transport Canada

Defect Investigations & Recalls Division
330 Sparks Street
Ottawa ON K1A 0N5
Canada
Toll Free in Canada: 800.333.0510

If calling internationally or from the Gatineau-Ottawa area: 819.994.3328

SERVICE & WARRANTY

Alliance RV Limited Warranties

Alliance RV, LLC (Alliance RV) provides the following Limited Base and Limited Structural Warranties with this recreational vehicle which sets forth what Alliance RV will cover and what Alliance RV will do if a defect is found to exist. Please read the following warranty details closely before your purchase of the recreational vehicle.

ACCEPTANCE OF WARRANTY: When you request or accept the performance of warranty repairs under the terms of either limited warranty, you are accepting all terms of both limited warranties.

ONE (1) YEAR LIMITED BASE WARRANTY

Alliance RV provides this Limited Base Warranty for the period of One (1) Year. Warranty period starts from the earlier of (a) the date of purchase by the original retail purchaser, or, (b) if the dealer places the vehicle in service prior to retail sale, on the date the recreational vehicle is first placed in such service.

For the warranty period set forth above, this one (1) year Limited Base Warranty covers certain defects in materials and/or workmanship for the recreational vehicle manufactured by Alliance RV, and workmanship provided directly by Alliance RV, arising under normal use and service for the Limited Base Warranty period of the recreational vehicle. Alliance RV reserves the right to use new or remanufactured parts of similar quality to complete any work, and to make parts and design changes without notice to anyone. Alliance RV reserves the right to make changes in the design or material of its products without obligation to incorporate such changes in any product previously manufactured.

This Limited Base Warranty only covers a recreational vehicle sold by an authorized Alliance RV dealer and to the original retail purchaser. Note that recreational vehicles purchased in the US with the specific intent to import to Canada will NOT be covered under this Limited Base Warranty.

Alliance RV makes no warranty whatsoever with respect to the recreational vehicle beyond that contained in this Limited Base Warranty. No other person(s) are authorized by Alliance RV to establish any other obligation or liability for it regarding this recreational vehicle. Alliance RV is not responsible for any promise, representation or warranty made by any dealer or person beyond what is expressly stated in this Limited Base Warranty. No one has authority to amend or modify this Limited Base Warranty.

NOTE: This Limited One (1) Year Base Warranty is separate from the Limited Three (3) Year Structural Warranty on the following page and will expire exactly one year from the warranty period start date as identified above.

LIMITATIONS, EXCLUSIONS AND DISCLAIMER OF IMPLIED WARRANTIES:

THE LIMITED BASE WARRANTY IS PROVIDED EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE, AND IN LIEU OF ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF ALLIANCE RV. IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, IN ANY, GIVEN BY LAW, WILL BE LIMITED TO AND NOT EXTEND BEYOND THE SCOPE OF COVERAGE AND BEYOND THE DURATION OF THE ABOVE ONE-YEAR LIMITED BASE WARRANTY.

IN NO EVENT SHALL ALLIANCE RV BE RESPONSIBLE OR LIABLE FOR ANY LOSS OF USE, REVENUE, PROFIT, OR FOR ANY INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, EXEMPLARY, OR PUNITIVE DAMAGES OF ANY KIND OR NATURE THAT RESULT FROM ANY DEFECT IN THE RECREATIONAL VEHICLE REGARDLESS OF WHETHER SUCH DAMAGES WERE FORESEEABLE. THE DISCLAIMER OF CONSEQUENTIAL DAMAGES IS NOT DEPENDENT UPON THE LIMITED BASE WARRANTY FULFILLING ITS ESSENTIAL PURPOSE.

NOTE: SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

THREE (3) YEAR LIMITED STRUCTURAL WARRANTY

Alliance RV provides this Limited Structural Warranty for the period of Three (3) Years. Warranty period starts from the earlier of (a) the date of purchase by the original retail purchaser, or, (b) if the dealer places the vehicle in service prior to retail sale, on the date the recreational vehicle is first placed in such service.

For the warranty period set forth above, this three (3) year Limited Structural Warranty covers certain defects in materials and/or workmanship of the **"structural components"** (as defined below) portions of the recreational vehicle manufactured by Alliance RV, and workmanship provided directly by Alliance RV, arising under normal use and service for the Limited Structural Warranty period of the recreational vehicle. Alliance RV reserves the right to use new or remanufactured parts of similar quality to complete any work, and to make parts and design changes without notice to anyone. Alliance RV reserves the right to make changes in the design or material of its products without obligation to incorporate such changes in any product previously manufactured.

"Structural components" is defined as (i) main steel frame including outriggers and cross members; (ii) laminated side walls and rear wall assembly; (iii) slideroom box assembly including sidewall, end walls, roof and floor; (iv) roof assembly; (v) floor assembly; and (vi) fiberglass cap including paint application (this structural warranty item does not cover damages to the cap such as rock chips, dents, scratches or failure to meet the maintenance requirements as outlined in the Owner's manual).

This Limited Structural Warranty only covers a recreational vehicle sold by an authorized Alliance RV dealer and to the original retail purchaser. Note that recreational vehicles purchased in the US with the specific intent to import to Canada will NOT be covered under this Limited Structural Warranty.

Alliance RV makes no warranty whatsoever with respect to the recreational vehicle beyond that contained in this Limited Structural Warranty. No other person(s) are authorized by Alliance RV to establish any other obligation or liability for it regarding this recreational vehicle. Alliance RV is not responsible for any promise, representation or warranty made by any dealer or person beyond what is expressly stated in this Limited Structural Warranty. No one has authority to amend or modify this Limited Structural Warranty.

NOTE: This Limited Three (3) Year Structural Warranty is separate from the Limited One (1) Year Base Warranty on the previous page and will expire exactly three years from the warranty period start date as identified above.

LIMITATIONS, EXCLUSIONS AND DISCLAIMER OF IMPLIED WARRANTIES:

THE LIMITED STRUCTURAL WARRANTY IS PROVIDED EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE, AND IN LIEU OF ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF ALLIANCE RV. IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, IN ANY, GIVEN BY LAW, WILL BE LIMITED TO AND NOT EXTEND BEYOND THE SCOPE OF COVERAGE AND BEYOND THE DURATION OF THE ABOVE ONE-YEAR LIMITED BASE WARRANTY.

IN NO EVENT SHALL ALLIANCE RV BE RESPONSIBLE OR LIABLE FOR ANY LOSS OF USE, REVENUE, PROFIT, OR FOR ANY INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, EXEMPLARY, OR PUNITIVE DAMAGES OF ANY KIND OR NATURE THAT RESULT FROM ANY DEFECT IN THE RECREATIONAL VEHICLE REGARDLESS OF WHETHER SUCH DAMAGES WERE FORESEEABLE. THE DISCLAIMER OF CONSEQUENTIAL DAMAGES IS NOT DEPENDENT UPON THE LIMITED BASE WARRANTY FULFILLING ITS ESSENTIAL PURPOSE.

NOTE: SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

Extended or Third-Party Warranties

Alliance RV does not offer any warranties outside of those outlined on pages 6-7 on the new purchase of an Alliance RV. Any extended or third party warranties obtained in connection with the purchase of an Alliance RV is the product of another organization. All questions related to such warranties must be directed toward the seller or provider of those warranties.

Obtaining Service

For a defect to be covered under either limited warranty, the repair or replacement must occur at an independent authorized Alliance RV dealer, or Alliance RV approved repair shop/service provider, or Alliance RV facilities. Alliance RV will remedy defects in materials and workmanship covered under the Limited Base Warranty or Limited Structural Warranty, under normal use and service, caused by Alliance RV in the recreational vehicle itself only.

To obtain warranty service the original retail purchaser must do the following:

1. Within twenty (20) days of discovery of any defect to be covered by this warranty, notify an independent, authorized Alliance RV dealer or Alliance RV. Warranty services can only be obtained through Alliance RV authorized dealers and service representatives.
2. Following notification, the recreational vehicle must be taken to an independent, authorized Alliance RV dealer, or if authorized by Alliance RV, a designated repair shop/service provider. Either that dealer or repair shop, or Alliance RV will undertake appropriate corrective repair actions in instances where the defect is covered by this warranty.

	Ancillary expenses incurred for transportation of the RV or while the RV is undergoing repairs, shall be borne by purchaser. Ancillary expenses include, but are not limited to: transportation, fuel, accommodations, food, loan payments.

If assistance is needed, you may contact Alliance RV directly at:

- Email: service@alliancerv.com (Preferred method of contact)
- Phone: (574) 226-0140
- Mail: 301 Benchmark Drive, Elkhart, IN 46516 (Attn: Customer Service)

	When sending an Email to Alliance RV Customer Service, please include the following information: • Last six digits of your VIN • Relevant photos to help illustrate your question or concern • Questions or concerns regarding components (ie. refrigerator, toilet, awning, etc), a photo of the data tag/label located on that specific component will often be needed.

	Alliance RV Customer Service response time for all inquiries is typically within 1-2 business days. For emails, if you do not see a response within the expected timeframe, please check your SPAM or JUNK folders, and also ensure that the email address was keyed in correctly at (service@alliancerv.com)

Parts Information for Non-Warranty Purposes

For parts information on non-warranty items, please contact your local Alliance RV Dealer or email the Alliance RV Parts Team directly at parts@alliancerv.com.

Unable to Complete Warranty Claim Within the Warranty Period

If there are concerns with completing warranty requests within the warranty period, it is recommended that you document these concerns via email prior to the warranty expiration with Alliance RV Customer Service or your Alliance RV Dealer. Sending an email does not guarantee coverage, but will provide a record and allow us to review.

Repair Remedy: Exclusive Remedy

Alliance RV's obligation is to address, within industry standards, any covered substantial defect discovered and reported within the warranty period provided: (a) you notify an authorized dealer within 20 days of your discovery of the substantial defect: AND (b) you deliver the recreational vehicle to an authorized dealership or Alliance RV at your cost and expense. If this primary remedy fails to successfully cure any substantial defect after a reasonable number of repair attempts, your sole and exclusive remedy shall be to have Alliance RV pay an independent service shop to perform repairs to the defect. If the defect is still incapable of being repaired, Alliance RV may, at its option, provide you the diminished value damages (the difference in purchase price and actual value of your recreational vehicle on the date of purchase). You must exhaust the primary repair remedy and this back-up remedy, and both these remedies must fail of their essential purpose before initiating any action against Alliance RV.

Warranty Exclusions

The Limited Base and Limited Structural Warranties noted above will not cover and will not apply to:

- Routine maintenance and adjustments;
- Any deterioration due to normal wear and tear;
- Defects in labor, materials, components or parts not manufactured or performed by Alliance RV;
- Modifications or alterations to the original design after the recreational vehicle leaves possession of Alliance RV;
- Damage caused by unauthorized attachments, modifications or alterations;
- Equipment or accessories installed by any party other than Alliance RV;
- Materials, components, appliances, electronics or parts which are warranted separately by the respective component manufacturer;
- Recreational vehicles used for purposes other than recreational travel and camping (By way of example only business, rental commercial or disaster relief purposes);
- Any recreational vehicle purchased in the United States with specific intent to import vehicle to Canada;
- Any recreational vehicle registered or primarily used outside the United States or Canada;

- Any water leaks or related significant damages that are a result of your failure to properly maintain the exterior seals as required in the Owner's Manual;
- Repairs or replacements made necessary as a result of your failure to follow ordinary maintenance procedures as recommended by Alliance or the manufacturer or dealer of the recreational vehicle;
- Rust or corrosion due to the environment;
- Damage caused by misuse, abuse, neglect, theft, or vandalism;
- Damage caused by improper stowing of equipment, overloading or improper load balancing;
- Damage caused by unprotected electrical hookups or power surges;
- Damage caused by extreme weather conditions such as extreme cold or heat, winds, rain, lightning, hail, ice and flooding;
- Damage caused by unauthorized repair or failure to follow instructions supplied with the recreational vehicle;
- Damage caused by the tow vehicle by the owner, owner's operation or use of the tow vehicle, improper selection or installation of towing hitch on tow vehicle, or damage to the owner's tow vehicle;
- Damage caused by road conditions, applications of salt or de-icing chemicals, gravel, sand, potholes, etc.;
- Fading, yellowing or aging of exterior materials and components due to exposure of UV or sunlight, or weather;
- Damage caused in-transit to or from a dealer, or to or from the consumer, or by the consumer or another;
- Recreational vehicles not originally purchased through an authorized Alliance RV dealer

	Relating to aftermarket items & modifications: • As stated above, warranties will not cover and will not apply to damage caused by unauthorized attachments, modifications or alterations. It is important to note that such addition or modification does not automatically void a coach warranty. If that aftermarket item is deemed to be the cause of an issue, then it could impact warranty coverage of that or a related issue. • In providing a warranty covered repair or replacement of any kind, should that repair negatively affect an aftermarket item, Alliance RV is not liable to return the aftermarket addition to like-new condition. For example, replacement of graphics due to warranty coverage will not result in Alliance RV paying for a new ceramic coating application.

Events Discharging Alliance RV from Obligation Under Warranty

Certain things completely discharge Alliance RV from any obligation under these warranties. By way of example, the following shall discharge Alliance RV from any express or implied warranty obligation to repair or replace any defect that results from: misuse or negligent use, abuse, or accident, neglect, unauthorized alteration, failure to provide reasonable and necessary maintenance including reasonable periodic inspections of the recreational vehicle, use of the recreational vehicle for rental, business or commercial use or any other use other than to use the recreational vehicle only for recreational and personal use.

Warranty Registrations

The selling dealer will assist you in completing and submitting the Alliance RV product warranty registration form. That form must be returned to Alliance RV within ten (10) days of your taking delivery of the recreational vehicle. Failure to file this warranty registration with Alliance RV will not affect your rights under the Limited Base or Limited Structural warranties as long as you can present proof of purchase, but it can cause delays in obtaining the benefits of these Limited Warranties and may inhibit any servicing facility's ability to provide proper repairs and/or part replacement.

As stated above, some components, accessories or equipment are not covered by these Limited Warranties. By way of example, the following have coverage that may be provided by the component manufacturer: tires, batteries, generators, and some appliances & electronics and entertainment equipment. These component manufacturer warranties are separate from this Limited Base Warranty, and in some cases may be longer and/or have specific coverage provisions and requirements. In order to activate these warranties, you may have to complete registration forms, post cards or some other form of notification to the component manufacturer within a specific time period. These forms and documents will be located with the Owner's Materials packet provided with your new vehicle. You must complete and submit them to the respective manufacturer as quickly as possible, and within the time periods required by those warranties.

Care and Maintenance

The owner of the recreational vehicle is responsible to perform proper care and maintenance of the recreational vehicle as outlined in the Alliance RV Owner's Manual and the owner's manuals of the chassis and other component part manufacturers. Failure to maintain the RV as noted in those manuals voids these warranties, and any damage to the RV as a result of your failure to perform such care, is not covered by the warranties set forth above.

LEGAL REMEDIES

ANY ACTION TO ENFORCE ANY PORTION OF THIS LIMITED BASE OR STRUCTURAL WARRANTIES, OR ANY IMPLIED WARRANTY, MUST BE COMMENCED WITHIN NINETY (90) DAYS AFTER THE EXPIRATION OF THE APPLICABLE WARRANTY COVERAGE PERIOD. ANY PERFORMANCE OF REPAIRS WILL NOT SUSPEND THIS LIMITATION PERIOD FROM EXPIRING, UNLESS STATE LAW PROVIDES OTHERWISE. ANY PERFORMANCE OF REPAIRS AFTER THE APPLICABLE WARRANTY COVERAGE PERIOD HAS EXPIRED, OR PERFORMANCE OF REPAIRS REGARDING ANYTHING EXCLUDED FROM COVERAGE UNDER THIS LIMITED WARRANTY SHALL BE CONSIDERED "GOOD WILL" REPAIRS, AND THEY WILL NOT CHANGE THE EXPRESS TERMS OF THIS LIMITED WARRANTY OR EXTEND THE WARRANTY COVERAGE PERIOD.

EXCLUSIVE JURISDICTION FOR DECIDING LEGAL DISPUTES RELATING TO ALLEGED BREACH OF WARRANTY OR REPRESENTATIONS OF ANY NATURE MUST BE FILED IN THE COURTS WITHIN THE STATE OF MANUFACTURE. THE ABOVE LIMITED WARRANTIES WILL BE INTERPRETED AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF INDIANA, WITHOUT GIVING EFFECT TO ANY CHOICE OR CONFLICT OF LAW PROVISION OR RULE (WHETHER OF THE STATE OF INDIANA OR ANY OTHER JURISDICTION) THAT WOULD CAUSE THE APPLICATION OF THE LAWS OF ANY JURISDICTION OTHER THAN THOSE OF THE STATE OF INDIANA. ANY AND ALL CLAIMS, CONTROVERSIES, AND CAUSES OF ACTION ARISING OUT OF OR RELATING TO THE ABOVE LIMITED

WARRANTIES, WHETHER SOUNDING IN CONTRACT, TORT OR STATUTE, WILL BE GOVERNED BY THE LAWS OF THE STATE OF INDIANA, INCLUDING ITS STATUTE OF LIMITATIONS, WITHOUT GIVING EFFECT TO ANY CHOICE OR CONFLICT OF LAW PROVISION OR RULE (WHETHER OF THE STATE OF INDIANA OR ANY OTHER JURISDICTION) THAT WOULD CAUSE THE APPLICATION OF THE LAWS OF ANY JURISDICTION OTHER THAN THOSE OF THE STATE OF INDIANA.

THE LIMITED BASE WARRANTY AND LIMITED STRUCTURAL WARRANTY GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

California Consumers

Alliance RV has elected to follow the procedures described in California Code of Civil Procedure, Section 871.20, et seq. regarding pre-litigation notice requirements for consumer claims brought pursuant to the Song-Beverly Consumer Warranty Act. Beginning on July 1, 2025, to comply with the Song-Beverly Consumer Warranty Act's pre-litigation notice requirements, as described at California Code of Civil Procedure Section 871.24, a consumer must include Full Name of Registered Owner, VIN number of the recreational vehicle, repair history and problems with the recreational vehicle, consumer demand, current physical address of where the RV is located, and confirmation that customer has possession of the recreational vehicle. This information must be sent to service.ca@alliancerv.com. Alternatively, the pre-litigation notice requirements can be sent via certified or registered mail, return receipt requested, to the following address: Alliance RV, LLC - Attn: Consumer Affairs 301 Benchmark Dr. Elkhart, IN 46516." Please include a physical address or email address where a confirmation receipt can be sent to you.

Alliance RV ha optado por seguir los procedimientos descritos en el Código de Procedimiento Civil de California, Sección 871.20 y siguientes, con respecto a los requisitos de notificación previa al litigio para las reclamaciones de consumidores presentadas de conformidad con la Ley de Garantía del Consumidor Song-Beverly. A partir del 1 de julio de 2025, para cumplir con los requisitos de notificación previa al litigio de la Ley de Garantía del Consumidor Song-Beverly, descritos en la Sección 871.24 del Código de Procedimiento Civil de California, el consumidor debe incluir el nombre completo del propietario registrado, el número de identificación del vehículo (VIN) del vehículo recreativo, el historial de reparaciones y problemas con el vehículo recreativo, la solicitud del consumidor, la dirección física actual donde se encuentra el vehículo recreativo y la confirmación de que el cliente está en posesión del mismo. Esta información debe enviarse a service.ca@alliancerv.com. Alternativamente, los requisitos de notificación previa al litigio pueden enviarse por correo certificado o registrado, con acuse de recibo, a la siguiente dirección: Alliance RV, LLC - Attn: Consumer Affairs, 301 Benchmark Dr. Elkhart, IN 46516. Incluya una dirección física o una dirección de correo electrónico donde podamos enviarle un recibo de confirmación.

SAFETY PRECAUTIONS

Throughout this manual, you will find the symbols shown below. This information is provided to help you avoid personal injury or death as well as damage to your RV and other property. Take the time to review all these warnings.

⚠CAUTION

INDICATES POTENTIAL MINOR TO MODERATE INJURY AND/OR PROPERTY DAMAGE

⚠WARNING

INDICATES POTENTIAL DEATH OR SERIOUS INJURY

⚠ DANGER

INDICATES POTENTIAL DEATH OR SERIOUS INJURY

SYMBOLS USED

	Information box: Used to highlight particularly helpful information about the topic.
	Technical Hint or Troubleshooting box: Used to present a short technical hint or troubleshooting method related to the topic.
	This symbol denotes an available vendor manual or Tech Tip at Alliance Academy.
	This symbol denotes an available video at Alliance Academy. When the abbreviation WYKW is used at the beginning, these are What You Know Wednesday videos: especially short and focused videos about the noted topic.
	This symbol denotes available vendor website information.

The following symbols may be within a text box as shown or the logos may be integrated into the text of the document to highlight important product-line specific information. The Delta model line of trailers has three distinct variations of production. The three variants are called the **Delta**, the Delta **Ultra Lite**, and the Delta **SOLO**. Throughout the manual, you may see certain features and operations that are specific to these variants.

D	Information related specifically to the **Delta** product line (**not Ultra Lite or SOLO**.)
UL	Information related specifically to the **Ultra Lite** product line (**not Delta or SOLO**.)
S	Information related specifically to the **SOLO** product line (**not Delta or Ultra Lite**.)

WEIGHT RATINGS, ASSOCIATED LABELS, LOADING AND WEIGHING

Weight Terms

⚠WARNING

PLEASE READ AND UNDERSTAND THE MANY SAFETY LABELS THROUGHOUT YOUR RV, FAILURE TO DO SO COULD RESULT PROPERTY DAMAGE, DEATH OR SERIOUS INJURY

Knowing and understanding the following weight terms are a crucial step to overall safety of your RV. By becoming familiar with this information, you will be better equipped in making decisions when using your Alliance RV product.

GAWR = Gross Axle Weight Rating and is the maximum weight the recreational vehicles axle(s) are rated for.

GVWR = Gross Vehicle Weight Rating and is the maximum operating weight the vehicle is rated for when fully loaded.

UVW = Unloaded Vehicle Weight and is the weight of the manufactured completed RV.

CCC = Cargo Carrying Capacity and is the difference between what the RV weighs when there is nothing in it and what it weights when you have loaded it with your personal belongings, also including but not limited to food, water, propane and any upgrades added (ie. *solar power, washer/dryer, additional batteries etc.)*

GTW = Gross Trailer Weight and is the total weight of the trailer as loaded.

HITCH WEIGHT = The weight of the trailer that is on the hitch of the tow vehicle when attached.

Refer to the following section, TOW VEHICLE: HITCH AND CONFIGURATION CONCERNS, for critical information about the tow vehicle hitch and hitch weight considerations.

⚠WARNING

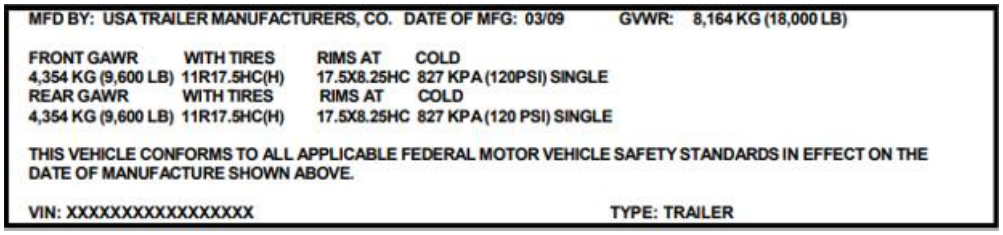
NEVER EXCEED ANY OF THE DESIGNATED WEIGHT RATINGS, DOING SO COULD RESULT IN DEATH OR SERIOUS INJURY

⚠WARNING

FACTORY INSTALLED WEIGHT LABELS ARE SPECIFIC TO YOUR RV, NEVER REMOVE OR MODIFY THESE LABELS. IF YOU HAVE A MISSING LABEL, CONTACT YOUR DEALER OR ALLIANCE RV FOR ASSISTANCE

Federal Certification

This label verifies that your RV is compliant with all Vehicle Safety Standards. You'll find this label near the front of your RV on the off-door side near the cabover.


MFD BY: USA TRAILER MANUFACTURERS, CO. DATE OF MFG: 03/09 GVWR: 8,164 KG (18,000 LB)

FRONT GAWR WITH TIRES RIMS AT COLD
4,354 KG (9,600 LB) 11R17.5HC(H) 17.5X8.25HC 827 KPA (120PSI) SINGLE
REAR GAWR WITH TIRES RIMS AT COLD
4,354 KG (9,600 LB) 11R17.5HC(H) 17.5X8.25HC 827 KPA (120 PSI) SINGLE

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: XXXXXXXXXXXXXXXXX TYPE: TRAILER

Figure 1. Vehicle Manufacturing Information label.

Tire and Loading Information

This label houses information regarding the correct tire pressure for the vehicle and will also tell you the size of the tires and the CCC of the RV. This label is also located near the front of the RV on the off-door side near the cabover.

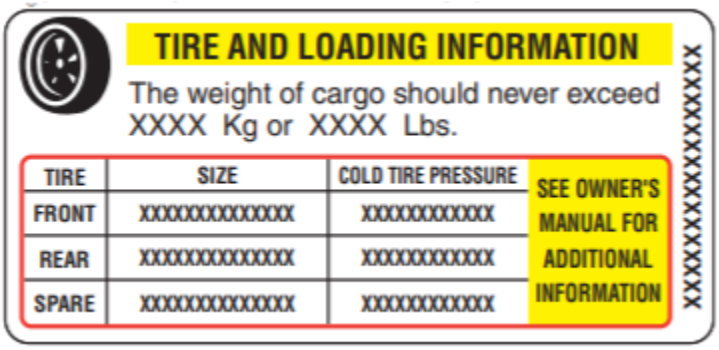


Figure 2. Tire and Loading Information label.

	WYKW: Alliance RV Tire Pressure

Cargo Capacities & Weighing Your RV

Weight and balance of your RV is crucial to your safety. To ensure that you are within all the established weight limits and ratings, you should have your RV weighed.

Always make sure that your RV is loaded evenly from side to side, never exceeding the specified weight ratings established for your RV. Always secure loose items and ensure that all factory-provided securements are in place before you travel.

	LP Gas and fresh water are considered cargo weight.

⚠WARNING

A LOAD THAT IS NOT PROPERLY DISTRIBUTED, REGARDLESS OF WEIGHT RATINGS, CAN HAVE AN ADVERSE EFFECT ON THE WAY THE RV PULLS.

⚠WARNING

THE TOTAL WEIGHT OF THE RV AND THE TOW VEHICLE TOGETHER SHOULD NEVER EXCEED THE GCWR OF THE TOW VEHICLE.

⚠WARNING

YOU MAY NOT ALWAYS BE able TO USE ALL AVAILABLE STORAGE SPACE WHEN LOADING YOUR RV. JUST BECAUSE IT CAN FIT DOESN'T MEAN THAT YOUR RV IS WITHIN THE ESTABLISHED WEIGHT RATINGS.

	Can My Truck Tow This?

TOW VEHICLE: HITCH AND CONFIGURATION CONCERNS

Hitch and Hitch Selection

There are many different hitch options. The type of hitch you select will impact the towing and handling characteristics of the travel trailer. Selecting and installing an appropriate hitch on the tow vehicle is vital to towing the travel trailer safely.

Information one needs to know:

- Related to the travel trailer: One needs to be familiar with its **GVWR** and **Hitch Weight** *before* selecting a hitch for the tow vehicle.
- Related to the tow vehicle hitch: It has a **Hitch Class Rating** based on its maximum towing capacity and the size of the receiver opening. The hitch class rating specifications also lists a **Maximum Hitch Weight**.

Based upon that information, one needs to ensure the following related to the selected hitch:

1. It must have a **Maximum Towing Capacity** that is ***greater than*** the trailer's **GVWR**.
2. It must have a **Maximum Hitch Weight** that is ***greater than*** the trailer's H**itch Weight.**

⚠ CAUTION

DO NOT OVERLOAD THE TOW VEHICLE
THE USE OF A TOW VEHICLE HITCH THAT IS NOT PROPERLY SIZED CAN CAUSE DAMAGE TO THE TRAVEL TRAILER FRAME AND/OR TOW VEHICLE THAT IS NOT COVERED BY ALLIANCE RV.
FINAL BALL HEIGHT AFTER THE TOW VEHICLE AND TRAVEL TRAILER IS CONNECTED IS A FACTOR THAT MUST BE CONSIDERED. WHEN THE TRAILER IS CONNECTED TO THE TOW VEHICLE THE TRAILER SHOULD BE LEVEL TO AVOID OVERLOADING THE TRAILER'S AXLES AND TO MINIMIZE POTENTIAL HANDLING PROBLEMS.

Hitch Ball

Alliance travel trailers require a hitch ball diameter of 2 5/16" and is stamped on the hitch coupler.

Hitch Weight

Maintaining the proper relative hitch weight of the trailer when reloading cargo is vital to stability of the tow vehicle. Adjust cargo such that approximately 10–15% of the gross trailer weight (GTW) is on the hitch.

- If your hitch weight is MORE THAN the upper weight limit, adjust some cargo to the rear of your travel trailer.
- If your hitch weight is LESS THAN the lower weight limit, adjust some cargo to the front of your travel trailer.
- Cargo Weight that is secure and BALANCED side-to-side is vital to proper vehicle handling.

Hitch Height

Hitch height is determined when the trailer is level. Once the travel trailer is connected to your tow vehicle, verify the hitch ball height by taking a measurement from the center of the hitch ball to the ground. This is your hitch height reference measurement.

- When loading cargo and there is an increase in hitch height from the reference measurement, this means that there is weight behind the axles and has the potential to cause your travel trailer to sway or fishtail.
- When loading cargo and there is a decrease in hitch height from the reference measurement, this means that weight has been transferred to the hitch and has the potential to raise the tow vehicle's front wheels causing adverse steering response, traction, and braking.
- It is critical that the travel trailer be as level as possible when loading cargo, and using a reference hitch height to maintain level of the travel trailer is a useful method.

⚠WARNING

HITCH WEIGHT IS CRITICAL TO THE TOW VEHICLE'S STABILITY AND MANEUVERABILITY. IF THE HITCH WEIGHT IS TOO HEAVY IT CAN RAISE THE TOW VEHICLES FONT WHEELS TO WHERE IT LOSES STEERING RESPONSIVENESS. TRACTION, AND BRAKING CAN BE NEGATIVELY AFFECTED. AS A RESULT, LOSS OF CONTROL, AND SUSPENSION AND/OR DRIVETRAIN DAMAGE CAN OCCUR.
IF HITCH WEIGHT IS TO LIGHT IT CAN NEGATIVELY AFFECT THE TOW VEHICLE'S REAR-WHEEL TRACTION AND STABILITY CAUSING TRAILER SWAY OR A JACKKNIFE SITUATION.

Suspension

There are numerous types of tow vehicle suspension systems on the market that will affect ball height, stability, and towing level of the connected travel trailer.

- When a tow vehicle suspension is too stiff, it can potentially cause an increase in bounce and vibration that can lead to speeding up wear on the tow vehicle and RV combination.
- When using a system that provides a tow vehicle with a softer ride, this can lead to increased potential for sway when towing.

Discuss these options with your dealer service center when choosing a towing system.

Sway Control (Customer Supplied)

There are numerous aftermarket sway control devices available to help reduce trailer sway produced by crosswinds, air buffeting caused by passing vehicles, improper weight distribution, and excessive speed etc. Utilizing a sway control device will assist to control side-to-side movement and minimize sway.

Weight Distribution System (Customer Supplied)

Using an aftermarket weight distributing hitch system will increase tow vehicle/travel trailer stability. This system spreads the weight evenly to distribute it to the front and rear tow vehicle axles and the trailer axle.

TIRE AND WHEEL INFORMATION & SAFETY

Your tires are the only part of the RV that has direct contact with the road. Tires directly affect the handling, braking and safety of your RV. Tires must have correct air pressure, tread depth and balance.

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires. This information identifies characteristics of the tire and provides a tire ID number for safety standard certification and in case of a recall.

DOT Tire Identification Number

This begins with the letters "DOT" and indicates the tire meets all federal standards. The following two digits are the plant code where the tire was manufactured. There may be several letters and numbers depending upon the manufacturer. The last four numbers represent the week and year the tire was built. In Figure 3, the tire was made in the seventh week of 2024. The DOT number is also important in the event of a tire recall and used for that purpose.



Figure 3. DOT tire information.

Tire Size

Alliance RV uses a very robust Load Range E ST225/75R15 for the **Delta** trailer, and Load Range D ST205/75R15 tires for the **Ultra Lite** and **SOLO** trailers. Only purchase new tires that are the same size as the vehicle's original tires. Look at the tire information label or on the sidewall of the tire you are replacing to find the information. If you have any questions, please contact Alliance RV.

Spare Tire Carrier

A cable hoist is used for storing your spare tire under the RV. You'll find the spare tire up against the underbelly of the coach towards the rear of the RV. An access hole in the skirt metal is provided for the spare tire crank handle to be inserted in order to lower or raise the spare tire hoist.

Tire Linc TPMS Prep (If Equipped)

Your RV may have been prepped for the Lippert Tire Linc tire pressure and temperature monitoring system. The prep includes the Tire Linc "Repeater Dock". The Repeater Dock is located on a panel inside the off-door side pass-through storage bay and has been wired to your RV's 12V DC power system. To complete the TPMS system on your RV with the Tire Linc system, consult with your dealer about purchasing the Lippert Tire Linc RV Tire Pressure and Temperature Monitoring System (TPMS).



Figure 4. Lippert Tire Linc mounting dock located inside the pass-through storage on the off-door (or street) side of the compartment. Note features in this panel change by floorplan and year.

Tire and Wheel Maintenance

Inspect Tires and Check Pressure

As per the Maintenance Schedule, as well as after encountering any significant road hazards, each tire should be inspected for abnormal wear, and the tire pressure should be checked.

	WYKW: Alliance RV Tire Pressure

⚠WARNING

TIRE PRESSURE SHOULD BE CHECKED AT THE BEGINNING OF A TRIP. ALWAYS FOLLOW ALL INSTRUCTIONS ON THE FEDERAL CERTIFICATION LABEL FOR ESTABLISHED REQUIREMENTS.

1. Inspection of the tires
   - Check your tires regularly, this is crucial to your safety. Ideally, tires should be inspected monthly. If you drive over potholes, debris or live in a cold climate or even regularly pull your RV, a more frequent inspection is suggested. The more often you inspect, the easier it is to catch small problems and get them fixed before it becomes a more expensive and potentially time-consuming problem.
   - Look for this during inspection:
     - **Over Inflation** – Too much air causing the tires middle section to contact the road. This will create wear in the center of the tire.

- **Under Inflation** – Too little air pressure causes the outer edges to contact the road. This will create wear on the outside edges of the tire tread.
- **Tread Wear on one Edge of the Tire** – This typically indicates that something is out of alignment.
- **Erratic Tread Wear** – Often called cupping and can mean the wheel is out of balance or an issue with suspension component

2. Pressure should be checked when the tires are cold. Tires are considered cold when the vehicle has not been moved for a period of 3 hours or more. Do NOT adjust tires when they are hot.
3. Using a quality tire gauge rated for the required pressure, check all the tires to make sure they have the same air pressure. Follow the tire manufacturer's inflation guidelines for maximum load capacity on the federal Tire Information Label. If the pressure is too high or too low, adjust as needed to match the required tire pressure.

⚠WARNING

ALWAYS KEEP TIRES PROPERLY INFLATED. NOT DOING SO CAN RESULT IN TIRE FAILURE THAT COULD RESULT IN AN ACCIDENT.

- If you have been driving your vehicle and think a tire is underinflated, fill it to the recommended cold inflation pressure indicated on your vehicle's tire information placard or certification label. While your tire may still be slightly underinflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that's slightly lower than the vehicle manufacturers recommended cold inflation pressure than to drive with a significantly underinflated tire. **Since this is a temporary fix, don't forget to recheck and adjust the tire's pressure when you can obtain a cold reading.**

⚠WARNING

NEVER ADJUST TIRE PRESSURE TO A "HOT" OR "WARM" TIRE. ADJUSTMENTS ARE ONLY TO BE MADE AFTER THE TIRE HAS BEEN AT REST FOR 3 OR MORE HOURS.

Changing a Tire



WYKW: Where to Place Your Tire jack

1. Keep the recreational vehicle attached to the tow vehicle. Block the tire on the opposite side of the recreational vehicle from the tire you are changing.
2. Remove the spare tire from the Spare Tire Carrier.
3. Loosen the wheel lug on the tire you are changing before jacking up the vehicle. **DO NOT remove the lug nuts.**
4. Locate the mainframe rail of the trailer (it spans from front-to-back just inside the tires).
5. To raise the recreational vehicle, place the jack under the main frame rail.

UL S	When jacking up an Ultra Lite or SOLO trailer, which has a BAL frame, be sure to support the outside edge of the frame (called the frame web) with the jack to ensure the bottom rail is not bent. In order to best achieve this, a floor jack with large lifting surface is recommended. **If using a bottle jack, you must use a block on top of the jack to spread the load out- do not use the bare top of the bottle jack.**

	Positioning a Floor Jack Under the BAL NXG Frame

The jack must be just ahead of the front tire or just behind the rear tire. Raise the recreational vehicle enough to lift the damaged wheel off the ground for removal. NOTE: The trailer may need to be raised slightly more to enable the new wheel to be placed.

⚠WARNING

NEVER USE THE LEVELING SYSTEM (IF EQUIPPED) TO CHANGE A TIRE. NEVER RAISE THE RV BY PLACING A JACK UNDER THE AXLE, AXLE SPRINGS OR ANY ATTACHED PARTS.

⚠WARNING

BE SURE TO REPLACE TIRES WITH A TIRE OF THE SAME SIZE AND SPECIFICATION.

6. Finish removing the lug nuts.
7. Replace the damaged wheel with the spare wheel, and secure the lug nuts hand tight.
8. Lower the recreational vehicle only enough to provide ground contact to prevent the wheel from turning as you complete the lug nut torques.
9. Apply full rated torque to the lug nuts in the sequence shown in **Wheel Nut Torque** for your wheel. You may need to repeat the torque sequence multiple times to fully seat all lug nuts.
10. Fully lower the recreational vehicle.

⚠WARNING

AFTER REPLACING A WHEEL, TORQUE SHOULD BE CHECKED AGAIN AFTER 100 MILES AND 200 MILES OF DRIVING.

Wheel Nut Torque

Always use a calibrated torque wrench to confirm proper torque. Check the lug nut torque on each wheel before departure and according to the Maintenance Schedule. Do NOT under torque or over torque under any circumstance. Tighten all lug nuts in the correct order according to your RVs lug pattern, illustrated in Figure 5.

⚠WARNING

ALWAYS TORQUE THE WHEEL LUG NUTS TO THE REQUIRED SPECIFICATIONS.

Table 1. Wheel lug nut torque specifications.

LUG NUT	STUD DIAMETER	RIM SIZE	RIM TYPE	ACCEPTABLE TORQUE RANGE
5	1/2”	15”	Aluminum	90-120 ft./lbs.
6	1/2”	15"	Aluminum	90-120 ft./lbs.

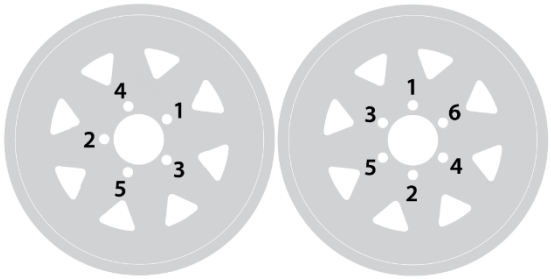


Figure 5. Proper lug nut torque sequence for five-lug (left) and six-lug (right) wheels.

BRAKE SYSTEMS

Alliance trailers come standard with drum brakes. The brakes are actuated via a brake controller to provide an electric signal to the trailer via the Tow Plug to apply the brakes. That signal travels to each wheel where an electromagnet applies the brakes. It is important to regularly inspect and maintain the brake systems according to the maintenance schedule.

Brake Controller

The brake controller should be installed in the tow vehicle to work in conjunction with the RV brakes. Consult with your dealer or brake controller manufacturer to decide what is the right towing combination. This controller will be present regardless of the type of brakes installed on the trailer.

Breakaway Switch

The breakaway switch is a critical safety component of the RV brake system. You'll find this located on the trailer's A-frame. If the trailer and the tow vehicle become separated during towing, the line will pull the plunger out and immediately activate the trailer's brakes. Always make sure your breakaway switch is in working order.

⚠ CAUTION

NEITHER THE BREAKAWAY SWITCH NOR THE TRAILER BRAKES SHOULD EVER BE USED AS A PARKING BRAKE

⚠ CAUTION

ENSURE THAT THERE IS ENOUGH SLACK IN THE BREAKAWAY SWITCH CABLE TO ALLOW FOR TIGHT TURNING RADII.

Brake Troubleshooting

Full troubleshooting of brake systems is beyond the scope of this manual. However, the following issues have been reported by Alliance owners:

Symptom: The drum brakes on the trailer appear to work less than in the past. The brakes have low miles and should not be worn.

Possible Causes:

- The brakes are self-adjusting, but the mechanisms that allow for self-adjustment can fail or become disconnected.
- Wires between the pin box connection and each brake could be damaged or disconnected. Check as much wiring as possible, using continuity checks where the full wire run cannot be seen.

Symptom: There is a known issue on Chevy/GMC trucks where a "Check Trailer Wiring" or "Service Trailer Brake" issue will post on the Driver Information Center, yet all tail lights and brakes function

- Damage to tow vehicle socket or trailer plug causing poor blade or socket connection. Refer to GM service bulletin 21-NA-155 to check for this issue.

Brake Maintenance

⚠WARNING

FAILURE TO KEEP YOUR BRAKES IN PROPER WORKING CONDITION AS OUTLINED CAN CAUSE PROPERTY DAMAGE, SERIOUS INJURY OR DEATH.

Breakaway Switch Operation

As per the Maintenance Schedule, test your breakaway switch with the following procedure. You may need to have a helper with you to hear the brakes actuate against the brake drums.

1. If the RV is still hitched to the tow vehicle, disconnect the tow plug from the vehicle.
2. With a helper standing near a trailer wheel, pull the breakaway pin out, only to the first stage.
3. The brake actuator should be heard to contact the brake drum.

	It may be necessary to raise a wheel (or pair of wheels) using proper jacking techniques to test that it does not (they do not) rotate. One may also use a clamp-style ammeter to verify that each wheel magnet is drawing 3 amps of current. The total draw on the system should be 6 Amps per pair of wheels. The magnets each have a resistance of 3.2 Ohms. Do not measure resistance with power applied to the brake circuit.

4. Reinsert the breakaway pin to disengage the brakes.

Brake Inspection

⚠WARNING

BRAKE MAINTENANCE SHOULD ONLY BE PERFORMED BY QUALIFIED PERSONS USING STANDARD INSPECTION AND MAINTENANCE PROCEDURES.

FRAME

The frame used on Delta trailers depends upon the variant of the model line in consideration. The Delta model line of trailers has three distinct variations of production. The three variants are called the **Delta**, the Delta **Ultra Lite**, and the Delta **SOLO**.

The **Delta** main product line utilizes a Lippert Components, Inc. (Lippert,) frame along with Dexter Axles and suspension components. The Lippert frame can be verified by looking for it's Variant Tag (frame information label) on the main frame itself, near the front of the door side of the trailer.

The Delta **Ultra Lite** and the Delta **SOLO** utilize a BAL RV Products frame. Along with the frame, BAL provides all suspension components including the leaf springs, equalizer, and axle(s). The frame label will either be on the front A-Frame (top center) or at the front of the frame on the off door side, as illustrated in the following link.

	Locating the frame serial number label on a BAL NXG frame

The primary similarities and differences between the two frames are illustrated in the following sections.

Lifting the Frame for Suspension Work (i.e. Changing a Tire)

When one is required to lift the trailer to change a tire or perform other work on the trailer, there are special considerations on the BAL frame. These are detailed in the section Changing a Tire, above. There are no special considerations for the Lippert frame beyond following the specified process for operations.

	Positioning a Floor Jack Under the BAL NXG Frame

Suspension Type

Both the Lippert and BAL frames utilize a conventional leaf spring suspension, with an equalizer on multi-axle trailers.

Flush-Floor Slides

Both frame styles provide for a flush-floor main area slide. When utilized, the Lippert frame in the **Delta** variant will use a Lippert 2x2 Electric Through-Floor slide. When a flush-floor main area slide is used on a BAL frame for the Delta **Ultra Lite** and the Delta **SOLO** variants, a BAL NXG slide is used.

Both through-floor slide types have their own sections detailing their use, troubleshooting, and maintenance information.

LEAF SPRING SUSPENSION SYSTEM

Equipped with overslung axles, an equalizer (on dual axle units,) and dual eye leaf springs, the Delta trailers (all variants) have an easy to maintain suspension to protect your RV from damaging road shock. This system has been chosen to offer the optimum combination of price, features, and components to enable a long life of the trailer.

Depending upon the floorplan and model of interest, the suspension components may be from either Dexter (with a Lippert trailer frame) or BAL RV Products when a BAL frame is used. In Figure 6, one can see the arrangement of the running gear, noting that the image portrays an **underslung** system where the axle is mounted underneath the leaf springs. Alliance uses an **overslung** system, where the axle rides on top of the leaf spring.

	Running Gear - Dexter: Operation, Maintenance, Service Manual -Axles -Brakes (electric drum) -Double eye leaf springs

	WYKW: Why is there a slight bend in your Alliance RV Axles?

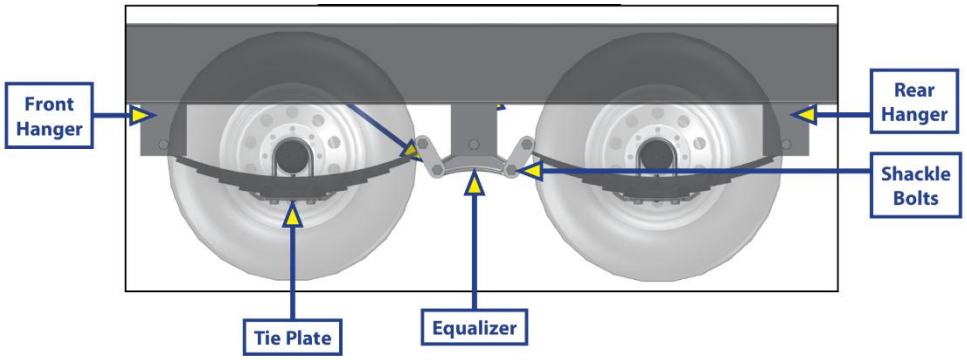


Figure 6. Double axle suspension part identification. ***Note this image is with underslung springs (the springs go under the axle.) Alliance trailers use an overslung orientation, where the leaf springs are over the axles.***

Leaf Spring Suspension Maintenance

Spring Hanger and Leaf Spring Inspection

Inspect each spring hanger location to assure no cracks exist and the hanger is straight. Ensure leaf springs are solid and not cracked or broken.

Equalizer Inspection (if equipped)

Equalizers are very strong, but perform a quick inspection to assure no cracks or damage are evident.

Leaf Spring Bolt Torque

As per the Maintenance Schedule, all bolts on the leaf spring assembly, whether in the leaf spring end, in a shackle, or on an equalizer, should only be snug tight (40 ft-lbs.) Rotation/play must exist for the assembly to work correctly. There are 7 bolts per side (5 on the equalizer and shackles, and 1 on each outer end of the leaf springs.)

Axle U-Bolt Torque

Always use a calibrated torque wrench to confirm proper torque according to the Maintenance Schedule. Do NOT under torque or over torque under any circumstance. Torque the nuts of all axle U-bolts to 75 ft-lbs (for standard nuts) or 100 ft lbs for nuts with serrated flanges.

Axle Bearing Inspection and Grease Repacking

⚠WARNING

AXLE MAINTENANCE SHOULD ONLY BE PERFORMED BY QUALIFIED PERSONS USING STANDARD INSPECTION AND MAINTENANCE PROCEDURES.

TOW PLUG

The tow plug (7-way wire harness) is wired to your RV to connect electrical power from the tow vehicle for the RV brakes, taillights, clearance lights, turn signals and brake lights. The plug is keyed to fit into a receptacle on your tow vehicle and can only be inserted one way. The gauge of wiring to operate your brakes must be the same size in both the tow vehicle and RV.

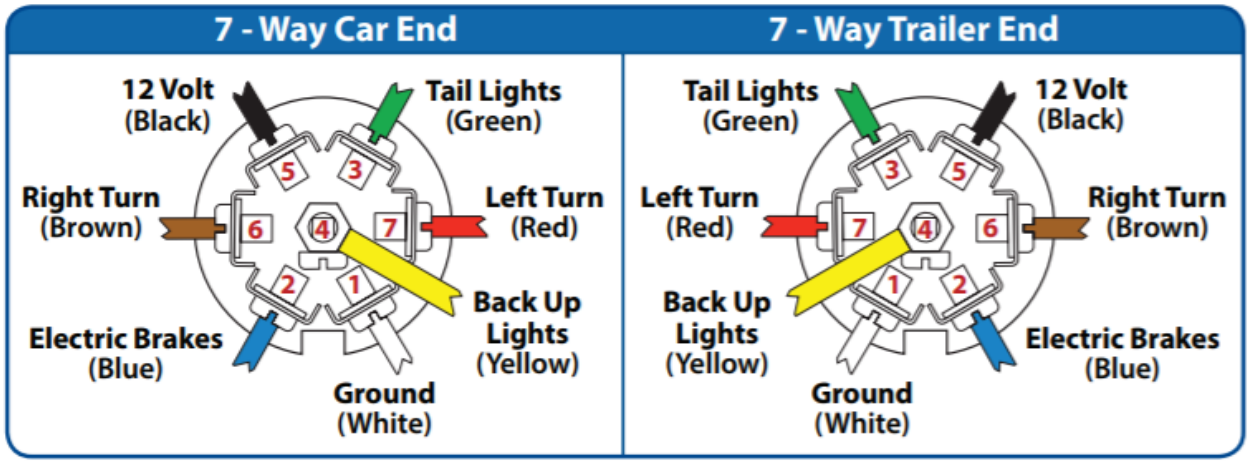


Figure 7. Standard 7 pin trailer wiring.

	WYKW: 7-Way Trailer Connection

Tow Plug Troubleshooting

Modern tow vehicles have many advanced monitoring systems for trailer wiring and braking. Often times, when these vehicles post errors and warnings for trailer braking issues, the issue will be related to fusing, programming, grounding, or other concern on the tow vehicle itself. Some things to verify on the trailer are as follows:

- Are the spades and sockets of the tow vehicle plug and trailer tow plug in good condition?
- Is there continuity between the trailer connection points and the connection box points?
- Is there continuity between the trailer tow plug pin 1 and the trailer frame ground?
- When testing the trailer's breakaway switch, does it operate normally?

If all of these items check out as functional, it is suggested to check the tow vehicle setup by contacting the manufacturer or online resources for your vehicle.

Tow Plug Maintenance

Inspection

As per the Maintenance Schedule, inspect your tow plug for corrosion and build up, clean as needed. Ensure the insulation is not pulled out from the plug. If damage is noticed, have the tow plug repaired by an authorized RV technician.

Wire Lug Torque

The Tow Plug cord is connected to the trailer wiring through a junction box mounted on the back of the Pin box. According to the Maintenance Schedule, one should follow this procedure to assure a solid wiring connection.

1. Using the battery disconnect switch on the trailer, turn off the battery power.

⚠ CAUTION

ALWAYS EXPECT THAT 12 V POWER IS ACTIVE IN THE JUNCTION BOX AND DO NOT TOUCH MORE THAN ANY ONE METAL OBJECT WITH THE TOOL.

2. Remove the junction box cover by removing the 2 screws.
3. Using a socket or nut driver, attempt to tighten each of the wire lugs connecting the Tow Plug cord to the trailer wiring.
4. Replace the cover, ensuring no wires are pinched.

SAFETY CHAINS

Requirements for safety chains vary by state. Your travel trailer RV comes equipped with chains to meet Society of Automobile Engineers (SAE) standards for the maximum gross trailer weight.

Using safety chains when towing is always recommended. The recommended method is to cross them under the trailer tongue and attach them to the safety chain loops on the tow vehicle's hitch.

When hitching always inspect the length of the chains once they are attached to the tow vehicle frame as they should be of sufficient length to allow sharp turns, but short enough as to not contact the ground. Each chain should have an equal amount of slack but only enough length to allow the tow vehicle to turn at its minimum radius.

⚠WARNING

ALWAYS USE SAFETY CHAINS WHEN TOWING YOUR TRAVEL TRAILER. SAFETY CHAINS MAINTAIN THE CONNECTION BETWEEN THE TRAVEL TRAILER AND THE TOW VEHICLE IN THE EVENT THE TRAVEL TRAILER WERE TO BECOME DETACHED DURING TRAVEL.

TOWING YOUR RV

When pulling an RV, the most obvious thing is shear mass. You'll be taller, wider and much heavier. Allow yourself plenty of room and time to maneuver out of potentially difficult situations.

Being taller, RVs are more susceptible to sway caused by cross winds and turbulence created by other large passing vehicles. Having the correct hitch equipment that is adjusted properly can significantly reduce these effects.

Know the height of your RV. This can only be properly measured when hitched to your tow vehicle. This will help in avoiding overhead obstructions such as tree branches, low building overhangs and low clearance bridges or overpasses.

Know the width of your RV. This is important when negotiating, turns and other obstructions. Extendable side mirrors and/or add on tow mirrors can help.

Know how much your RV weighs and be aware of the weight ratings of the RV. This information is available for your safety. It is critical to never overload your RV. Overloading adversely affect the towing and handling of your RV. Stay within the weight ratings and limits of your RV.



Can My Truck Tow This?

A tow vehicle and RV weigh a lot and can take longer to stop. Increase your following distance and give yourself plenty of room and time to stop. Ensure your braking controller is set to correctly stop your vehicle, referring to your brake controller or tow vehicle owner's manual. Each truck & towable recreational vehicle setup is unique and no one value of brake gain or setup can be advised.

Practice makes perfect. Get a feel for how the RV tows and handles. Offtracking is the term used to describe the behavior of the rear wheels of a vehicle, or the wheels of a trailer, to turn inside the radius of a turn made by the front (steering) wheels of a vehicle. Many incidents of recreational vehicle damage are caused by this behavior. As such, it is imperative that a driver understands this tendency and is comfortable with how to safely navigate turns in tight spaces and at highway speeds. This is especially important if you are new to RVs. It is also important to obey highway signs with speed advisement for turns and downgrades.

⚠WARNING

THE RV BRAKE SYSTEM IS DESIGNED AND RATED FOR THE GVWR OF THE RV, NOT THE GCWR OF THE TOW VEHICLE.

⚠WARNING

WHEN POSSIBLE, ENSURE THAT YOUR HOLDING TANKS ARE EMPTY DURING TRAVEL. FULL HOLDING TANKS CAN ADVERSELY AFFECT THE TOWING OF THE RV.

⚠WARNING

ALWAYS MAKE SURE THE PROPANE IS OFF WHEN TOWING THE RV.

Before and After Travel: Checklists

Your Alliance RV has a multitude of features that enable comfortable living while camping and traveling. Many of those features and capabilities require moving parts and specific setups for use. This not only includes sliding doors, but also small appliances, assorted decorations, and equipment setup inside and out (electronics, camp chairs, utility connections.) In order to move place to place, it's important to prepare for the trip carefully, review items during travel (depending upon distance being traveled,) and set up at the new location. Finally, it's good to assure that your Alliance RV continues to be "road ready" between trips.

Experienced RVer's know the importance of carefully preparing to leave a campsite, converting their RV from a living space to a traveling vehicle. As such, they often use checklists to assure all items are taken care of. Sometimes, those lists contain items added due to unfortunate experiences in the past. Every owner is encouraged to develop a series of checklists to assure each stage of the RV experience is protected from oversight of small but important steps.

⚠WARNING

THIS SECTION MENTIONS SEVERAL TYPES OF CHECKS NEEDED FOR SAFE TRAVEL, BUT CANNOT SUGGEST ALL CHECKS AND MAINTENANCE THAT ONE MAY NEED TO PERFORM. EACH SITUATION IS DIFFERENT AND THE READER IS ADVISED TO BUILD THEIR CHECKLISTS AND TRAVEL ROUTINES BASED UPON THEIR UNIQUE SITUATION(S), RV, AND TOW VEHICLE SETUPS.

An example of a couple of items to think about before travel is shown in the following short videos

	WYKW: Microwave Plate Quick Tip

	WYKW: Shower Door Latch

Some of the suggested checklists are:

- Pre-travel or departure checklist: This list contains all steps that might be needed to transition from a stationary campsite to a traveling RV, departing the campground. Sometimes, this list may need to start being addressed the day before travel (tow vehicle checks, electronic device charging are two points that might need to be reviewed the day before.) The list commonly contains things like packing up decorations, making sure to empty any water out of the fresh water tank, pack up satellite dishes, ensuring all doors and windows are latched in position, vent lids down, etc.
- Mid-travel quick check: This list might be used at every location where you stop during a travel day. Often called a "walk around," it can be used to assure the condition of the tires, wheels, running gear, and hitch are all in the expected condition. For example, your Tire Pressure Monitor System may not be indicating any problems, but there may be damaged tire tread or a bubble in the side of the tire that needs attention.
- Arrival checklist: What should be done when you arrive at a new camp location, and in what order? For example, it's important to level the trailer before extending slides. It's also important to carefully check around slides on the inside before extending to ensure things have not fallen or jostled into position to damage the slide as it moves out.
- Post-trip checklist: This is often done between travel days, and its purpose is to assure that no major repair is needed before the next travel day. It should be done close to arrival at a destination, which would help provide time to complete any repair so that travel plan changes are mitigated. This list would include the same type of items as the Mid-travel quick check, but is intended to be more in depth and include tow vehicle fluid checks, bolt torques as needed, etc.

There are numerous sources for checklists in the RV community. For novice RV owners, it is suggested to consult with other trusted RV owners as to what they use for checklists, as well as numerous RV owner communities that provide information on the internet.

	Building a checklist is not a one-and-done activity. Even experienced RVers find they revise their checklists to account for things like new equipment or decorations, age of the tow vehicle, or unusual conditions.

HITCH RECEIVER

Your trailer is supplied with an accessory hitch receiver. This receiver is only intended to mount accessories and is not intended for towing any trailing object.

The receiver can be used for a storage rack, bike rack or similar. The cargo weight carrying capacity includes the weight of the cargo carrier and should never exceed 300 lbs.

	WYKW: What Can You Tow With Your Hitch on an Alliance RV?

⚠WARNING

DO NOT EXCEED THE MAXIMUM LOAD OR HITCH WEIGHT RATING OF ANY HITCH KIT. EXCEEDING MAXIMUM LOAD OR WEIGHT RATINGS CAN CREATE A HAZARDOUS CONDITION THAT MAY RESULT IN POSSIBLE DEATH, SERIOUS PERSONAL INJURY OR SEVERE PRODUCT AND/OR PROPERTY DAMAGE, INCLUDING VOIDING OF THE WARRANTY.

CONNECTING TO THE TOW VEHICLE – WITHOUT AUTO-LEVEL SYSTEM

This section will help you understand how to connect your Delta trailer to the tow vehicle when it is not equipped with a BAL Auto-Leveling system. Whether you have a manual crank or motorized tongue jack, the procedure is the same, with the only difference being in how the tongue jack is raised or lowered.

- Before operating the jack, ensure that the foot is attached with the safety lock pin provided.
- Ensure all slides are IN, and stabilizers have been raised.
- For nighttime hookups, flip the light switch (mounted on the jack) ON to illuminate your work. You may also find the front Docking Light useful.
- If not already in place, make sure wheel chocks are properly placed in front of and behind the wheels on both sides.

To hitch the trailer:

1. Using the **UP/DOWN** momentary push switch on a motorized tongue jack to raise the tongue of the trailer high enough to enable the hitch ball of the tow vehicle to move underneath it.
2. Move the tow vehicle into position with the hitch ball underneath the hitch ball receiver.
3. Ensure the receiver latch mechanism is open/up to receive the hitch ball correctly.
4. Press and hold the **DOWN** button on the motorized tongue jack to lower the trailer onto the hitch ball, allowing the trailer to settle onto the ball.

	When lowering the trailer tongue onto the hitch ball, it can be helpful to ensure the hitch latch, on the trailer, latches before putting too much of the trailer weight onto the hitch. The latch is a mechanical system and sometimes one needs to push/pull or otherwise jostle the assembly to get the latch to fully engage (completed in the next step.)

⚠WARNING

ENSURE THAT THE LATCH OF THE HITCH BALL RECEIVER IS ACTUALLY UNDER THE HITCH BALL AND THAT THE BALL HAS NOT ACTUALLY PUSHED IT UP INTO THE RECEIVER.

5. Complete connecting the trailer to the tow vehicle: Latch the hitch ball receiver, connect the safety chains securely, and connect the trailer's electrical plug to the tow vehicle.

	If you have a Weight Distributing System, this is usually the point in time where you set up that system. Such steps are not covered in this manual – please see appropriate documentation in your system's owner's manual.

6. Now fully raise the tongue jack and remove the foot plate (if equipped) to provide maximum clearance below the jack for towing.

⚠WARNING

THE JACK WILL SLOW DAWN AND STOP AS IT APPROACHES THE FULLY RETRACTED POSITION. RELEASE THE SWITCH AT THE FIRST SIGN OF SLOWING.

7. Remove the wheel chocks from both sides of the trailer.
8. It is wise to do a final walk-around the RV to ensure the only items touching the ground are the trailer tires.

⚠WARNING

ALWAYS CHECK TO ENSURE THAT THE UNIT IS PROPERLY CONNECTED TO THE TOW VEHICLE BEFORE RETRACTING THE TONGUE JACK.

⚠WARNING

VISUALLY CHECK ALL JACKS TO ENSURE THAT THEY ARE FULLY RETRACTED BEFORE TOWING THE UNIT.

CONNECTING TO THE TOW VEHICLE – USING BAL LS 5.3 AUTO-LEVEL SYSTEM (IF EQUIPPED)

When your Delta trailer is equipped with the BAL LS 5.3 Auto-leveling system, this procedure is used to safely connect to your trailer to the tow vehicle.

The following procedure assumes that:

- The trailer has wheel chocks properly placed in front of and behind the wheels on both sides.
- The trailer has been prepared for hitching, with all jacks and stabilizers up, and the hitch is high enough to enable one to position the hitch ball underneath the hitch ball receiver on the trailer tongue.

Complete details on how to prepare the trailer for hitching are contained in the section DISCONNECTING AND LEVELING YOUR RV – USING THE AUTO-LEVEL SYSTEM (IF EQUIPPED)

When disconnecting and leveling your RV, it is important that your RV is reasonably level to begin as per leveling system documentation. This may include using leveling devices under wheels to assure wheels are not lifted off the ground on one side or the other after leveling.

The following process is only a general guide in disconnecting and leveling your RV. The specific process, requirements, images, and guidelines can be found in the appropriate section of **Error! Not a valid bookmark self-reference.**.

1. After locating the trailer in a suitable, reasonable level location and orientation, place blocks in front of and behind wheels on both sides of the trailer.
2. Lower the tongue jack adjustable foot and disconnect the electrical cable from the tow vehicle.
3. Disconnect the safety chains from the tow vehicle.
4. Open the cover to the tongue jack, providing access to the illuminated control screen.
5. Press the **ON/OFF** button to activate the display.
6. Press the **TONGUE JACK MODE** on-screen button.
7. Press and hold **EXTEND** until the necessary detachment height is reached. As the weight is removed from the hitch ball, release the ball hitch latch.
8. Pull the tow vehicle completely clear of the unit.
9. Perform automatic or manual leveling operations to ensure the trailer is level and stabilized. Please refer to the Error! Not a valid bookmark self-reference. section.

THE LEVELING OF THE RECREATIONAL VEHICLE SHOULD BE DONE BEFORE THE STAIRS ARE LOWERED AND WITH THE SLIDES IN.

	WYKW: Do you level your Alliance RV with your slides in or out? WYKW: Make Sure Steps are Up BEFORE Leveling

10. After the trailer is stable and level, the stairs may be lowered, and the slides may be extended. Please refer to the **Slide-outs** section.

BAL LS 5.3 AUTO LEVELING SYSTEM.

1. Move the tow vehicle into position with the hitch ball underneath the hitch ball receiver.
2. Ensure the receiver latch mechanism is open/up to receive the hitch ball correctly.
3. Open the cover to the tongue jack, providing access to the illuminated control screen.
4. Press the **ON/OFF** button to activate the display.
5. Press the **TONGUE JACK MODE** on-screen button.
6. Press and hold the **RETRACT** soft button to lower the trailer onto the hitch ball.

	When lowering the trailer tongue onto the hitch ball, it can be helpful to ensure the hitch latch, on the trailer, latches before putting too much of the trailer weight onto the hitch. The latch is a mechanical system and sometimes one needs to push/pull or otherwise jostle the assembly to get the latch to fully engage (completed in the next step.)

⚠WARNING

ENSURE THAT THE LATCH OF THE HITCH BALL RECEIVER IS ACTUALLY UNDER THE HITCH BALL AND THAT THE BALL HAS NOT ACTUALLY PUSHED IT UP INTO THE RECEIVER.

7. Complete connecting the trailer to the tow vehicle: Latch the hitch ball receiver, connect the safety chains securely, and connect the trailer's electrical plug to the tow vehicle.

	If you have a Weight Distributing System, this is usually the point in time where you set up that system. Such steps are not covered in this manual – please see appropriate documentation in your system's owner's manual.

8. Press the **HOME SCREEN** button, then **AUTO MODE**, and then finally **TONGUE JACK RETRACT**.

⚠WARNING

ALWAYS CHECK TO ENSURE THAT THE UNIT IS PROPERLY CONNECTED TO THE TOW VEHICLE BEFORE RETRACTING THE TONGUE JACK.

9. Press **OK** to begin retracting the tongue jack. Press **STOP** to make another selection.
    a. The display will read "TONGUE JACK RETRACT IN PROGRESS."
    b. When the jack has been fully retracted the display will read "TONGUE JACK RETRACT SUCCESSFUL" and a beep will sound.
10. Raise all adjustable feet to the hole that provides the most ground clearance before towing the unit.
11. Press **ON/OFF** to deactivate the display.
12. Close and latch the cover of the touch screen display.

⚠WARNING

VISUALLY CHECK ALL JACKS TO ENSURE THAT THEY ARE FULLY RETRACTED BEFORE TOWING THE UNIT.

DISCONNECTING AND LEVELING YOUR RV – WITHOUT AUTO-LEVEL SYSTEM

When disconnecting and leveling your RV, it is important that your RV is reasonably level to begin. This may include using leveling devices (ramps, 2x6 boards, etc.) under wheels to ensure the trailer is level side to side.

1. After locating the trailer in a suitable, reasonable level location and orientation, place blocks in front of and behind wheels on both sides of the trailer.
2. If removed, reattach the jack foot with the provided safety pin.
3. Extend the jack foot to the ground using the motorized jack DOWN switch. Continue lowering/extending the foot until some of the weight has been removed from the vehicle. Do not lift the vehicle using the hitch ball.
4. Disconnect the electrical Tow Plug and Breakaway safety cable.
5. If used, remove the weight distribution components as per manufacturer's directions.
6. Unlatch the coupler that is keeping the hitch on the hitch ball.
7. Use the motorized jack by pushing DOWN (Extend) to lift the trailer tongue off the hitch ball.
8. Move the vehicle a safe distance away from the trailer.
9. Raise or lower the tongue jack to provide front-to-back level of the trailer.
10. After the trailer is stable and level, the stairs may be lowered, and the slides may be extended. Please refer to the **Slide-outs** section.

⚠CAUTION

THE LEVELING OF THE RECREATIONAL VEHICLE SHOULD BE DONE BEFORE THE STAIRS ARE LOWERED AND WITH THE SLIDES IN.

WYKW: Do you level your Alliance RV with your slides in or out?

Stabilizer Jack Use

The manual stabilizer jacks are located under the RV at each corner. Stabilizer jacks are designed to stabilize the RV and minimize movement as you move around inside the RV. After the trailer is level, lower them to the ground using the provided crank handle and ensure they're snug against the ground. Do not over-torque. Placing blocks under the foot pads of the jacks can prevent them from sinking into the ground. They should be wider and longer than the pads of the jacks.

⚠WARNING

STABILIZER JACKS ARE NOT INTENDED TO SUPPORT THE WEIGHT OF THE RV. DO NOT USE STABILIZER JACKS TO LEVEL THE RV OR ATTEMPT TO LIFT THE RV IN ANY WAY.

DISCONNECTING AND LEVELING YOUR RV – USING THE AUTO-LEVEL SYSTEM (IF EQUIPPED)

When disconnecting and leveling your RV, it is important that your RV is reasonably level to begin as per leveling system documentation. This may include using leveling devices under wheels to assure wheels are not lifted off the ground on one side or the other after leveling.

The following process is only a general guide in disconnecting and leveling your RV. The specific process, requirements, images, and guidelines can be found in the appropriate section of **Error! Not a valid bookmark self-reference.**.

11. After locating the trailer in a suitable, reasonable level location and orientation, place blocks in front of and behind wheels on both sides of the trailer.
12. Lower the tongue jack adjustable foot and disconnect the electrical cable from the tow vehicle.
13. Disconnect the safety chains from the tow vehicle.
14. Open the cover to the tongue jack, providing access to the illuminated control screen.
15. Press the **ON/OFF** button to activate the display.
16. Press the **TONGUE JACK MODE** on-screen button.
17. Press and hold **EXTEND** until the necessary detachment height is reached. As the weight is removed from the hitch ball, release the ball hitch latch.
18. Pull the tow vehicle completely clear of the unit.
19. Perform automatic or manual leveling operations to ensure the trailer is level and stabilized. Please refer to the **Error! Not a valid bookmark self-reference.** section.

⚠ CAUTION

THE LEVELING OF THE RECREATIONAL VEHICLE SHOULD BE DONE BEFORE THE STAIRS ARE LOWERED AND WITH THE SLIDES IN.

WYKW: Do you level your Alliance RV with your slides in or out?
WYKW: Make Sure Steps are Up BEFORE Leveling

20. After the trailer is stable and level, the stairs may be lowered, and the slides may be extended. Please refer to the **Slide-outs** section.

BAL LS 5.3 AUTO LEVELING SYSTEM (IF EQUIPPED)

Your Delta travel trailer may be equipped with the LS 5.3 Auto Leveling & Stabilizing system from BAL RV Products. This is a five-point automated system equipped with a powered tongue jack, two rear leveling jacks, and one powered c-jack near the front corners of the trailer.

Keeping the RV level is important to ensure proper function of the appliances, slide-outs, compartment doors, and interior/exterior doors. The easy-to-read, interactive touch screen can operate all leveling jacks and stabilizers automatically, or manually when desired. The bottom of the main control box also has LED illumination of the trailer's hitch area.



Figure 8. BAL LS 5.3 control display on the tongue jack.

⚠WARNING

- **NEVER USE THE LEVELING SYSTEM AS A LIFT FOR CHANGING TIRES OR WORKING UNDER THE UNIT.**
- **KEEP PEOPLE AND PETS CLEAR OF THE UNIT BEFORE TURNING THE LEVELING SYSTEM ON AND WHILE OPERATING THE SYSTEM.**
- **ALWAYS CHOCK THE TIRES BEFORE DISCONNECTING THE UNIT FROM THE TOW VEHICLE AND/OR OPERATING THE LEVELING SYSTEM.**
- **PARK UNIT ON REASONABLY SOLID SURFACE SO THAT JACKS WILL NOT SINK INTO THE GROUND. ON EXTREMELY SOFT SURFACES USE LOAD DISTRIBUTION PADS UNDER EACH JACK.**
- **PARK UNIT ON REASONABLY LEVEL SURFACE MAKING SURE THAT THE JACK CONTACT LOCATIONS ARE CLEAR OF OBSTRUCTIONS AND DEPRESSIONS BEFORE OPERATING THE SYSTEM.**
- **ALWAYS MAKE SURE THAT THE TOW VEHICLE IS DISCONNECTED AND MOVED COMPLETELY CLEAR OF THE FRONT OF THE UNIT BEFORE THE LEVELING PROCESS IS STARTED.**
- **NEVER LIFT THE WHEELS OF THE UNIT COMPLETELY OFF THE GROUND TO LEVEL THE UNIT.**
- **ALWAYS CHECK TO ENSURE THAT THE UNIT IS PROPERLY CONNECTED TO THE TOW VEHICLE BEFORE EXECUTING THE "TONGUE JACK RETRACT" FUNCTION.**
- **VISUALLY CHECK ALL JACKS TO ENSURE THAT THEY ARE FULLY RETRACTED BEFORE TOWING THE UNIT.**
- **FAILURE TO HEED ANY OF THESE WARNINGS MAY RESULT IN DAMAGE TO THE UNIT, TOW VEHICLE AND/OR CAUSE SERIOUS INJURY OR DEATH.**

	BAL Electric Leveling System LS 5.3 User Manual

Overall Display and System Usage

In all screens:

- At any time during an Auto function you may press **STOP** to abort the Auto function.
- When buttons are outlined in white the function may be selected.
- When buttons are outlined in yellow the function is active.

Disconnecting the Tow Vehicle and Leveling the Trailer

1. After locating the trailer in a suitable, reasonable level location and orientation, place blocks in front of and behind wheels on both sides of the trailer.
2. Lower the tongue jack adjustable foot and disconnect the electrical cable from the tow vehicle.
3. Disconnect the safety chains from the tow vehicle.

4. Open the cover to the tongue jack, providing access to the illuminated control screen.
5. Press the **ON/OFF** button to activate the display.



Figure 9. Leveling system HOME SCREEN. White buttons are available options

6. Press the **TONGUE JACK MODE** on-screen button.
7. Press and hold **EXTEND** until the necessary detachment height is reached. As the weight is removed from the hitch ball, pause movement and release the ball hitch latch.
8. Pull the tow vehicle completely clear of the unit.
9. Lower the rear leveling jack adjustable feet and position them so that they are close to the same distance from the ground.
10. Press **AUTO MODE**.



Figure 10. Tongue Jack Mode screen. The yellow highlight indicates the active function.

11. Press **AUTO LEVEL**.



Figure 11. AUTO LEVEL execution screen.

⚠WARNING

VEHICLE, PEOPLE, PETS AND OBSTRUCTIONS MUST BE COMPLETELY CLEAR OF UNIT BEFORE EXECUTING THE "AUTO LEVEL" FUNCTION.

12. Press **OK** to begin "AUTO LEVEL" or **STOP** to make another selection.

The system will go through a series of moving the jacks and checking the unit for level. The display will read "AUTO LEVEL IN PROGRESS". When the system has successfully leveled the unit, the display will read "AUTO LEVEL SUCCESSFUL" and a beep will sound.

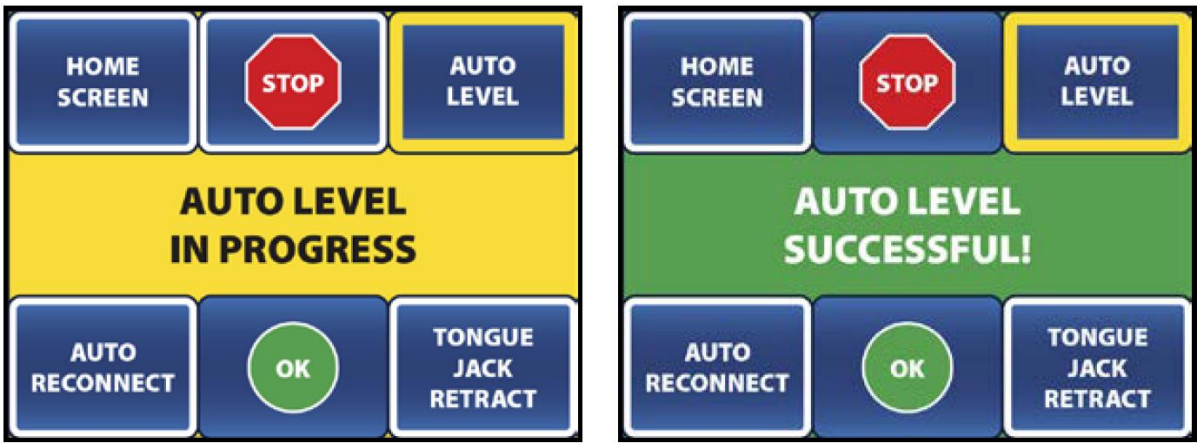


Figure 12. AUTO LEVEL status displays.

13. Press **HOME SCREEN**, then **ON/OFF** to deactivate the display.
14. Close and latch the cover of the touch screen display.

	If the system fails to successfully Auto Level, check the unevenness of the area under the unit. All lifting jacks must be able to make full contact for the system to function properly.

Reconnecting the Trailer to the Tow Vehicle

1. Press the **ON/OFF** button to activate the display.



Figure 13. HOME SCREEN display after turning the system on.

2. Press **AUTO MODE**, then press **AUTO RECONNECT**.



Figure 14. AUTO RECONNECT execution screen.

3. Press **OK** to begin “AUTO RECONNECT” or **STOP** to make another selection.

The system will retract all stabilizer jacks and the rear leveling jacks, then extend or retract the tongue jack until the proper connection height is achieved. The display will read “AUTO RECONNECT IN PROGRESS ". When the system has completed the “AUTO RECONNECT” function the display will read “AUTO RECONNECT SUCCESSFUL” and a beep will sound.

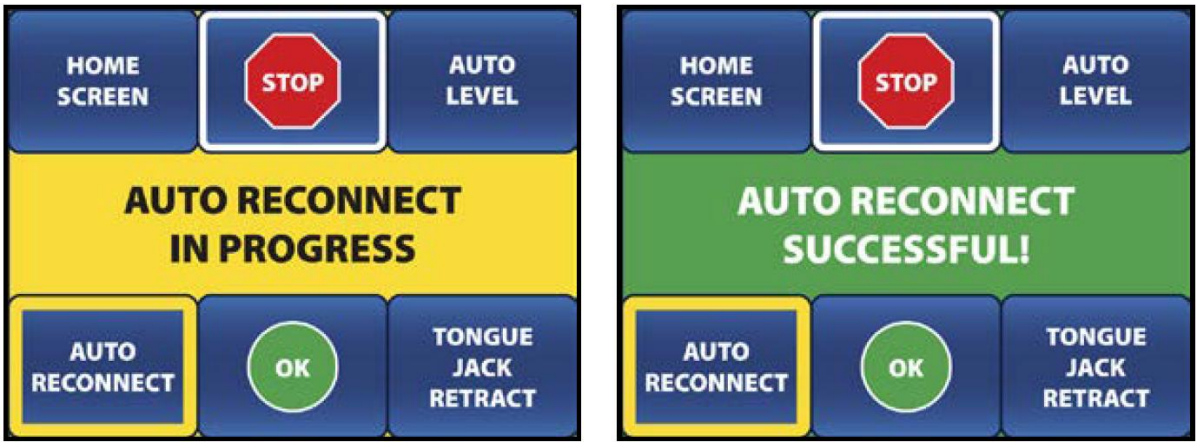


Figure 15. AUTO RECONNECT status displays.

4. Press **HOME SCREEN.** Position the tow vehicle's hitch ball underneath the hitch ball receiver. If needed, use the **EXTEND** button to raise the hitch ball receiver on the trailer.
5. Ensure the receiver latch mechanism is open/up to receive the hitch ball correctly.
6. Press and hold **RETRACT** until the unit can be connected to the tow vehicle. Connect the unit to the tow vehicle.

⚠WARNING

ENSURE THAT THE LATCH OF THE HITCH BALL RECEIVER IS ACTUALLY UNDER THE HITCH BALL AND THAT THE BALL HAS NOT ACTUALLY PUSHED IT UP INTO THE RECEIVER.

7. Complete connecting the trailer to the tow vehicle: Latch the hitch ball receiver, connect the safety chains securely, and connect the trailer's electrical plug to the tow vehicle.
8. Press **AUTO MODE**, and then **TONGUE JACK RETRACT**.



Figure 16. TONGUE JACK RETRACT execution screen.

⚠WARNING

ALWAYS CHECK TO ENSURE THAT THE UNIT IS PROPERLY CONNECTED TO THE TOW VEHICLE BEFORE RETRACTING THE TONGUE JACK.

9. Press **OK** to begin retracting the tongue jack. Press **STOP** to make another selection.
    a. The display will read "TONGUE JACK RETRACT IN PROGRESS."
    b. When the jack has been fully retracted the display will read "TONGUE JACK RETRACT SUCCESSFUL" and a beep will sound.

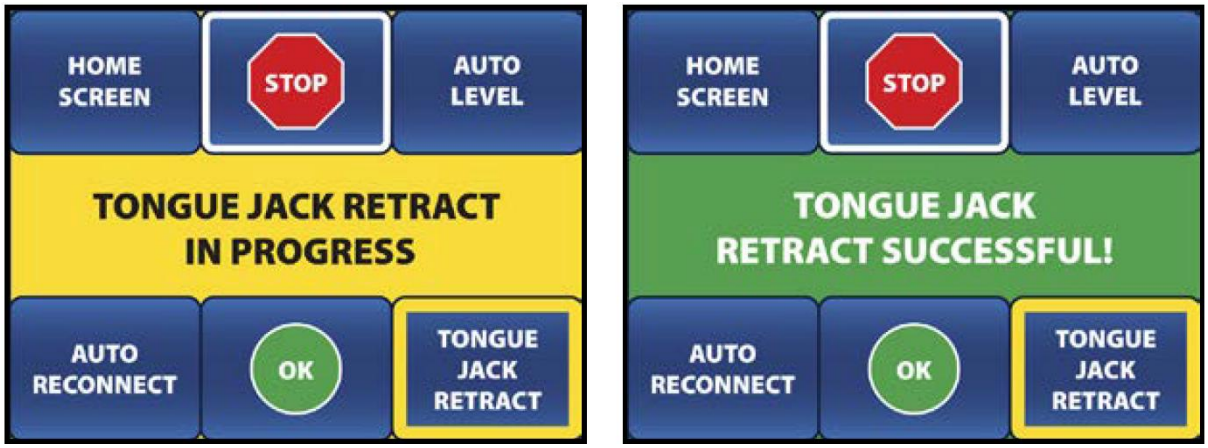


Figure 17. TONGUE JACK RETRACT status displays.

10. Raise all adjustable feet to the hole that provides the most ground clearance before towing the unit.
11. Press **ON/OFF** to deactivate the display.
12. Close and latch the cover of the touch screen display.

⚠WARNING

VISUALLY CHECK ALL JACKS TO ENSURE THAT THEY ARE FULLY RETRACTED BEFORE TOWING THE UNIT.

Manual Mode Functions

Manual Stabilizer Jack Mode

1. Press **ON/OFF** to activate the display.

2. Press **MANUAL MODE**.



Figure 18. Leveling system HOME SCREEN.

3. Press and hold **EXTEND/RETRACT** to operate the stabilizer jacks.

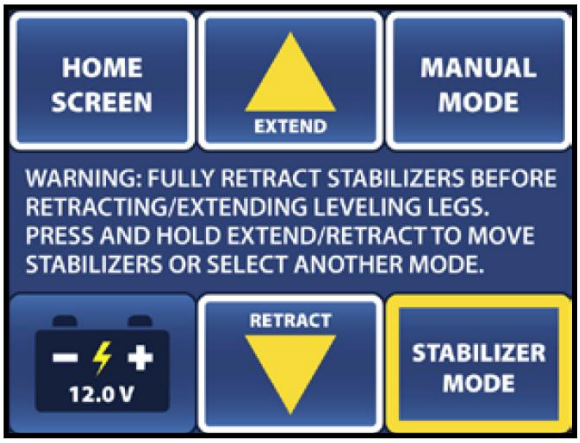


Figure 19. STABILIZER MODE execution screen, allowing manual control of the stabilizers only.

4. Press **MANUAL MODE** or **HOME SCREEN** to continue.

⚠WARNING

ALWAYS MAKE SURE THAT THE STABILIZER JACKS ARE FULLY RETRACTED BEFORE OPERATING THE TONGUE JACK OR REAR LEVELING JACKS.

Manual Leveling Jack Mode

1. Press **ON/OFF** to activate the display.
2. Press **MANUAL MODE**.
3. Select **EXTEND** or **RETRACT** as desired to move the system in the following ways. Note the bubble level can help identify level. When the white dot is centered, the system reads the trailer as being level.
   FRONT: Tongue jack on the front of the unit will move.

REAR: Both leveling jacks on the rear of the unit will move. NOTE: Run the rear leveling jacks all the way to the ground before lifting side to side.
LEFT: The left rear leveling jack will move (road side.)
RIGHT: The right rear leveling jack will move (curb side.)

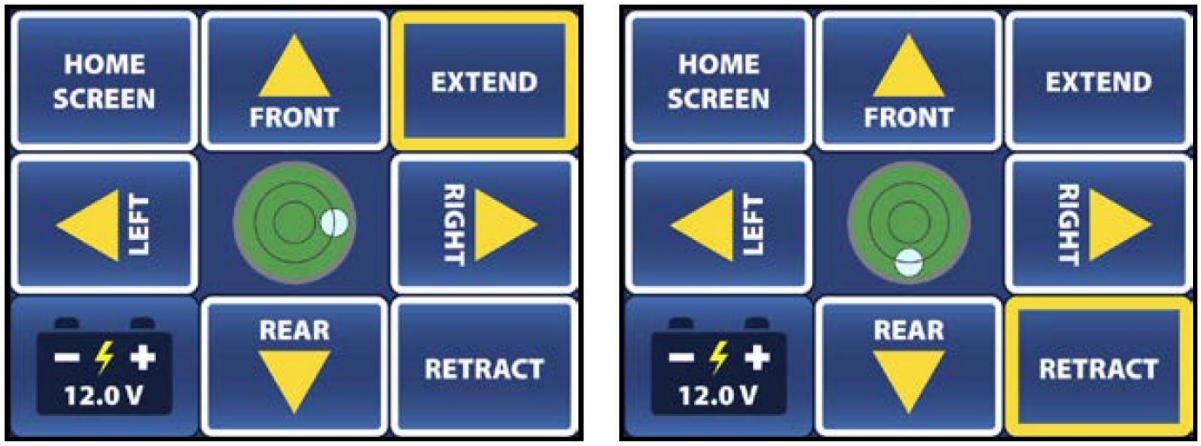


Figure 20. Manual leveling jack movement screen. The left image shows when EXTEND is active, the right image is for RETRACT.

4. Press **ON/OFF** to deactivate the display.
5. Close and latch the cover of the touch screen display.

Auto Leveling System Troubleshooting

If there is an error in the system, an error display will be shown. Use the following information to alleviate the problem. Press **CLEAR ERROR** to proceed.

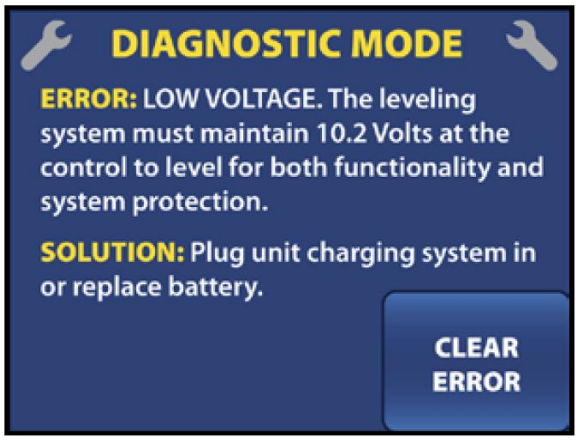


Figure 21. Sample error display, stating the error and solution.

Table 2. BAL LS 5.3 leveling system error messages.

LCD Message	What's Happening?	What Should Be Done?
AUTO LEVEL FAILED	Rear raised too high during auto level process. (Without being able to lift side to side) This may be a sign of unstable ground.	Move the unit into an area with stable soil or place load distribution pads under each jack. Minimize movement within unit.
LOW VOLTAGE	The leveling system must maintain 10.2 Volts at the control to operate for both functionality and system protection.	Verify power to the charging system (converter) and connections are secure. Verify battery condition.
HIGH VOLTAGE	The leveling system must be less than 16 Volts at the control to operate for both functionality and system protection.	Verify charging system is working properly.
EXCESS ANGLE DETECTED	The angle of the unit is too great to perform operation.	Move the unit into an area with lesser grade or unevenness.
MANUAL ADJUST ANGLE LIMIT	Manual adjust angle limit.	Use extend and retract options to keep unit reasonably level during manual operations. Try using Auto level or move the unit into an area with lesser grade.
OUT OF STROKE	The jack leg is fully extended.	Move the unit into an area with lesser grade, unevenness or place load distribution pads underneath the jacks.
FEATURE DISABLED	Zero point not set.	Contact an Authorized Dealer to have the system Zero point set.
	Auto Reconnect position not set.	Use Tongue Jack Mode to obtain disconnect position then Auto level before using Auto Reconnect.
JACK TIMEOUT	The control is not seeing movement from the jacks.	Check that landing area is firm and within reach of the jack travel. Check all wire harnesses to make sure they are not damaged and that they are plugged in properly.

Auto Leveling System Maintenance

Inspection and Greasing

The system should be inspected and maintained as per the Maintenance Schedule with the following steps:

1. Inspect the jacks for dirt and debris. Clean and lubricate as needed. Do not use a pressure washer to clean any of the leveling system components.
2. Grease the tongue jack:
    a. Extend the jack halfway.

b. Remove the plastic plug on the tube just under the top casing.
c. Apply a small amount of grease on the screw.
d. Reinstall the plastic plug.

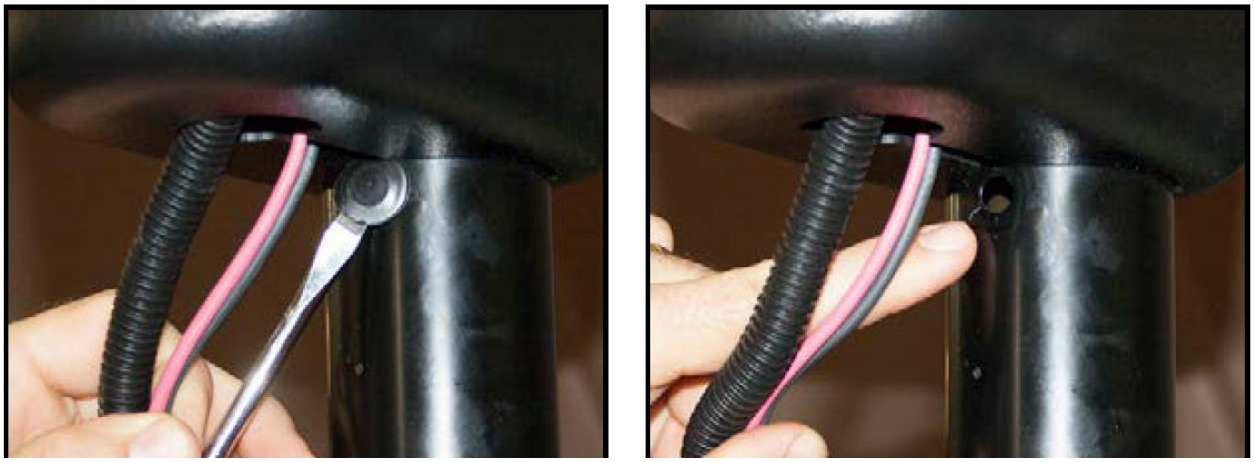


Figure 22. Tongue Jack grease access hole.

3. Grease the rear leveling jacks:
    a. Extend the jack halfway.
    b. Remove the plastic plug on the tube just under the top casing.
    c. Apply a small amount of grease on the screw.
    d. Reinstall the plastic plug.

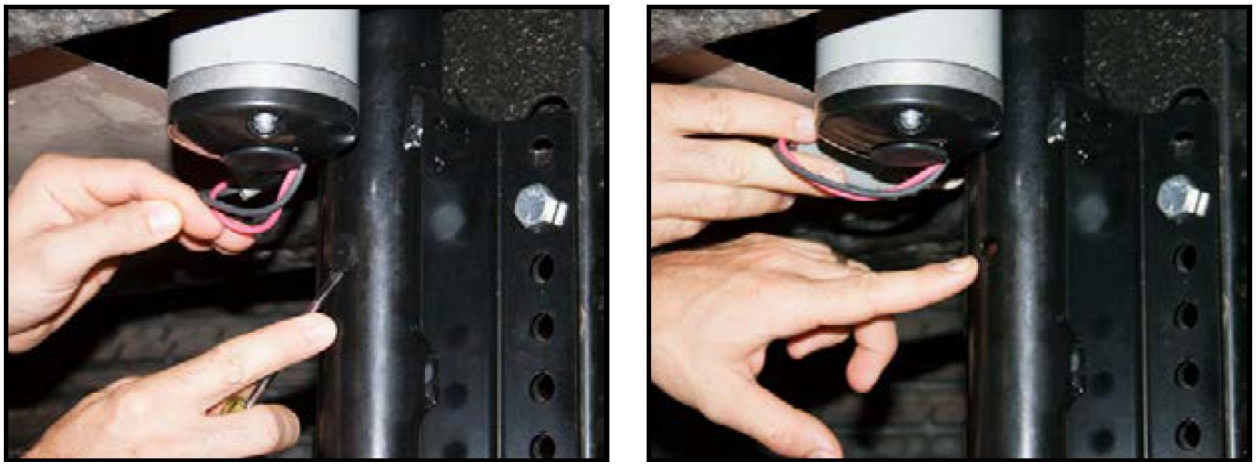


Figure 23. Rear leveling jack grease access hole.

4. Grease the stabilizer c-jack:
    a. Extend the jack such that it is about one inch from the ground.
    b. Apply some grease on the screw between the motor coupler and trunnion nut (where the leg is attached.)




Figure 24. Stabilizer c-jack grease location.

5. Check all bolts for correct torque.
    a. Tongue Jack: 30 ft. lbs.
    b. Rear Leveling Jacks: 80 ft. lbs.
    c. Stabilizer Jacks: 30 ft. lbs.

Manual Override

Each component can be manually driven should the need arise. The leveling and tongue jacks each have an override access point at the bottom of the motor, while the tongue jack also has a top access point.

Tools needed for override:

- Bottom access point on jacks: Drill with a 5/16” socket.
- Top access point on the tongue jack: Drill with a 3/8” square socket drive.
- Stabilizer jack override: 3/4” socket or wrench.

Tongue Jack Override (top)

1. Remove the round plug to the right of the touch screen.
2. Insert the 3/8” square socket drive on a drill to rotate the jack.



Figure 25. Top of tongue jack manual override.

Jack Override (tongue and rear leveling from bottom)

1. Remove the round plug at the bottom center of the motor.
2. Insert the 5/16” socket mounted in a drill driver to rotate the motor.

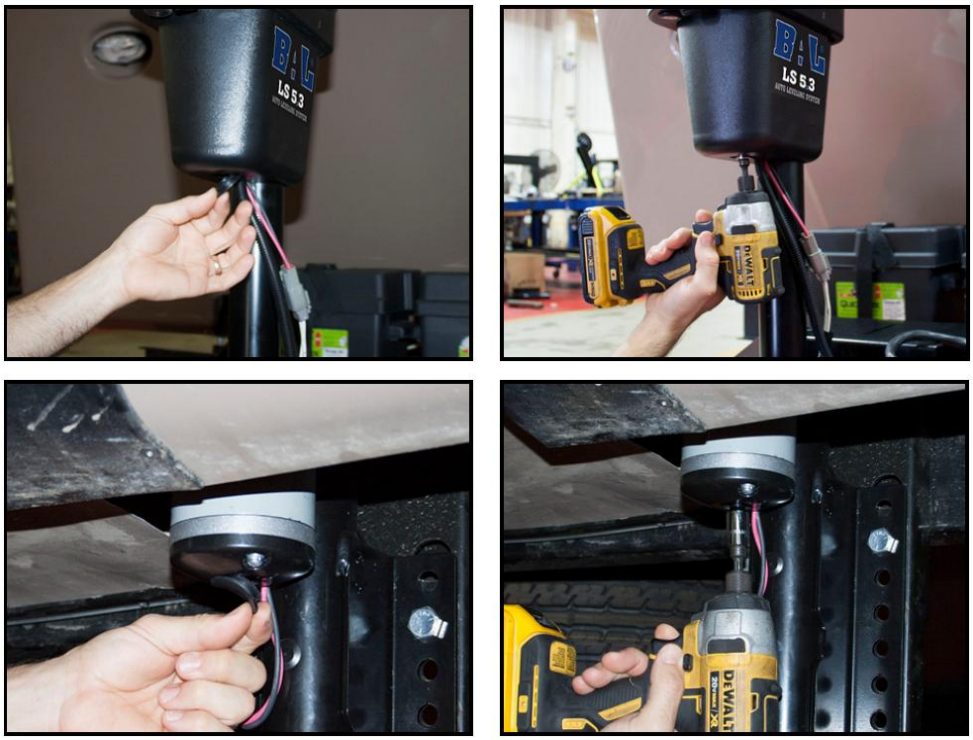


Figure 26. Manual override of jack motors from the bottom. Upper images are the tongue jack, lower images are the rear leveling jacks.

Stabilizer Override

1. Locate the 3/4” nut on the out facing end of the stabilizer jack. Use a ¾” socket or wrench to raise or lower the jacks

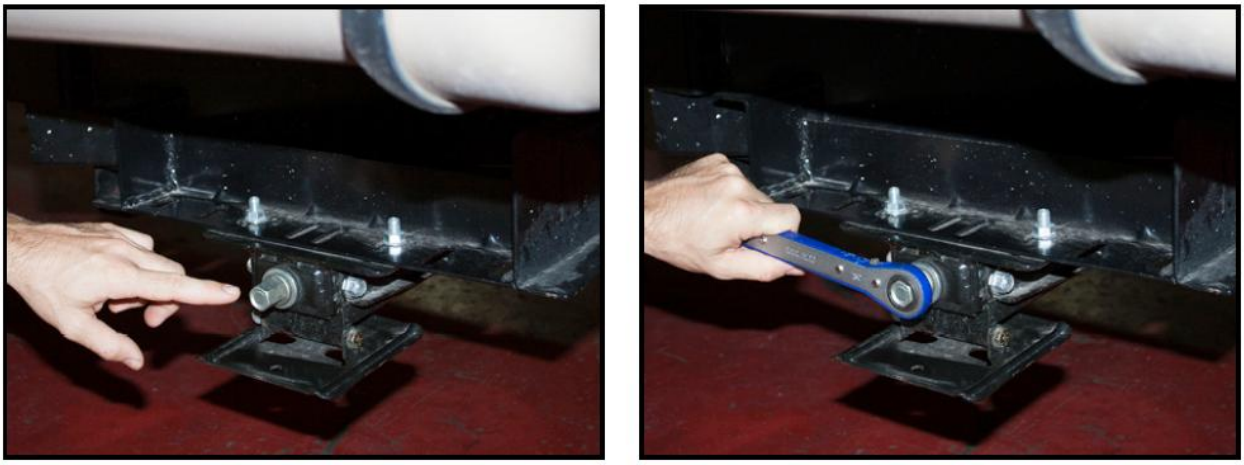


Figure 27. Front stabilizer manual override nut.

Programming the Zero Point or "Level Position"

⚠WARNING

BAL LEVELING SYSTEMS ARE NOT DESIGNED WITH SAFETY FEATURES AND/OR WARNING MESSAGES WHILE PROGRAMMING THE "LEVEL POSITION" IN THIS MODE. BE CAREFUL NOT TO PUT THE RV IN A TWIST OR ANY OTHER UNDESIRABLE POSITION THAT MAY CAUSE DAMAGE TO THE LEVELING SYSTEM AND/OR THE RV. THIS SERVICE INFORMATION IS DESIGNED FOR EXPERIENCED RV TECHNICIANS.
ALLIANCE RV NOR BAL RV PRODUCTS ARE RESPONSIBLE FOR DAMAGE THAT MAY RESULT FROM THE MISUSE OF THIS INFORMATION.

1. To access the programming screen, press and hold the voltage readout in the bottom left corner of the home screen. Refer to Figure 10.
2. When the keypad appears, type in the code 9588. This code will take you in to the programming screen. If the 9588 code does not work on your system, use the code 3759.

3. Now that you are at the programming screen, you will see the buttons necessary to manually level the RV. First run both rear leveling legs to the ground, then use the extend and retract buttons as necessary to achieve the true level position. A carpenter's bubble level on the RV floor may be helpful for this step.

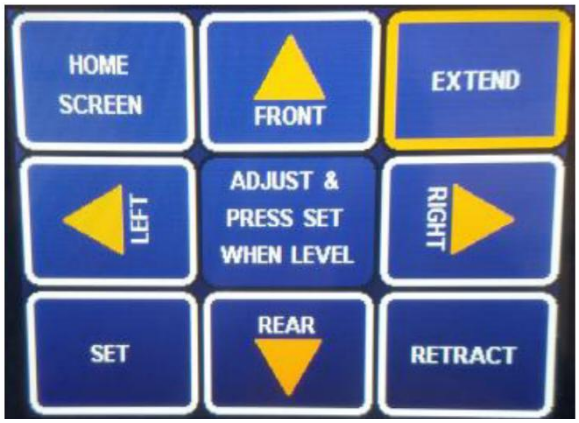


Figure 28. Programming screen of the leveling system.

4. When the RV is perfectly level, front to back, and side to side, press the "SET" button in the bottom left corner. This will program the system's "level position" to the RV's current position.
5. The system will return to the main screen.

OCCUPANT SAFETY

Alliance RV trailers are equipped with safety systems that work together to help protect the occupants in the event of an emergency. Please read and fully understand all safety functions before using your new RV.

Emergency Exit Windows

While all RV brands are different, the operation of the emergency windows are generally consistent across brands. The design, application, and location of these windows are governed by the RV Industries governing bodies. You will find some helpful safety information below regarding these exit windows. Please take time to familiarize yourself and anyone that will be in the RV with the location and operation of all exit windows in the RV.



Figure 29. Label placed on or near all emergency exits in the RV.

⚠CAUTION

ENSURE THAT ALL EXIT WINDOWS ARE CLOSED AND LOCKED DURING TRAVEL.

Identify and locate all emergency exit windows in the RV, they are easily identifiable by both the “EXIT” sticker and the red hardware used to open them.

Know what to expect in the event of an emergency. Activate the release mechanisms on the exit windows and apply pressure to push or slide them open.

Once you’re familiar with the location and operation, make yourself familiar with the drop between the window and the ground. Depending on the RV, it could be a significant distance.

⚠WARNING

ALWAYS PUT YOUR LEGS OUT FIRST AND ATTEMPT TO LAND ON YOUR FEET IF YOU MUST USE AN EMERGENCY EXIT WINDOW.

Table 3. Styles of emergency exit windows that may be present on your RV. Each opens differently.

1. **Pull or Tab Style Latch:** This style is generally used on larger slider style exit windows. Pull the handle out, or rotate the tab out (similar to other sliding windows) to slide the window open for escape.	 *Figure 30. Pull style latch on an emergency exit.*  *Figure 31. Tab style latch on an emergency exit.*
2. **Flip Style Latch:** This style flips up and disengages which allows the window to be pushed out for escape.	 *Figure 32. Flip style latch on an emergency exit.*

3. **Lever Style Latch:** This style has a handle that will either rotate or pull out and up to disengage to window retention. Once opened, push out the window, which will hinge at the top.



Figure 33. Rotation-Lever style latch on an emergency exit. Rotate the handle up into the window area to disengage the latch. Push window out.



Figure 34. Pull-Lever style latch on an emergency exit. Pull the leverl out, away from base, to disengage latch. Push window out.

4. **Bar Style Latch:** This style has a long bar with red handle that unlatches from the frame, and then rotating in. Push the bar out through the opening, which opens the window and allows escape.



Figure 35. Bar style latch on an emergency exit.

Fire Safety

Safety is always important, whether you're at home or on the road. As far as your RV, make sure to keep fire safety a top priority.

⚠WARNING

IN A FIRE, EVACUATING ALL OCCUPANTS FROM THE RV SAFELY MUST BE YOUR TOP PRIORITY.

Fire Extinguishers

Your recreational vehicle comes equipped with a fire extinguisher mounted by the door. Become familiar with its location and use to be prepared for emergency situations. A common acronym for proper fire extinguisher operation is P.A.S.S.

P – Pull the pin

A – Aim the nozzle (always aim at the base of the fire, not the flames)

S – Squeeze the trigger

S – Sweep from side to side

For additional information on fire extinguisher chemistry and operation, please refer to the fire extinguisher's user manual.

Alarms

Smoke Alarm (Ceiling)

Your RV is equipped with a smoke alarm. Understanding the information in this section will prepare you to reach in the event of an emergency.

⚠WARNING

NEVER TEST OR PRACTICE USING A FIRE EXTINGUISHER BY SQUEEZING THE TRIGGER. THESE ARE NON-RECHARGEABLE AND ONCE USED, PRESSURE WILL DECREASE OVER TIME AND WILL NOT BE FULLY FUNCTIONAL IN AN EMERGENCY.

⚠WARNING

WHILE USING A FIRE EXTINGUISHER, ALWAYS KEEP YOUR BACK TOWARD A CLEAR PATH FOR EXIT.

⚠WARNING

DO NOT TURN ELECTRICAL POWER BACK ON AFTER THE USE OF AN EXTINGUISHER.

⚠WARNING

INSPECT EXTINGUISHERS WEEKLY. IF YOUR RV HAS BEEN IN STORAGE, INSPECT BEFORE THE RV IS USED. ALWAYS INSPECT BEFORE A VACATION OR TRIP WITH YOUR RV.

ⓘ	Some early model Alliance trailers had a combination smoke & carbon monoxide (CO) alarm. Instruction manuals for those alarms will indicate how to determine differences between the active alarms. Regardless of model installed, there is always a carbon monoxide alarm installed along with the LP alarm (see next section.)

Follow safety rules and prevent hazardous situations:

1) NEVER smoke in bed.
2) Keep matches or lighters away from children.
3) Store flammable materials in proper containers.
4) Keep electrical appliances in good condition and NEVER overload electrical circuits.
5) Keep stove debris free.
6) Never leave anything cooking on the stove unattended.
7) Keep portable heaters and open flames, such as candles, away from flammable materials.
8) Don't let rubbish accumulate.

Refer to the alarm owner's manuals for a more in-depth understanding of the features, functions and precautions of this safety device.

Keep alarms clean and test them weekly. Immediately replace any alarm that is not functioning properly.



Figure 36. Ceiling mounted smoke alarm.

⚠WARNING

- **THIS ALARM WILL NOT OPERATE WITHOUT BATTERIES.**
- **NEVER IGNORE ANY ALARM, FAILURE TO RESPOND COULD RESULT IN SERIOUS INJURY OR DEATH.**
- **TEST ALARMS WEEKLY. IF THE ALARM FAILS TO TEST CORRECTLY, REPLACE THE ALARM IMMEDIATELY.**

If this alarm sounds, get out of the RV as quickly as possible and call your emergency services. Do not go into the RV until the problem is identified and corrected.

Propane and Carbon Monoxide (LP & CO) Alarm (Base of Wall near Stairs)

For your safety, your RV is equipped with a combination LP and CO Alarm. This alarm will detect both propane gas and carbon monoxide. Please read and become familiar with the individual users manual for this alarm. This will help prepare you if there is an emergency.



Figure 37. Wall mounted Carbon Monoxide (CO) and Propane alarm. These will be mounted near floor level, usually near stairs.

⚠WARNING

- **THIS UNIT MUST BE REPLACED WITHIN 5 YEARS OF ITS PRODUCTION DATE.**
- **THIS ALARM WILL NOT WORK WITHOUT POWER.**
- **THIS ALARM WILL ONLY INDICATE THE PRESENSE OF GAS AT THE SENSOR. THERE COULD BE GAS ELSEWHERE THAT HAS NOT REACHED THE SENSOR.**
- **THIS ALARM IS DESIGNED TO DETECT CARBON MONOXIDE AND PROPANE GAS. THE ALARM IS NOT DESIGNED TO DETECT SMOKE OR FIRE.**

<u>If an alarm sounds, identify which alarm is sounding.</u>

CO Alarm - If CO is detected, the red CO LED will flash and the alarm will sound with 4 beeps and then a 5 second silence. This indicates that the CO level is over 35pp. If this alarm is activated, immediate action is required.

If the CO alarm sounds:

1. Press the TEST/MUTE button to temporarily silence the alarm.
2. Evactuate the RV. Make sure to account for everyone.
3. Call 911 or the local emergency services available in your area.
4. Do not re-enter the RV until the problem has been corrected

Propane Alarm - If propane is detected, the RED led will will flash and the alarm will sound with a steady tone and remain on until the area is clear from propane gas. If you hear this alarm, immediate action is requried. Exit the RV immediately and do not return into the RV until the problem has been corrected.

If the Propane alarm sounds:

1. Extinguish all flames and smoking material and turn off all gas appliances.
2. Press the TEST/MUTE button to temporarily silence the alarm (DO NOT DISCONNECT POWER).
3. Evactuate the RV. Make sure to account for everyone.
4. Turn off the propane tank valve.
5. Open doors and windows of the RV.
6. Determine & Repair the source of the leak.
7. Do not re-enter the RV until the issue has been corrected.

Alarm Troubleshooting

	WYKW: LP and CO Detectors - Beeping

If you hear “chirping” in your trailer:

- Get very close to both the Smoke & CO alarm and the LP & CO Alarms to determine which one is making the noise. Also watch the front of the alarm for any LED indications
- If the chirping is coming from the Smoke & CO alarm: Open the cover and change the battery with a new battery. If the chirping persists, replace the alarm unit.

⚠WARNING

- **THE SMOKE & CO ALARM WILL NOT OPERATE WITHOUT BATTERIES.**
- **NEVER ATTEMPT TO REPAIR AN ALARM, IMMEDIATELY HAVE THE ALARM REPLACED.**
- **ALWAYS USE THE EXACT BATTERIES SPECIFIED BY THE ALARM MANUFACTURER.**

- If the LP & CO alarm is chirping and has an alternating Red & Green LED: You will need to replace the unit. This requires removal from the wall and disconnecting the power to replace.

Alarm Maintenance

Smoke & CO/Carbon Monoxide Alarm

- Test at least once a month by pushing the TEST button.
- Test after the RV has been in storage and before a vacation or long trip.

- Clean the alarm at least once a month by blowing air across it from a vacuum output or dusting the cover with an appropriate cloth or dusting tool.

⚠WARNING

- **ALWAYS USE THE EXACT BATTERIES SPECIFIED BY THE ALARM MANUFACTURER.**
- **NEVER USE AN OPEN FLAME OF ANY KIND TO TEST AN ALARM.**
- **DO NOT STAND CLOSE TO THE ALARM WHEN THE HORN IS SOUNDING. EXPOSURE AT CLOSE RANGE CAN BE HARMFUL TO YOUR HEARING. WHEN TESTING, STEP AWAY WHEN THE HORN STARTS TO SOUND.**

LP & CO Alarm

- Test at least once a month by pushing the TEST button.
- Test after the RV has been in storage and before a vacation or long trip.
- Vaccum the dust off of the alarm cover. If cleaning is needed, clean with a damp cloth. Do NOT spray cleaning agents or waxes directly onto the front panel. This can cause damage to the alarm.

PROPANE

The propane system provides heat, hot water, fuel for cooking, refrigeration and can be used for other small appliances.

The propane supply for an RV is stored in a DOT cylinder that is positioned vertically upright and mounted outside the living space of an RV. Repair and/or replacement should always be done by certified service technicians.

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

⚠WARNING

IF YOU SMELL PROPANE:

- **EXTINGUISH ANY OPEN FLAMES INCLUDING PILOT LIGHTS AND ALL SMOKING MATERIALS.**
- **SHUT OFF THE PROPANE SUPPLY AT THE LP CONTAINERS.**
- **DO NOT TOUCH ELECTRICAL SWITCHES.**
- **OPEN DOORS AND OTHER VENTS.**
- **LEAVE THE AREA UNTIL THE ODOR CLEARS.**
- **THE PROPANE SYSTEM SHOULD BE CHECKED FOR LEAKS AND THE SOURCE DETECTED AND REPAIRED BEFORE USING THE RV AGAIN.**
- **FAILURE TO COMPLY COULD RESULT IN EXPLOSION RESULTING IN DEATH OR SERIOUS INJURY.**

⚠WARNING

NEVER USE AN OPEN FLAME TO TEST FOR A PROPANE LEAK. DO NOT CHECK FOR LEAKS USING PRODUCTS THAT CONTAIN AMMONIA OR CHLORINE, THESE PRODUCTS CAN CAUSE CRACKS TO FORM ON METAL COMPONENTS IN THE PROPANE SYSTEM. A SOLUTION OF WATER AN MILD SOAP SHOULD BE USED BY SPRAYING THE FITTINGS AND CONNECTION POINTS DOWN AND WATCHING FOR BUBBLES.

⚠WARNING

IF YOU SMELL PROPANE:

- **DOT PROPANE TANKS MUST BE TRANSPORTED AND STORED IN AN UPRIGHT POSITION SO THE PRESSURE RELIEF VALVE CAN FUNCTION PROPERLY. LAYING A TANK ON ITS SIDE MAY CREATE A VERY DANGEROUS SITUATION.**
- **THE LP PIGTAIL HOSE MUST BE INSTALLED IN A MANNER TO AVOID TENSION OR STRESS AT EITHER END OF THE HOSE. KEEP THE PIGTAIL AWAY FROM SHARP EDGES, RIGID CORNERS, WALLS, AND DOORS.**
- **BEFORE ENTERING A PROPANE FUEL SERVICE STATION MAKE SURE ALL PILOT LIGHTS ARE EXTINGUISHED. SHUT THE GAS TO ALL APPLIANCES OFF BY TURNING OFF THE PROPANE AT THE GAS SHUT OFF VALVE(S). ALWAYS SHUT OFF ANY ENGINE BEFORE REFUELING. DO NOT SMOKE AND NEVER OPERATE IGNITION SOURCES WHILE REFUELING.**

Traveling with Propane

Turning the propane off when traveling is always safer, it reduces the risk of a gas leak from a line or connection working loose. Some states have laws against traveling with propane on. Even in states where traveling with propane on is legal, there may be locations, such at bridges and tunnels, that restrict or prohibit propane altogether. Make sure you are familiar with those laws and regulations in the area you are traveling.

⚠WARNING

MAKE SURE ALL PROPANE CYLINDER FASTENERS ARE SECURED BEFORE TRAVELING.

Two Stage LP Regulator

To regulate the propane pressure throughout the RV, it is equipped with a two-stage regulator with automatic changeover. With the first stage of the regulator, the fuel coming from the tank is reduced by venting from the tank or extended feed line high pressure down to 10 to 15 psi. In the second stage, the pressure is reduced again by further venting down to 11” water column which is the pressure safe for the appliances that the propane system powers. Always make sure that the vents are clean and unobstructed.

This regulator allows for removal of empty cylinders for refill without interrupting propane supply and will automatically switch from the supplying cylinder to the reserve cylinder when empty.



Figure 38. Two stage regulator with 11" water column pressure output for the trailer's appliances.

	WYKW: Your Auto-Changeover LP Regulator

⚠WARNING

PROPANE CONNECTIONS SHOULD BE CHECKED PERIODICALLY AS VIBRATIONS FROM TRAVEL MAY CAUSE THEM TO LOOSEN. FAILURE TO CHECK THESE CONNECTIONS COULD LEAD TO A PROPANE LEAK. A LEAK CAN CAUSE A FIRE OR EXPLOSION.

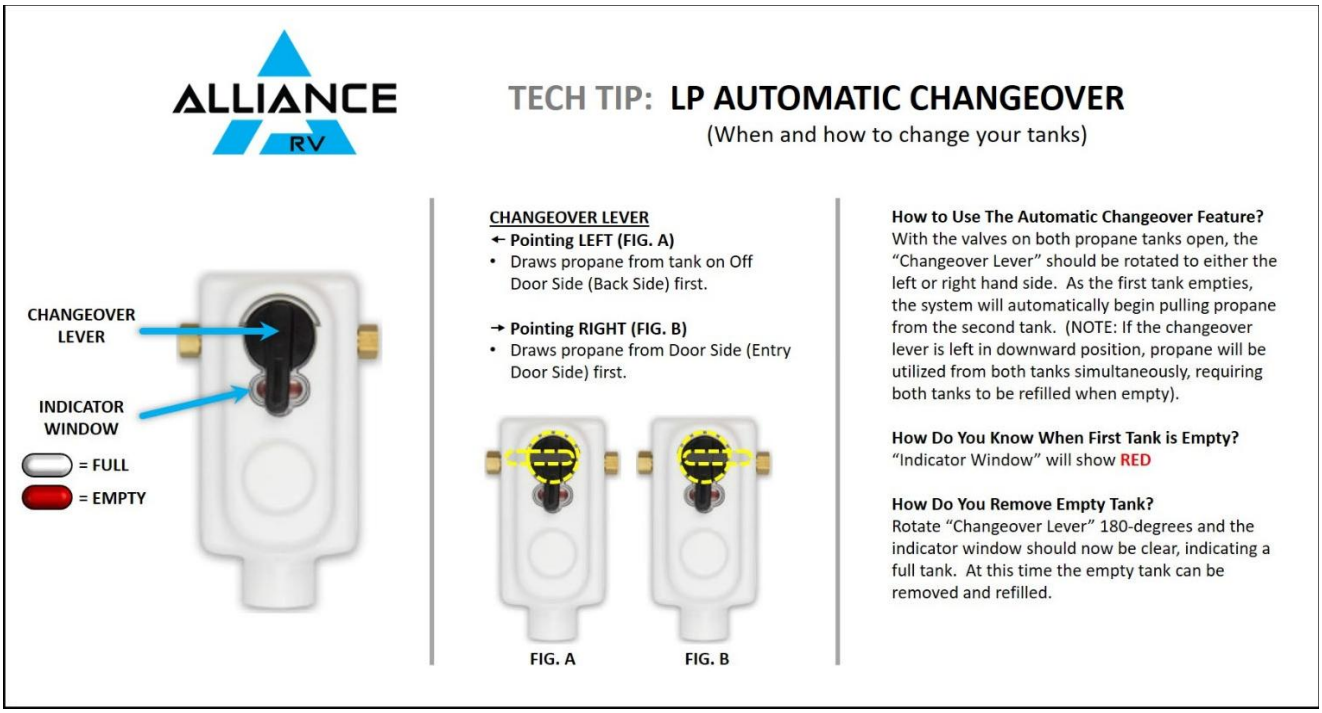


Figure 39. Using the Automatic Changeover regulator.

External Appliance Quick Connect

The quick connection port allows you to use the onboard propane supply for external appliances outside of your RV. The pressure at the port is already at 11" of Water Column (wc), meaning your appliance (BBQ Grill, firepit, etc.) needs to be able to connect to this port without having the propane supply travel through another regulator. Please refer to the appliance documentation for proper setup in this application.



Figure 40. External propane quick connect, with flow lever in the "off" position.

Using the External Quick Connect

Connecting an Appliance

1. Remove the Dust Cover.
2. Push the retaining ring back (toward on/off lever.) **Ensure that the shutoff lever is as shown in the picture, turned perpendicular (across) the flow of propane**. The ring will not move when the lever is inline with the direction of flow (propane flow ON.)
3. Push the connection line fitting into the port, the retaining ring will pop back out. Make sure the ring is fully seated toward the new connection.
4. Rotate the lever to the ON position, allowing propane to flow.



Figure 41. Pushing the retaining ring to accept an appliance connector.



Figure 42. Connected appliance, with flow lever rotated forward to the "on" position.

	The quick connect port connection can be difficult if debris has fouled the unit. If this is the case, electrical contact cleaner, carburetor cleaner, or brake cleaner can be sprayed into/on the port while moving the ring to clean out dirt and debris. Always allow the fluid to completely evaporate before re-attempting a connection.

	The pressure at the quick connect port is 11" of water column, which is the desired operational pressure of most propane appliances. If the appliance connected to the quick connect port has an additional regulator, the pressure will be too low to function. Verify proper set up with accessory manufacturer.

Disconnecting an Appliance

1. Rotate the black ON/OFF lever to the OFF position, stopping the flow of propane and enabling the retaining ring to be moved.
2. Firmly grasp the connection hose at the quick-connect fitting. Push the retaining ring on the fitting back (toward on/off lever.)
3. The connection hose should be able to be pulled out without too much force.
4. Ensure the ring closes/returns to the closed position. This may need to be manually pulled to the front position.
5. **Make sure to replace the Dust Cover, keeping the fitting clean.**

Propane Cylinders

Alliance RVs have a pair of DOT approved propane cylinders mounted at the front of the trailer. These cylinders can be removed and taken to a propane dealer for refilling. During transport, do not tilt the cylinders onto their side. Doing so will cause a safety valve to shut at the outlet of the cylinder and flow will be prevented.

Propane cylinders, like many other items, have an expiration date to ensure they are safe and reliable for use. Each cylinder is stamped with a date code that indicates when it was manufactured or last certified for use. Understanding this date is important because propane cylinders must be re-certified or replaced after a certain period to maintain safety standards.

The date code is typically stamped on the collar or handle of the cylinder and is shown in a **month-year** format, such as "03-20," which means March 2020. Most propane cylinders have a shelf life of **12 years** from the date of manufacture, after which they must either be inspected and re-certified for continued use or replaced.

Always check the date code before using a propane cylinder to ensure it is still within its certified period, ensuring safety and peace of mind during use.



Figure 43. Propane cylinder with a date code of "03-20".

Filling Your Propane Cylinders

	WYKW: Quick Tip After Changing LP Tanks (Cylinders)

A propane cylinder can only be filled to 80% of their total capacity. The remaining 20% is for expansion that takes place when subjected to heat. If a cylinder is filled to 80% when it is cold outside, that same cylinder may be at 90% on a much warmer day. Always ensure that the cylinder is filled to the required limit only.

⚠WARNING

NEVER FILL A PROPANE TANK OVER 80% OF ITS CAPACITY. AN OVERFILLED TANK COULD ALLOW LIQUID PROPANE TO ENTER THE SYSTEM WHICH IS DESIGNED FOR VAPOR AND CREATE A VERY HAZARDOUS CONDITION.

Cooking with Propane Gas

In an RV most stovetops and ovens run on propane. A properly ventilated RV is very important when cooking. Open a window or roof vent and turn your range hood fan on. Never use your stove or oven for space heat and never use outdoor fuel-burning equipment inside the RV.

⚠WARNING

IN AN RV, THE AMOUNT OF OXYGEN SUPPLY IS LIMITED DUE TO ITS SIZE. PROPER VENTILATION DURING COOKING WILL HELP AVOID DANGEROUS SITUATIONS.

Propane System Maintenance

⚠WARNING

- **NEVER ATTEMPT TO REPAIR ANY PROPANE RELATED COMPONENT.**
- **ENSURE THAT ALL ALARMS, DETECTORS AND EXTINGUISHERS ARE IN GOOD WORKING ORDER.**

Installing Propane Cylinders

Anytime a propane cylinder is removed for servicing or filling and re-installed on the RV, ensure that the fittings are all tight and the main shutoffs on the LP cylinders are in the off position and that the strap that secures the tank is in place. A quick visual inspection of the LP system should be performed any time cylinders are removed.

Inspection (Owner)

As per the Maintenance Schedule:

1. Visually inspect your propane cylinders, mounting hardware, and connection points for wear, rust, kinks or damage. Using a good flashlight can help illuminate small defects that would otherwise go unseen.
2. Inspect supply lines (between cylinders and regulator(s), along the underside of the trailer) using your eyes and fingers to assure there is no wear/rub point, no cracks, and no separation at joints. Using a good flashlight can help illuminate small defects that would otherwise go unseen.

3. **If issues are found:** Turn off the propane cylinders immediately. The propane system should be serviced by a qualified technician immediately upon an issue being identified. Never paint propane cylinders, valves or mounting hardware.

Inspection (Professional)

As per the Maintenance Schedule, your RV's propane system should be inspected by a certified professional. This will usually consist of a full visual inspection of visible lines as well as a Pressure Drop Test to assure no leaks in the system.

SLIDE-OUTS OVERVIEW

Slide-out Safety Information

⚠WARNING

FAILURE TO ADHERE WITH THE FOLLOWING INFORMATION MAY RESULT IN DEATH, SERIOUS INJURY, RV OR OTHER PROPERTY DAMAGE.

All slide-out systems are intended solely for opening and closing the slide-out room and should never be used for any other purpose. Before operating your slide-out, please keep these things in mind:

- Exterior: Your location should be clear of obstructions that may cause damage when the slide-out room is operated. Each slide-out may open a different distance. Know your slide-out opening distances.
- Interior: Ensure that items have not fallen while traveling and are now blocking the slide-out path or trim pieces. Also check that cabinet doors have not jostled open and are now blocking the slide from opening.
- Be sure that everyone is clear of the RV prior to the slide-out room actuation.
- Keep parts away from slide-out mechanisms during use. Severe injury or death may result.
- Park your RV on solid and level ground.

	WYKW: Properly Opening and Closing Slides – What to Check

	WYKW: Slide Seal Setup

⚠CAUTION

ALWAYS ENSURE THE SLIDE-OUT PATH IS CLEAR DURING OPERATION. KEEP CLEAR OF SLIDE RAILS WHEN THE ROOM IS IN MOTION. THE GEAR ASSEMBLY MAY PINCH OR CATCH ON LOOSE CLOTHING AND CAUSE PERSONAL INJURY.

Slide-out Control

All slide-outs are operated at the central monitor panel shown below, regardless of type. This panel will be found relatively close to the entry door of the RV in a cabinet designed to house this panel. The location of the panel and number of slide switches will vary depending on floor plan of your RV. Slides

are numbered as such: Starting at the front end of the trailer on the street side (Off Door Side) and continuing around the trailer in a counterclockwise direction.



Figure 44. Delta monitor panel with slide-out controls highlighted. Ultra Lite / SOLO models similar.

Late model trailers also have slide switches located inside the passthrough storage area on the same side of the trailer as the slide. Thus, there may be a switch on the Door Side, or Off Door Side, whichever side of the trailer the slides are on. They are individual switches, and on floorplans where there are two slides on a single side, they will be labeled to control the same slide numbers as the inside Monitor Panel.



Figure 45. Remote slide control in the pass through of the Delta Ultra Lite. Note that the switches may also have circular covers on later models.

LIPPERT ELECTRIC THROUGH FRAME SLIDE-OUT (IF EQUIPPED)

D

Alliance RV has used one of two types of electric through frame slide-outs for the main floor slide-outs on Delta trailers. On **Delta** trailers (as opposed to the **Ultra Lite** or **SOLO** variants) the slide will be this Lippert system.

UL
S

The **Ultra Lite** and **SOLO** versions of the Delta trailer utilize a BAL frame, and a BAL NXG Through Frame slide-out. Please refer to the section BAL NXG ELECTRIC THROUGH FRAME SLIDE-OUT (IF EQUIPPED).

This system has a single electric actuator with manual override capability. The system is robust, low maintenance, and enables easy adjustment of the slide if needed.

Lippert Electric Through Frame Slide-Out Owner's Manual

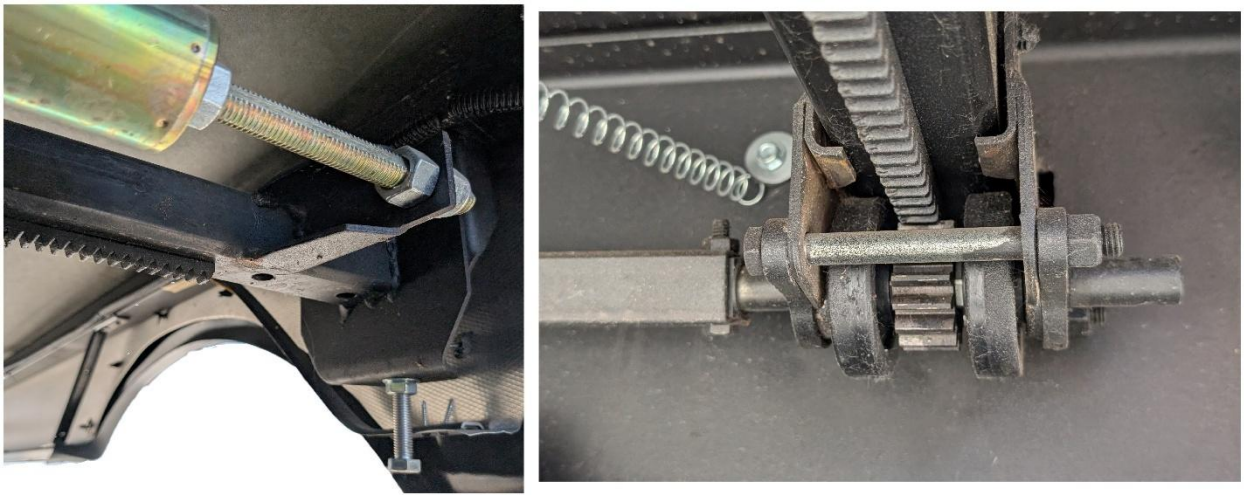


Figure 46. Identification of the Lippert Through Frame Slide-out. Features of note are the gold stop can, flat mounting plate on the end of the bar, and centered gear rack (right) and on the left one can see the exposed pinion gear in the gear pack. Refer to Figure 57 for comparison.

Lippert Electric Slide-out System Overview

The system is a Lippert 2 x 2 electric through frame slide system. This system uses a pair of telescoping bars (arms) with rack gears and connected by a cross shaft with pinion gears to keep each arm synchronized. A single actuator drives the system from one side and has a gold-colored Stop Can and nuts secured to the brackets in order to control the precise in and out travel distances.

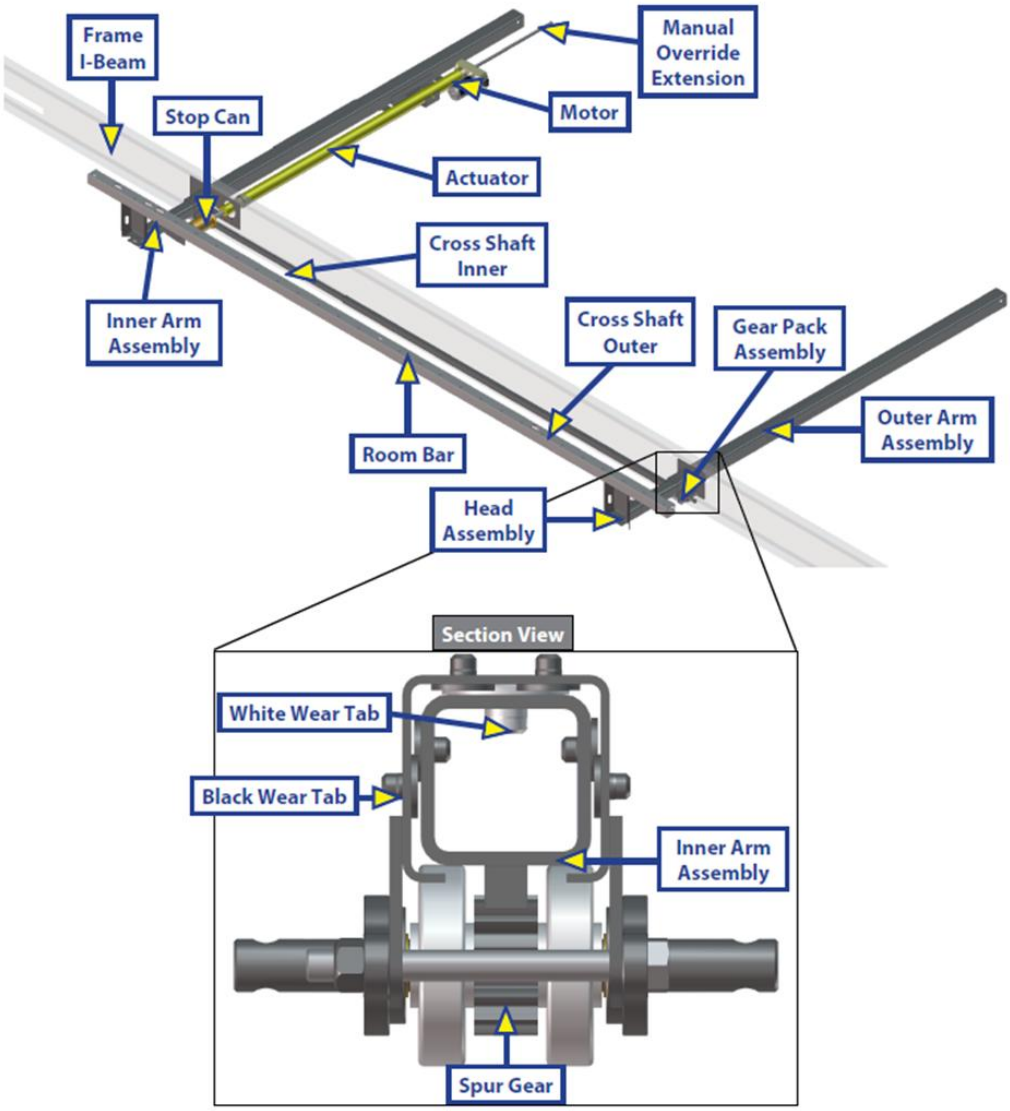


Figure 47. Lippert electric 2x2 through-frame slide-out system overview.

Lippert Slide-out Gear Pack

The Gear Pack converts the linear motion from the drive bar into rotational motion, which is transmitted to the idler side of the system via the crossbar, and a second gear pack converts the rotational motion back to linear motion. For the Lippert system, these are the only components that require lubrication (see the Maintenance section.)

Operating Your Lippert Electric Through Frame Slide-out

Extending Your Lippert Electric Slide-out

1. Level the RV.
2. Press and hold the room's switch in the "OUT" position until room is fully extended and stops moving.
3. Release the switch, this will lock the room into the "OUT" position *(**NOTE:** Only hold switch until the room stops extending).*

	If your slide room does not move, or moves initially and then stops, the first item to check is the state of charge of your battery.

Retracting Your Lippert Electric Slide-out

1. Ensure the floor is swept clean and no debris is present that will get caught under the slide and damage the floor. Lifting the covering flap and sweeping below it often helps to remove pebbles, etc.
2. Press and hold the room's switch in the "IN" position until the room is fully retracted and stops moving.
3. Release the switch, this will lock the room in the "IN" position. *(**Note:** Only hold the switch until the room stops retracting).*

	If your slide room does not move, or moves initially and then stops, the first item to check is the state of charge of your battery.

Lippert Electric Slide-out Troubleshooting

	Lippert Electric Through-Frame Slide-Out Service Manual

The troubleshooting chart below outlines some common problems, their causes, and possible corrective actions. If any part or serial number information is available, provide it to the service technician when asking for assistance.

The Through Frame Electric Slide-out System is only one of four interrelated slide-out room system components. These four components are: chassis, room, coach, and Through Frame Electric Slide-out System. Each one needs to function correctly with the others or misalignment problems will occur.

Every travel trailer has its own personality and what may work to fix one trailer may not work on another even if the symptoms appear to be the same.

When something restricts room travel, system performance will be unpredictable. It is very important that slide tubes be free of contamination and allowed to travel full distance (Stroke). Ice or mud buildup during travel is an example of a type of contamination that can occur.

When you begin to troubleshoot the system, make sure the battery is fully charged, there are no visible signs of external damage to the system and that all connections are secure.

During troubleshooting, remember that if you change something, that change may affect something else. Be sure any changes you make will not create a new problem.

Table 4. Electric Through-frame slide troubleshooting.

WHAT IS HAPPENING?	WHY?	WHAT SHOULD BE DONE?
Room doesn't move when switch is pressed.	Restriction or obstruction inside or outside of unit.	Check for and clear obstruction.
	Low battery voltage, blown fuse, or defective wiring.	*Check battery voltage and charge if needed. This must be above 10.5V, under load. *Find and check fuse in the main 12V fuse panel, replace if blown. *Check battery terminals and wiring. Look for loose, disconnected or corroded connectors.
Actuator motor runs but room does not move.	Actuator not attached to front mounting drive bracket.	Check jam nuts/nylock nuts. Be sure that they are properly tightened and adjusted.
	Bad motor or gear housing.	Replace motor.
Motor runs but room moves slowly (compared to normal.)	Low battery voltage, poor ground, extremely low outdoor temperature.	Charge battery and check ground wire.
	Room is in a bind.	Check to see that the room is properly adjusted.
Room stalls in mid travel.	Actuator is in a bind.	Crank the manual override and move room short distance then retry electric switch to move room.
	Bad actuator.	Replace actuator if above instructions do not work.

Lippert Electric Slide-out Maintenance

System Inspection

The following general inspections should be performed as per the Maintenance Schedule to assure the system is in peak operating condition.

1. Before any slide movement, ensure the interior floor is clean and free of debris. Ensure the exterior wall and areas around the seals is also clean.
2. Retract and extend the slide as needed to check the following points:
    a. Outside seals compress when slide-out is retracted.
    b. Inside seals compress when slide-out is extended.
    c. Slide-out extends and retracts smoothly.

d. Both sides of slide-out are synchronized. Each end of the slide should have the same (or nearly the same) seal compression when extended and retracted.

System Maintenance

It is recommended that when operating in harsh environments (road salt, ice buildup, etc.) the moving parts be kept clean. They can be washed with mild soap and water. No grease or lubrication is necessary and, in some situations, may be detrimental to the environment and long-term dependability of the system.

⚠CAUTION

THE GEAR PACKS SHOULD BE LUBRICATED PERIODICALLY OR WHEN EXCESSIVE SOUND IS HEARD, PLEASE REFER TO THE APPROPRIATE MAINTENANCE SECTION.

Mechanical Maintenance

Although the system is designed to be almost maintenance free, actuate the room once or twice a month to keep the seals and internal moving parts lubricated. Check for any visible signs of external damage after and before movement of the unit.

ℹ	When the RV is in storage or not being used for extended periods of time, it is recommended the room be closed (retracted.)

Electrical Maintenance

The slide-outs need a full battery for operation. The battery should be maintained in accordance with the battery manufacturers' recommendations. Always check the terminals and other connections at the battery, the control switch, and the system for corrosion, and loose or damaged terminals. Check motor leads under the trailer chassis, these connections are subject to damage from road debris.

Lippert Gear Pack Lubrication

1. Loosen both gear packs bolts (Figure 48A and B) until tension is off of the gear pack.

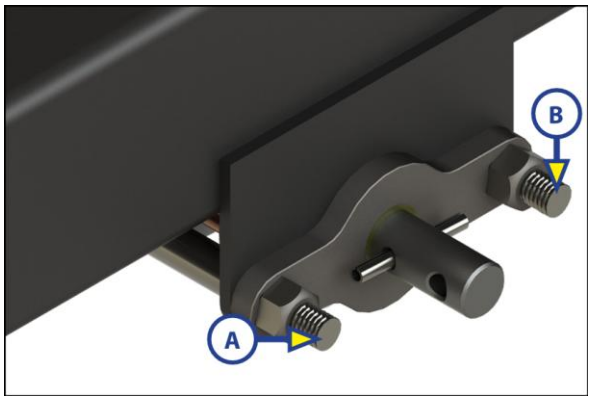


Figure 48. Gear pack mounting bolts.

2. Apply dry silicone onto gear pack drive shaft at lubrication points A through D in Figure 49 and Figure 50.



Figure 49. Gear Pack lubrication points - exterior.

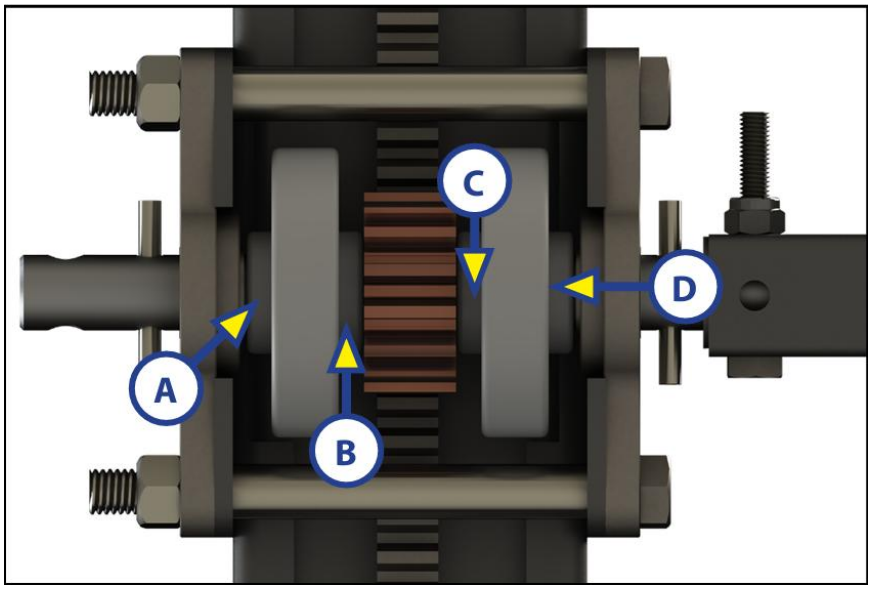


Figure 50. Gear Pack lubrication points - interior.

	Do not lubricate rack or pinion gear teeth, lubricate drive shaft only. If lubricant gets on pinion/bar, dirt and debris can stick and cause premature wear.

3. Extend and retract slide-out arms several times to work lubricant through gear pack.

Manual Lippert Electric Slide-out Operation (Manual Override)

⚠CAUTION

ALWAYS DISCONNECT BATTERY FROM SYSTEM PRIOR TO MANUALLY OPERATING SYSTEM. FAILURE TO DISCONNECT BATTERY CAN CAUSE ELECTRICITY TO BACKFEED THROUGH THE MOTOR AND CAUSE SERIOUS DAMAGE TO THE SYSTEM AS WELL AS VOID THE WARRANTY.

The Lippert Electric Through Frame Slide-out comes with a Manual Override system. The manual override is accessed through specially placed access holes which penetrate the lower skirting and frame of the trailer. These holes are placed on the opposite side of the trailer from the slide-room, near the location of the actuator. For example, if one wants to move the Door Side (Curb Side) slide, the manual override hole will be on the Off Door Side (Street Side) of the trailer, nearer to the front of the slide (where the actuator is.) A gold-colored crank handle is provided for this purpose with a hex socket on the end. That hex socket is placed through the hole and will connect to a hex drive on the actuator gear box.

Rotate the extension clockwise to retract the slide-out and counterclockwise to extend the slide-out. It is important to note that you DO NOT need to attempt to disengage the motor (physically) as the actuator is "manual ready." Please do note the previous warning about disconnecting the electrical path to the battery.

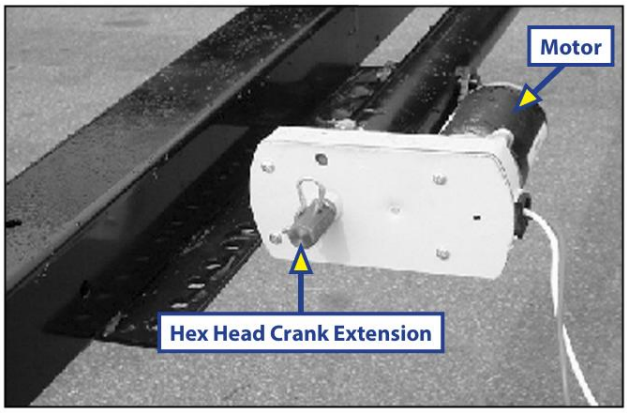


Figure 51. Actuator manual override hex configuration. This assembly is inside the frame of the trailer. The access hole lines up with the Hex Head Crank Extension.

⚠WARNING

USE EXTREME CAUTION WHEN EXTENDING AND/OR RETRACTING ROOM USING THE MANUAL OVERRIDE FEATURE. IT IS POSSIBLE TO OPERATE THE SLIDE-OUT BEYOND THE MAXIMUM EXTENSION AND/OR RETRACTION AND DAMAGE THE SLIDE COMPONENTS, SLIDE ROOM STRUCTURE OR TRIM COMPONENTS.

⚠WARNING

THE GEARS CAN BE STRIPPED OUT IF THE ROOM IS MANUALLY RETRACTED/EXTENDED TO ITS FULLEST EXTENT AND THE OPERATOR CONTINUES TO ROTATE MANUAL OVERRIDE. ANY DAMAGE DUE TO MISUSE OF THE MANUAL OVERRIDE FEATURE WILL DISQUALIFY ANY AND ALL CLAIMS TO THE LIMITED WARRANTY.

Advanced Maintenance: Adjusting Your Lippert Electric Slide-outs

While slide-outs are adjusted at the factory to achieve smooth and consistent operation, normal wear and tear may require slides are adjusted over the lifetime of the trailer.

⚠CAUTION

WE RECOMMEND THAT SLIDE-OUTS ARE ADJUSTED BY A CERTIFIED RV TECHNICIAN.

⚠WARNING

- **IT IS THE RESPONSIBILITY OF THE TECHNICIAN PERFORMING THESE PROCEDURES TO FOLLOW ALL STANDARD SAFETY PROTOCOLS IN SUPPORTING THE SLIDEROOM.**
- **REMOVE ALL EQUIPMENT FROM THE WORKING AREA BEFORE MOVING THE SLIDE OUT AFTER ADJUSTMENTS.**

Adjusting Lippert Electric Slide-out “IN” Position

1. Locate the cylinder coming through the frame.
2. Run the slide-out room partially out. Pressure must be off of the Stop Can.
3. Referring to Figure 52, loosen the 3/4” jam nut at the end of the stop can using a 1-1/8” wrench (A).
4. Adjust the Stop Can away from the frame if the room does not seal.
5. Adjust the Stop Can towards the frame if the room is too tight.
6. Tighten the jam nut (A) back against the Stop Can and test the room “IN” position.

⚠CAUTION

MAKE SMALL ADJUSTMENTS, RUNNING THE ROOM IN AFTER EACH ADJUSTMENT UNTIL PROPER SEAL IS ACHIEVED.

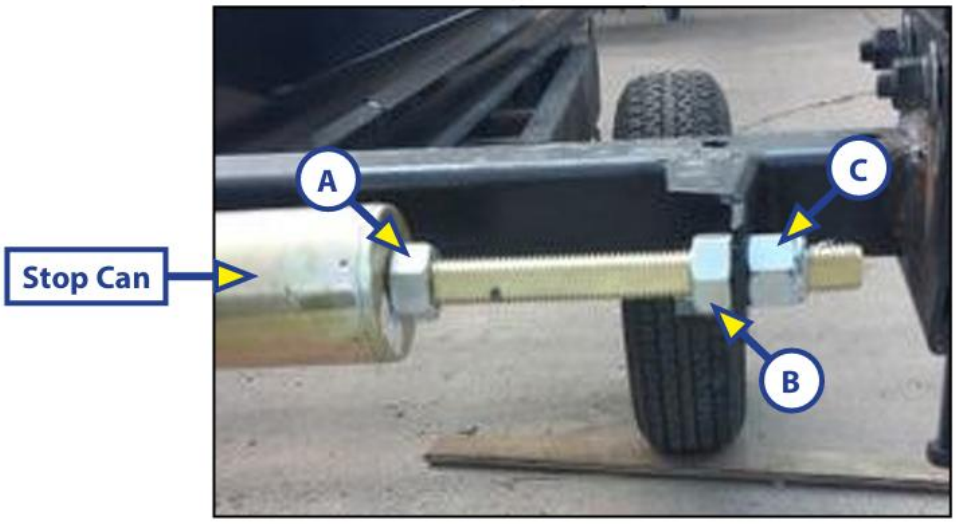


Figure 52. Electric slide-out IN and OUT adjustment components on the actuator.

Adjusting Lippert Electric Slide-out "OUT" Position

1. Locate the cylinder coming through the frame.
2. If the slide is fully extended, bring it partially in.
3. Referring to Figure 52, use a 1-1/8" wrench for nut (B) and a 1-1/16" wrench for the Nylock nut (C) to move the bracket in our out as needed. You may need to loosen the first nut in the direction of desired change, then tap the actuator in the desired direction to bring the bracket in, and then tighten the other nut against the bracket.
   a. Adjust the pair **closer** to the Stop Can if the room is too tight at full extension.
   b. Adjust the pair **farther** from the Stop Can if there is too much gap between the trim and wall (too loose) when the room is at full extension.
4. Ensure both nuts (B) and (C) are tight on the bracket before testing.

⚠ CAUTION

MAKE SMALL ADJUSTMENTS, RUNNING THE ROOM IN AFTER EACH ADJUSTMENT UNTIL PROPER SEAL IS ACHIEVED.

Adjusting the Lippert Electric Slide-out Room Horizontally

⚠WARNING

BEFORE BEGINNING THIS PROCEDURE, MAKE SURE THE VERTICAL ADJUSTMENT BOLT ON BOTH BRACKETS IS DRIVEN FULLY UP AGAINST IT'S BRACKET. IF NOT, THE ROOM WILL DROP WHEN YOU LOOSEN THE BOLTS IN STEP 4. REFER TO THE VERTICAL ADJUSTMENT PROCEDURE FOR AN IMAGE OF THE BOLTS OF CONCERN.

1. Begin by determining how much sideways movement is needed. Noting this value, divide it in half for the following adjustments. For example, if the slide must move ½" forward on the trailer, you will adjust the brackets by only 1/4". This will be called the **Bracket Offset Distance**, below.
2. Extend the room fully.
3. Using a scribe, mark the horizontal location of the bracket on the room bar (both sides.)
4. Loosen carriage bolts (Figure 53A) on each bracket located at the end of each guide rail. The image shown is from the top of the bracket, where the slide-out room is sitting.

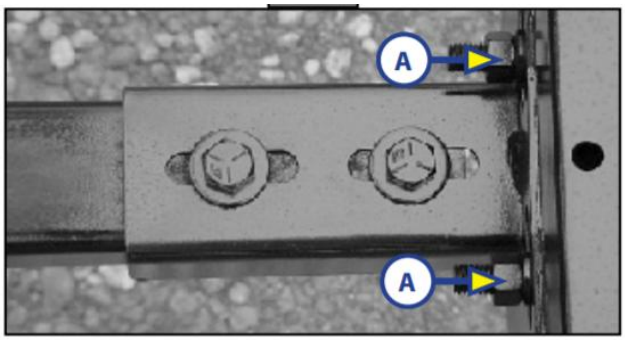


Figure 53. Room Bar mounting bracket - idler side. The drive side will not have adjustments on the guide rail.

5. Using a Dead-blow hammer or other hefty mallet, move the bracket by the **Bracket Offset Distance**, in the direction *opposite* of what direction you want the room to move. Continuing the example from above, if you want the room to move forward on the trailer, the bracket must be moved backwards. This will result in pulling the room forward.
6. Tighten the bolts on this bracket.
7. Repeat for the second bracket.
8. Make sure the area is clear of any tools, run the room in and out fully a few times to verify the new position of the room.

Adjusting the Lippert Electric Slide-out Room Vertically

1. Extend the room fully.
2. Place a jack underneath the slide room, near the bracket you will adjust first. Use a vertical board to extend the jack's height and a horizontal board of some length directly on the slide underside. Raise the room only enough to remove weight from the bracket. This can be observed by seeing the inner bar come up with respect to the outer bar near the trailer frame rail.
3. Using a scribe, mark the vertical location of the bracket on the room bar.

4. Loosen carriage bolts (Figure 54A) on each bracket located at the end of each guide rail. The image shown is from the top of the bracket, where the slide-out room is sitting.

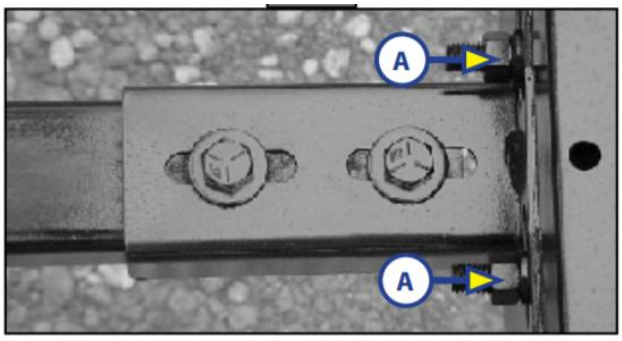


Figure 54. Room Bar mounting bracket - idler side. The drive side will not have adjustments on the guide rail.

5. Referring to Figure 55 for the following adjustments, raise the room using the jack to ensure it lifts off of the vertical adjustment bolt (B).
6. Loosen jam nut (A).

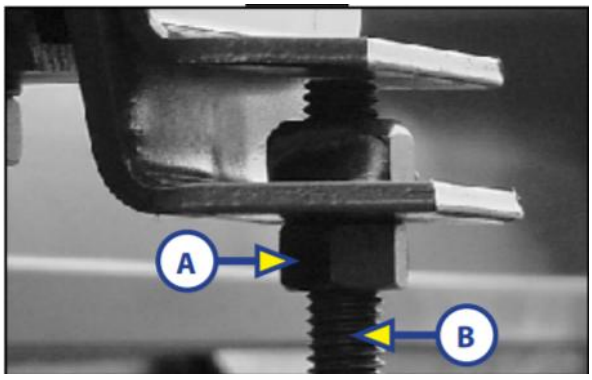


Figure 55. Vertical adjustment lock nut (A) and bolt (B).

7. For vertical adjustment turn vertical adjustment bolt (B) up or down to set room height.
8. Once room height is located, tighten the jam nut (A).
9. Tighten carriage bolts (Figure 54A) on this bracket. Once you are sure they're tight, gently lower the jack.
10. Repeat for the second bracket, moving the jack near that bracket.
11. Make sure the area is clear of any tools and the jack, run the room in and out fully a few times to verify the new position of the room.

Synchronizing Lippert Electric Slide-out Room Travel

This can be adjusted with the specially designed synchronizing bracket mounted on the passive slide tube. The passive slide tube is the one that is not powered. The active slide tube has the actuator attached to it. If one side of the room fails to seal adjust as follows:

1. Run the slide-out approximately halfway out.
2. Measure the active side from the "T"-molding on the slide-out main wall to the outside wall of the RV.

	If the synchronization requires more distance than that provided by the adjustment bracket, a more advanced procedure is required to adjust the gear pack position on the telescoping bar. That procedure is beyond the scope of this section. Refer to Lippert documentation for further assistance.

3. Measure the passive side in the same way.
4. Loosen bolts (Figure 56B) on top of the passive slide tube (A).

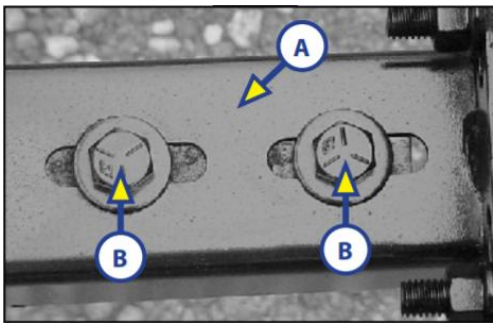


Figure 56. Synchronization adjustment bolts on guide rail. These are only present on the idler side.

5. Push or pull room (on passive side) to align the passive side with the active side.

	It can be helpful to remove weight from this side of the slide room using jacking techniques similar to the Vertical Slide-out Adjustment procedure.

6. Tighten bolts (Figure 56B) to secure the passive side position.
7. Move the room in and out to verify the new position.

BAL NXG ELECTRIC THROUGH FRAME SLIDE-OUT (IF EQUIPPED)

UL

Alliance RV has used one of two types of electric through frame slide-outs for the main floor slide-outs on Delta trailers. On **Ultra Lite** or **SOLO** variants, The BAL NXG slide is used along with the BAL frame.

S

D	The **Delta** variant of this product line utilizes a Lippert frame and associated Lippert Electric Through Frame slide-out. Please refer to the section LIPPERT ELECTRIC THROUGH FRAME SLIDE-OUT (IF EQUIPPED).

This system has a single electric actuator with manual override capability. The system is robust, low maintenance, and enables easy adjustment of the slide if needed.

	BAL NXG slide documentation and support videos

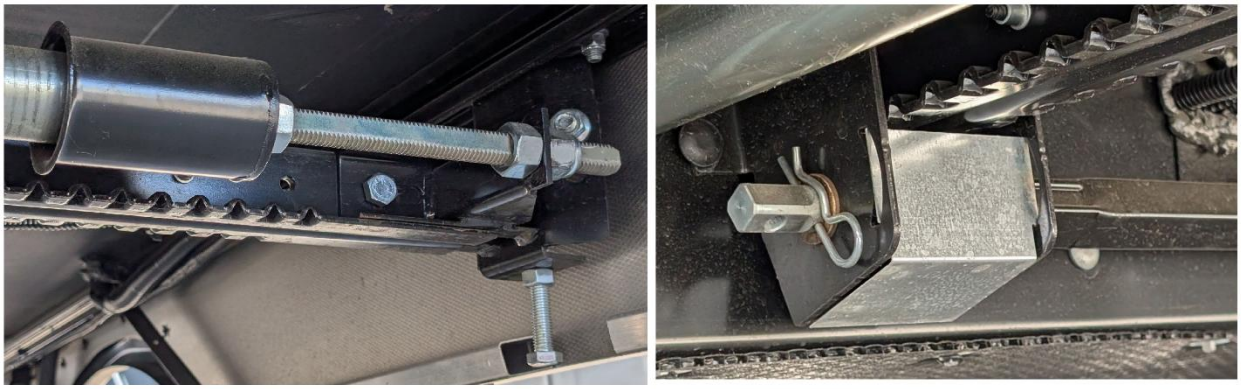


Figure 57. Identification of the BAL NXG Through Frame Slide-out. Features of note are the black stop can, angled mounting plate on the end of the bar, and dual gear indentations on the lower sides of the drive bar (right.) On the left one can see the covered pinion gears in the gear pack. Refer to Figure 46 for comparison.



Figure 58. BAL NXG Slide system overview.

The system uses a pair of telescoping bars (arms) with rack gears and connected by a cross shaft with pinion gears to keep each arm synchronized. In contrast to the Lippert system, the rack of this system is formed into the lower surface of the drive arms (see Figure 57), as opposed to Lippert's top-rack system. A single actuator drives the system from one side and has a black Stop Can and nuts secured to the brackets in order to control the precise in and out travel distances.

Slide-out Gear Pack

The Gear Pack converts the linear motion from the drive bar into rotational motion, which is transmitted to the idler side of the system via the crossbar, and a second gear pack converts the rotational motion back to linear motion. In contrast to the Lippert system, the gear pack is covered as shown in Figure 57.

Operating Your BAL NXG Electric Through Frame Slide-out

Extending Your BAL NXG Electric Slide-out

1. Level the RV.
2. Press and hold the room's switch in the "OUT" position until room is fully extended and stops moving.
3. Release the switch, this will lock the room into the "OUT" position *(**NOTE:** Only hold switch until the room stops extending).*

	If your slide room does not move, or moves initially and then stops, the first item to check is the state of charge of your battery.

Retracting Your BAL NXG Electric Slide-out

1. Ensure the floor is swept clean and no debris is present that will get caught under the slide and damage the floor. Lifting the covering flap and sweeping below it often helps to remove pebbles, etc.
2. Press and hold the room's switch in the "IN" position until the room is fully retracted and stops moving.
3. Release the switch, this will lock the room in the "IN" position. *(**Note:** Only hold the switch until the room stops retracting).*

	If your slide room does not move, or moves initially and then stops, the first item to check is the state of charge of your battery.

BAL NXG Electric Slide-out Troubleshooting

The troubleshooting chart below outlines some common problems, their causes, and possible corrective actions. If any part or serial number information is available, provide it to the service technician when asking for assistance.

The Through Frame Electric Slide-out System is only one of four interrelated slide-out room system components. These four components are: chassis, room, coach, and Through Frame Electric Slide-out System. Each one needs to function correctly with the others or misalignment problems will occur.

Every travel trailer has its own personality and what may work to fix one trailer may not work on another even if the symptoms appear to be the same.

When something restricts room travel, system performance will be unpredictable. It is very important that slide tubes be free of contamination and allowed to travel full distance (Stroke). Ice or mud buildup during travel is an example of a type of contamination that can occur.

When you begin to troubleshoot the system, make sure the battery is fully charged, there are no visible signs of external damage to the system and that all connections are secure.

During troubleshooting, remember that if you change something, that change may affect something else. Be sure any changes you make will not create a new problem.

Table 5. BAL NXG Electric Through-frame slide troubleshooting.

WHAT IS HAPPENING?	WHY?	WHAT SHOULD BE DONE?
Room doesn't move when switch is pressed.	Restriction or obstruction inside or outside of unit.	Check for and clear obstruction.
	Low battery voltage, blown fuse, or defective wiring.	*Check battery voltage and charge if needed. This must be above 10.5V, under load. *Find and check fuse in the main 12V fuse panel, replace if blown. *Check battery terminals and wiring. Look for loose, disconnected or corroded connectors.
Actuator motor runs but room does not move.	Actuator not attached to front mounting drive bracket.	Check jam nuts/nylock nuts. Be sure that they are properly tightened and adjusted.
	Bad motor or gear housing.	Replace motor.
Motor runs but room moves slowly (compared to normal.)	Low battery voltage, poor ground, extremely low outdoor temperature.	Charge battery and check ground wire.
	Room is in a bind.	Check to see that the room is properly adjusted.

WHAT IS HAPPENING?	WHY?	WHAT SHOULD BE DONE?
Room stalls in mid travel.	Actuator is in a bind.	Crank the manual override and move room short distance then retry electric switch to move room.
	Bad actuator.	Replace actuator if above instructions do not work.

BAL NXG Electric Slide-out Maintenance

System Inspection

The following general inspections should be performed as per the Maintenance Schedule to assure the system is in peak operating condition.

1. Before any slide movement, ensure the interior floor is clean and free of debris. Ensure the exterior wall and areas around the seals is also clean.
2. Retract and extend the slide as needed to check the following points:
    a. Outside seals compress when slide-out is retracted.
    b. Inside seals compress when slide-out is extended.
    c. Slide-out extends and retracts smoothly.
    d. Both sides of slide-out are synchronized. Each end of the slide should have the same (or nearly the same) seal compression when extended and retracted.

Mechanical Maintenance

Although the system is designed to be almost maintenance free, actuate the room once or twice a month to keep the seals and internal moving parts lubricated. Check for any visible signs of external damage after and before movement of the unit.

	When the RV is in storage or not being used for extended periods of time, it is recommended the room be closed (retracted.)

Electrical Maintenance

The slide-outs need a full battery for operation. The battery should be maintained in accordance with the battery manufacturers' recommendations. Always check the terminals and other connections at the battery, the control switch, and the system for corrosion, and loose or damaged terminals. Check motor leads under the trailer chassis, these connections are subject to damage from road debris.

BAL NXG Electric Slide-out Lubrication

As per the maintenance schedule, perform the following procedure to lubricate the slide-out:

1. Fully extend the slide-out.
2. Wipe the top of the slide-out arms free of any dirt or debris.
3. Apply lube directly to the top of the slie-out arms. BAL recommends using a wax-based, self-cleaning lubrication such as Dupont Chain Saver, or CRC Power Lube.
4. Cycle the room one complete time while spraying the lubrication on/into the top nylon wear block as needed. The wear block is at the top of the extended rail, where it enters the outer bar at the frame.

5. Complete the previous step as needed until the slide-out is operating smooth and quietly. In certain circumstances 24-hour dry time may be required to eliminate excessive noise and/or vibration. Also, the below video details an advanced lubrication point if noise continues.
6. Also move to the opposite side of the trailer, and lubricate the grommet surrounding the manual override bar on the opposite side of the frame, where the manual override hex nut is positioned. This is also demonstrated in the video.

	BAL NXG slide lubrication: Video - including inside rails (within underbelly.) BAL NXG slide lubrication: Technical Document with photos

BAL NXG Electric Slide-out Gear Pack Lubrication

BAL RV Products does not have a requirement to lubricate the gear pack.

Advanced Maintenance: Adjusting Your BAL NXG Electric Slide-outs

While slide-outs are adjusted at the factory to achieve smooth and consistent operation, normal wear and tear may require slides are adjusted over the lifetime of the trailer.

Most of these adjustments are covered in videos available on the BAL support web site, linked at the top of the BAL NXG Electric Slide Out section.

The following illustration will help identify what adjustments are available on the brackets and which bolt(s) should be used.

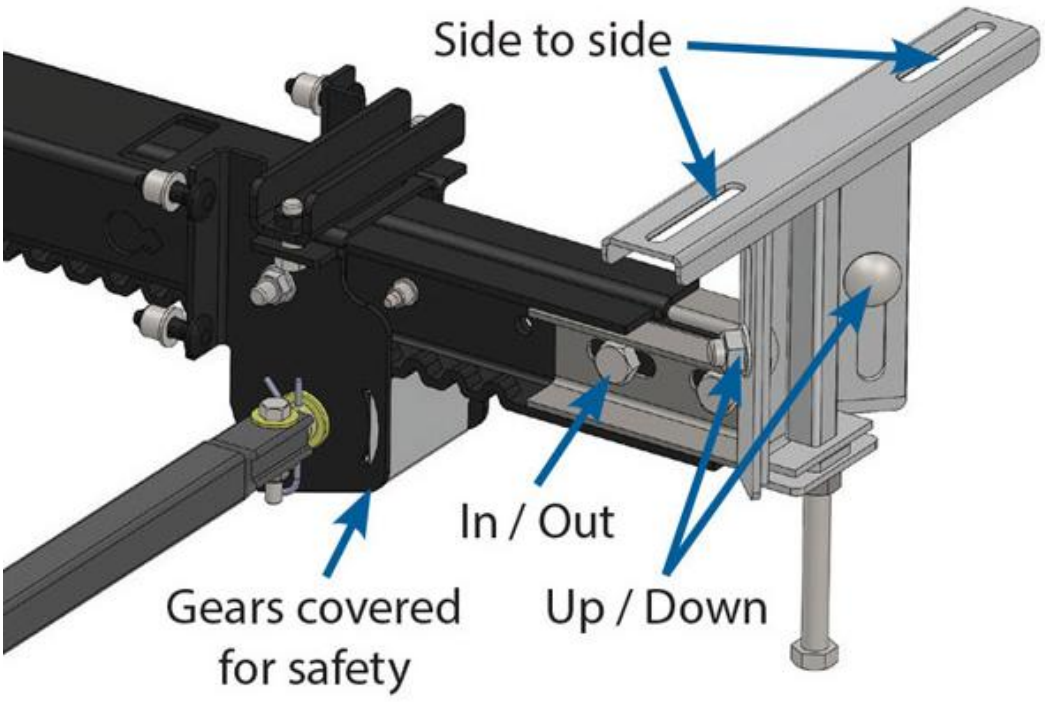


Figure 59. Adjustment bolts used for room positioning on the BAL NXG Slide. Note that the In/Out bolts indicated are only used when one side only needs adjustment, not both.

⚠CAUTION

WE RECOMMEND THAT SLIDE-OUTS ARE ADJUSTED BY A CERTIFIED RV TECHNICIAN.

⚠WARNING

- **IT IS THE RESPONSIBILITY OF THE TECHNICIAN PERFORMING THESE PROCEDURES TO FOLLOW ALL STANDARD SAFETY PROTOCOLS IN SUPPORTING THE SLIDEROOM.**
- **REMOVE ALL EQUIPMENT FROM THE WORKING AREA BEFORE MOVING THE SLIDE OUT AFTER ADJUSTMENTS.**

Adjusting BAL NXG Electric Slide-out "IN" Position

This procedure is used when BOTH sides of the slide must move the same amount inward or outward.

1. Locate the actuator coming through the frame.
2. Run the slide-out room partially out. Pressure must be off of the Stop Can (D).
3. Referring to Figure 60, loosen the 3/4" jam nut (C) at the end of the stop can using a 1-1/8" wrench.
4. Adjust the Stop Can (D) away from the frame if the room does not seal.
5. Adjust the Stop Can (D) towards the frame if the room is too tight.
6. Tighten the jam nut (C) back against the Stop Can (D) and test the room "IN" position.

⚠CAUTION

MAKE SMALL ADJUSTMENTS, RUNNING THE ROOM IN AFTER EACH ADJUSTMENT UNTIL PROPER SEAL IS ACHIEVED.

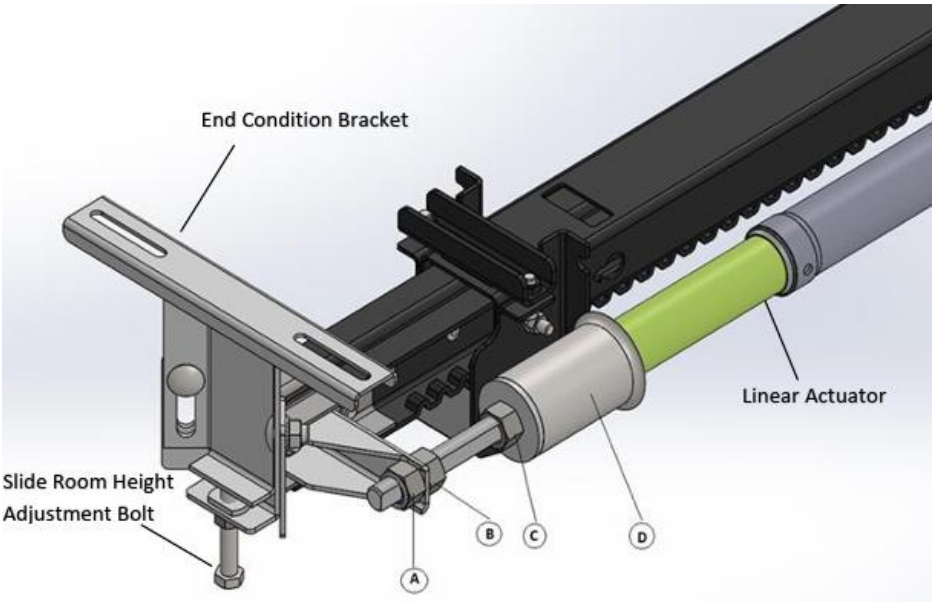


Figure 60. BAL NXG Electric slide-out IN and OUT adjustment components on the actuator.

Adjusting BAL NXG Electric Slide-out "OUT" Position

This procedure is used when BOTH sides of the slide must move the same amount inward or outward.

1. Locate the actuator coming through the frame.
2. If the slide is fully extended, bring it partially in.
3. Referring to Figure 60, use a 1-1/8" wrench for nut (B) and a 1-1/16" wrench for the Nylock nut (A) to move the bracket in our out as needed. You may need to loosen the first nut in the direction of desired change, then tap the actuator in the desired direction to bring the bracket in, and then tighten the other nut against the bracket.
   a. Adjust the pair **closer** to the Stop Can if the room is too tight at full extension.
   b. Adjust the pair **farther** from the Stop Can if there is too much gap between the trim and wall (too loose) when the room is at full extension.
4. Ensure both nuts (A) and (B) are tight on the bracket before testing.

⚠ CAUTION

MAKE SMALL ADJUSTMENTS, RUNNING THE ROOM IN AFTER EACH ADJUSTMENT UNTIL PROPER SEAL IS ACHIEVED.

Synchronizing BAL NXG Electric Slide-out Room Travel

This procedure is used when one side of the room (only) is more extended or retracted than the other side of the room. Since this adjustment can be done to either side of the room, it is important to understand which side should be adjusted, and in which direction. In most cases, one will strive to adjust the passive side with this procedure (the side without the actuator attached.)

Referring to Figure 59 and the bolts labeled "In / Out", if one side of the room fails to seal adjust as follows:

1. Run the slide-out approximately halfway out.

2. Measure the active side from the "T"-molding on the slide-out main wall to the outside wall of the RV.

	If the synchronization requires more distance than that provided by the adjustment bracket, the change should be to set the passive side in the middle of the adjustment range, then work with the IN or OUT adjustment on the active side (adjusting the actuator's lock nuts) first and then return to this procedure if needed.

3. Measure the passive side in the same way.
4. Loosen the In / Out bolts (Figure 59) at the end of the bar on the passive side.
5. Push or pull room (on passive side) to align the passive side with the active side.

	It can be helpful to remove weight from this side of the slide room using jacking techniques similar to the Vertical Slide-out Adjustment procedure.

6. Tighten bolts to secure the passive side position.
7. Move the room in and out to verify the new position.

Adjusting the Lippert Electric Slide-out Room Horizontally

⚠WARNING

BEFORE BEGINNING THIS PROCEDURE, MAKE SURE THE SLIDE ROOM HEIGHT ADJUSTMENT BOLT ON BOTH BRACKETS IS DRIVEN FULLY UP AGAINST IT'S BRACKET. IF NOT, THE ROOM WILL DROP WHEN YOU LOOSEN THE BOLTS IN STEP 4. REFER TO Figure 60.

1. Begin by determining how much sideways movement is needed. Noting this value, divide it in half for the following adjustments. For example, if the slide must move ½" forward on the trailer, you will adjust the brackets by only 1/4". This will be called the **Bracket Offset Distance**, below.
2. Extend the room fully.
3. Referring to Figure 60, scribe a mark for the horizontal location of the bracket on the underside of the room at both ends of the top of the End Condition Bracket (both sides.) This will provide a reference for your starting location.
4. Loosen the bolts on each end of the End Condition Bracket.
5. Using a Dead-blow hammer or other hefty mallet, move the bracket by the **Bracket Offset Distance**, in the direction *opposite* of what direction you want the room to move. Continuing the example from above, if you want the room to move forward on the trailer, the bracket must be moved backwards. This will result in pulling the room forward.
6. Tighten the bolts on the End Condition Bracket.
7. Repeat for the second bracket.
8. Make sure the area is clear of any tools, run the room in and out fully a few times to verify the new position of the room.

Adjusting the BAL NXG Electric Slide-out Room Vertically

Vertical movement of a slide is rarely needed. However, this procedure is provided to enable such movement if needed. The linked video explains when this might be needed, and a couple of initial checks that should be performed before it is executed.

	Vertical adjustment of BAL Exact-Slide to correct nose-diving movement

1. Extend the room fully.
2. Place a jack underneath the slide room, near the bracket you will adjust first. Use a vertical board to extend the jack's height and a horizontal board of some length directly on the slide underside. Raise the room only enough to remove weight from the bracket. This can be observed by seeing the inner bar come up with respect to the outer bar near the trailer frame rail.
3. Using a scribe, mark the vertical location of the bracket on the room bar.
4. Loosen carriage bolts marked "Up / Down" (Figure 59) on the bracket.
5. Loosen jam nut on the Slide Room Height Adjustment Bolt shown in Figure 60.
6. Turn the Slide Room Height Adjustment Bolt up or down to set room height.
7. Once room height is located, tighten the jam nut.
8. Tighten carriage bolts on this bracket. Once you are sure they're tight, gently lower the jack.
9. Repeat for the second bracket, moving the jack near that bracket.
10. Make sure the area is clear of any tools and the jack, run the room in and out fully a few times to verify the new position of the room.

BAL® EXACT-SLIDE CABLE SLIDE-OUT SYSTEM (IF EQUIPPED)

Many Alliance Delta trailers utilize an Exact-Slide in-wall slide system. These systems have two in-wall channels with cables connected via a single controller.

	BAL Exact-Slide product information (see Support and Video tabs)

Operating Your Exact-Slide System

Extending Your Slide-out

1. Level the RV.
2. Press and hold the room's switch in the "OUT" position until the slide is fully extended and both motors turn themselves off to ensure the best seal.
3. Release the switch, this will lock the room in the "OUT" position.

	If your slide room does not move, or moves initially and then stops, the first item to check is the state of charge of your battery.

Retracting Your Slide-out

1. Ensure the floor is swept clean and no debris is present that will get caught under the slide and damage the floor.
2. Press and hold the room's switch in the "IN" position until the slide is fully retracted and both motors turn themselves off to ensure the best seal.
3. Release the switch, this will lock the room in the "IN" position.

	If your slide room does not move, or moves initially and then stops, the first item to check is the state of charge of your battery.

BAL Exact-Slide Troubleshooting

If the slide does not respond to switch input, take the following steps:

- Locate the slide controller. It should be mounted near the slide in a cabinet near the slide, or a lower storage area. Locate the green and red LED lights between 'SW IN' and 'SW OUT' on the slide out control.
- The green light indicates that the control has power.
- The red light indicates low voltage. The control will enter sleep mode and the light will turn off after 5 minutes of switch inactivity.
- Verify 12V at the proper, marked, terminal.



Figure 61. BAL Exact-Slide controller, with indicator lights shown in lower left corner.

- To determine if the controller is not getting a signal from the switch, locate the Motor 1 (M1) and Motor 2 (M2) move IN switches (shown in white in the lower corners of the control board, and marked on the cover.) Push one at a time to see if the corresponding slide motor moves in. If so, look for power loss from the switch or a bad switch.
- If there is no response to pushing M1 IN or M2 IN, use the manual override procedure to operate the slide-out and contact an authorized dealer for repair.

BAL Exact-Slide Maintenance

Adjustment Procedure

The only points of adjustment are at the black standoff brackets located directly behind the fascia backer boards.

1. Run the slide room all the way in. First loosen the top cable until the cable is visually sagging in position.
2. Adjust tension the interior bottom cables until you reach ¼" deflection, meaning you should be able to easily lift the cable ¼" and push it down ¼" from center with your thumb and pointer finger.
3. Adjust tension the top cable until you reach ½" deflection. This is again ½" movement up or down from center using only your thumb and pointer finger.

Manual Override

Use a flex shaft and #3 square bit mounted in a drill/driver. **DO NOT USE AN IMPACT DRIVER.** Locate each motor at the top of the mechanism. Insert the drive bit into the end of the motor and activate.



Figure 62. Using the flexible drive tool to manually override the slide.

Alternate between motors so that the room does not become wedged in the opening or encounter cabinets or other fixtures in the RV.

ELECTRICAL: GENERAL

This section of the manual focuses on all items related to the power connection, distribution, and conversion devices on your Alliance RV.

All trailers will have: A Power Cord, a Battery Disconnect Switch, a 12-volt Battery Bank, and a Power Distribution Center that includes a converter. These items are discussed in this section. Many other systems could be installed as optional equipment. The following sections on Inverter Prep and Solar discuss those items in detail.

Electrical System Overview

Your RV has a 120-volt (120V) electrical system and a 12-volt (12V) system.

The 120-volt system is powered by an electrical source such as: Shore Power via the Power Cord (which may be plugged in to a power pole or a generator,) or an Inverter which converts 12V battery power to 120V power (if equipped.) This system usually powers the Air Conditioners, kitchen appliances, TVs, and other items that utilize conventional wall outlets. All 120V circuits are protected by breakers in a Power Distribution Center, and most outlets in the RV will be protected by a GFCI outlet. More details on the Power Distribution Center and the GFCI circuits can be found below.

The 12-volt system is powered by a bank of one or more batteries and powers numerous items such the water heater, water pump, furnace, lights, radio, alarms such as Carbon Monoxide and LP detectors, and depending upon the refrigerator some, or all, of its power. You'll also find that Alliance RV uses Smart Wire Technology, where 12-volt wiring is color coded and numbered. Further details on Smart Wire Technology are covered below. All 12V circuits are protected by fuses in the Power Distribution Center, special fuses mounted on a high-power 12V bus bar near the battery bank, and possibly by additional fuses contained within the 12V device itself (such as a 12V refrigerator.)

The 12-volt system is supported by a converter, which will charge the battery or batteries when on shore power. The converter will also help power the 12V loads in the RV up to a certain extent. High power items such as a hydraulic pump or electric slide motor depend upon the high-current capabilities of the battery bank. The battery bank may also be charged from a solar system (if equipped) or a DC-DC charger (if equipped.)

	High-current systems such as Leveling and Slides will draw primarily from your battery bank. This is why problems with your slides or leveling may be related to the health of your battery, and not the converter. However, it's important to be sure both are operating at peak condition if you experience problems.

	The converter generates a fair amount of heat when many 12 V loads are running. This is why you'll often hear a fan running near your power panel, especially is several 12 V loads are running.

Alliance RV is compliant with industry standards applicable at the time the RV is manufactured. Do not make unauthorized changes.

Modifications to the RVs electrical system should only be performed by qualified technicians and should never be made without approval from Alliance RV. Should modifications be made, those changes MUST comply with current safety and code requirements.

⚠WARNING

CHANGES OR ADDITIONS MADE AFTER DELIVERY MAY RESULT IN HAZARDOUS CONDITIONS. ALWAYS HAVE A PROFESSIONAL WORK ON YOUR RV.

	Owner Empowerment Series Video – Electrical System Overview.

Electrical Troubleshooting

There are a number of individual electrical systems in your Alliance RV. Some of them interact with each other, and all of them are connected through the Power Distribution Center, either on the 120 V side, or the 12 V side. This section will help identify common problems found at the highest level of electrical power in your RV. It is not intended to solve specific problems, but rather to help identify where to go for further investigation.

	My Power Is Out… What Can I Check?

Below is a second video with the same topic, but some different information:

	No Power To My Alliance RV! Why?

Table 6. General RV electrical troubleshooting.

Symptom	When plugged into 50 Amp shore power, several 120V items in the RV work, but several 120V items in the RV do not work.
Possible Cause	One leg of 50 Amp power supply is faulty
Suggested Action(s)	1. Contact a campground employee to check that shore power is correct at the power pole. 2. Ensure Power Cord is securely plugged into the power pole, and the connection at the RV is secure. 3. Check the Automatic Transfer Switch (if equipped.)

Symptom	One or more of the 120V outlets in the RV do not work.
Possible Causes	Breaker tripped, faulty GFCI, loose connection.
Suggested Action(s)	1. Locate any breaker labeled GFI in the Power Distribution Center. Turn each breaker off, then on. Do this even if they don't seem to have been tripped. 2. Reset each GFI in the trailer. Each one should have a solid green light when operating correctly. If the green light is not on, use a multimeter or small appliance to determine if the outlet is working. 3. If the above steps do not solve the problem, contact a qualified repair service to further troubleshoot the outlets.
Symptom	The 120V items work fine either on shore power or generator, but not with the other source.
Possible Cause	Faulty Automatic Transfer Switch (if equipped,) or a fault at the generator.
Suggested Action(s)	Refer to the troubleshooting section for Automatic Transfer Switch.

Removing All Power from the RV

To disable all power systems in the RV, follow these steps, in order. If your RV does not have a particular power source, for example a generator, simply skip that step.

⚠WARNING

USE CAUTION WHEN USING METAL TOOLS. IF A TOOL CONTACTS A BATTERY OR ELECTRICAL TERMINAL OR METAL CONNECTED TO IT, A SHORT CIRCUIT COULD OCCUR AND CAUSE INJURY.

1. Turn off all appliances (Refrigerator, AC, Water Heater) and loads (lights, radios.)
2. Turn off the generator (if equipped and running) and disable the auto start function (if equipped.)
3. Make sure the inverter is turned off (if equipped.)
4. Turn off the solar disconnect switch, or otherwise disable solar power input to the solar charge controller (if equipped.)
5. Turn off the battery disconnect switch.
6. In the Power Distribution Center, turn off the Main input AC circuit breakers.
7. If connected to shore power turn off the breaker at the power pole, then disconnect the Power Cord.
8. Disconnect the negative 12-volt DC battery terminal from the battery.

Power Cord

A heavy-duty power cord with a grounding plug is used to plug the RV into an external 120V source. Depending upon the model of your trailer, this may be a 50 Amp connection or 30 Amp connection. The male plug on the power cord will indicate which one is on your trailer. The 30 Amp (30A) system uses a

cord with three (3) prongs, and the 50 Amp (50A) system uses four (4) prongs. Regardless of the system, the included power cord will attach to the trailer using a socket and secure with a threaded ring.



Figure 63. Examples of 30A (right) and 50A (left) plugs.



Figure 64. Examples of 30A (right) and 50A (left) receptacles as they appear on a campground power pole.



Figure 65. Trailer power plug port and connected cord. Note that the 50 A system is shown, 30A system is similar, but does not have the fourth (metal) contact on the side.

Never connect the power cord to a power source:

- That is not wired to the National Electric Code standard for 50 amp or 30 amp 120V/240V service.
- With non-functioning ground circuits.
- That has reverse polarity.
- That shows outward signs of heat damage.

Do not:

- Use a cheater plug/adapter/extension cord. (A device to lift AC ground.)
- Adapt the power cord to plug into a connector which it was not designed.

⚠WARNING

VIOLATING THE ABOVE DIRECTIONS MAY RESULT IN PROPERTY DAMAGE OR SERIOUS INJURY. YOU CAN POTENTIALLY DAMAGE YOUR RVs ELECTRICAL SYSTEM WHICH COULD RESULT IN SEVERE OR EVEN FATAL INJURY.

To connect your power cord:

1. At the power pole, ensure the breaker is off.
2. At the Power Distribution Center, turn off the MAIN breakers.
3. Attach the power cord to the trailer. Tighten the outer plastic ring. Do not over-tighten.
4. Extend the power cord to the length needed.
5. Plug the power cord into the power pole in the proper recepticle. Be sure that all the power cord prongs are properly plugged in at the same time.
6. Turn on the breaker at the power pole.
7. Turn on the MAIN breakers in the Power Distribution Center.

- **DO NOT** plug your RV 50-amp shore cord into any receptacle that is not wired to National Electric Code for 50 amp 120/240V configuration. Likewise, **DO NOT** plug your RV 30-amp shore cord into any receptacle that is not wired to National Electric Code for 30 amp 120/240V configuration. **Doing so will supply the RV with the incorrect electrical power causing extensive damage to the electrical system and 120-volt components which would not be warrantable.**
- **DO NOT** disconnect the male plug connection by pulling up on the cord. Serious electrical damage may occur and is not warrantable. Always pull straight out on the head of the cord so all prongs disengage the receptacle simultaneously.
- **DO NOT plug in or unplug the shore cord while under load**. Make sure all 120-volt components are turned off prior to connecting or disconnecting the shore cord or damage to the 120-volt systems may result. Turn off the breakers at the power center first before connecting or disconnecting the shore cord to prevent damage.

⚠WARNING

FAILURE TO PLUG YOUR 50 AMP OR 30 AMP POWER CORD INTO A RECEPTACLE THAT IS NOT WIRED TO THE NATIONAL ELECTRIC CODE FOR 50 AMP 120/140V CONFIGURATION COULD LEAD TO AN INCREASED RISK OF PROPERY DAMAGE, SERIOUS INJURY OR DEATH. IT IS IMPORTANT TO INSPECT POWER CORD FREQUENTLY FOR DAMAGE. IF DAMAGE IS FOUND, HAVE THE CORD REPLACED IMMEDIATELY.

⚠WARNING

EXPOSURE TO VOLTAGES HIGHER OR LOWER THAN A NOMINAL 120-VOLTS, WILL DAMAGE OR SHORTEN THE SERVICE LIFE OF THE ELECTRICAL SYSTEM AND APPLIANCES. THE 50 AMP 120-VOLT 60HZ AC ELECTRICAL SYSTEM CAN BE POWERED BY AN OUTSIDE 120/240-VOLT 60HZ UTILITY SERVICE LIKE THOSE COMMONLY FOUND IN CAMPGROUNDS OR BY 120/240-VOLT 60HZ GENERATOR POWER.

⚠WARNING

50 AMP SYSTEM: MAKE CERTAIN THE EXTERNAL POWER SOURCE YOU CONNECT THE POWER CORD TO IS A PROPERLY WIRED 50 AMP NEMA 14-50 RV RECEPTACLE AND NOT 240 VOLT AC. PLUG INTO 50-AMP SERVICE ONLY.
CIRCUIT BREAKERS AND FUSES WILL NOT OFFER COMPLETE PROTECTION OF THE ELECTRICAL SYSTEM IN THE EVENT OF POWER SURGE OR VOLTAGE SPIKE.

GFCI (Ground Fault Circuit Interrupter)

A ground fault circuit interrupter is a type of circuit breaker usually incorporated into a standard-looking 120V wall socket that shuts off electric power when it senses an imbalance between the outgoing and incoming current. A GFCI is specifically designed to protect a person from electrical shock by reacting to an imbalance that can be as small as 4 or 5 milliamps, when detected, in less than one tenth of a second the circuit is tripped and shuts off.

GFCI Troubleshooting

If the GFCI circuit breaker trips, and cannot be reset by pushing the RESET button, please check the following things:

- Power to the GFCI: Sometimes, an event that causes the GFCI to trip can also cause the circuit's breaker to trip.
    - Manually turn off the breaker and turn it back on, even if it looks like it has not tripped.
    - Try again to RESET the GFCI.
- Check the circuit for overloads:
    - Unplug all loads on the GFCI and try to RESET.
    - If the RESET is successful, plug in devices one at a time until the circuit trips again.

  - If the circuit does not trip again, it could be due to a connected device pulling more than average power.
- Check for ground faults: this could be water near an outlet or damaged wiring. Inspect for either of these conditions and rectify before attempting to RESET the GFCI again.
- Nuisance tripping: GFCI outlets can be sensitive to high levels of moisture and electromagnetic interference. Check for either of these conditions and rectify before resetting.
- Faulty GFCI. GFCI outlets do have a lifespan and can wear out over time. If no other cause can be determined, contact a qualified professional to replace the GFCI outlet.

GFCI Maintenance

GFCI Outlet Testing

As per the Maintenance Schedule:

1. Push the TEST button. This action should force the RESET button out on the receptacle (engaging the interruption of power).
2. To reset the GFCI to working order, push the RESET button.
3. If the RESET button cannot be depressed, your 120-volt electrical will require service – contact your servicing dealer immediately.

Battery Disconnect Switch

Used to shut off all nonessential 12 Volt (12V) power that supplies RV. When the switch is activated, in the "OFF" position, the batteries are disconnected/isolated and no longer supply 12V power to the RV. **Some items will remain powered.** Exactly which items stay on depend upon your specific trailer options but may include the Refrigerator (if a 12V model,) battery heaters (if equipped,) and the charge line from your Tow Plug. Also, if you have solar panels, they will still be connected to the battery via the solar charge controller unless the Solar Disconnect switch is off. When the switch is in the "ON" position, all 12V items in the RV will have power.

You will find the battery disconnect switch in the forward pass-through storage compartment, in the Off Door Side convenience center. There are two types of battery disconnect switches – the original key style on early models and a newer rotating knob style on later models. The key style switch has a lanyard attached to prevent the removable key from being misplaced.

To turn the 12V system ON and OFF, simply rotate the key or knob to the desired position.



Figure 66. Battery disconnect switches. Original style, left, and new style, right.

Solar Disconnect Switch (if equipped)

Mounted near the solar charge controller (if equipped,) this switch is used to disconnect the solar panel(s) from the solar charge controller. It should be turned off before the battery/batteries are disconnected from the solar charge controller or the trailer.

⚠WARNING

IF YOUR TRAILER HAS A SOLAR CHARGER, ENSURE THE SOLAR DISCONNECT IS SET TO "OFF" BEFORE DISCONNECTING THE BATTERY/BATTERIES FROM THE TRAILER. THE SOLAR CHARGE CONTROLLER (IF EQUIPPED) CAN BE DAMAGED BY HAVING SOLAR PANEL INPUT WITHOUT A BATTERY/BATTERIES CONNECTED.

Battery

Delta trailer batteries are selected and installed by the dealership from which you purchased your trailer.

When you are not plugged into electricity (dry camping), the battery supplies power to the 12-volt system in the RV. The battery in this scenario will eventually die unless other steps are taken to charge them with an externally connected generator and/or the internal solar power (if equipped.)

When plugged in to shore power, the Converter in your RV reduces some of the 120-volt incoming power down to 12 volts to supply power to the 12-volt system in the RV. It will also automatically sense voltage on the battery and will select an appropriate charging profile based on the battery type and state of charge (how full it is.) The battery type setting on the converter may need to be manually set, or it may be automatic. Please refer to the Power Distribution Center section for more information.

	WYKW: What to Expect of Your Batteries in Storage

Battery Troubleshooting

When encountering problems with any 12V device, the following items should be verified. Note that this is not a full troubleshooting process for 12V systems, but can help identify where issues may exist.

- Ensure all connections between the battery terminals and device of concern are tight.
- Verify any fuse(s) are not damaged. Fuses can pass electrical checks for voltage and resistance when not under load but fail once put under load (usually through heated expansion of a crack.) If in doubt, replace the fuse with a known-good fuse.
- If no other sources of error are found for a dropping voltage when the battery is the only power source, disconnect all batteries and perform load testing on each battery individually before re-connecting.

Battery Maintenance

Perform the following maintenance on each battery as per the Maintenance Schedule, or whenever problems are being investigated with any 12V powered item on the trailer:

1. Remove any corrosion from the terminals using standard safety protocols and techniques.
2. Look for cracks, leaks, or bulging in the case. Any physical damage requires a replacement of the battery.
3. Check water levels in non-sealed batteries.
    - Ensure the top of the battery is very clean before removing caps.
    - Add distilled water as needed to keep each cell full.
    - Do not allow **any** contaminants to enter the battery.
    - Replace the caps.

⚠WARNING

IT IS IMPORTANT THAT THE FLUID LEVELS OF ANY NON-SEALED CONNECTED BATTERY(S) BE CHECKED ON A REGULAR BASIS. ALL BATTERIES WILL "GAS" AND LOSE SOME FLUID WHEN CONTINUOUSLY CONNECTED TO ANY CHARGING SOURCE.

4. Ensure all battery connections are tight.
5. Using a voltmeter set to a proper range, ensure battery voltage is appropriate at the battery.
    - It is best to check this while the trailer is unplugged from shore power and solar disconnect is turned off (if equipped.) **If this is not done, you may be reading input charging voltage and not actual battery resting voltage.**
    - The value measured across the terminals should be **equal to or more than** the nominal value of 12.0 Volts.
        - A fully charged lead-acid battery (conventional 12V battery with covers) will read 12.7 Volts. The battery is considered discharged at 11.8 Volts, and dead at 11.6 Volts. When voltage drops below 11.6 Volts, permanent damage may occur.

Non-Vented Batteries (If Equipped)

While current Delta trailers are not shipped with batteries in any configuration, Alliance may in the future ship them with non-vented batteries. Those batteries are mounted in locations where the use of vented batteries would be hazardous. In such locations, the following warning is placed via a sticker. Do not install vented batteries in these locations.

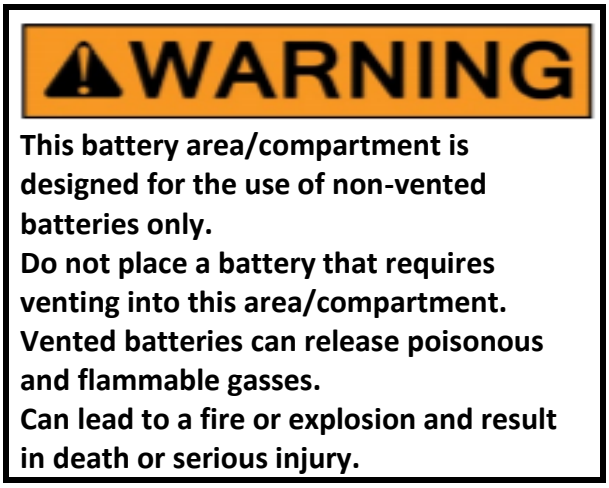


Figure 67. Non-vented battery warning label placed in applicable location(s) on Alliance trailers.

POWER DISTRIBUTION

All electrical circuits in an RV need protection devices. These devices most commonly are 120 V **breakers**, similar to what is in a house, or they could be 12V **fuses**, similar to what is seen in a car. There are also some 12V fuses that may be in another location (close to the batteries) that are commonly termed **self-resetting fuses** or **self-resetting breakers**. These are often placed on a single device called a **12V Bus Bar**.

	WYKW: How Many A/Cs Can I Run?

	WYKW: Power and Amp Draw in Your Alliance RV

The most common power distribution setup in an RV is the single **Power Control Center**. This device looks like a panel mount breaker box, but also has 12V fuses visible and accessible. This device also usually has an integrated Converter, discussed at the start of the electrical section.

Note that while this single three-function unit is most commonly used, some Alliance trailers will have their 12V fuse panel separated from the 120V breakers, and also may have the converter mounted outside of the actual Power Control Center, but still behind a wall and inaccessible to the RV inhabitants (called a “deck mount” converter.)

In the below sections, you’ll find separate discussions of most items due to the variety of installations in Alliance RV models. If you need help verifying what is installed in your RV, take a look at the images in the sections to identify which equipment you have, or feel free to contact Alliance RV to learn what your specific trailer has.

Smart Wire Technology (12 V systems)

Smart Wire is an attempt to help individuals trace and troubleshoot 12V circuits when needed. Throughout the trailer, 12V wiring is highly standardized with specific colors and numbers printed on the wires which can be identified via a label on the inside of the Power Control Center door. This chart lists the following information:

- Circuit Number
- Equipment on the circuit / its use
- Required fuse amperage
- The gauge of wire and number of conductors
- The color and number printed on the wires used for that circuit

In addition to these pairs of wires, the wires used for specific slides and tank heaters have markings and colors, as listed at the bottom of the Power Control Center door panel. The fuses for these systems are located in the front compartment on the 12 V bus bar (see 12 V Bus Bar, below.)

	WYKW: Smart Wire Quick Tip

12 Volt Bus Bar

While not in the Power Control Center, it is important to note the location of where several 12 Volt circuits receive their power. These circuits may require high current or a certain type of fused connection, such as a self-resetting circuit breaker. This bus bar is mounted in the front bay of the trailer and is split into an upper and lower section. One section is connected directly to the battery bank and is connected to the converter through the battery disconnect switch, and the other section is connected directly to the converter.

All maintenance or modifications to these bus bars must be performed by trained and certified persons.

⚠WARNING

- **ITEMS CONNECTED THROUGH THE 12 V BUS BAR ARE HIGH POWER ITEMS.**
- **ALL MAINTENANCE AND MODIFICATION TO THESE CONNECTIONS MUST BE DONE BY TRAINED PERSONS.**
- **REPLACEMENT BREAKERS AND FUSES MUST BE OF THE SAME VOLTAGE, AMPERAGE RATING AND TYPE. NEVER USE A HIGHER RATED REPLACEMENT FUSE, DOING SO MAY CAUSE A FIRE BY OVERHEATING THE RV WIRING.**

WFCO Power Control Center (If Equipped)

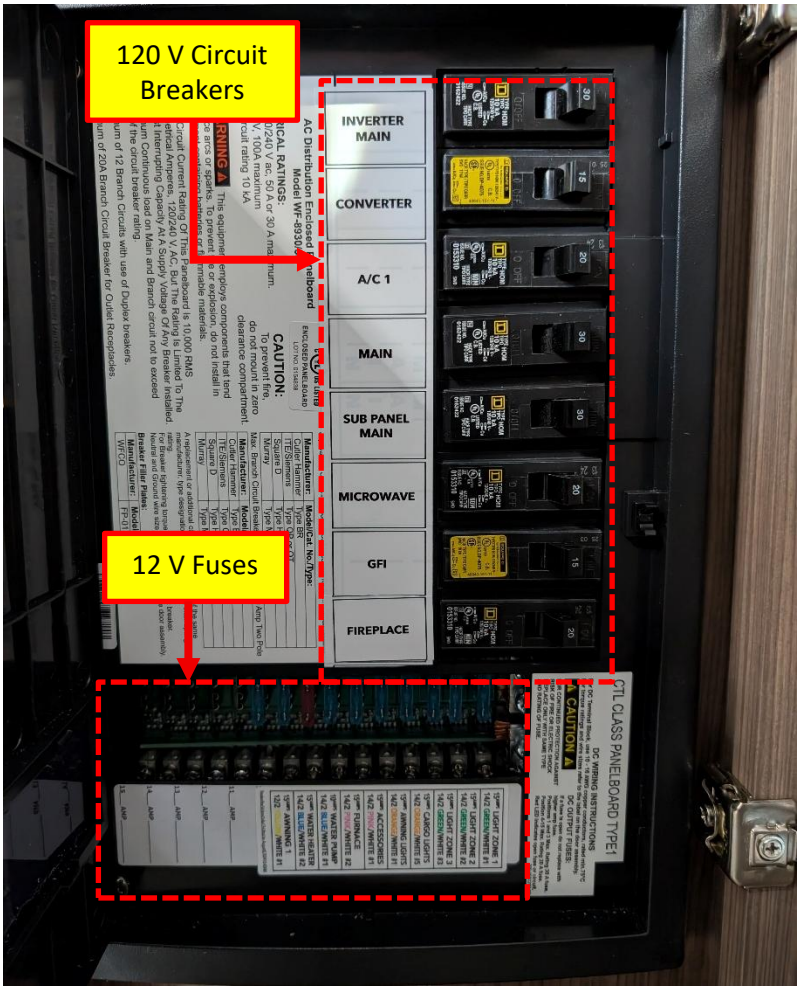


Figure 68. WFCO combined Power Control Center.

The WFCO power control center may come in one of two varieties. One of the available units has the 120V breakers and 12V fuses housed in a single unit. It has 120V breakers arranged near the middle-left of the unit, arranged vertically, and 12V fuses at the lower portion of the panel. Each 12V fuse has a faulty-fuse indicator which will light up if a blown fuse is detected.

	WFCO Product Manuals (Your model number printed on the white label on the power panel.)

Alternatively, some Alliance trailers will have a split-panel configuration, where the 120V breakers and 12V fuses are in separate panels.



Figure 69. WFCO Power Control Center (right) with separate 12V fuse panel (left.)

In either configuration, the converter is physically separated from the panel or panels and is called a Deck-Mount converter. It is mounted to a surface behind the power panel.

120 Volt Circuit Breakers

Your 120V circuit breakers are in the main power control center. These circuit breakers act just like those in a household in that they protect 120V wiring and components. You'll find the individual circuits labeled on the power center door to identify which each breaker is for.

To reset a breaker, simply flip the switch to the off position then immediately back to the on position. If the breaker immediately trips again, contact your dealer or Alliance RV for assistance.

	If you believe a circuit breaker may have tripped, but the switch is not visibly moved from its ON position, it is suggested to turn it off and then back on anyway. Sometimes when a circuit breaker trips the movement of the switch is not easily visible.

⚠WARNING

- **CIRCUIT BREAKERS AND FUSES WILL NOT OFFER COMPLETE PROTECTION OF THE ELECTRICAL SYSTEM IN THE EVENT OF POWER SURGE OR VOLTAGE SPIKE**

- **REPLACEMENT CIRCUIT BREAKERS MUST BE OF THE SAME VOLTAGE, AMPERAGE RATING AND TYPE. NEVER USE A HIGHER RATED REPLACEMENT CIRCUIT BREAKER, DOING SO MAY CAUSE A FIRE BY OVERHEATING THE RV WIRING.**

At the beginning of camping season, inspect the circuit breakers and replace as needed. Test by turning each circuit breaker off and back on, **circuit breakers are wearable parts** and must be replaced as needed as part of your RV maintenance.

12 Volt Fuse Panel

You'll find the 12-volt fuse panel either in the main power control center, or in a separate narrow panel mounted near the main power panel. As with the 120 V circuits, individual 12 V circuits are labeled as to their use. As part of the Smart Wire system, the 12 V circuit label also has notation as to what colors the wires are, what gauge/size they are, and what number is stamped on the wiring. This can be quite helpful in matching wires behind panels.

The fuse panel has helpful indicator LEDs that illuminate when a fuse has failed. When a fuse fails, the LED next to the corresponding failed fuse will light. These can be useful to quickly identify if there is a fault in a fuse.

	Failed fuse LEDs are not a fool-proof method to check fuses. Sometimes they will not light for certain types of fuse failures. In particular a fuse can have a type of failure that it only fails when the load is applied, but not when it's out-of-circuit. **If there is any reason to suspect the fuse could be bad, it is best to replace the fuse.**

⚠WARNING

DISCONNECT ALL POWER TO THE CONVERTER PRIOR TO CHECKING OR CHANGING FUSES.

⚠WARNING

FOR CONTINUED PROTECTION AGAINST RISK OF FIRE OR ELECTRICAL SHOCK, REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE. CONSULT A LICENSED ELECTRICAL OR RV TECHNICIAN FOR ANY NEEDED ASSISTANCE.

When replacing fuses, please follow these safety precautions:

- Disconnect the main power cord.
- Turn the inverter off, if equipped.
- Disconnect solar, if equipped.
- Disconnect batteries.

Reverse Battery Protection Fuses

In order to protect the RV from an improperly installed battery, the Converter features a set of ATC type fuses and associated circuit. These fuses will blow if a battery is connected in reverse. If these fuses blow, correct battery wiring and replace fuses with the same type and rating.

12 Volt Converter

The 12 V converter is either mounted within the power control center or mounted outside of the power control center and behind the wall of the RV near the power panel. Either unit operates the same way and requires no user intervention. It is responsible to power the 12 V fused circuits and charge the battery bank when 120 Volt power is received. It is powered by a single 120V breaker as labeled on the power control center door. It can monitor and power both conventional (flooded) batteries as well as Lithium-Ion (Li-Ion) batteries. **This WFCO converter automatically senses the battery type, so no manual setting is required when upgrading or changing batteries**.

WFCO Power Control Center Troubleshooting

The following information may be helpful to determine the root causes of problems with the AC and DC output of the power control center.

Table 7. WFCO Power Distribution Center troubleshooting guide.

WHAT IS HAPPENING?	WHY?	WHAT SHOULD BE DONE?
No Output	Proper AC power not connected	Connect power supply Check AC distribution panel for proper operation
	Reverse battery fuses blown	Check for reverse battery connection Replace fuses with same type and rating
	Short circuit	Trace circuits for possible fault
	Unit has shutdown due to overheating	Check air flow Allow unit to cool
	Unit has shutdown due to over voltage	Check input voltage Correct input voltage
Low Output	Compartment gets too hot	Check air flow to the converter Improve ventilation to the compartment
	Excessive load for converter	Reduce load requirements Install larger converter
	Input voltage not between 105-130 Volts AC	Correct input supply voltage
	Bad battery cells	Replace battery

WFCO Power Control Center Maintenance

⚠WARNING

120 V ELECTRICAL POWER IS DANGEROUS. ALL POWER CONTROL CENTER MAINTENANCE MUST BE PERFORMED BY A TRAINED AND QUALIFIED PERSON.

Inspection & Torque Check

As per the Maintenance Schedule, perform the following inspection and bolt torquing procedure to the Power Control Center.

1. Completely remove all power from the RV as per the associated procedure discussed above.
2. Using a Voltmeter set to AC Voltage, ensure no power is present on either AC Mains breakers.
3. Set Voltmeter to DC Voltage, and ensure no voltage exists on any of the DC connections (inside the DC power distribution panel.)
4. Remove the AC power distribution center cover panel, exposing all ground and neutral bars for the AC connections. See Figure 70.
5. Check the torque of all AC electrical connections in the power control center as per the following table.
6. For DC connections, remove the safety cover from the DC panel, and check the torque of all lugs on that panel as well. The power distribution panel may need to be removed from the wall panel to locate the ground bus bar behind in order to check all ground connections.

	IMPORTANT: Pay close attention as to what wires are on the Neutral bar. Most of them will be 120 V neutral wires (solid core, paired in romex cable with black and bare copper ground.) If you do not see a 12 V set of white wires – between the Circuit Breakers and the 12 V fuses, or you have a separate 12 V fuse panel, then the 12 V bus bar for negative is mounted behind the Power Distribution box. You will need to carefully remove the power distribution box from the wall, the ground bar will then be visible, and you can tighten all lugs. **This must be done to properly complete this procedure.**

Table 8. Required torque values for lugs in the WFCO power distribution center.

LOCATION/BOLT	WIRE GAUGE (AWG)	TORQUE REQ. (in. lbs.)
AC Breakers		See breaker mfg. data
AC Neutral & Ground Bars	10 -12	25
	14	15-20
	8	30
	6	35
DC Fuse Panel Lugs (+VCC, NEG-, POS+)	10 -14	25
	8	32
	6	45
DC Fuse Panel: Single Ckt Terminals	16	12-20
	14	14-20
	12	16-20
	10	20-25

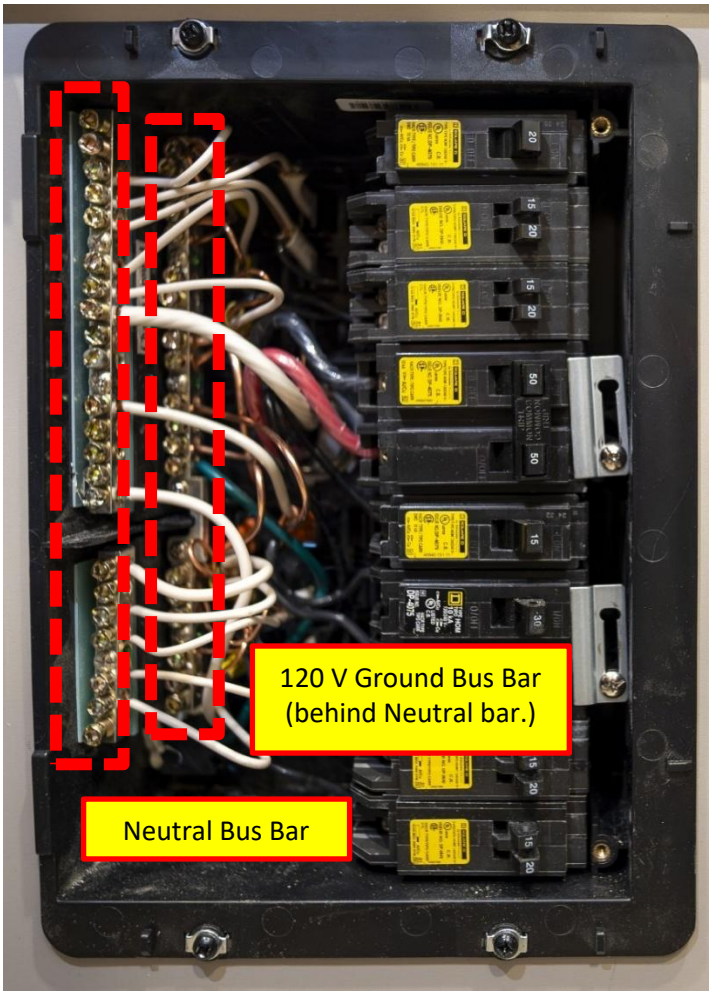


Figure 70. WFCO Power Control Center with the safety cover removed. The configuration shown is the 120V AC panel of a dual-panel configuration. The single/combined panel is similar.

INVERTER PREP (IF EQUIPPED)

Overview

An inverter is used to transform the input DC power from the batteries into 120 Volt AC power. The items receiving power from the inverter vary by trailer configuration, referred to as the **load devices** below. They commonly include the television, some of the 120 AC outlets, and the recliners.

In the front pass-through, behind the removable service panel on the rear wall, is a metal junction box with warning label (see Figure 71.) The label will inform you of the maximum amperage of the inverter connection. This junction box receives AC from the circuit breaker labeled “Inverter”. When no inverter is installed, the input wires are simply connected to the output AC wires and those go to the **load devices** in the trailer. When installing the inverter, they become the AC input and output, respectively. The installation would then also require one to provide appropriate DC wiring from the DC +12V bus and ground.

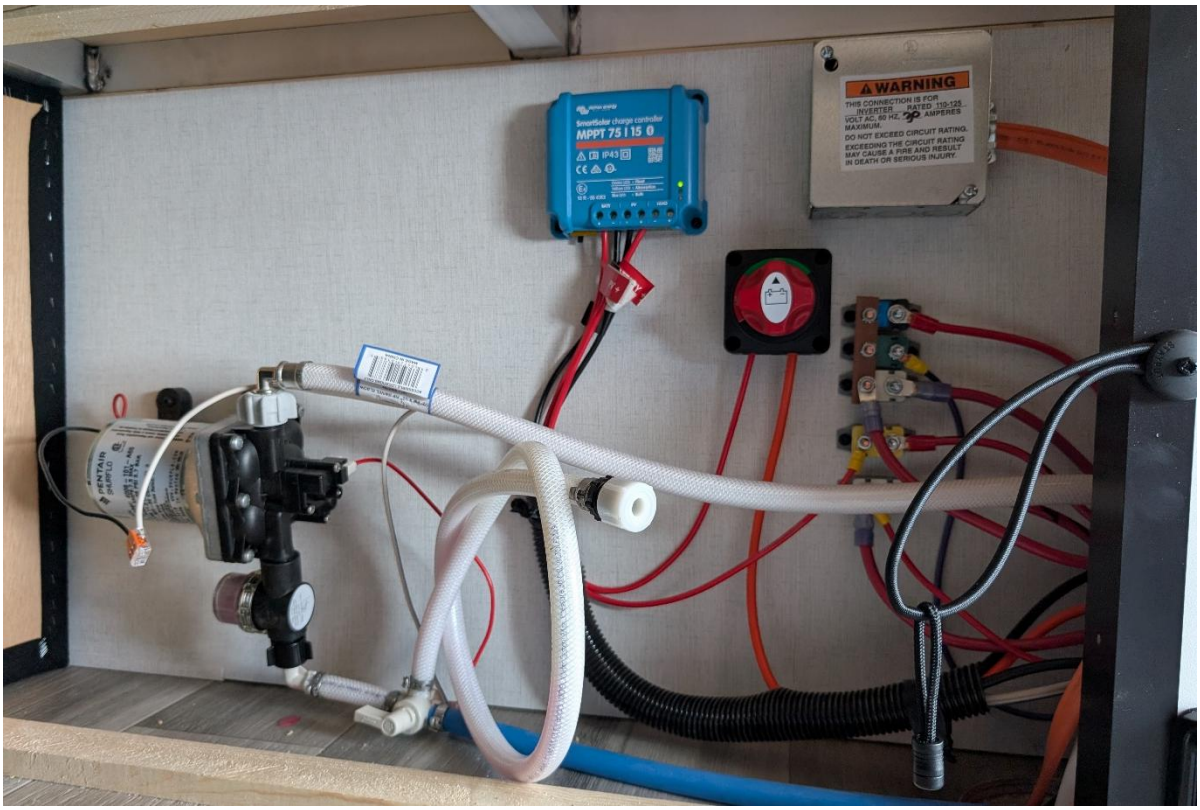


Figure 71. Illustration of the inverter prep location behind the service panel in the front pass-through storage. The inverter wiring prep is the metal box in the upper right corner. The DC +12 V bus bar is immediately below it, with available mounting room to the left.

SOLAR EQUIPMENT (IF EQUIPPED)

Your trailer may have installed solar equipment from the factory. If so, the solar charge controller may be from RICH Solar, or possibly Victron in late model trailers.

Solar charge controllers are the devices that safely allow one to charge batteries via one or more solar panels. This allows one to charge the batteries without connecting to shore power or a generator. While Delta trailers are only provided with a single solar panel, the charge controllers installed have the capability to have more panels added. Please contact your dealer or a qualified service provider to have additional panel(s) installed if desired.

This section discusses the various equipment that may be in your trailer, depending on the original build at the factory. If you have any questions as to how your trailer is equipped, please reach out to us!

Solar Disconnect Switch (If Equipped)

The Solar Disconnect switch provides a way to interrupt incoming power from the solar panels to the Solar Charge Controller. It is completely independent of the 12V battery switch and may be left on when the 12V battery disconnect switch is OFF to enable automatic battery maintenance charging during times of storage.



Figure 72. Solar disconnect switch.

⚠WARNING

IT IS IMPORTANT TO TURN OFF THE SOLAR DISCONNECT SWITCH WHEN PERFORMING CERTAIN SOLAR SYSTEM AND/OR ELECTRICAL MAINTENANCE. ALL ELECTRICAL MAINTENANCE (SOLAR OR OTHERWISE) SHOULD ONLY BE PERFORMED BY TRAINED PERSONS.

Solar Panels and Cable Entry Point (If Equipped)

When solar is installed at the factory, Alliance RVs are equipped with a single panel and a Cable Entry Point (CEP) on the roof to enable wiring to an installed solar charge controller.



Figure 73. Roof-mounted cable entry port.

RICH Solar Charge Controller (If Equipped)

Overview

The RICH Solar charge controller manages the charging of batteries in a solar power system. It uses MPPT technology to maximize energy capture from solar panels, regulates charging to prevent overcharging or damage, and provides monitoring and protection features for both the batteries and the system. They work with all battery chemistry, with the proper programming to ensure the charging profile is correct.

	RICH Solar 20A/30A/40A MPPT Solar Charge Controller Manual

⚠WARNING

CONNECT BATTERY TERMINALS TO THE CHARGE CONTROLLER BEFORE CONNECTING THE SOLAR PANEL(S) TO THE CHARGE CONTROLLER. NEVER CONNECT SOLAR PANELS TO CHARGE CONTROLLER UNTIL THE BATTERY IS CONNECTED.

Table 9. RICH Solar controller front panel indicators, display, and controls. For LED indicator meanings, refer to Table 10.

ITEM	DESCRIPTION
1	PV LED Indicator – indicating the controller's current charging mode.
2	BATT LED Indicator – indicating the battery's current state.
3	LOAD LED Indicator – indicating the loads' On/Off state.
4	ERROR LED Indicator – indicating whether the controller is functioning normally.
5	LCD Screen
6	Operating Keys (see Figure 75)

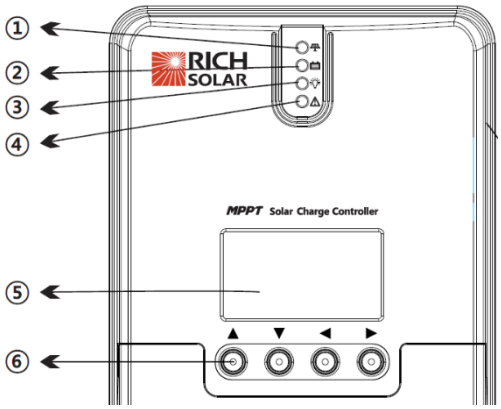


Figure 74. RICH Solar controller interface.

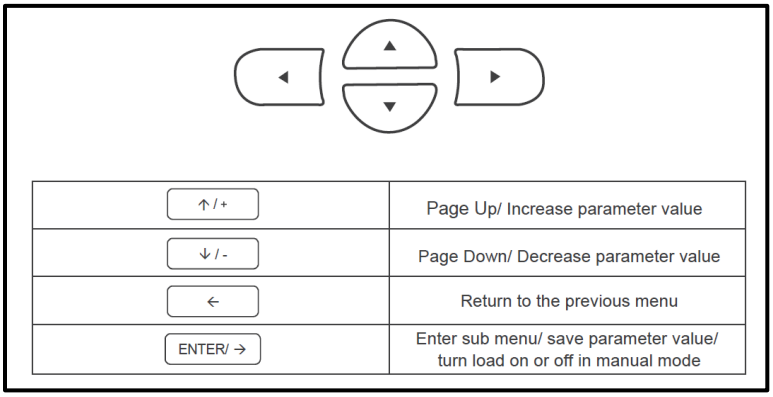


Figure 75. RICH solar charge controller operating key use.

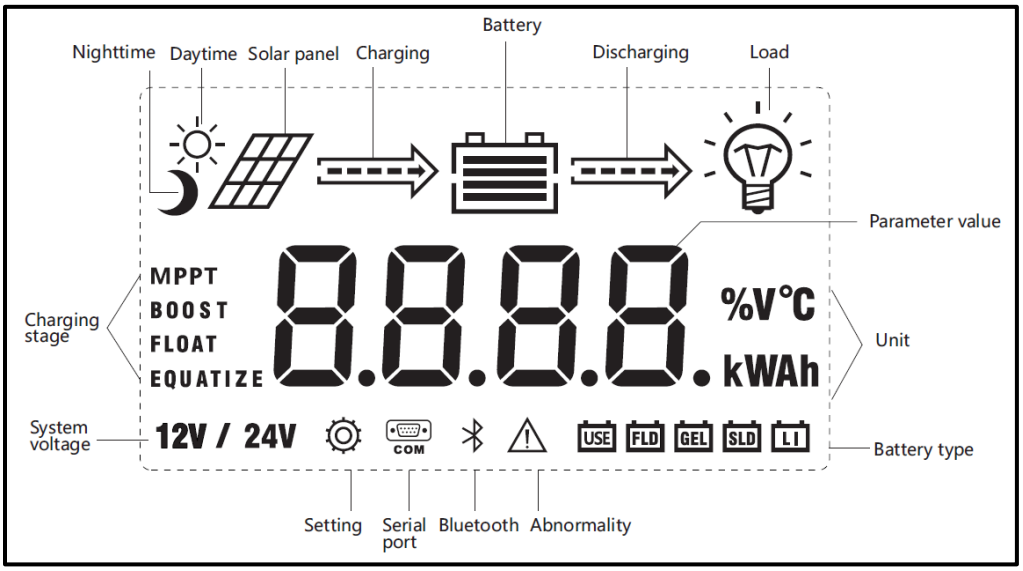


Figure 76. Display icons used on the RICH solar charge controller.

Table 10. RICH Solar controller LED Indicator guide.

PV INDICATOR (1)	STATUS
Solid	The PV system is charging the battery bank
Slow Flashing	The Controller is undergoing boost stage
Single Flashing	The Controller is undergoing float stage
Fast Flashing	The Controller is undergoing equalization stage
Double Flashing	The oversized PV system is charging the battery bank at the rated current (current limited.)
Off	The PV system is not charging the battery bank. PV not detected.
BATT Indicator (2)	**STATUS**
Solid	Battery is normal
Slow Flashing	Battery is over-discharged
Fast Flashing	Battery is over-voltage
LOAD Indicator (3)	**STATUS**
Solid	Load is on
Fast Flashing	Load is over-loaded or short-circuited
Off	Load is off
ERROR Indicator (4)	**STATUS**
White Solid	System Error. Please check LCD for Error code
Off	System is operating normally

Main Display Screens / Operating the Unit

The main display can cycle through the following screens using the operating keys. The LCD display description in Figure 76 will also help interpret the information shown on each screen. The interested reader is directed to the User Manual for additional examples and details.

Screens Available (cycles from top to bottom, then back to top):

- Main Screen (shown at right)
- Solar Panel Voltage
- Charging Current
- Battery Capacity
- Battery Voltage
- Load Current
- Accumulated Amp Hours
- Discharged Amp Hours
- Controller Temperature
- Load Mode
- Error Code

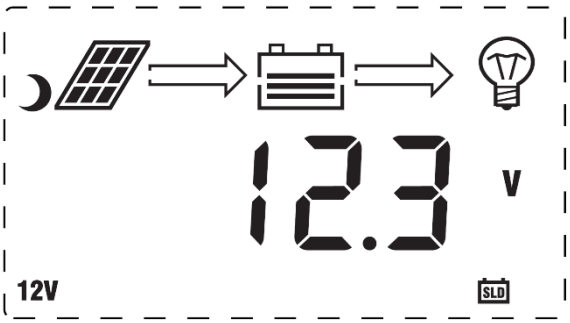


Figure 77. RICH Solar display screen.

In Figure 77, the charge controller is not receiving energy from the connected PV panel(s) and the battery is at 12.3V, with an estimated 51-75% battery life, providing energy to loads.

Programming

Programming and reprogramming the unit (in the case of battery upgrade or conversion) are beyond the scope of this manual and the interested reader is directed to the User Manual.

RICH Solar Charger Troubleshooting

Table 11. RICH Solar controller troubleshooting guide.

PV INDICATOR (1)	TROUBLESHOOTING STEPS
Off during daylight	Ensure that the PV wires are correctly and tightly secured inside the charge controller PV terminals. Use a multi-meter to make sure the poles are correctly connected to the charge controller.
BATT INDICATOR (2)	**TROUBLESHOOTING STEPS**
Slow Flashing	Disconnect loads, if any, and let the PV modules charge the battery bank. Use a multi-meter to frequently check on any change in battery voltage to see if condition improves. This should ensure a fast charge. Otherwise, monitor the system and check to see if system improves.
Fast Flashing	Using a multimeter check the battery voltage and verify it is not exceeding 32 volts.

LOAD INDICATOR (3)	TROUBLESHOOTING STEPS
Fast Flashing	The Load circuit on the controller is being shorted or overloaded. Please ensure the device is properly connected to the controller and make sure it does not exceed 20A (DC).
ERROR INDICATOR (4)	**TROUBLESHOOTING STEPS**
Solid On	System Error. Please check LCD for Error code

Table 12. On screen error code descriptions.

ERROR CODE (ON SCREEN)	DESCRIPTION	LED Indication
E0	No error detected	ERROR indicator off
E1	Battery over-discharged	BATT indicator flashing slowly, ERROR indicator on
E2	System over-voltage	BATT indicator flashing quickly, ERROR indicator on
E3	Battery under-voltage	ERROR indicator on
E4	Load short circuit	LOAD indicator flashing quickly, ERROR indicator on
E5	Load overloaded	LOAD indicator flashing quickly, ERROR indicator on
E6	Controller over-temperature	ERROR indicator on
E8	PV (solar) component overloaded	ERROR indicator on
E10	PV (solar) component over-voltage	ERROR indicator on
E13	PV (solar) component reverse connected (polarity problem)	ERROR indicator on

	Further troubleshooting information can be found on the RICH Solar Learning Center, low on the page in the Legacy Products section, at the following link: RICH Solar Learning Center

RICH Solar Charger Maintenance

As per the Maintenance Schedule, please perform the following checks and adjustments:

1. Check around the controller to ensure it is clean and dry.
2. Check wiring going into the charge controller and make sure there is no wire damage or wear.
3. Tighten all terminals and inspect any loose, broken, or burnt up connections.
4. Check to make sure none of the terminals have any corrosion, insulation damage, high temperature, or any burnt/discoloration marks.
5. Make sure LED readings are consistent. Take necessary corrective action.

Victron SmartSolar MPPT 75/15 Solar Charger (If Equipped)

Overview

The Victron solar charger manages the charging of batteries from the input of the installed solar panel(s). It uses Maximum Power Point Tracking (MPPT) technology to maximize energy capture from solar panels. It can manage up to 75 Volts of solar panel input and will charge batteries at a variable rate up to 15 Amps and is suitable for 12 V or 24 V batteries.

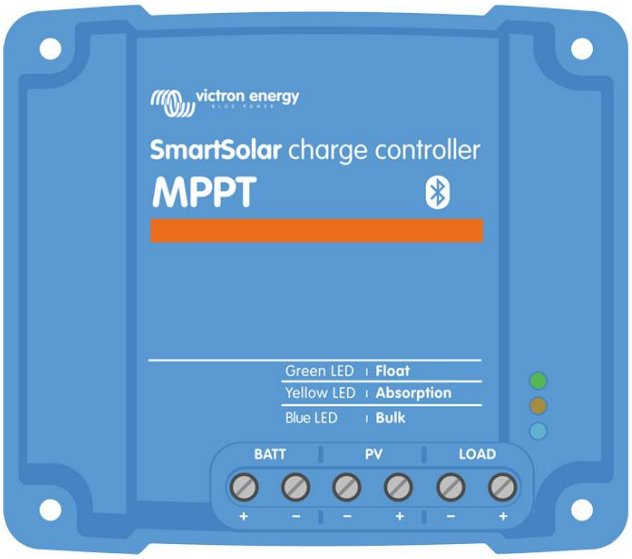


Figure 78. Victron MPPT Solar Charge Controller.

The charger is able to utilize the **VictronConnect** app for programming and monitoring, available on app stores for the Android, Windows (USB connection only with optional VE.Direct USB Interface,) Apple iOS (Bluetooth connection only,) and MacOs platforms.

Normal operation of the device requires no user intervention, but there are times when the user may need to disconnect/connect solar panels or batteries or change programming of the solar charge controller when changing batteries or system configuration. See the procedure below for Shutdown and Restart.

⚠CAUTION

THE SOLAR CHARGER WILL BE PROGRAMMED FOR GEL-TYPE BATTERIES WHEN INSTALLED AND SHIPPED FROM ALLIANCE.
IF LITHIUM OR LEAD ACID BATTERIES ARE INSTALLED BY THE DEALER, THE SOLAR CHARGER MUST BE PROGRAMMED TO CORRECTLY MANAGE THOSE BATTERIES. PLEASE REFER TO ALLIANCE TECH TIP 20, LINKED BELOW, FOR INFORMATION ON HOW TO PROGRAM THE CHARGER FOR THESE SITUATIONS.

	Victron MPPT solar charger manual for SmartSolar MPPT 75/15

	Victron Software Downloads Page

Identification

Figure 79 is looking at the bottom of the charger, where most of the important features can be seen. The table below the image identifies the parts.

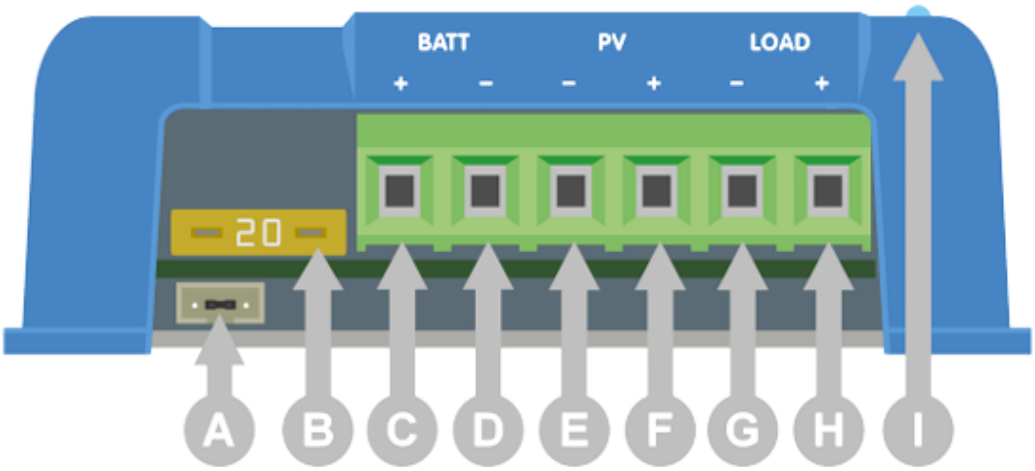


Figure 79. Victron MPPT charge controller interface identification.

Table 13. Victron interface identification. See Figure 79.

ID	DESCRIPTION
A	VE.Direct socket with jumper link
B	Fuse
C	Battery positive (+) screw terminal
D	Battery negative (-) screw terminal
E	PV (solar panel) negative (-) screw terminal
F	PV (solar panel) positive (+) screw terminal
G	Load negative (-) screw terminal
H	Load positive (+) screw terminal
I	LEDs

Shutdown and Restart Procedure

The solar charger is always active when the PV and/or the battery terminals are powered. The solar charger does not have an on/off switch.

To shut down the solar charger, perform these steps in the prescribed order:

1. Disconnect the PV supply to the solar charger by switching the Solar Disconnect rotary switch to OFF.
2. Disconnect the battery supply to the solar charger by switching the battery supply off. For Alliance trailers, this means first turning off the Battery Disconnect rotary switch, **then disconnecting the negative battery lead.** In the case of multiple batteries, disconnect the negative battery lead at the single point of connection to the 12 V bus bar.

To restart the solar charger after it was shutdown, perform these steps in the prescribed order:

1. Connect the battery supply to the solar charger by connecting the negative battery lead to the 12 V bus bar. Be sure to also re-enable the Battery Disconnect rotary switch when desired, as this switch has no influence on the solar charger connection on Alliance trailers but will affect the remainder of the trailer.
2. Reconnect the PV supply to the solar charger by turning ON the Solar disconnect rotary switch.

Monitoring Operation via LED Indicators

The status of the LED lights will inform you as to what the current operation is, or if there is a noted fault which requires further investigation. Symbols determining if the LED is on, blinking, or off, are identified in Table 14.Table 18. Victron LED interpretation.

For the latest and most up-to-date information about the LED blink codes, refer to the **Victron Toolkit** app. The app is available for Apple and Android. The app can be downloaded from the respective app stores or at the link provided above.

Table 14. Victron LED interpretation.

SYMBOL	MEANING
	LED is on (solid)
	LED is blinking
(blank)	LED is off

Table 15. Victron LED Interpretation.

OPERATION MODE	BULK LED	ABSORPTION LED	FLOAT LED
Not Charging[1]			
Bulk[1]			
Absorption[2]			
Float[2]			
Manual Equalization (alternating blinking)[2]			
Automatic equalization[2]			

Notes:
1. The bulk LED will blink briefly every 3 seconds when the system is powered but there is insufficient power to start charging.

OPERATION MODE	BULK LED	ABSORPTION LED	FLOAT LED

2. The LED(s) might blink every 4 seconds indicating that the charger is receiving data from another device, this can be a GX device (ESS) or a VE.Smart Network link via Bluetooth.

Table 16. Victron LED Interpretation - fault modes.

FAULT MODE	BULK LED	ABSORPTION LED	FLOAT LED
Charger temperature too high			
Charger over-current			
Charger or panel over-voltage			
VE.Smart networking or BMS issue			
Internal error, calibration issue, settings data lost or current sensor issue.			

Monitoring Operation via the VictronConnect app

The VictronConnect app can be used to monitor the solar charger, see its historical values and if there are operational warnings or errors. It is beyond the scope of this manual to discuss the app. More information about using the VictronConnect app to monitor this device can be found in section 7 of the solar charger manual, linked above, or one may also refer to the VictronConnect app manual, linked below.

	VictronConnect app manual

Programming Options

The Victron solar charger is shipped from Victron with a default setting of Gel-type batteries. If your trailer is equipped from the factory with one or more Lithium batteries, the charger will be reprogrammed to work with that battery. However, **if the dealer has provided batteries, of any type, the charger programming will need to be updated to properly work with the battery type installed**. This can be done via Bluetooth and the VictronConnect app, or via a USB connection via an optionally available adapter through the VE.Direct port.

⚠WARNING

DO NOT CHANGE SOLAR CHARGER SETTINGS UNLESS YOU KNOW WHAT THEY ARE AND WHAT THE EFFECT OF CHANGING THESE SETTINGS CAN BE. INCORRECT SETTINGS MAY CAUSE SYSTEM PROBLEMS INCLUDING DAMAGE TO BATTERIES. WHEN IN DOUBT, SEEK ADVICE FROM AN EXPERIENCED VICTRON ENERGY INSTALLER, DEALER OR DISTRIBUTOR.

Victron MPPT 75/15 Troubleshooting

If you suspect the solar charger is not performing correctly, or the LEDs on the front panel indicate a fault condition, use the VictronConnect app to review the status of the charger. The Victron manual for the charger, in section 8, contains extensive information on potential faults occurring with the charger, how to verify if certain faults are occurring, and how to correct them. It also includes information on the error codes used in the app related to the MPPT chargers.

Victron MPPT 75/15 Maintenance

As per the Maintenance Schedule, inspect the charger and check the cable screw terminal torque as follows:

1. Inspect the housing and area surrounding the housing for any signs of water damage / stains or mechanical damage (loose or broken wires, cut or damaged insulation, discolored wire insulation, or marks from any unrelated objects contacting the housing or area around it.)
2. Using a torque wrench with adapter, ensure the screws have a torque of 0.75Nm (7 in-lbs.)

Victron SmartSolar MPPT 100/30 Solar Charger (If Equipped)

Overview

The Victron solar charger manages the charging of batteries from the input of the installed solar panel(s). It uses Maximum Power Point Tracking (MPPT) technology to maximize energy capture from solar panels. It can manage up to 100 Volts of solar panel input and will charge batteries at a variable rate up to 30 Amps and is suitable for 12 V or 24 V batteries.

The charger is able to utilize the **VictronConnect** app for programming and monitoring, available on app stores for the

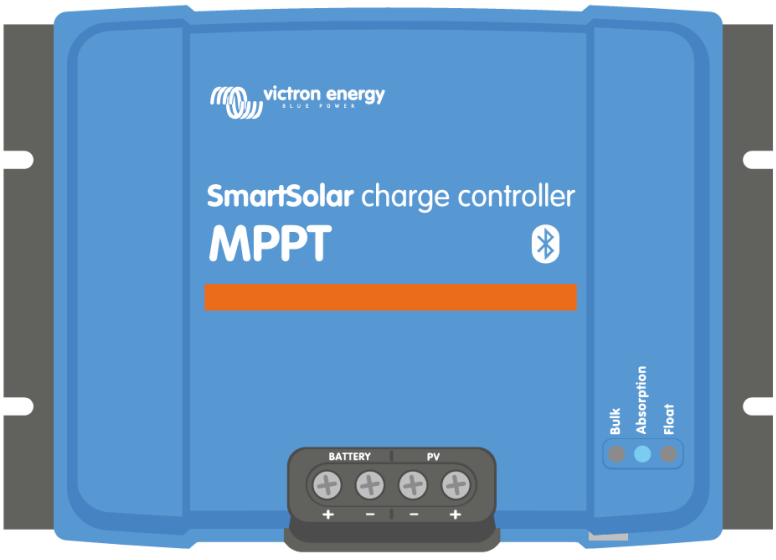


Figure 80. Victron MPPT Solar Charge Controller.

Android, Windows (USB connection only with optional VE.Direct USB Interface,) Apple iOS (Bluetooth connection only,) and MacOs platforms.

Normal operation of the device requires no user intervention, but there are times when the user may need to disconnect/connect solar panels or batteries or change programming of the solar charge controller when changing batteries or system configuration. See the procedure below for Shutdown and Restart.

⚠CAUTION

THE SOLAR CHARGER WILL BE PROGRAMMED FOR GEL-TYPE BATTERIES WHEN INSTALLED AND SHIPPED FROM ALLIANCE, UNLESS THE SUPER SOLAR PACKAGE IS INSTALLED (WITH RENOGY LITHIUM BATTERIES PROVIDED FROM THE FACTORY.)
IF LITHIUM OR LEAD ACID BATTERIES ARE INSTALLED BY THE DEALER, THE SOLAR CHARGER MUST BE PROGRAMMED TO CORRECTLY MANAGE THOSE BATTERIES. PLEASE REFER TO ALLIANCE TECH TIP 20, LINKED BELOW, FOR INFORMATION ON HOW TO PROGRAM THE CHARGER FOR THESE SITUATIONS.

	Victron MPPT solar charger manual for SmartSolar MPPT 100/30

	Victron Software Downloads Page

Identification

Figure 81, bottom, is looking at the bottom of the charger, where most of the important features can be seen. The table below the image identifies the parts.

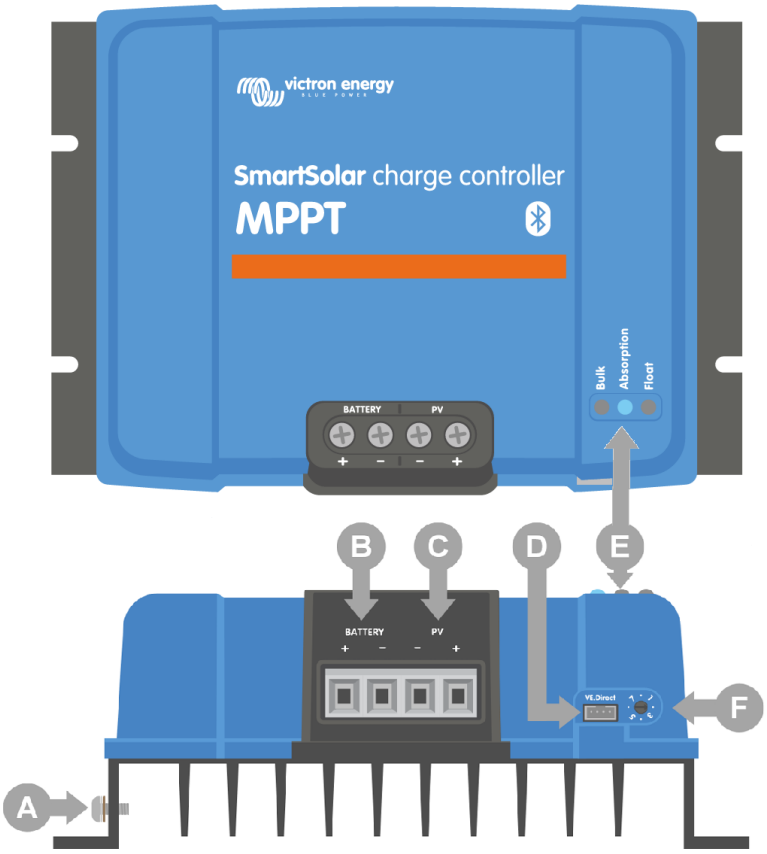


Figure 81. Victron MPPT charge controller interface identification.

Table 17. Victron interface identification. See Figure 81.

ID	DESCRIPTION
A	Ground screw
B	Battery screw terminals
C	PV (solar panel) screw terminals
D	VE.Direct socket
E	Operation/Fault LEDs
F	Rotary switch (battery type quick programming)

Shutdown and Restart Procedure

The solar charger is always active when the PV and/or the battery terminals are powered. The solar charger does not have an on/off switch.

To shut down the solar charger, perform these steps in the prescribed order:

3. Disconnect the PV supply to the solar charger by switching the Solar Disconnect rotary switch to OFF.

4. Disconnect the battery supply to the solar charger by switching the battery supply off. For Alliance trailers, this means first turning off the Battery Disconnect rotary switch, **then disconnecting the negative battery lead.** In the case of multiple batteries, disconnect the negative battery lead at the single point of connection to the 12 V bus bar.

To restart the solar charger after it was shutdown, perform these steps in the prescribed order:

3. Connect the battery supply to the solar charger by connecting the negative battery lead to the 12 V bus bar. Be sure to also re-enable the Battery Disconnect rotary switch when desired, as this switch has no influence on the solar charger connection on Alliance trailers but will affect the remainder of the trailer.
4. Reconnect the PV supply to the solar charger by turning ON the Solar disconnect rotary switch.

Monitoring Operation via LED Indicators

The status of the LED lights will inform you as to what the current operation is, or if there is a noted fault which requires further investigation. Symbols determining if the LED is on, blinking, or off, are identified in Table 18Table 18. Victron LED interpretation..

For the latest and most up-to-date information about the LED blink codes, refer to the **Victron Toolkit** app. The app is available for Apple and Android. The app can be downloaded from the respective app stores or at the link provided above.

Table 18. Victron LED interpretation.

SYMBOL	MEANING
	LED is on (solid)
	LED is blinking
(blank)	LED is off

Table 19. Victron LED Interpretation.

OPERATION MODE	BULK LED	ABSORPTION LED	FLOAT LED
Not Charging[1]			
Bulk[1]			
Absorption[2]			
Float[2]			
Manual Equalization (alternating blinking)[2]			

OPERATION MODE	BULK LED	ABSORPTION LED	FLOAT LED
Automatic equalization[2]			

Notes:
1. The bulk LED will blink briefly every 3 seconds when the system is powered but there is insufficient power to start charging.
2. The LED(s) might blink every 4 seconds indicating that the charger is receiving data from another device, this can be a GX device (ESS) or a VE.Smart Network link via Bluetooth.

Table 20. Victron LED Interpretation - fault modes.

FAULT MODE	BULK LED	ABSORPTION LED	FLOAT LED
Charger temperature too high			
Charger over-current			
Charger or panel over-voltage			
VE.Smart networking or BMS issue			
Internal error, calibration issue, settings data lost or current sensor issue.			

Monitoring Operation via the VictronConnect app

The VictronConnect app can be used to monitor the solar charger, see its historical values and if there are operational warnings or errors. It is beyond the scope of this manual to discuss the app. More information about using the VictronConnect app to monitor this device can be found in section 7 of the solar charger manual, linked above, or one may also refer to the VictronConnect app manual, linked below.

	VictronConnect app manual

Programming Options

The Victron solar charger is shipped from Victron with a default setting of Gel-type batteries. If your trailer is equipped from the factory with one or more Lithium batteries, the charger will be reprogrammed to work with that battery. However, **if the dealer has provided batteries, of any type, the charger programming will need to be updated to properly work with the battery type installed**. This can be done with either the rotary switch on the bottom, via Bluetooth and the VictronConnect app, or via a USB connection via an optionally available adapter through the VE.Direct port.

⚠WARNING

DO NOT CHANGE SOLAR CHARGER SETTINGS UNLESS YOU KNOW WHAT THEY ARE AND WHAT THE EFFECT OF CHANGING THESE SETTINGS CAN BE. INCORRECT SETTINGS MAY CAUSE SYSTEM PROBLEMS INCLUDING DAMAGE TO BATTERIES. WHEN IN DOUBT, SEEK ADVICE FROM AN EXPERIENCED VICTRON ENERGY INSTALLER, DEALER OR DISTRIBUTOR.

Victron MPPT 100/30 Troubleshooting

If you suspect the solar charger is not performing correctly, or the LEDs on the front panel indicate a fault condition, use the VictronConnect app to review the status of the charger. The Victron manual for the charger, in section 8, contains extensive information on potential faults occurring with the charger, how to verify if certain faults are occurring, and how to correct them. It also includes information on the error codes used in the app related to the MPPT chargers.

Victron MPPT 100/30 Maintenance

As per the Maintenance Schedule, inspect the charger and check the cable screw terminal torque as follows:

3. Inspect the housing and area surrounding the housing for any signs of water damage / stains or mechanical damage (loose or broken wires, cut or damaged insulation, discolored wire insulation, or marks from any unrelated objects contacting the housing or area around it.)
4. Using a torque wrench with adapter, ensure the screws have a torque of 1.6Nm (14 in-lbs.)

TV & STEREO

ALL TV

ALL TV is an effort to simplify the overall configuration and wiring for the AV system in your RV. We've taken steps to eliminate connection points, wall plates and the overall burden of work when trying to switch from one AV source to another.

Regardless of TV antenna model, at each new location, an initial channel scan must be run on each TV. Ensure that the antenna power supply is in the on position (if you desire over-the-air programming) and the green light is illuminated on the booster plate. If you have cable TV provided, connect to it, and a scan will still need to be executed, but the booster will stay off. The location of the booster plate is usually mounted on the front pass-through storage area wall on the Door Side of the trailer. A scan will find any new channels that have been added in your area. Follow the channel scan instructions for your TV when running a new scan.

	How To Setup My Alliance RV TV

The COAX wiring system is configured as shown in Figure 82. One component not shown in the diagram is the living room radio. It is connected to the antenna line between the Booster Switch and living room TV outlet.

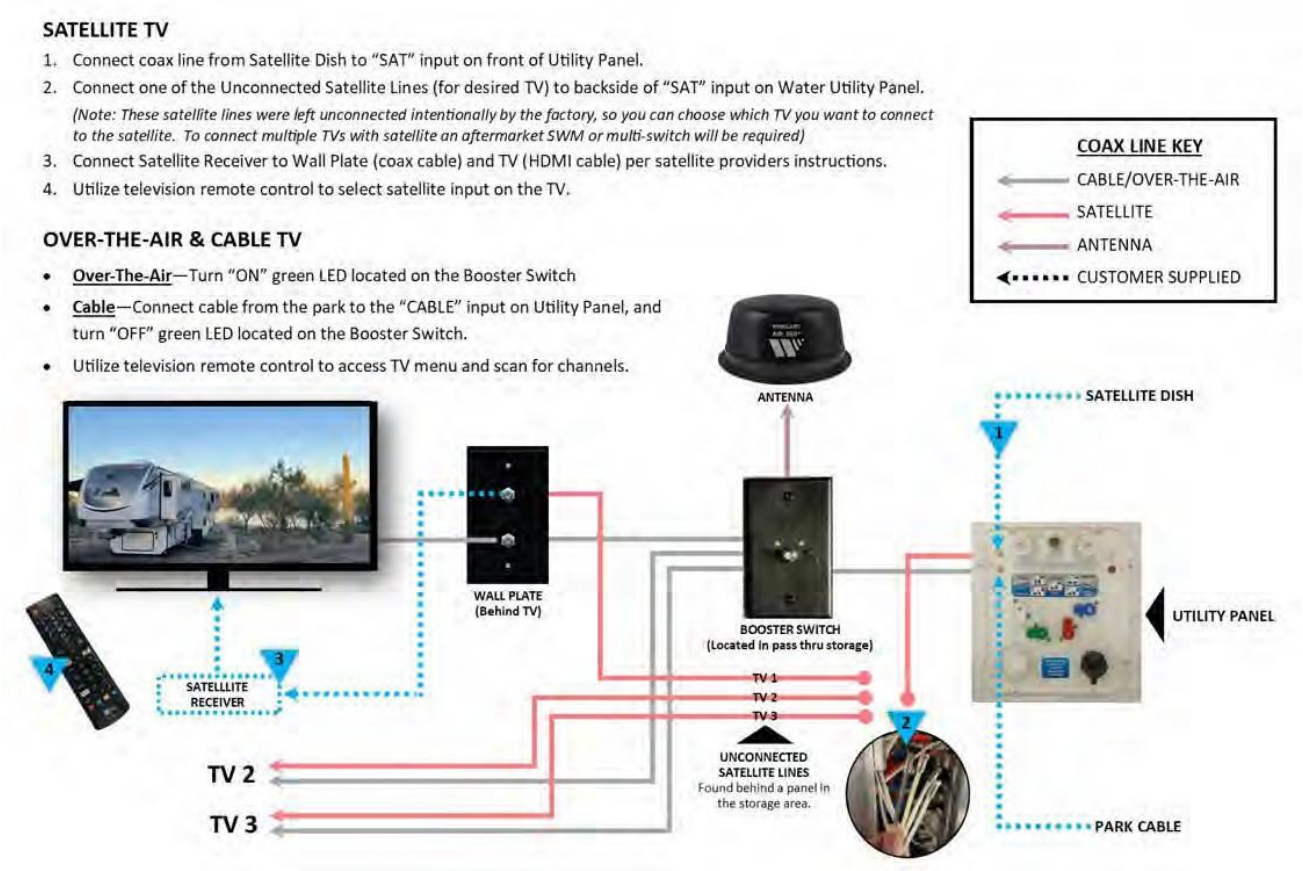


Figure 82. Alliance RV All TV COAX wiring system.

	For information on connecting a satellite dish or campground-provided Cable to the to the AV system, see the plumbing section regarding the COAX connectors.

In order to connect a satellite antenna, one will need to connect to the marked port and then use a Male/Male connector between that feed and the desired TV feed behind the booster switch panel with the group of white COAX wires. These wires are bundled together at the factory.

Winegard TV Antenna (If Equipped)

Most Delta trailers are equipped with a Winegard Air 360+. This unit provides signal amplification of television and radio signals and also is cellular internet ready (Delta models only, not Ultralight) and can be upgraded easily with the Winegard Gateway for 4G LTE & WiFi capabilities. It is a low-profile dome that requires no aiming or pointing to pick signals up. Be sure to read the full manual for your antenna for all features and functionality.



Figure 83. Winegard Air 360+ antenna. This combines TV, radio, and cellular (for Wifi) reception. Note that a Wifi router is not included, but purchased as an additional component.

	Winegard Air 360 Installation and Owner's Manual

Winegard Booster Switch

The booster switch is normally located behind the main area TV but may be in the passthrough storage of your trailer.

This panel provides power to the tv/radio antenna (left button,) and the wifi router if equipped (right button.) When the tv/radio button is depressed and the light is ON, then your TV and radio are receiving the TV antenna signal for Over-The-Air viewing. If this is OFF, then the system is routing the incoming Cable TV signal (from the cable connected to the CABLE port on the Nautilus panel) to the ports in your trailer.



Figure 84. Winegard booster switch, with booster and Wifi enabled.

Winegard Gateway (Wi-Fi) (If Equipped)

On Delta variant models (not the Ultralight) the Winegard Gateway is an optional module with a pre-installed port location on the ceiling of the RV just below where your antenna is installed. Please refer to the following video on how to access the wiring and install the gateway should you wish to add it.

	WYKW: Winegard Gateway Installation and Booster Power

Taoglas TV Antenna

Delta trailers of all variants may be equipped with a Taoglas LoPro Connect 4-in-1 antenna model MAR140.A.001. This unit provides signal amplification of television and radio signals and it also requires no aiming or pointing to pick signals up.

Taoglas Booster Switch

The booster switch is normally located behind the main area TV but may be in the passthrough storage of your trailer.

This panel provides power to the tv/radio antenna. When the tv/radio button is depressed and the light is ON, then your TV and radio receive the TV antenna signal for Over-The-Air viewing. If this is OFF, then the system is routing the incoming Cable TV signal (from the cable connected to the CABLE COAX port in your passthrough) to the various ports in your trailer.

Television & Stereo Setup and Operation

Due to the large variety of models of televisions and stereos installed in Alliance RV units, please review the owner's manual for your tv or stereo for operation. For a list of installed equipment along with links to their manuals can be found at Alliance Academy.

TV Signal Troubleshooting

If one or more of your TVs is not displaying the intended programming, please follow this troubleshooting list, in order, to help diagnose and fix common issues. If after following this list you're unable to achieve the desired viewing, please contact your Alliance Dealer or other service provider.

Common COAX Troubleshooting Steps

When troubleshooting using the guidance in the next section, many remedies will suggest one of these procedures. Executed carefully, these procedures can often remedy COAX problems.

Checking all relevant COAX connections.

1. Starting at the back of the problematic TV, check to ensure COAX cable is tight at the TV, and the Wall Plug.
2. Next, remove the wall plate (cable(s) still connected) and check to ensure the COAX connections on the back of the wall plate are tight.
3. If this TV outlet is near the living area radio, locate the COAX splitter providing a signal to the radio, and ensure all connections on that splitter are tight.
4. Finally, check all fittings on the back of the plate for the booster switch.

Common symptoms and remedies

Symptom: One or more TVs are able to see many TV channels after performing a Channel Scan, while one or more are not able to see the same channels.

Possible Issues:

Loose COAX connection: Check all COAX connections.

Damaged COAX cable: If all connections are tight, exchange the COAX cable from the problematic TV with the one from a working TV. If all channels are now found, discard the removed cable and replace.

Symptom: No TVs are finding the number of channels expected with Over-The-Air (OTA) reception. They have been able to receive OTA programming in the past.

Possible Issues:

Ensure the Booster is turned OFF.

Potential signal interference: Is the RV parked near a large metal structure (for example, a park model trailer with carport in an RV resort?) If so, very localized disruption of TV signals can occur in this situation.

Loose COAX connection: Check all COAX connections.

Damaged COAX cable: If all connections are tight, exchange the COAX cable from the problematic TV with the one from a working TV. If all channels are now found, discard the removed cable and replace.

Symptom: No TVs are finding the number of channels expected with CABLE reception. They have been able to receive CABLE programming in the past.

Possible Issues:

Campground CABLE source: Ensure the campground cable feed is in working order at the power pole. Ensure tight connections from the campground CABLE source to the trailer at the nautilus panel.

Ensure the Booster is turned ON.

Loose COAX connection: Check all COAX connections.

Symptom: A TV cannot connect with the satellite source. If the satellite receiver is connected directly to the dish/source, it works well.

Possible Issues:

Satellite input at Nautilus not connected to TV/Room feed.

1. Each satellite COAX connection has a white COAX cable connected to the back (in-wall side) of the plate. Remove the plate and ensure the lower COAX cable is white. Ensure the satellite receiver box is connected to that COAX port on the wall plate.
2. Near the booster switch, behind the wall, is a bundle of white COAX cables. Each cable connects to a different COAX plate. One will be for the service entrance at the Nautilus, one will be for the room of interest (for example, the living room.) Using a Male/Male COAX connector, ensure the two desired cables are connected.

3. If the problem TV is the living room TV, remove the radio from its mounted position and gentle pull it out. Follow the antenna cable to the splitter. Verify the COAX cable connection color. If the wire leading from the splitter to the TV is white, then go back to the TV wall plate and connect the satellite receiver to the non-white (other) COAX cable. Most satellite signals will not travel through a splitter well.

Loose COAX connection: Check all COAX connections.

Damaged COAX cable: If all connections are tight, exchange the COAX cable from the problematic TV with the one from a working TV. If all channels are now found, discard the removed cable and replace.

Bluetooth Ceiling Speaker (If Equipped)

Your trailer may be equipped with the iRV Bluetooth Speaker mounted in the ceiling of your living area. If so, you can connect that to your mobile device.



Figure 85. The iRV bluetooth speaker from QAV.

- You may connect your own devices that have Bluetooth output capability to connect to the speaker via Bluetooth for streaming music etc.
- If your TV has Bluetooth output capability, you can use the speaker's IRV app to scan for the TV and pair it with the speaker to hear TV sound from the speaker.
- The IRV Bluetooth Speaker can only be paired to one device at a time. If you've paired it with your TV, you will need to go into the TV menu and unpair the TV from the speaker, then you may connect another device to the speaker such as a phone, tablet of computer using the instructions below.

Connecting to the Speaker

1. Download the app from the app store. Search for "**iRV Audio**", from Patrick Industries. The icon is shown here.
2. Once downloaded, open the app, and search for devices. Select the speaker and enter the PIN code **8888**.
3. Once the app shows connected, navigate to the Bluetooth settings on your phone, searching for "iRV" to connect too.
4. Again, enter the PIN **8888** on your phone. You should hear a tone from the speaker shortly.
5. Now that you're connected, you can play music from the device to the speaker.

	WYKW: Connecting the Alliance Delta Travel Trailer Bluetooth Speaker: Step-by-step Guide

MONITOR PANEL

This system allows monitoring of fresh water, gray water, black water and battery levels. All functions are controlled from computer grade tactile switches for easy operation. Power control of the water heater, water pump, tank heaters (if equipped,) awnings, slide-outs, and some of the lights are also done from the central monitor panel. Controls are explained below, or in the sections of interest.

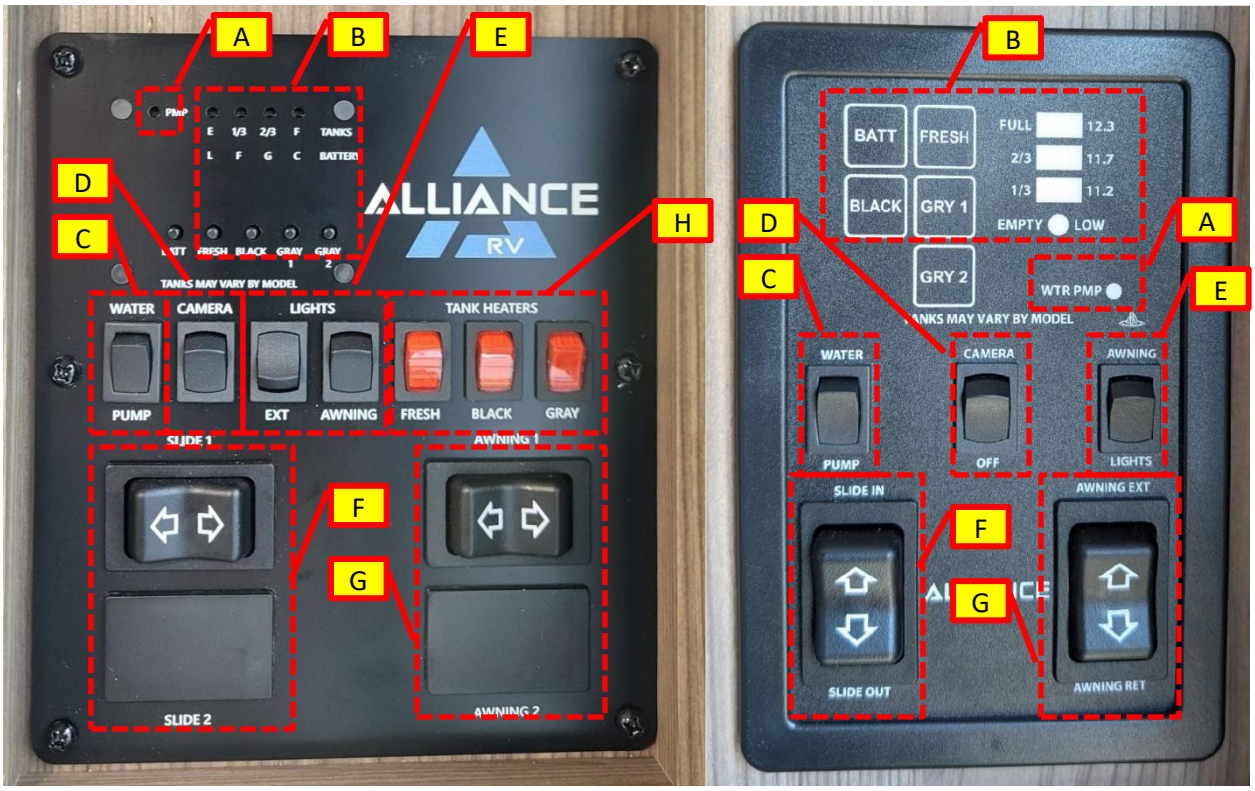


Figure 86. The Delta monitor panel (left) and Ultra Lite / SOLO monitor panel (right) with sections highlighted.

Table 21. Monitor panel control group identification.

ID	DESCRIPTION
A	Water Pump Power Indicator Light
B	Holding Tank & Battery Charge Interface
C	Water Pump Power
D	Backup Camera Power
E	Light Switches
F	Slide-out Room Controls
G	Awning Controls
H	Fresh Water & Holding Tank Heating Pads (if equipped)

Backup Camera

The trailer has a pre-wired backup camera location at the top-rear of the trailer. The mounting location is covered and sealed with a circular black plastic cover. When mounting a camera, one removes the cover, and the +12 V and ground wires are attached to the cover. **The Camera switch on the Monitor Panel controls power to this location- and must be ON for the camera to receive power.** The camera can then be mounted at this location using proper screws and sealant.

Holding Tank & Battery Charge Interface

In order to monitor the state of your battery charge and holding tank levels, use the buttons and indicator lights shown in Figure 86B. These buttons and lights are shown in detail in Figure 87.



Figure 87. Holding tank and battery charge interface details. Pushing on any one of the buttons circled in green will illuminate the LEDs circled in yellow to indicate the current state for that tank (or battery bank). The PMP/WTR PMP light indicated in red will illuminate when the water pump is enabled with the appropriate switch on the panel.

When an individual button is pressed (Figure 87 green), the lights above the switch or to the right (Figure 87 yellow) illuminate to reveal the level of the selection pushed. For the battery level indicator, the individual letters mean the following:

- L = Low at 6.0 volts
- F = Fair at 11.2 volts
- G = Good at 11.7 volts
- C = Charge at 12.3 volts

ℹ	The panel is universal for many floor plans. As such, it has available buttons to check up to 3 waste tanks. Your floor plan may have less. The number of waste tank pull handles will be the true indicator of the number and types of tanks on your trailer.

AWNINGS

Your Alliance RV comes standard with a power awning and in some cases, depending on the floor plan, may have two power awnings installed from the factory.

	WYKW: Best Practices for Patio Awnings Use

	Solera 3000 Series 12V Power Awning Owner's Manual

Awning Operation

The awning controls are located at the lower-right corner of the Monitor Panel, in section G of Figure 86. Late model Alliance trailers also include remote awning controls in the front pass-through storage on the Door Side of the trailer. Either switch location may be used at any time. Awning 1 is the awning closer to the front of the trailer.

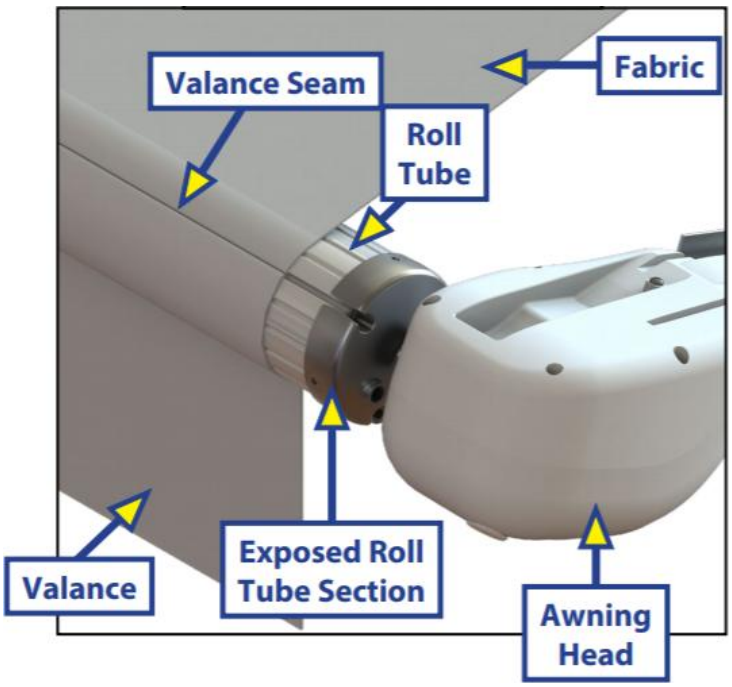


Figure 88. Awning part identification at full extension.

Extending the Awning

1. First verify that the battery is fully charged and connected to the electrical system.
2. Press and hold the awning extend button in the monitor panel.

	Extension is considered complete when the fabric is completely unrolled, the valance sean is visible and a section of the awning tube is exposed.

	The fabric should always be above the tube. However, if the extend switch is engaged too long or it is accidentally hit, the awning will roll up backwards. To correct the orientation of the fabric, press the retract button to extend it to its correct position and normal operation can resume.

	WYKW: Awning Operating in Reverse

⚠WARNING

TYING DOWN THE ROLLER TUBE ONCE THE AWING IS EXTENDED WILL NOT ALLOW THE FREE-FLOATING SUPPORT ARMS TO WORK AS DESIGNED AND CAN CAUSE DAMAGE TO THE AWNING AND/OR RV.

Retracting the Awning

1. Always check the battery first to ensure it's charged and tied into the electrical system.

	The awning can be retracted wihtout resetting the pitch.

2. Press and hold the retract button until the awning is retracted completely.

Adjusting the Awning Pitch

Pitch can be set by adjusting the articulating arm to tip one side of the awning in order to allow water runoff.

1. Extend the awning.
2. Choose the side of the awning for optimum shade or conenient water runoff. Pull down on the joint of the atriculating arm until desired pitch is set to allow for water runoff. Never push the

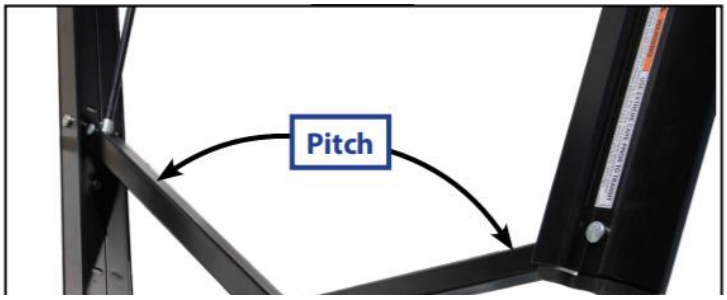


Figure 89. Awning pitch adjustment location. Pull down on the center of the arm to lower pitch.

jointes of the atriculating arms up. This will put tension on the gas strut, which can cause the strut to break.

	If the articulating arm does not hold position, it can be tightened by adjusting the bolt in the center of the articualating arm.

⚠CAUTION

DURING INCIDENTS OF HIGH WIND, HEAVY RAIN OR EXTENDED TIME AWY FROM THE RV, BE SURE TO RETRACT THE AWNING COMPLETELDY TO PREVENT DAMAGE TO THE WAWNING AND THE RV.

Awning Component Breakdown

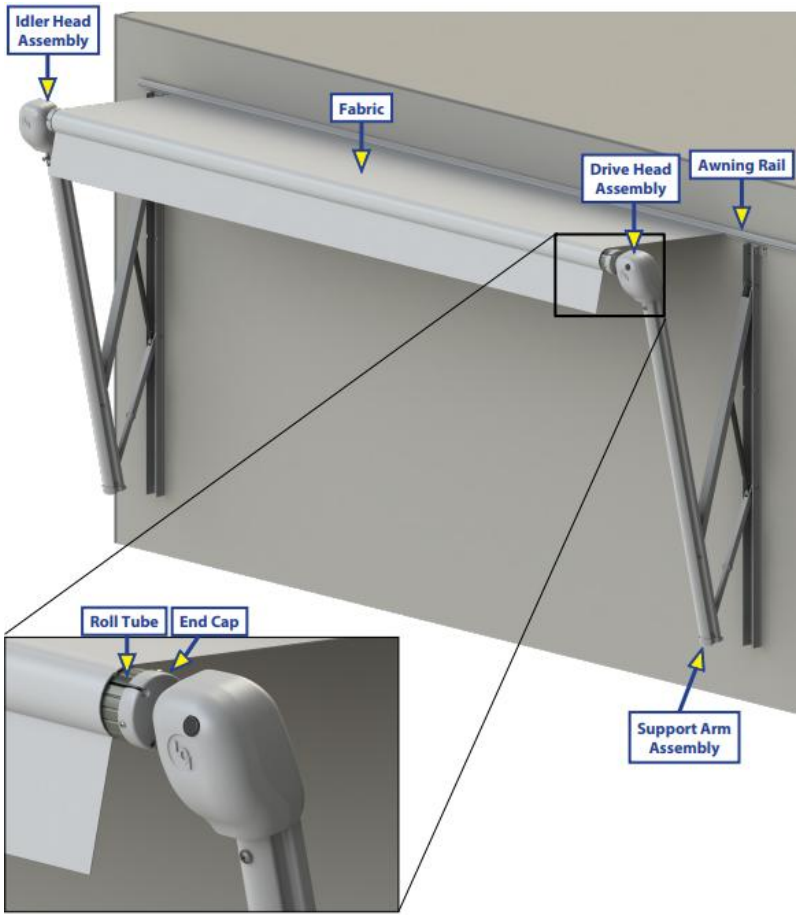


Figure 90. Awning components of interest.

Awning Troubleshooting

	Solera Power Awning Troubleshooting and Service Manual

Awning Maintenance

Cleaning & Inspection

As per the Maintenance Schedule, perform the following tasks:

1. Extend the awning and clean it with mild soap and water, or approved awning cleaner. Allow awning to dry before closing.
2. While running the awning out and in, monitor the gas struts. If bouncing or rough operation is witnessed, open the awning fully, and wipe the exposed strut shafts with a small cloth dampened with silicone lubricant.
3. With the awning out, carefully inspect upward (from underneath the awning) to verify the awning rail has not started to separate from the trailer side. If evidence of this is seen, contact an appropriate service provider to remedy.

Awning Manual Override

If you lose power or experience motor falilure, the awning can be extended and rertracted manually. This override can also be used if you're dry camping or camping without a battery.

1. Remove the rubber grommet form the drive head assembly (on the right or forward arm,) this will expose the override nut on the motor.

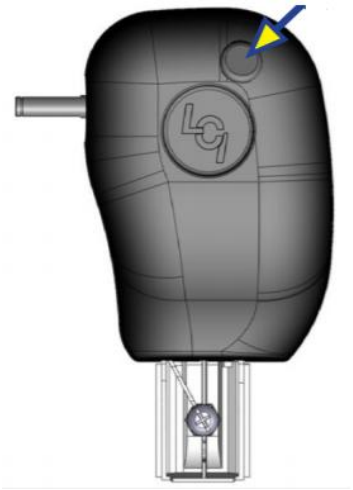


Figure 91. Location of rubber grommet covering the awning manual override. Location may vary slightly due to manufacturer differences.

2. Using a 7/16" socket and a drill, turn the override nut counterclockwise to retract the awning.



Figure 92. Using a drill to manually retract or extend awning.

3. When the awning is completely retracted, remove the drill and replace the rubber grommet.

Slide-out Topper Prep

The trailer is prepped with a slide topper prep kit to allow for easy installation of a Solera Slide-out Topper at a later date. The top left and right hand corners, just beneath the slide-out fascia, you'll find the bracket (shown below) installed.

For assistance with parts and or questions regarding the slide-out topper prep kits, please contact your Alliance Dealer or Alliance RV.



Figure 93. Slide topper prep with cover. Note the cover may be black.

	Solera 1000 Series Slide Topper (Aftermarket Installation and Owner's Manual)

Slide-out Toppers (If Equipped)

Late model Alliance RVs can be purchased with Solera Series 1000 Slide Toppers installed. Slide toppers are affixed to the top of the side and the side of the trailer and require no user intervention.

	Solera 1000 Series Slide Topper Owner's Manual

Slide Topper Component Breakdown

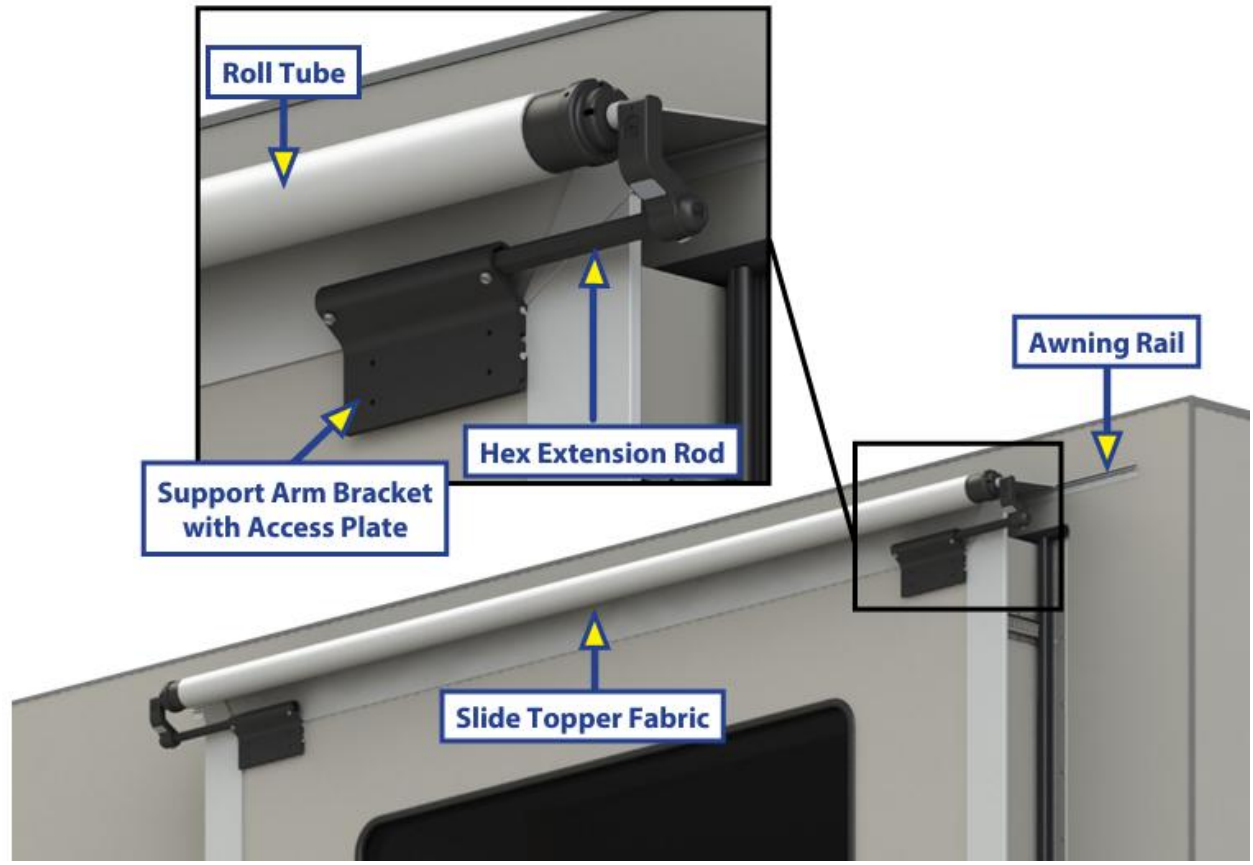


Figure 94. Slide topper component identification.

HEATING, COOLING & VENTILATION

Furrion Single Zone Thermostat (IF Equipped)

When equipped, and depending upon floorplan and options purchased, your trailer will have one or two individual thermostats. Each thermostat controls a single rooftop air conditioning unit. The bedroom area thermostat will also be connected to your Surburban propane furnace to manage heating your RV.

	Furrion Single Zone Basic Wall Thermostat

Identification

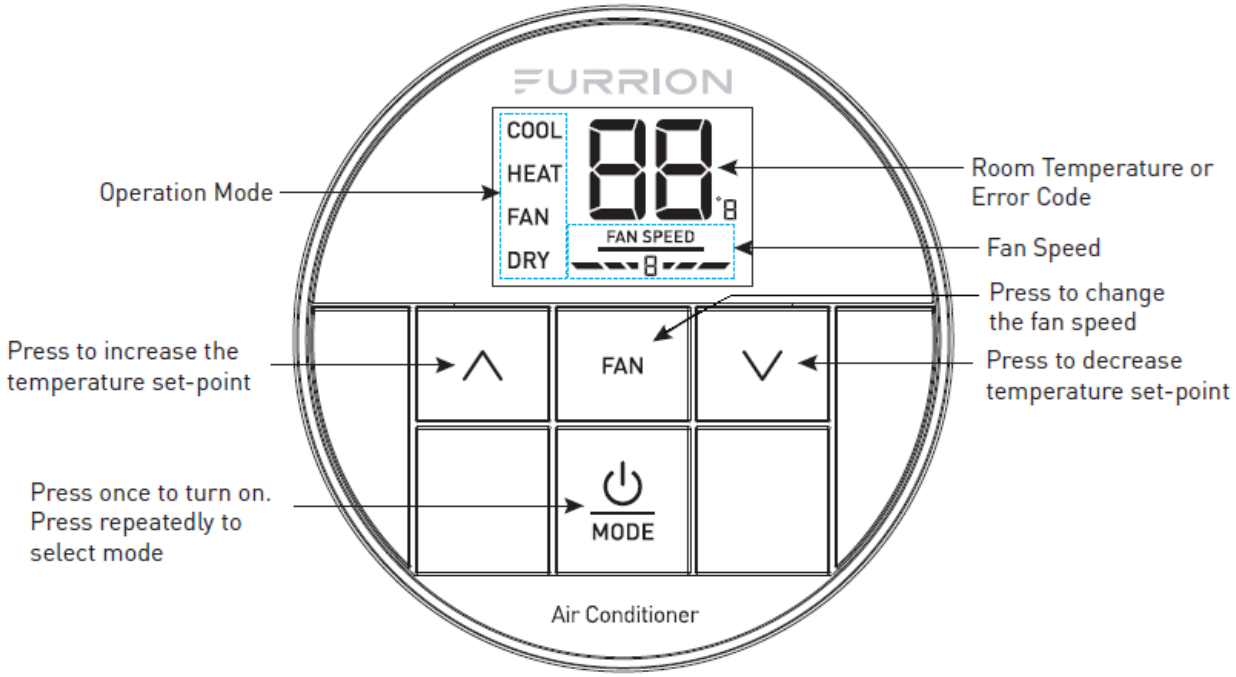


Figure 95. The display and buttons of the Furrion single zone thermostat.

Operation

- To turn on: Hold the Power/Mode button for 3 seconds.
- To turn off: When on, hold the Power/Mode button for 3 seconds.
- To cycle between modes: Once on, press the Power/Mode button to cycle through the COOL, HEAT (if enabled), FAN, and DRY modes.
- To set the Fan Speed: Press the FAN button to cycle through Low, Medium, High, Auto, and Off.
- To change the set point temperature: Press the Up and Down arrow buttons.
- To change between Fahrenheit and Celsius: Simultaneously press the Up and Down arrow keys for three (3) seconds. The display will show °F or °C to indicate the current format.

Modes Available

The following descriptions detail how the system will run in each of the available modes on the thermostat.

	Fan AUTO mode: In auto modes, the fan speed will change relative to the difference between the room temperature and the set-point temperature. When that difference is greater than three (3) degrees, it will run on HIGH. When that difference is between one (1) and three (3) degrees, it will run on MEDIUM. When there is less than one (1) degree difference, the fan will run on LOW.

COOL Mode:

- The system will cycle the compressor on and off based on the room temperature and the temperature set-point.
- The fan will be turned on after the compressor is running.
- There are four (4) fan speed selections in this mode. Use the FAN button to change the speed.
  - **Low:** The fan operates continuously at low speed and the fan icon shows a (1) on the LCD.
  - **Medium:** The fan operates continuously at medium speed and the fan icon shows a (2) on the LCD.
  - **High:** The fan operates continuously at high speed and the fan icon shows a (3) on the LCD.
  - **Auto:** The fan speed varies depending on the difference between the temperature set-point and room temperature. The fan icon shows an (A) on the LCD.

HEAT Mode (If enabled/equipped):

- The system will cycle the furnace on and off based on the room temperature and the temperature set-point.
- The fan speed selections only apply to the rooftop fan that is part of the Air Conditioner. The fan speed selection does not change the fan speed of the furnace.
- There are five (5) fan speed selections in this mode. Use the FAN button to change the speed.
  - **Low:** The fan operates continuously at low speed and the fan icon shows a (1) on the LCD.
  - **Medium:** The fan operates continuously at medium speed and the fan icon shows a (2) on the LCD.
  - **High:** The fan operates continuously at high speed and the fan icon shows a (3) on the LCD.
  - **Auto:** The fan speed varies depending on the difference between the temperature set-point and room temperature. The fan icon shows an (A) on the LCD.
  - **Off:** The fan is off. The fan icon shows a zero (0) on the LCD.

FAN Mode:

- The Temperature set-point is not available.
- There are three (3) fan speed selections in this mode. Use the FAN button to change the speed.
  - **Low:** The fan operates continuously at low speed and the fan icon shows a (1) on the LCD.
  - **Medium:** The fan operates continuously at medium speed and the fan icon shows a (2) on the LCD.
  - **High:** The fan operates continuously at high speed and the fan icon shows a (3) on the LCD.

DRY Mode:

- The compressor runs continuously when room temperature is higher than set-point.
- Compressor cycles ON for 10 minutes and OFF for 6 minutes when the room temperature is lower than set-point.
- The fan runs continuously at Low (1) speed.

Furrion Single Zone Thermostat Troubleshooting

If the display of the thermostat indicates an error code, refer to the following table to determine what is happening. In all cases, the system will shut down.

Table 22. Furrion thermostat error codes.

ERROR CODE ON DISPLAY	MEANING
E1	Indoor temperature sensor out of order.
E2	Evaporator temperature sensor out of order.
E3	Loss of communication between the thermostat and control box.
E4	Condenser temperature sensor out of order.
E5	Outdoor temperature sensor out of order.
LO	Insufficient low level of +12V power supply.

- If the system has an E1 or E3 error, the problem may be related to a loose or damaged connection at the thermostat. One may remove the thermostat from the wall by twisting counter-clockwise to remove it from the baseplate. Inspect the wire connections and repair using appropriate methods if damage is apparent.
- For an LO error, the root cause of the problem is likely not related to the Air Conditioner or Thermostat. Ensure at least +12V is available to the system. The actual problem may be related to your batteries or RV converter.
- In all cases, contact a qualified service provider for remedy.

Furrion Air Conditioners (If Equipped)

Alliance RV main living quarters (Living Room and Kitchen) will utilize one or two “direct cool” air conditioners. These units are mounted on the exterior roof of the RV with a shroud mounted on the inside ceiling – this is called the **Air Distribution Box**. We’ve opted for most of the RV to be cooled with these direct cool units as they are significantly more efficient than your typical ducted system.

The bedroom area(s) of the RV may utilize a ducted air conditioner system, depending upon the floorplan and purchased options. Due to the nature of the design in these spaces, containing multiple rooms and areas that can be isolated with doors, a ducted system is utilized.

Each air conditioner will be operated by its own individual thermostat.

The ability of the air conditioner to maintain the desired inside temperature depends on the heat gain of the recreational vehicle. The size of the vehicle, amount of window area, amount of insulation, direct exposure to the sun, outside temperature, and the number of people in the recreational vehicle may increase the heat gain to such an extent that the capacity of the air conditioner is exceeded.

As a general rule, air entering the air conditioner will be cooled about 15 to 20 degrees, depending on the outside temperature and humidity conditions. For example, if the air entering the return air grilles in the air conditioner is 80° F, the air leaving the discharge grilles in the air conditioner will be 60 - 65°F. As long as this temperature difference is being maintained between the return air and discharge air, the air conditioner is operating at its capacity. If the desired inside temperature (normally 80° F) cannot be maintained, then the heat gain of the RV is too great for the capacity of the air conditioner.

Parking the vehicle in a shaded area, keeping windows and doors shut and avoiding the use of heat producing appliances in the vehicle will help to reduce the heat gain. When possible, the addition of insulation and tinted glass (especially in uninsulated vans) should be considered.

Furrion AC Maintenance

⚠WARNING

DO NOT OPERATE YOUR AIR CONDITIONER WITHOUT THE FILTER INSTALLED.

Cleaning the AC Filter

As per the Maintenance Schedule, clean or replace the AC Filters:

1. Remove the decorative plate by pushing the side tabs to release. The tabs are accessed by reaching up over the sides of the plate on each side.

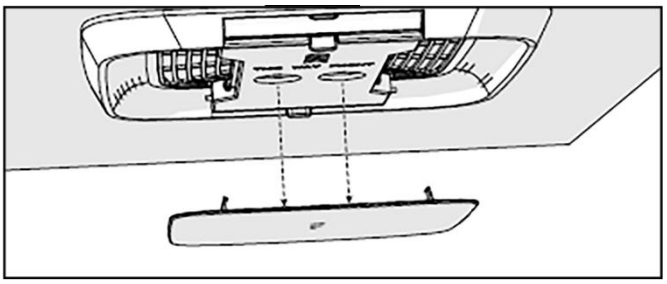


Figure 96. Removing the decorative plate for filter cleaning.

2. Remove the filters by pushing the tabs to release.
3. The filter can be washed with warm soapy water. Take care not to rip the fabric.
4. Replace the filters and decorative plate by reversing the above process.

ℹ	The filter must be completely dry before re-installation.

AC Coil Cleaning

As per the maintenance Schedule, one needs to remove the top shroud and clean the Evaporator Coils,

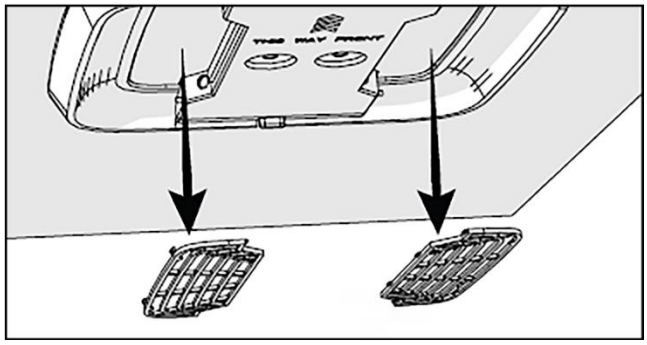


Figure 97. Removing the filters from the Air Distribution Box for cleaning.

Condenser coils, and Fan (as needed.) The process to do this standard service is beyond the scope of this manual. There are many sources of information on how to do this online, and RV service centers can also provide this service.

Digital Thermostat for Coleman Mach Air Conditioners (If Equipped)

Early model Delta trailers will have the Coleman digital thermostat installed. It will operate the AC fan and cooling modes, and depending upon location the furnace. When a furnace is connected, it will run in a cooling/heating automatic selection mode.



Figure 98. Coleman digital thermostat.

Room Temperature: The current room temperature is displayed in large digits in the middle of the display.

Setpoint Temperature: The setpoint temperature is displayed on the right side of the display in smaller digits.

System Mode: Information about the system mode settings is displayed at the lower-left corner of the display, circled in blue in Figure 98. The state of the cooling/heating will be shown above the box, and the selected mode will be shown in the box.

Fan: Information about the Fan settings is in the lower right corner of the display, circled in blue in Figure 98. The state of the fan will be shown above the box (on/off) and the setting (Low, High, and Auto if selected) will be shown in the box.

Selection Knob: Use the Selection Knob to change the mode, set the fan, and setpoint temperature. You can push on the knob to accept a setting. If it's not pushed, it will automatically "accept" the set value after 7 seconds. See below for operation details.

	Hold the Selection Knob down for 4 seconds to change from Fahrenheit to Celsius.

	Reboot: The thermostat can be manually rebooted by pressing and holding the knob for 12 seconds. When the knob is held for 4 seconds, the thermostat will go to the units selection screen, after another 4 seconds, the thermostat will begin a count down. Once the countdown reaches 0 and the display turns off, the device will wait for the knob to be released. Upon the release of the knob, the device reboots

Operating the Thermostat

	Coleman Digital Wall Thermostat Manual

The Selection Knob is the only input method for the thermostat. Depending upon the current state of the thermostat/system, the knob enables certain functions.

1. System off: The knob has no effect when turned. Press the knob to enable Mode Selection.
2. Mode Selection: If the knob is pushed at any time before being turned, you will enter Mode Selection.
    - Turning the dial changes the selected mode, flashing in the lower left corner (Cool, Dry Cool, Heat (if equipped,) and Cool+Heat (if equipped.) Push the knob to accept the state.
    - The Fan mode is now flashing. Rotate the dial to select the desired setting (Lo, Hi, Lo Auto, Hi Auto.) If Dry Cool is selected, you will not be able to set the Fan mode. Push the dial to accept.
    - The system now runs in the selected HVAC state (cool/heat) and fan speed, related to the Setpoint Temperature.
3. Running in any mode: Turning the knob will change the Setpoint Temperature. Push to accept or let the system automatically "accept" the setting after 7 seconds.
4. Turn the system off: With the system running, push the Selection Knob. Rotate until the HVAC State is "off" and push the knob again.

	In Alliance trailers, only the middle thermostat (or rear thermostat if only two ACs are present) has a furnace connected.

Coleman Mach Air Conditioners (If Equipped)

Alliance RV main living quarters (Living Room and Kitchen) will utilize one or two “direct cool” Coleman air conditioners. These units are mounted on the exterior roof of the RV with a combination shroud mounted on the inside ceiling of the RV. We’ve opted for most of the RV to be cooled with these direct cool units as they are significantly more efficient than your typical ducted system.

The bedroom area(s) of the RV may utilize a ducted Coleman air conditioner system, depending upon the floorplan and purchased options. Due to the nature of the design in these spaces, containing multiple rooms and areas that can be isolated with doors, a ducted system is utilized.

Each air conditioner will be operated by its own individual thermostat.

The ability of the air conditioner to maintain the desired inside temperature depends on the heat gain of the recreational vehicle. The size of the vehicle, amount of window area, amount of insulation, direct exposure to the sun, outside temperature, and the number of people in the recreational vehicle may increase the heat gain to such an extent that the capacity of the air conditioner is exceeded.

As a general rule, air entering the air conditioner will be cooled about 15 to 20 degrees, depending on the outside temperature and humidity conditions. For example, if the air entering the return air grilles in the air conditioner is 80° F, the air leaving the discharge grilles in the air conditioner will be 60 - 65° F. As long as this temperature difference is being maintained between the return air and discharge air, the air conditioner is operating at its capacity. If the desired inside temperature (normally 80° F) cannot be maintained, then the heat gain of the RV is too great for the capacity of the air conditioner.

Parking the vehicle in a shaded area, keeping windows and doors shut and avoiding the use of heat producing appliances in the vehicle will help to reduce the heat gain. When possible, the addition of insulation and tinted glass (especially in uninsulated vans) should be considered.

	How Do I Fix/Troubleshoot My Alliance RV Air Conditioner (AC)?

Coleman Mach AC Maintenance

⚠WARNING

DO NOT OPERATE YOUR AIR CONDITIONER WITHOUT THE FILTER INSTALLED.

Cleaning the AC Filter

As per the Maintenance Schedule, clean or replace the AC Filters:

1. Turn the AC unit off.
2. Each side of the AC ceiling assembly has a removable plastic grille and foam filter behind it. On each side, push the pair of tabs on the outer edge toward the center. The grilles can be stiff and difficult to bend.
3. Once loose on the outside edge, rotate and lower. The grille will come loose along with the filter.

4. Either clean the filter with a vacuum, or soap and water, and shake or gently wring out the water. If replacing, make sure to use identical replacement filters. Do not use more restrictive (i.e. HEPA) filters as the AC fan is not designed to use these and premature system failure can be expected.
5. Replace the filters in the reverse order of removal.

AC Coil Cleaning

As per the maintenance Schedule, one needs to remove the top shroud and clean the Evaporator Coils, Condenser coils, and Fan (as needed.) The process to do this standard service is beyond the scope of this manual. There are many sources of information on how to do this online, and RV service centers can also provide this service.

Suburban Furnace

Every Alliance RV will be heated with an SF-Q series Suburban furnace that provides 42,000 BTU's. An exterior access door allows for ease of service. The furnace is operated with the thermostat that is tied to the main air conditioner unit in the center zone of the trailer.

	Owner Empowerment Furnace Tips

⚠WARNING

DO NOT OPERATE THE FURNACE WHILE VEHICLE IS IN MOTION OR BEING TOWED.

	During initial firing of this furnace, a burn-off of excess paint and oils remaining from manufacturing process may cause foul odors and mild smoking for 5 – 10 minutes. This can also happen after several months with no operation due to dust build up.

To Turn the Furnace On

For the furnace to properly turn on, the propane gas valve must be fully open. Never attempt to operate the furnace with any of the gas valves partially open

1. Set the thermostat to Heat mode, and program the Setpoint Temperature as desired.
2. When the thermostat senses the room temperature at least 2 degrees below the Setpoint Temperature, the furnace fan motor will start. It will run approximately 30 seconds before the next step.
3. After the burn chamber has been purged for 30 seconds, the furnace will automatically attempt to ignite. At the outside cover of the furnace, you will hear a click and then the ticking of the ignitor.

⚠WARNING

DO NOT ATTEMPT TO LIGHT THE BURNER BY HAND.

a. If the burner fails to light after several seconds of ignition attempt, the system will stop the ignitor (ticking stops) and the propane valve will close. The fan will run for another 2 minutes before another attempt is made to ignite (steps 2-3.)
b. If the system fails to ignite after 3 cycles, the furnace will go into "Lockout Mode." The fan will continue to run for several minutes to evacuate the burn chamber of any propane fumes.
c. The system can be reset by turning the system off, then back on. See Troubleshooting for further assistance.

4. After a normal ignition, the system will continue to run the fan and blower until the thermostat senses the room is 1 degree warmer than the Setpoint Temperature. It will then shut off the burner, while the fan continues to run for several minutes to cool the burn chamber and ensure all exhaust gasses have been purged before stopping.

To Turn the Furnace Off

1. Set the thermostat Setpoint Temperature to a value at least 2 degrees warmer than the current room temperature, or set the mode to OFF.
2. The burner will shut off, but the fan continues to run for several minutes to cool the burn chamber and ensure all exhaust gasses have been purged before stopping.

Suburban Furnace Maintenance

Inspection

As per the Maintenance Schedule, and prior to operation after an extended period of not running the furnace:

1. Inspect the exterior furnace vent for debris, spider webs, animal presence, or soot.
2. If soot is found, shut down the furnace immediately and contact a qualified service provider to address incomplete burning of the fuel.
3. Inspect the return air location (under the front stairs in most Alliance trailers) to assure no blockages exist. Open the access panel beside/behind the nautilus utility panel and use a flashlight to inspect behind the furnace. Ensure no debris or excessive fiber buildup (from rugs, pet fur, etc.) has occurred. If found, ensure area is clean before furnace is used.

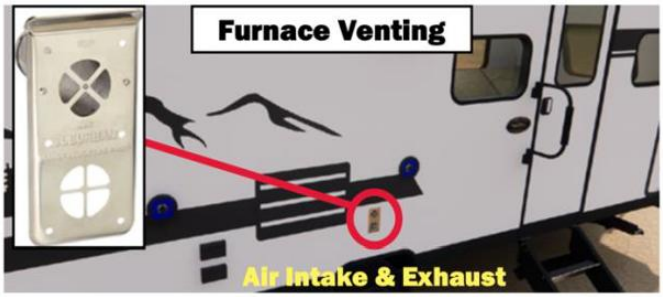


Figure 99. Exterior furnace vent.

Fireplace (If Equipped)

Your RV may be equipped with an electric fireplace with a rating of 5100 Btu. You'll be able to use this to help knock the chill off on cold days, this fireplace is not intended to heat your entire RV nor will it do so.

You can operate the fireplace at the control panel on the fireplace itself or with the remote.

Control Panel

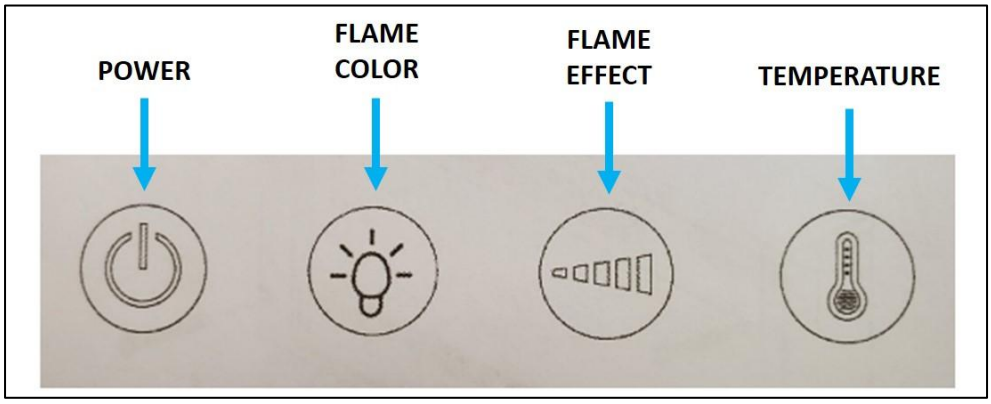


Figure 100. Fireplace control panel at the bottom center.

- **Power button** – Press this button to turn the fireplace on. The unit will beep. Press again to turn the fireplace off.

ℹ	The fan will continue to run for 60 seconds without heat.

- **Flame Color** – Press this button to change the flame color. The unit will beep – press once for orange, press twice for an orange'ish blue, press three times for blue
- **Flame Effect** – Press this button to change the flame effect. The unit will beep. Press again to decrease the flame intensity. There are 6 light settings for your selection. The flame optics will go lower under the sequence of 6,5,4,3,2,1. Pressing the button again will stop the flame effect.
- **Temperature** – Press this button to set the temperature. The unit will beep. Press to set the desired temperature. When desired ambient temp is reached, the heater will automatically stop

heating. When the ambient temperature drops below the set point, the heater will resume heating.

Remote Control

- **Fahrenheit Vs. Celsius** – Press this button to toggle between the two temperature scales.
- **Flame Effect** - Press this button to change the flame effect. The unit will beep. Press again to decrease the flame intensity. There are 6 light settings for your selection. The flame optics will go lower under the sequence of 6,5,4,3,2,1. Pressing the button again will stop the flame effect.
- **Up and Down** – Press these buttons to set the desired temperature.
- **Power Button** – Turn the unit on and off with this button.
- **Time Function** – Press this button for timer function. The letters “0H” to “8H” will appear on the LED screen. “OH” means there is no set running time and the heater will run continuously. The letters “1H” thru “8H” mean the number of hours that the heater will operate before shutting off.

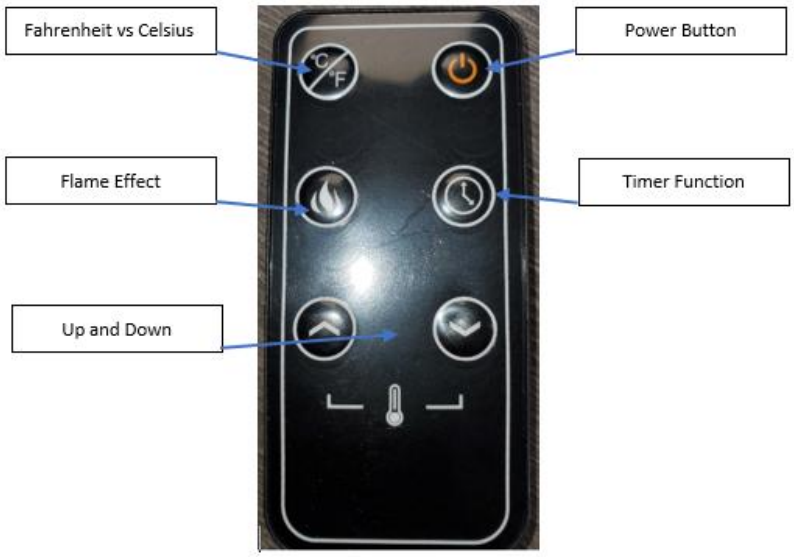


Figure 101. Fireplace remote interface.

	The battery in the remote is a CR2025 battery.

	If the fireplace will not run, verify the AC outlet in the space behind the unit is providing adequate power. If not, have a qualified RV Technician verify the plug function as well as checking the relay mounted in the bottom of the kitchen island. This relay diverts power to the dishwasher (if installed) or device(s) running on the provided dishwasher outlet.

	How to Fix/Troubleshoot Your Alliance RV Fireplace

Ventilation

In addition to your RV's windows, your RV is equipped with a ceiling vent fan, located in the bathroom. This fan is crucial in your RV's ventilation and assisting with minimizing condensation, especially when showering, in extended use and extreme temperature situations.

Bathroom Vent Fan

1. Rotate the vent cover knob to open the vent cover.
2. Press the push button switch located on the fan as shown in Figure 102. Press the button to toggle between On and Off states.
3. You may also open the vent cover without turning the fan.

Note: When storing your RV in a covered space, some owners prefer to partially open a vent fan lid (with fan Off) to keep the RV interior passively ventilated.

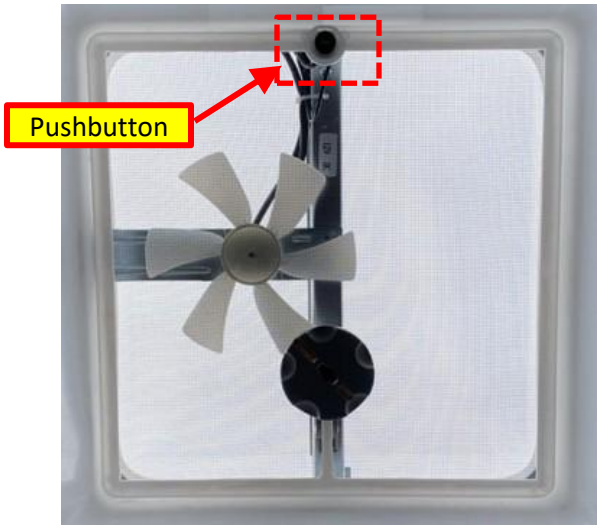


Figure 102. Interior view of the ceiling ventilation fan and operable vent cover.

Range Vent

The microwave or microwave/convection oven (if equipped) situated above your stove has a built-in fan. This will be covered in the Appliances section to follow.

APPLIANCES

There is a large variety of appliances used in Alliance trailers. All operating manuals can be found online at Alliance Academy at https://alliancerv.com/alliance-academy.

12 V Refrigerator

The trailer was equipped from the factory with a 12 V residential refrigerator and the RV will not need an inverter to run the refrigerator (although it may have one.) The refrigerator may run while traveling without any safety concern.

12 V Refrigerator Maintenance

Properly caring for your refrigerator will give you years of trouble-free service, checking these few things periodically should be priority.

- Keep the food compartment and freezer clean.
- Make sure the doors seal correctly (refer to the Maintenance Schedule for a method to check this.)

Microwave or Microwave/Convection Combination (If Equipped) Oven

Your Alliance RV comes equipped with either an Over the Range (OTR) Microwave, or combination Microwave/Convection Oven.

Range Vent (Vent Hood)

Your OTR (Over-the-Range) microwave is equipped with a vent fan and a light underneath the microwave. The fan works as a range hood to filter out smoke and other odors from cooking. Use your range hood anytime you cook, this will help maintain the air quality in your RV.

Depending upon your trailer's production date, model of microwave, and floorplan, the microwave may be vented directly outside (through the wall) or it may have the vent exhausting out the top front of the microwave.

If the microwave has it's exhaust is directed forward and uses the top-front edge of the microwave for exhaust, opening the roof vent and running the Maxxair fan will help exhaust more fumes.

If the microwave does not exhaust out of the top-front, the vent is already directed outside via a range vent hood. This hood has closure tabs and a flap to keep cold air out when not in use. It is **recommended** to keep these tabs in the open position when cooking on the stovetop and they **must be open** when using a convection cooking option (if equipped) in the microwave.

Range/Cooktop

Your freestanding residential style gas range represents the newest in RV range design and is designed for reliable and trouble-free performance.

Before Using Your Range

Remove all packaging materials and wipe the surfaces of your range with a damp cloth or sponge. When you turn on a burner or the oven for the first time, smoke and odors may be present. This is normal, make sure the room is well ventilated.

Outdoor Griddle/Grill

Certain floorplans have a slide-out propane griddle/grill. This appliance is propane fueled, and connects to your trailer's quick-connect port, mounted near the device. In order to use the grill, you will need to pull the grill out of the storage/travel position, rotate a blocking panel out of the way of the quick-connect port, then connect the supplied hose to the grill. Then connect the other end of the hose to the quick connection fitting as illustrated in the Propane section of this manual.

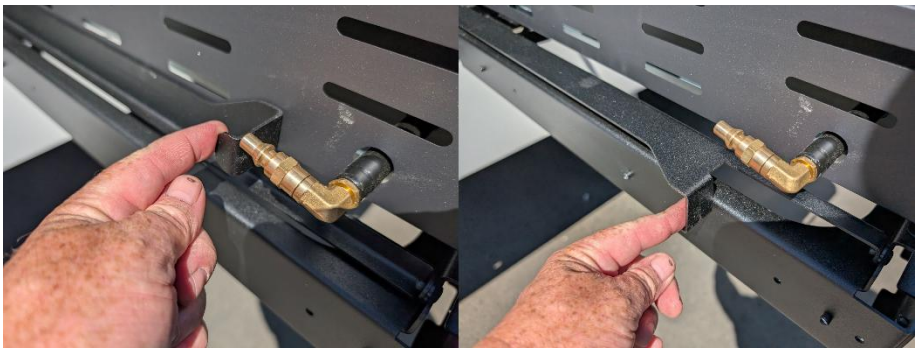


Figure 103. Opening the safety bar that prevents hose connection when traveling.

When cooking is complete, make sure to turn off the grill and let it cool to ambient temperature before disconnecting the hose from the trailer's port, then the grills port. You can then rotate the safety panel back into position before pushing the grill assembly back into the travel position.

Please refer to the Owner's Manual of the grill for all operating instructions.

	WYKW: Connecting Your LP Line for an Outdoor Grill

PLUMBING AND UTILITIES

Convenience Centers

The Delta Travel Trailer features dual Convenience Centers. They are located inside the pass- through storage bay on the aft wall, just inside both storage bay doors. There is also a removeable access panel in the middle of this wall, where lesser-needed components are included (water pump access, winterizing suction tube, inverter prep (if equipped,) and a solar charge controller (if equipped.)

Each convenience center consists of a panel with various items on them. The exact number and type of items will change by floorplan and model variant (Delta, Ultra Lite, or SOLO.) The convenience centers are your hub for various systems and controls as outlined below. Images below will help identify the components which are discussed in sections below or elsewhere in this manual where relevant.

With these controls and fixtures, you'll have the ability to perform the following functions from a centralized and easy-to-access location:

1. Find your stabilizer (scissor jack) drill adapter, if equipped.
2. Plug in a heated hose or other 120 V accessory via a 120 V outlet.
3. Disconnect the 12 V battery and solar, if equipped.
4. Charge USB devices (if equipped with ports.)
5. Connect COAX lines for externally supplied Cable TV and Satellite signals.
6. Rinse off items outside unit with a mixed temperature (hot/cold) spray port.
7. Extend or retract slide-outs from the outside (switches are replicated at the interior monitor panel.)
8. Extend or retract awning(s).
9. Operate the Front Cap Lights, if equipped.
10. Rinse the black tank to help control odors and prevent sewage buildup.
11. Manage your water system:
    a. Connect to city water to either supply water to interior fixtures or fill your fresh water tank for dry camping.
    b. Use your pump to supply water to fixtures from the fresh water tank.
    c. Use your pump to
        i. siphon fill or sanitize your fresh water tank from a bucket.
        ii. winterize your plumbing lines and fixtures.
    d. Bypass hot water heater when winterizing to avoid water heater damage

Controls in the convenience centers are covered individually below Figure 104 to Figure 107. **For general water system operations such as filling the fresh water tank, winterizing, or sanitizing, please refer to the appropriate sections below that.**

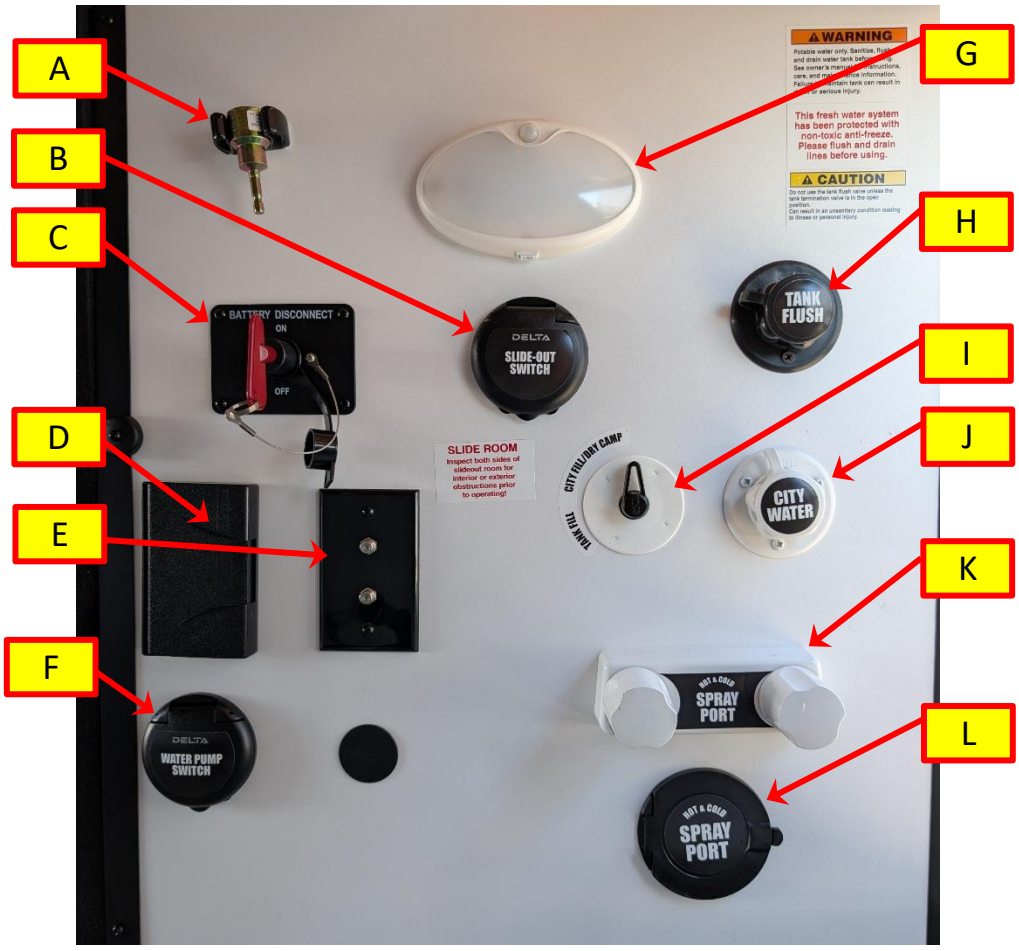


Figure 104. Convenience center, Off Door Side (ODS). Controls shown may change by floorplan and variant (Delta, Ultra Lite, and SOLO.) Items E, H, J, and L may be mounted outside the storage door on Ultra Lite and SOLO models.

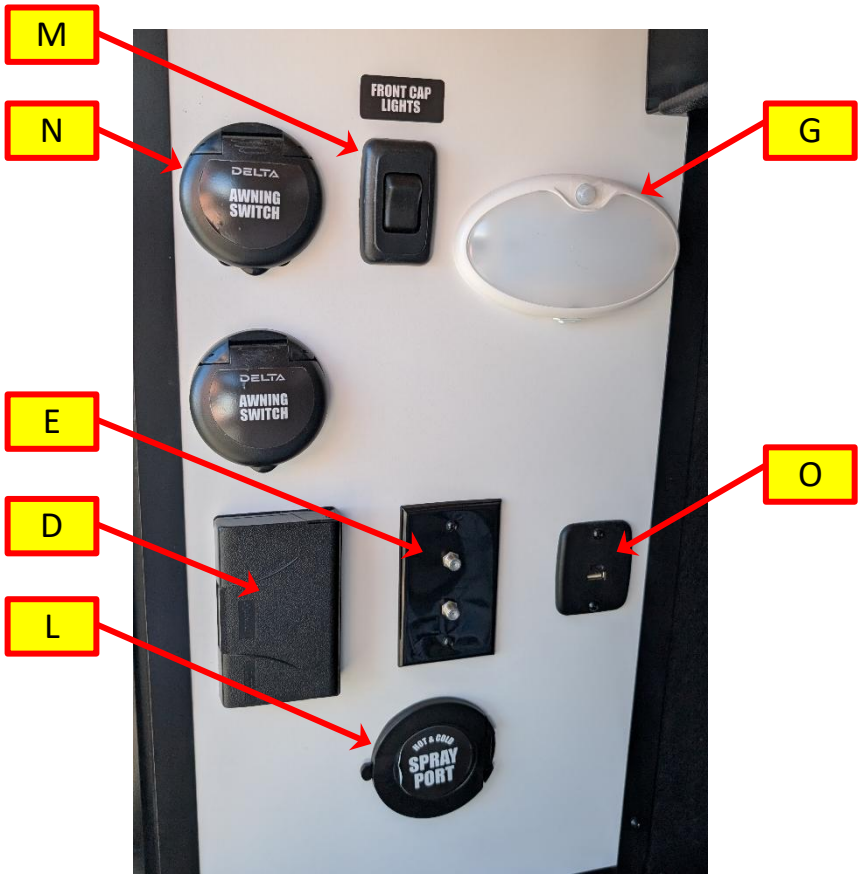


Figure 105. Convenience center, Door Side (DS). Controls shown may change by floorplan and variant (Delta, Ultra Lite, and SOLO.)

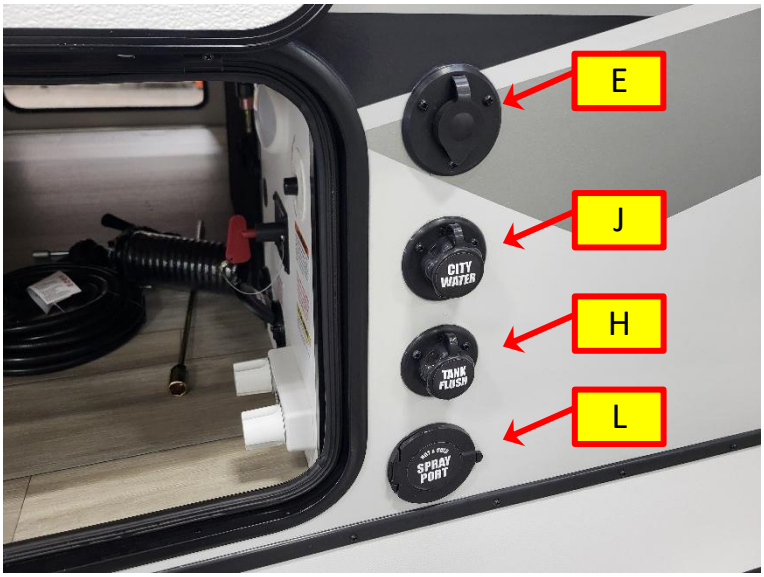


Figure 106. Externally mounted interfaces on Ultra Lite and SOLO variants of the Delta trailer.

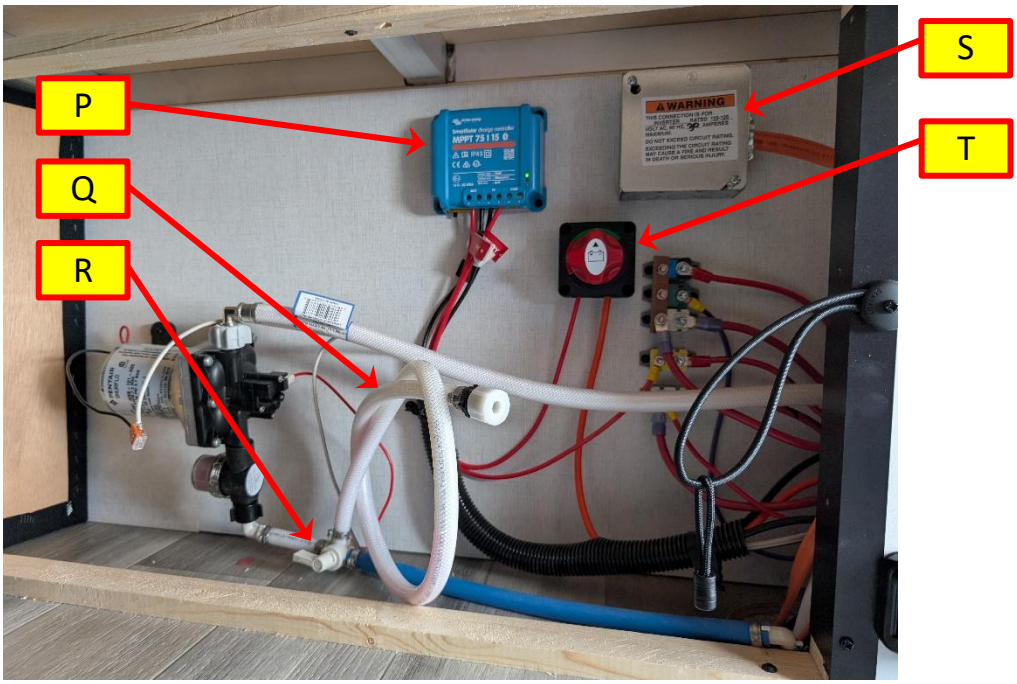


Figure 107. Less frequently needed controls mounted between the convenience centers behind a covering panel. Also shown is the 12V bus bar for direct connections.

Table 23. Convenience Center controls. Refer to Figure 104 through Figure 107. Note that some items may exist on the Door Side only, Off Door Side only, or both.

Identifier	Device
A	Stabilizer (scissor jack) drill adapter socket (if equipped)
B	Slide-out switch (if a slide-out is on this side)
C	Battery disconnect switch
D	120 V Electrical Outlet
E	Cable TV/Satellite (if equipped) COAX input plate.
F	Water pump exterior switch (replicated on interior monitor panel)
G	12 V light w motion sensor, dual position rocker switch
H	Black tank flush input hose connection
I	Tank Fill / City Fill valve
J	City Water Inlet
K	Spray port water valves, hot water enabled
L	Spray port connection (all port locations are controlled by the single set of valves located in the Off Door Side Convenience Center.)
M	Front Cap Lights power switch
N	Awning extend/retract switch(es)
O	USB power port(s) (if equipped)
P	Solar Charge Controller (if equipped) (Refer to the appropriate section in the manual)
Q	Siphon Hose used for sanitizing or winterizing
R	Pump input selector valve
S	Inverter Prep connection point (if equipped) (Refer to the appropriate section in the manual)
T	Solar Disconnect (if equipped) (Refer to the appropriate section in the manual)

Stabilizer Jack Drill Adapter (If Equipped)

This adapter (Figure 104A) may be used in either a conventional drill chuck or ¼" quick change drill and enables rapid movement of the manual scissor jacks.

Slide-out Switch (Exterior)

While the Monitor Panel (inside) has slide-out switches, these are also mounted on the outside convenience centers, either the Door Side or Off Door Side depending on which side the slide is present. It is shown in Figure 104B, and may have a circular or rectangular shape. This enables one to extend or retract the slide-out while in view of the slide-out.

Battery Disconnect Switch (Off Door Side Only)

Used to shut off all nonessential 12 Volt (12V) power that supplies RV. When the switch is activated, in the "OFF" position, the batteries are disconnected/isolated and no longer supply 12V power to the RV. **Some items will remain powered.** Exactly which items stay on depend upon your specific trailer options but may include the Refrigerator (if a 12V model,) and the charge line from your Tow Plug. When the switch is in the "ON" position, all 12V items in the RV will have power.

i	If you are plugged into shore power, your converter (in the Power Distribution Center) will still supply 12V power to the trailer but has a limited level of current it will produce. That power limit is well below what the batteries can produce.

To turn the 12V system ON and OFF, simply rotate the key (or knob) to the desired position. If a key version, as shown, the key is held by a cable to ensure it will not be lost if removed.

Awning Switch(es) (Door Side Only)

Similar to the slide-out switch, these are located on the Monitor Panel inside, but are also replicated on the outside of the trailer to enable convenient access to extend or retract the awning(s) from outside. They will only be located on the door side convenience panel as shown in Figure 105N.

120 V Outlet

A conventional electrical outlet (Figure 104D and Figure 105D) is provided to enable power for items such as a heated water supply hose or other utility applications (for example a battery charger.) This outlet will always be found in the Off Door Side, but one may also be provided on the Door Side.

COAX Input Plate

The COAX input plate may be mounted on either side of the trailer (Figure 104E and Figure 105E) and provides available connections to external television signals such as Cable TV or a Satellite dish. Depending upon the model of your trailer, it may have one or two connections. Single connection plates or ports (in the case of an externally mounted connection) will only be suitable for Cable TV connection.

UL S	The **Ultra Lite** and **SOLO** versions of the Delta trailer have several connections mounted externally at the Off Door Side pass-through storage door. The single COAX port is one such connection. Refer to **Error! Reference source not found.**.

Water Pump Switch

An external water pump switch is mounted in the Off Door Side convenience center to allow for water system operations requiring pump activation (such as winterizing.) Refer to Figure 104F. This switch is wired in parallel to the interior switch on the monitor panel. When either switch is moved, the state of the water pump activation will change. That is to say that if the pump is turned on via the inside switch, moving the outside switch up will act to turn **OFF** the pump.

12V Light

Each convenience center has a 12V light with a three-position manual switch. When in the center, the light is off. The switch can be moved to one side (marked “I”) to turn on the light. When moved to the other side, marked “II”, the light will be placed into motion-activated mode. When motion is detected, the light will illuminate, and turn off after about a minute of no detected movement. Refer to Figure 104G and Figure 105G.

Black Tank Flush Connection

Shown in Figure 104H and Figure 106H, this port is used to connect a hose to provide city water used for flushing the black waste tank. Refer to the proper section, below, on the recommended procedure to use this port.

Tank Fill / City Fill Valve

This valve (Figure 104I) determines if the water coming into the City Water Inlet (Figure 104J) is directed to the trailer's plumbing system for city water supply, or if it will feed to the fresh water tank to fill it. Move the selector to the desired operation.

City Water Inlet

This hose connection (Figure 104J) is used to connect to a city water spigot at a campground or other location to feed water directly to the trailer's plumbing, or alternatively it may be used to provide fresh water to the onboard water tank.

Mixed Temperature Spray Port(s)

Spray port(s) on late model Delta trailers feature the ability to have cold, warm, or hot water supplied to the port(s). This is controlled via the mixed temperature valve(s) shown in Figure 104K. Your trailer may have more than one spray port (Figure 104L) dependent upon floor plan.

The spray port(s) themselves use a quick-connect fitting on a supplied coiled hose to provide an outdoor spray-down capability. In order to connect the hose, push the retaining ring on the port inward while inserting the quick-connect fitting. The ring will return outward, securing the hose. Removal requires the same process, pulling out the quick connect fitting.

	WYKW: How to Hook Up Your RV Spray Port

Front Cap Lights Switch (If Equipped)

If your trailer is equipped with front cap lights, this switch is used to turn them on and off. Shown in Figure 105M.

USB Power Port(s) (If Equipped)

Late model Delta trailers may include a pair of USB power ports as shown in Figure 105O. These ports have no data connectivity but do provide a location to receive power for charging devices.

Water Pump Siphon Hose and Selector Switch

When winterizing or sanitizing the trailer, one will need to pull in antifreeze or sanitizing fluid from an external container (bottle/jug or bucket.) Use this hose (Figure 107Q) and selector switch (Figure 107R) for those operations. Please refer to the appropriate section below to accomplish this.

Connecting to City Water

When camping with access to a pressurized water source (e.g., campground etc.), you'll typically want to connect your RV to that water source.

	WYKW: Proper Water Pressure (PSI)

	WYKW: Properly Connecting Your Water Fill

To connect pressurized city water:

1. Connect your drinking water hose to the water source, turn the water on and allow the water to run for a few seconds to flush the water source hydrant and rinse out the hose, then turn the water off.
2. Connect the other end of the hose to the white City Water Inlet (Figure 104J) in the off-door side convenience center.
3. Turn the Tank Fill / City Fill valve (Figure 104I) to **City Fill/Dry Camp**.
4. Turn the source water supply on.
5. Use your faucets and water fixtures as normal.

Filling the Fresh Water Tank – Power Fill

	WYKW: Proper Water Pressure (PSI)

	WYKW: Properly Connecting Your Water Fill

Using the convenient City Fill / Tank Fill valve, it's easy to power fill your fresh water tank to prepare for dry camping (camping without access to pressurized city water.)

1. Connect your drinking water hose to the water source, turn the water on and allow the water to run for a few seconds to flush the water source hydrant and rinse out the hose, then turn the water off.
2. Connect the other end of the hose to the white City Water Inlet (Figure 104J) in the off-door side convenience center.
3. Turn the Tank Fill / City Fill valve (Figure 104I) to **Tank Fill**.
4. Turn the source water supply on. The fresh water tank will begin to fill.

	DO NOT OVERFILL. While a Fresh Tank Overfill tube does exist, it is helpful to not rely on this tube for pressure relief, only for minor overfill situations.

5. When desired level in fresh water tank is reached, turn water off at the source and disconnect the fresh water hose from the source.
6. Disconnect the fresh water hose from the fresh water inlet on the convenience center panel, drain the hose and store it for future use.

	There is no gravity fill capability for the fresh water tank. If you must fill the fresh water tank with gravity, you will need to have the water supply be above the trailer's City Water Inlet height and use a garden hose connection to let the water flow into the tank, or use an external pump.

Using the Fresh water Tank for Dry Camping

When dry camping (using your trailer without access to an external pressurized water source) you will first fill the fresh water tank using the Power Fill procedure (above.) Once water is in the tank, follow this procedure to use your water pump:

1. Turn the Tank Fill / City Fill valve (Figure 104I) to **City Fill/Dry Camp**.
2. Turn on the water pump and allow the system to pressurize.
3. Use your faucets and other water facilities as normal.

	It is normal to hear the water pump running when you are using water and for some time after all water taps are off. This is the water pump repressurizing your plumbing system. If the water pump continues to run when not using water, it could mean any of the following: • You may be out of water in your fresh water tank. • You may have a loose plumbing connection between the tank and the pump input where air is being admitted to the plumbing system and not allowing the pump to prime. • You may have a plumbing leak somewhere or damage to the pump diaphram that is causing your plumbing system to lose pressure, thereby making the pump run to repressurize the system. This will usually also be evidenced by having your water pump occasionally run for a second or two even if no faucet has been turned on.

Winterizing

When your trailer will not be used during times when temperatures drop below freezing, it's important to remove all water from the system, and fill with antifreeze solution to ensure no fixtures, fittings, or lines fail.

	Using antifreeze fluid after blowing out with air: It's often asked if this is needed. The answer is YES. Using an air blow technique alone can result in low points in the system retaining some pockets of water, and if the system has a tankless water heater it is very important to assure that all water is out of the system.

The procedure written below is covered in the following video.

	Winterizing Your Delta RV

	WYKW: Winterizing Quick Tip – Pulling Antifreeze In

In order to properly winterize your trailer, follow this procedure:

1. Gather the required components:
    a. Air compressor with tire inflation chuck.
    b. A blow out plug (has a tire stem for air input, and male garden hose threads.)
    c. A few gallons of RV safe antifreeze (pink fluid.)
2. Remove the water from the lines. Start by opening all water sources.
    a. Open the Low Point Drains.
    b. Open the Fresh Water Drain.
    c. Go inside and open all inside faucets. This includes shower, sinks, and toilet. This will allow the vacuum that's developed in the line to release and drain the water out of the low point drains.
3. Place your blow out plug into the City Water inlet.
4. Connect your air compressor with tire inflation chuck to the blow out plug.

⚠CAUTION

MAKE SURE THE AIR COMPRESSOR IS SET FOR NO MORE THAN 40 PSI.

5. Now activate the tire inflation and blow out the lines. While doing this, remember the spray port(s) that your trailer has outside- be sure to connect a hose to each port and spray with both the hot and cold turned on until you see no more water coming out.
6. Once all the water has been blown out (to the best of the system's ability) disconnect the air hose and remove the blow out plug.
7. Close all the inside and outside water valves that were opened earlier in step 2.
8. Open and remove the felt covered panel in the middle of the rear wall of the pass-through storage, between the two convenience centers. Behind the panel is your water pump with a connected and capped siphon hose, with a quarter-turn selection valve.
9. Uncoil the hose and remove the cap. Rotate the quarter-turn directional valve to point in the direction of the siphon hose free end. Place the end of the hose into a bottle of antifreeze, with the antifreeze placed in the passthrough.
10. Turn the Tank Fill / City Fill valve (Figure 104I) to **City Fill/Dry Camp**.

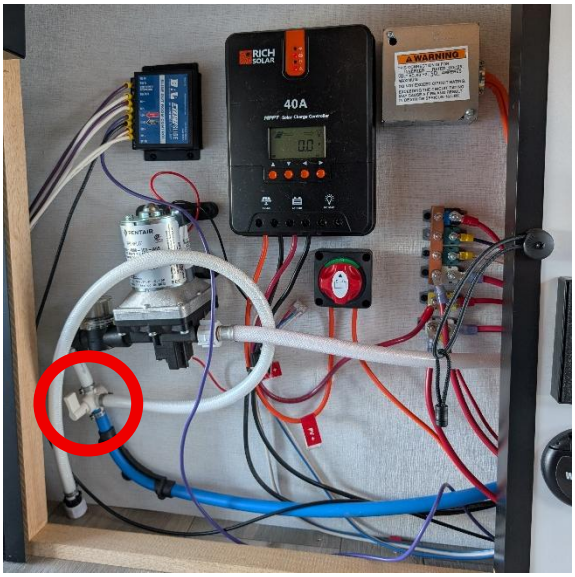


Figure 108. Water pump with connected siphone hose and quarter-turn directional valve indicated. As pictured, the pump will pull from the fresh water tank.

11. Turn on the water pump. It will begin to pull in antifreeze and pressurize the system.
12. While performing the next steps, be sure to check the fluid level in the bottle often and swap out bottles as they empty.
13. Now, starting inside the coach, open each water valve one at a time (hot and cold where appropriate) and let the water flow until you see antifreeze coming through the line. You'll want to make sure to work with all sinks, the shower, and the toilet.
14. Continue to open valves, one at a time, outside as well. All spray ports, and the Low Point Drains. **You will not need to open the Fresh Water Drain, as this has already been drained and is not connected to the pressurized water system.**
15. When all lines have been filled with antifreeze, remove the siphon hose from the bottle, re-cap it, and rotate the directional valve back to pulling from the fresh water tank. Close up the panel.
16. Be sure to pour a bit of antifreeze into each drain to protect the p-traps that have water in them.

Sanitize the Fresh Water System with the Pump

It is recommended to sanitize the fresh water system annually to assure a clean and healthy water system. The procedure for doing so is very similar to the winterization process in that the fluid will be siphoned from a bucket using the water pump input. There are several variations of sanitization processes and directions, but the following procedure will cover a basic method that can be adapted if desired.

	There is no method to fill the fresh water tank using the water pump (no siphon fill capability.) If you wish to sanitize the fresh water tank, you will need to source an inline hose mixing device which connects to your city water hose, and allows the incoming water to mix with the fluid to then continue to your city water fill inlet.

	For sanitizing, a solution of 1 gallon of water and one quarter cup of household bleach should be prepared for every fifteen gallons of holding tank capacity. A commercial sanitizing product may also be used.

⚠CAUTION

THE FOLLOWING PROCEDURE WILL REQUIRE A SIGNIFICANT AMOUNT OF WATER FLOW THROUGH YOUR TRAILER'S PLUMBING, MORE THAN FILLING YOUR WASTE TANK(S.) MAKE SURE YOU HAVE A USABLE SEWER CONNECTION TO DUMP YOUR TANKS AS NEEDED THROUGHOUT THE PROCEDURE.

In order to sanitize your fresh water system:

1. Prepare a bucket of the desired sanitizing solution in the appropriate concentration. Place it into the pass-through storage area, protecting the floor against accidental spills.

2. Open and remove the felt covered panel in the middle of the rear wall of the pass-through storage, between the two convenience centers. Behind the panel is your water pump with a connected and capped siphon hose, with a quarter-turn selection valve.
3. Uncoil the hose and remove the cap. Rotate the quarter-turn directional valve to point in the direction of the siphon hose free end. Place the end of the hose into the desired sanitizing solution. Refer to Figure 108.
4. Turn the Tank Fill / City Fill valve (Figure 104I) to **City Fill/Dry Camp**.
5. Turn on the water pump. It will begin to pull in the solution and pressurize the system.
6. Now, starting inside the coach, open each water valve one at a time (hot and cold where appropriate) and let the water flow until you see antifreeze coming through the line. You'll want to make sure to work with all sinks, the shower, and the toilet. The goal is to run enough solution to fill the lines completely.
7. Outside the coach, make sure to also run fluid through all spray ports and even open up the Low Point Drains to fill those lines with solution.
8. Once all lines have been filled with solution, remove the siphon hose from the solution and re-cap it. Replace the hose behind the panel, and return the quarter turn directional valve to the other position to enable it to pull from the fresh water tank.
9. Let the sanitizing solution sit in the system (providing its cleaning action) for the prescribed period of time.
10. Once you are ready to rinse the system, connect the trailer to the City Water supply using the appropriate method. It is not recommended to rinse the full system using the water pump and fresh water tank as the length of time needed to run will provide a significant load on the pump.
11. With city water connected, run each valve for 3-5 minutes to rinse out the input lines.

Black Tank Flush

When dumping the contents of the Black holding tank, it is recommended to also flush the tank with water to remove as much of the contents as possible. The hose connection shown in Figure 104H and Figure 106H is plumbed to the black tank rinse sprayer, mounted in the tank.

Here is the recommended procedure to dump and rinse your black tank:

1. Connect a flexible sewer hose to the 4" outlet of the unit.
2. Open the black tank dump valve to begin letting it drain.
3. Connect a hose to the Black Tank Flush connection at the convenience center. Turn on the water to enable tank flushing.
4. Continue to let the tank flush until the water runs clear out.
5. Turn off the water and disconnect the flushing hose from the centralized docking station.

⚠CAUTION

IT IS ADVISED TO ENSURE THE BLACK TANK FLUSH HOSE IS NOT LEFT CONNECTED TO THE TRAILER AT THE CENTRALIZED DOCKING STATION. WHILE NOT COMMON, THERE IS A RISK OF OTHER PEOPLE AT A CAMPGROUND ACCIDENTALLY TURNING ON THE WRONG HOSE AND FLOODING AN RV WITH SUCH A SETUP.

Fresh Water System

The fresh water system is made up of two inputs, a portable fresh water holding tank with a pressure demand 12 volt water pump and a city water connection that provides water to the system and bypasses the fresh water holding tank and the water pump to supply your fresh water from an already pressurized source. All tanks (fresh and waste) **may be** equipped with electric heating pads that are controlled in the central monitor panel.

The fresh water system consists of:

- **A fresh water holding tank** which is filled at the convenience center (covered above). The tank is emptied/drained at a low point drain on the exterior beneath the fresh water holding tank, see Figure 109. There is a large, white, manual pull dump valve to allow for rapid draining if putting the rv into storage, or if draining water to enable travel. Always be sure to drain your freshwater tank between uses, and during storage in the winter, this will prevent any stagnation that can cause water to smell and/or taste bad. This tank is also equipped with a safety overflow drain. This drain is connected to the top of the tank, and will come straight out of the underbelly of the RV beneath the fresh water tank. It is usually blue, ½" in diameter, and has an open end. This drain should never be plugged or obstructed. Keeping this line open for safety overflow will prevent damage that can occur from overfilling your fresh water tank.

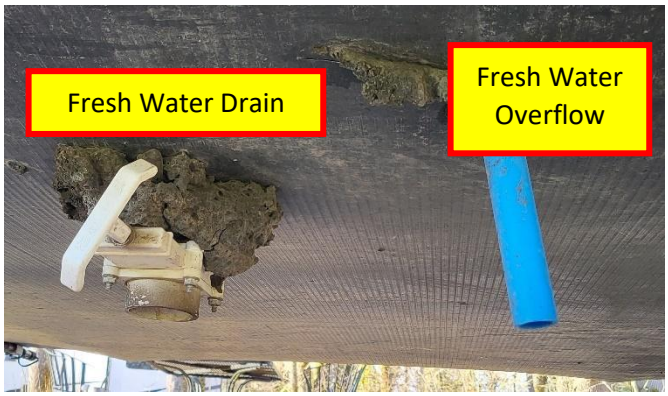


Figure 109. Fresh water drain and overflow.

	WYKW: Can I Travel With Full Tanks?

	The fresh water tank does not have a gravity fill capability.

- **A water pump connected to the fresh water tank**. When not hooked up to an external water supply, the RVs fresh water tank is utilized. The water is pumped from the fresh water tank by the water pump. When the power is switched on, the pump works automatically whenever a faucet is on. The water pump is self-priming and when the system pressure drops below 55psi, the water pump will energize and re-pressurize the system to that 55psi.

	If the water pump is on, and no faucets are running, the pump should not run after it pressurizes the plumbing lines. If your pump runs for short periods of time (anywhere from several seconds between runs up to a couple of hours between runs) then you either have a leak or there is a problem with the inner workings of the pump.

- **A city water system connection**, which is a water hose connected to the convenience center (covered above). When connected and turned on, the system will automatically pressurize. It is always a good idea to bleed the system by turning on a hot water faucet until the water runs smoothly and there is no air present.

⚠CAUTION

HIGH WATER PRESSURE CAN DAMAGE YOUR WATER SYSTEM. DUE TO PRESSURE INCONSISTENCIES IN POTENTIAL WATER SOURCES, AN RV WATER PRESSURE REGULATOR MUST BE USED BETWEEN THE HOSE AND THE CONNECTION POINT TO ENSURE AN ALWAYS CONSISTENT WATER PRESSURE COMING INTO THE RV. A SAFE SETTING IS 45 PSI.

When draining your fresh water system (required for winterization, covered in the plumbing portion of this manual, when the RV is not being used and/or is being stored in the cold or winter months), all tanks should be emptied. This will prevent damage from freezing. Every Alliance RV has **low point drains** as well as a **fresh water drain (and overflow)** in which the fresh water system can be evacuated. These low point drains will be located on the off-door side of the RV near the water heater directly beneath the RV and coming out of the underbelly. These are shut off valves that can be opened and closed with a thumb turn, see Figure 110.

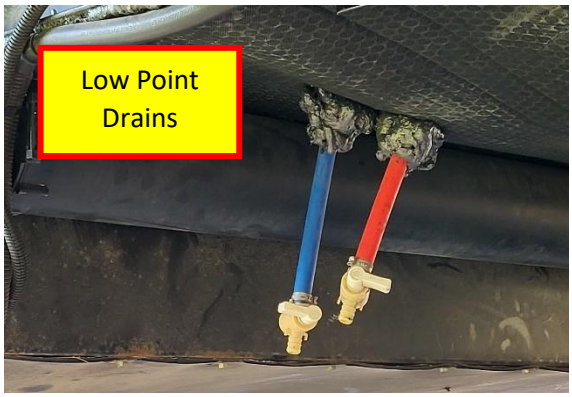


Figure 110. Water system low point drains.

	The Fresh Water Drain & Overflow, as well as the Low Point Drains may be located in slightly different locations depending upon the model of trailer but will always look similar.

Waste Water System

	WYKW: Best Practices for Holding Tanks

The waste system contains holding tanks. The quantity of tanks along with location is dictated by the floor plan of the RV. Some models are equipped with electric heating pads that can be controlled in the monitor panel.

- **Black tanks** hold toilet waste. There are some things to note with black tanks. Black tanks typically will need a digester/deodorant (talk with your RV dealer for recommendations). Black tanks require RV toilet paper, or other toilet paper quick to break down. RV toilet paper breaks down quicker and is specifically designed for this type of waste water system. You'll find that this toilet paper breaks down more quickly and allows the waste water to flow more easily during the dumping process. A black tank's monitoring electronics can be adversely affected by debris handing up on the reading probes. For this case, we have installed a tank flush for your black tank(s) to assist in keeping the probe indicators clean so that you have accurate readings on the tank's levels. It is advised to always keep the black tank(s) closed until full. This allows for solid waste to flow out of the tank along with liquid. When left open, the liquid will run out, leaving the solid to build into a very difficult to remove pile.

⚠CAUTION

DO NOT USE THE BLACK TANK FLUSH SYSTEM WITHOUT HAVING THE BLACK TANK VALVES OPEN. IF CLOSED, THE TANK COULD OVERFILL.

- **Gray tanks** hold your sink, shower, and laundry waste water. Gray tanks require less maintenance due to the difference in waste produce making its way into the tank. It may be ideal to dump black tanks first and then your gray tanks, the gray tank running thru the main dump will help in keep the pipeline cleaner.

Plumbing System Throughout the Trailer

Your trailer is plumbed with ½" PEX B piping. Clamp-style fittings are used at all locations, and all fixtures have a shutoff valve to ensure if there are problems, you can turn off the water to that fixture without disabling your entire water system. These valves are usually located very close to the fixture, for example under a sink below the faucet. However, for some fixtures they may be in the storage space below the trailer floor (in the case of a shower or washer supply.)

	WYKW: Plumbing Shutoff Valves

The drains for sinks and showers may use conventional p-traps, or they may use **waterless p-traps** due to space or other constraints.

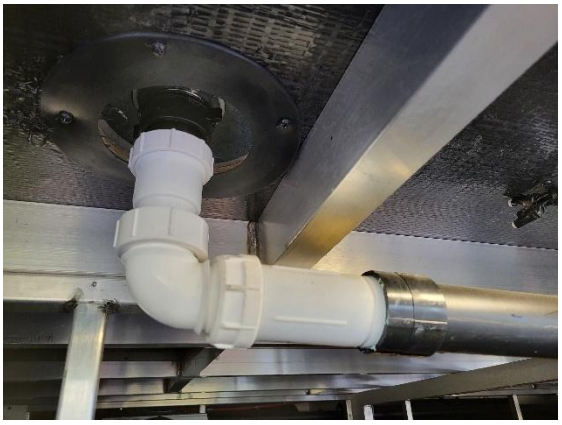


Figure 111. Waterless p-trap under a shower location.

	WYKW: Waterless P-Traps

Another item that may be used in the plumbing system is an **air admittance valve**. The air admittance valve is a device designed to allow air to enter the drainage system to balance the pressure. These can sometimes fail and need replacement. They can be found at local big-box hardware stores.



Figure 112. Air admittance valve.

	If you should notice foul smells coming from drains with a waterless p-trap, it may need replacement. Sometimes the “duck bill” can be left open to permit odors to backflow into the RV space. These are typically only available at RV parts supply locations and online.

Tankless Water Heater (General Information)

For those seeking modern convenience and efficiency in their recreational vehicles, tankless water heaters have emerged as a popular upgrade over traditional tanked models. These systems, often called “on-demand” water heaters, deliver hot water exactly when you need it—without the limitations of a storage tank. Unlike conventional tank-style heaters that preheat and store a finite quantity of water, tankless units activate the moment you turn on the faucet or shower. Water passes through a heat exchanger and exits at your desired temperature, providing a continuous stream of hot water for as long as the system is running and fuel is available.

There are a couple of key benefits to tankless water heaters:

- Endless hot water: The most celebrated advantage is the virtually unlimited supply of hot water. You can take longer showers, wash dishes, or do laundry without worrying about running out of hot water midway.
- Energy Savings: Because the unit heats water only when you need it, there's no energy wasted maintaining a tank of hot water. This on-demand operation conserves propane.

	WYKW: On Demand Water Heater - Turn it Up!

Helpful Tips for Using RV Tankless Water Heaters

- Understand the unique operation: Tankless heaters often differ in operation from traditional water heaters. Always read the owner's manual and become familiar with the startup sequence and control panel functions before your first use.
- **Mind the flow rate:** These systems require a minimum flow rate to activate. If you open a faucet only slightly, you may notice the heater does not turn on. Use only the HOT faucet and open it to a moderate flow to ensure consistent heating.
- Temperature fluctuations: Tankless systems may sometimes deliver fluctuating temperatures, especially if water pressure varies. To help keep temperatures consistent, minimize simultaneous use of multiple fixtures.
- Winterization: Before cold weather sets in, follow manufacturer guidelines for winterizing your tankless heater. This manual does cover winterization concerns for your included model.
- Fuel considerations: Your heater uses propane. Remember that extended use will draw down your supply faster. Plan to carry extra propane if you anticipate heavy hot water use.
- Electrical requirements: All models require consistent 12V DC power for the control panel. Monitor your batteries to avoid unexpected shutdowns.
- Troubleshooting: Familiarize yourself with basic troubleshooting—such as checking for error codes, resetting the unit, or ensuring adequate water and gas supply—to quickly resolve common issues while on the road.

	WYKW: No Hot Water Quick Fix (On Demand or Tank Water Heater)

Furrion Tankless Water Heater (If Equipped)

Your Delta RV may have the Furrion Tankless Water Heater. This unit provides a source of rapid hot water via a propane burner system. The unit will start when hot water is requested **and** the control panel, shown below, is turned ON. The output capacity of 2.4 gallons per minute (gpm) and a heating capacity of 60,000 BTUs translates to continual hot water availability. The system operates on propane with 12V DC electricity controls. The controller is mounted in the bathroom.



Figure 113. Furrion water heater components. Exterior cover plate (left) and the interior control (right.)

Control Panel

Unlike a traditional tank water heater, the tankless water heater uses a remote control panel to set the expected temperature and help activate the water heater. The control panel must be turned on to enable hot water to flow once a faucet is opened and the burner has started.

	It may take upwards of 30 seconds to feel hot water depending upon the location of the faucet being used. When activated, the hot water heater must start up, and heat the initial water, then travel through the pipes where it will loose some heat initially. For more information, see the Sequence of Operation section inside Troubleshooting, below.

Safe Operation Considerations

⚠CAUTION

NEVER LET INFANTS, CHILDREN, OR ELDERLY ADJUST THE WATER TEMPERATURE OR BE LEFT UNSUPERVISED WHEN USING HOT WATER. FAILURE TO FOLLOW INSTRUCTION MAY LEAD TO SERIOUS INJURY.

Consider the following points for safe use of the appliance:

Install an RV water regulator to the inlet of the coach, and operate between (35-70PSI).

The factory default water temperature setting is 115°F (46°C).

There may be a variation between the temperature delivered from the appliance and the temperature at the faucet due to water conditions between seasons like hot summer or the length of pipe from the appliance.

Always check the water temperature, in reference to Table 24, by the display (step 3 & 4) and hand touch before bathing or with other hot water uses.

Table 24. Time to receive scalding burns at various temperatures.

Temperature °F (°C)	Time before skin becomes scalded
155 (68)	1 second
148 (64)	2 seconds
140 (60)	5 seconds
133 (56)	15 seconds
127 (52)	1 minute
124 (51)	3 minutes
120 (48)	5 minutes
100 (37)	Safe Bathing Temperature
Source: Moritz, A.R. / Herriques, F.C.: Studies of thermal injuries: the relative importance of time and surface temperature in causation of cutaneous burns A. J. Pathol 1947; 23: 695 - 720.	

Operation

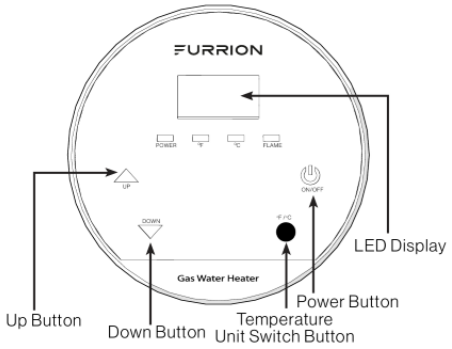


Figure 114. Furrion Control Panel interface.

1. On the control panel, turn the heater ON via the power button. The Furrion logo will illuminate, and the programmed water temperature will display. **This is the temperature that the water will leave the water heater.**
2. For best results, open hot water faucet fully until hot water arrives, then reduce the temperature on the control until a comfortable temperature is achived. This may take a couple of minutes, as the tubing heats with the hot flowing water. Use the Up and Down buttons to adjust the temperature. The temperature can be adjusted from 95°F (35°C) to 124°F (51°C.) This is termed **single point use**, where the temperature is set directly on the control, and no cold water is mixed at the point of use.
3. Alternatively, one may set the temperature a bit higher than desired, and then once hot water is at the point of use, cold water is added to reduce the final temperature. This is the standard method of residential hot water use, and it is termed **point of use mixing**.

	• If too much cold water is mixed, the flow of the hot water will be too low and the system will turn off. • If the burner does not light, the system will automatically attempt two more tries for ignition before lock-out.

ℹ	The water heater operates based off of hot water demand. **There must be a hot water faucet open to a minimum of 0.32 GPM for the unit to operate.**

4. You may continue to use faucet(s) as desired. After a period of time with no hot water flow, the controller will turn off.

Water Control Valve

The water heater is equipped with a water flow control valve, set from the factory at MAX flow. The valve will reduce the water flow and capacity through the water heater to improve water heating performance. Under extreme conditions, it may be necessary to adjust the valve accordingly:

- When cold water inlet conditions are approximately less than 45°F (7°C).
- Higher water inlet pressures >65 PSI.

To reduce water flow, rotate knob clockwise. Do not force past a solid stop. To increase water flow, rotate knob counter-clockwise. Do not force past a solid stop.

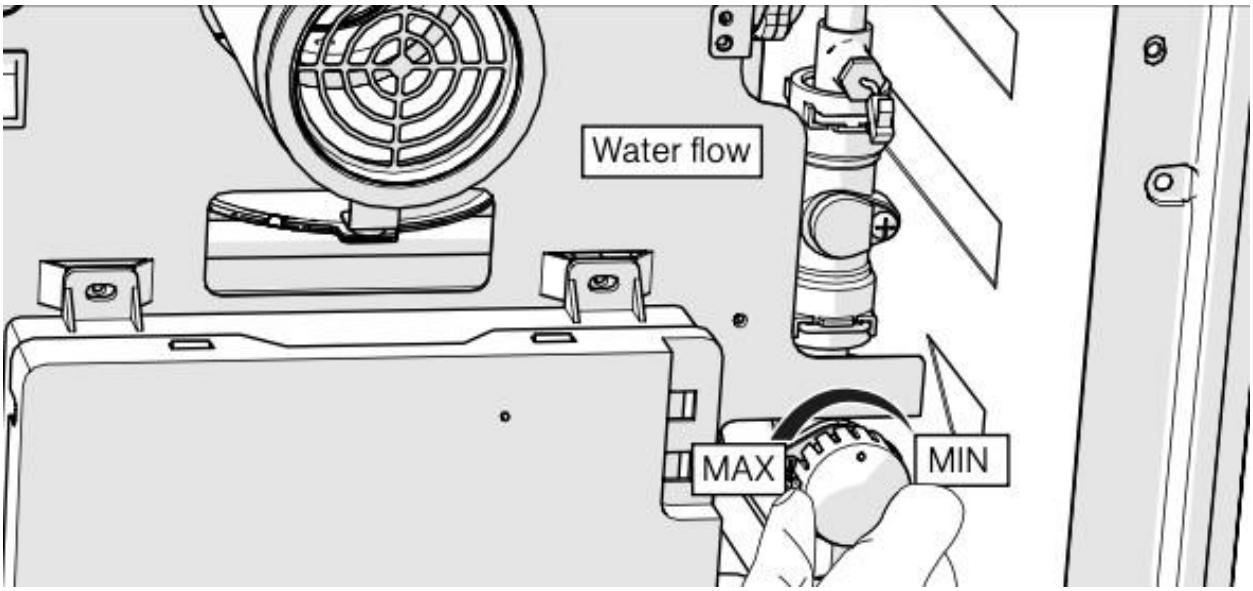


Figure 115. Using the Water Control Valve on the external portion of the water heater.

High Altitude Use

This appliance can be used at high altitude and has been tested to 4500ft. For prolonged use at higher altitudes please contact support@furrion.com.

Antifreeze Function

The model that Alliance uses, FWH09AFA, has a special protective function to allow the system to be used in freezing conditions.

- The appliance can be used in freezing conditions, by operating a burner sequence program to keep the water liquid. The function operates automatically when the appliance water falls below 43°F (6°C), and it will automatically shut off when it is warmed.
- It will likely be necessary to manually adjust the water control valve to the min setting when using the water heater in freezing conditions.
- If the RV is to be stored, with no use, the water heater should be winterized appropriately per the instructions on page 14 "Winterizing Water Heater".
- The freeze protection system only protects the water heater appliance from freezing and will not prevent freezing of the water system in the coach. Ensure the coach is properly insulated and protected from freezing conditions.
- It is normal for the water heater to operate the burner system at different frequencies and duration for this mode.

	The antifreeze function is in-operable if any of the following are turned off: • Water heater appliance • 12V+ house electric • Liquid Propane (LP) Gas supply

Furrion Tankless Water Heater Troubleshooting

The following section provides information on error codes that may be displayed as well as general system faults and how to address them.

Error Codes

If the appliance malfunctions, an error code will display on the wall controller. Write down the error code, then try resolving by stopping and restarting the water flow, or resetting the appliance as follows:

- Switch the power switch (Figure 116, below) in front of the water heater to the “OFF” position.
- Wait 5 seconds.
- Switch the appliance on again.

Continue to use the appliance normally. If error fault codes continue to display, review the following table for potential causes.

Table 25 Error codes on the Furrion tankless water heater.

ERROR CODE	MEANING	ACTION
E0: Water outlet temperature	System Fault.	Contact Furrion.
E1: Flame sense during ignition	Insufficient Fuel Supply to start operation	Confirm all gas valves are open.
		Confirm adequate fuel in tanks.
	Low gas inlet pressure.	Check regulator for operation, replace if needed.

ERROR CODE	MEANING	ACTION
	System Fault.	Contact Furrion.
E2: Detected fake flame signal	System Fault.	Contact Furrion.
E3: Over temperature mechanical sensor faulty	System Fault.	When E3 error displays, let cold water flow 10-20 sec then restart the appliance. If E3 still displays, contact Furrion.
E4: Water inlet temperature	System Fault.	Contact Furrion.
E5: Air pressure	Exhaust Blockage.	Remove obstruction, then restart the appliance.
	High winds blowing on exhaust.	Move or re-orient coach so exhaust is not facing high winds, then restart the appliance.
	System Fault.	Contact Furrion.
E6: Temperature surge	Cold water surge in system.	Reduce toilet flushes and amount of cold water faucets opened during operation.
	Cold water mix ratio.	Reduce temperature setting to reduce cold water mix ratio.
		Check for shower head and outdoor faucet valves leaking cold water to hot side.
	Insufficient water supply.	Confirm water tank is full or city water valve fully open.
		Air in water lines - continue to run all faucets, Hot and Cold, open until air purged.
	Insufficient water flow.	Filter plugged - review maintenance section of this manual.
		Low flow faucets - check that the minium flow is 0.32 gallons per minute (gpm.)
	System Fault.	Contact Furrion.
E7: Solenoid valve fault	System Fault.	Contact Furrion.

General Troubleshooting

- If you encounter a problem with the appliance as the below table states, first try the suggested solutions. If problems persist, please call the service or the dealer.

- Don’t repair the appliance by yourself, Repairs must be performed by a certified service technician.

Table 26. Troubleshooting the Furrion tankless water heater.

WHAT IS HAPPENING?	WHY?	WHAT SHOULD BE DONE?
Hot water takes longer to reach temperature	Cold water mixing into hot water side	Check all valves, inside and outside, to ensure they are closed, check shower head valve to make sure it is not partially closed.
	Higher Elevation	This is normal due to lesser oxygen levels - Contact Furrion.
	Incoming water temperature is abnormally low	See **Maintennce: Water Control Valve** for adjustment.
Low hot water flow at the faucet	Lime scale occurs due to precipitation of "hard " water.	Decalcify your water heater. See the Maintenance section.
No hot water at the tap	Gas supply is turned off or interrupted.	Check and/or turn on gas supply.
	Gas tank is empty.	Refill/replace the gas tank.
	The appliance is switched off.	Switch on the appliance according to instructions (at the control panel.)
	Fresh water supply is turned off.	Open the fresh water supply.
	Power supply to the appliance is switched off.	Switch on power supply to the appliance.
	Defect in the appliance.	Refer to error codes list.
Hot water temperature too low.	Gas flow to the appliance is too low (gas inlet pressure 11in. wc.)	* Consult vehicle documentation to determine if gas supply is capable of providing the necessary volume of gas for the appliance. * Contact a service technician to verify a suitable gas installation.
	Volume flow of hot water is too high and/ or the temperature of cold water reaching the appliance is too low.	* Turn down hot water at the tap or in the shower in order to reduce volume flow or mix more cold water in faucet. * Potentially retrofit a volume flow throttle into the water system. This must be performed only by a certified service technician.
	Too much lime scale in the appliance.	Decalcify your water heater. See the Maintenance section.

WHAT IS HAPPENING?	WHY?	WHAT SHOULD BE DONE?
	Cold water mixing into Hot water side	Check all valves, inside and outside, to ensure they are closed. Check shower head valve to make sure it is not partially closed.
Water escaping at pressure safety valve.	Water pressure in water system too high.	* Adjust the water pump pressure to a maximum of 65PSI. * If the water system is connected to a central water supply higher than 65PSI (rural or urban connection), a water pressure reducer must be used. * Install a water pressure regulator at the fresh water supply.
	Lime or dirt under the pressure relief valve seat.	* Allow the appliance to cool then slowly operate the pressure relief valve by rotating its valve handle (knob), to flush the water system and attempt to force dirt or foreign matter out of the pressure relief valve seat. * Replace pressure relief valve. This must be performed only by a certified service technician.
Water leaking at the water inlet filter.	Lime or dirt under the O-ring seats.	Clean the O-rings and their corresponding sealing surfaces with clean water.
Power status LED is off although an operating mode was selected.	Power supply to the appliance is switched off.	Switch on power supply to the appliance.
	Blown fuse.	Switch the standard 125V/10A fuse. Contact Furrion for service.
Water heater stops working often and water is found on the drainage tray.	Unit is overheating, and pressure relief valve discharged periodically.	Contact Furrion.

Furrion Tankless Water Heater Maintenance

This section details several procedures that one may need to execute periodically to ensure the continued reliable operation of the water heater. Please refer to the Maintenance Schedule to ensure when each procedure should be executed.

⚠WARNING

- **NEVER PERFORM WORK WHILE THE WATER HEATER IS OPERATING.**
- **NEVER PERFORM WORK WITHOUT TURNING THE ELECTRICAL AND LP GAS SUPPLY OFF.**
- **NEVER PERFORM WORK WHILE THE APPLIANCE IS HOT.**
- **NEVER ACTUATE THE PRESSURE RELIEF VALVE AS LONG AS THE APPLIANCE IS STILL HOT.**
- **NEVER ACTUATE THE DRAIN PLUG AS LONG AS THE APPLIANCE IS UNDER WATER PRESSURE AND/OR IS STILL HOT.**

⚠CAUTION

ALWAYS WEAR PROTECTIVE GEAR SUCH AS GLOVES, EYEWEAR, AND CLOTHING TO AVOID INJURIES DURING INSTALLATION AND SERVICING OF THE PRODUCT.

Storage and Transit

Anytime the RV is not intended to be used, it is considered to be in storage or transit. To prepare the water heater, follow these steps:

1. Turn off gas supply.
2. Turn off the main-switch located behind the access door of the water heater unit (Figure 116.)

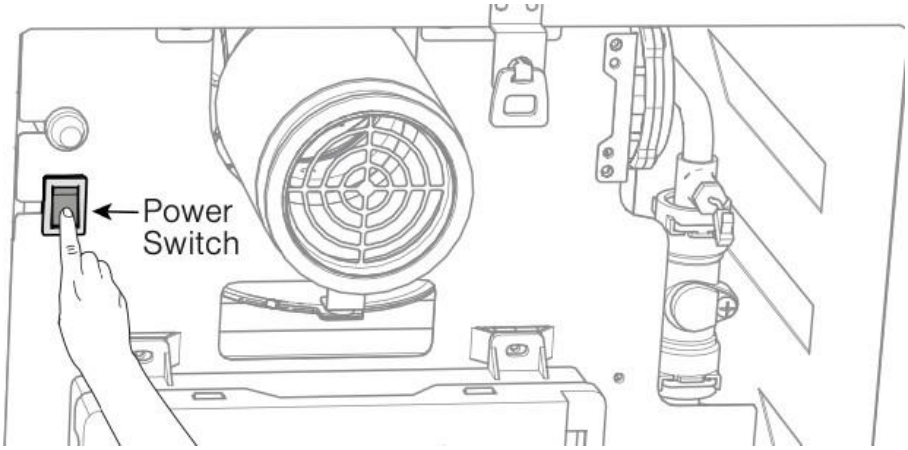


Figure 116. Water heater external (main) power switch. The cover panel has been removed.

3. Drain water out of the system and water heater by removing the filter cover and drain plug (Figure 117.)

If freezing conditions could occur, then winterize according to "Winterizing Water Heater."

Winterizing the Water Heater

⚠CAUTION

IN FROST CONDITIONS, AMBIENT TEMPERATURES BELOW 39°F (4°C) THERE IS A RISK THAT WATER IN PIPES, FAUCETS, AND APPLIANCE COULD FREEZE. THIS CAN CAUSE CONSIDERABLE DAMAGE.

Follow the general instructions provided for winterizing your water system. Supplement the following important water heater instructions when completing any winterizing steps:

Compressed Air Method:

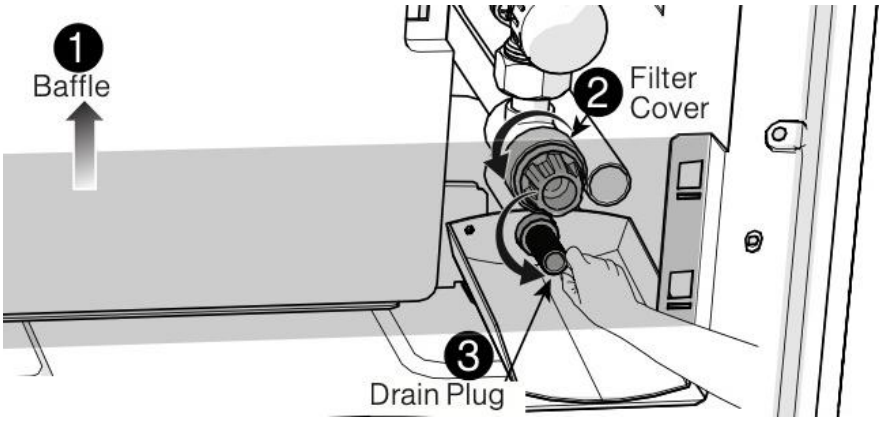


Figure 117. Location of the Baffle (1), Filter Cover (2) and Drain Plug (3) in the lower right corner of the water heater, as seen when the cover panel is removed.

- DO NOT exceed 50PSI in the water heater when blowing out the system.
- While completing the blow out process for the entire water system, take time to isolate the water heater by closing all drain plugs and faucets and only open the water heater drain plug. This ensures maximum pressure and flow is isolated through the water heater for complete evacuation.

Anti-freeze Method:

- Use a non-toxic antifreeze recommended by the RV coach manufacturer.
- Anti-freeze can be used directly in the water heater, plan for an additional 1L to fill the system.
- **Optional:** A bypass valve can be installed/used to bypass filling the water heater with antifreeze. The water heater MUST be evacuated with compressed air (see steps above) before bypassing.

Next Season:

Thoroughly flush the water heater and system with clean drinking water through the hot and cold side before using. Drain water several times out of the water heater drain plug. It is recommended to sanitize the water system (see appropriate section.)

Routine Inspection

Routine inspection is critical for maintaining proper operation of your appliance. As per the maintenance schedule, review the following items:

1. Inspect the gas system and installation every year by qualified personnel.
2. Inspect for cracks, separation, peeling of seals to the RV wall. Remove and re-seal as necessary between the side wall and the door of the water heater and ensure that the unit is solidly mounted to the vehicle.
3. Verify that the air inlet openings (louvers) are completely open and clear of any debris including mud, leaves, twigs, insects, etc... Remove all obstructions to allow full air flow.
4. Before actively using the vehicle, verify that the exhaust tube and screen are completely clear of obstructions including: mud, leaves, twigs, insects, nest, etc. Clean by gently breaking up and using a vacuum to clear it. Use only water and apply gently from a spray bottle, NEVER spray directly with high pressure. Run the appliance to dry any moisture and blow out loose debris. **The use of any after-market protective screen is prohibited and will void the warranty.**
5. Before actively using the vehicle, open the door and verify that no debris or extraneous combustible materials are present anywhere (especially in the area of the burner and the gas controls). Remove any item present and wipe clean the bottom of the housing.
6. Inspect the interior surface of the housing for any cracks or corroded areas that could allow penetration of gases into or out of the interior of the vehicle. Check especially around the hot water, cold water, gas and electrical connections. NOTE: If damages found, please contact a technician to repair or contact Furrion customer service.
7. Check that all wire connections are firmly in place and there are no signs of chafing or cracks on the insulation. Verify that the spark ignition cable between the Control Board and the igniter is securely in place and not shorted to any metal component.
8. Inspect the pressure safety valve to ensure it has not been leaking (no water residue). See "Pressure Safety Valve Maintenance" for further inspection. (Figure 118.)

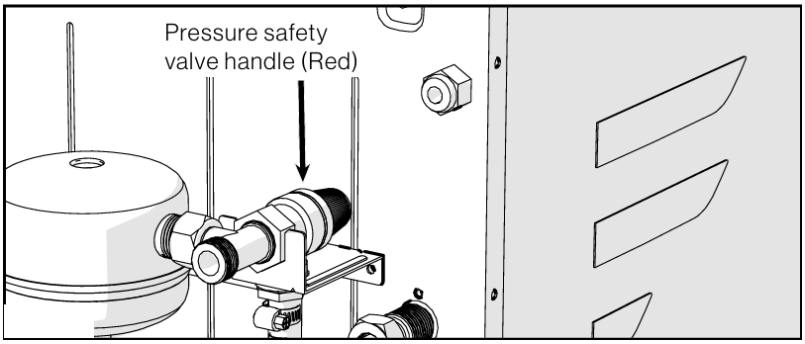


Figure 118. Locating the Pressure Safety Valve - which is on the back panel of the water heater, opposite the exterior door, inside the trailer.

9. Inspect/clean/replace water inlet filter as necessary, see "Filter Cleaning" section.

10. Turn on the power to the water heater and open a hot water faucet to inspect the flame of the burner. The flame should be of the normal bluish appearance that indicates proper combustion. This can be accomplished by removing the water heater door and baffle (Figure 117 and Figure 119) to observe the flames by looking at the burner under the edge of the heat exchanger.

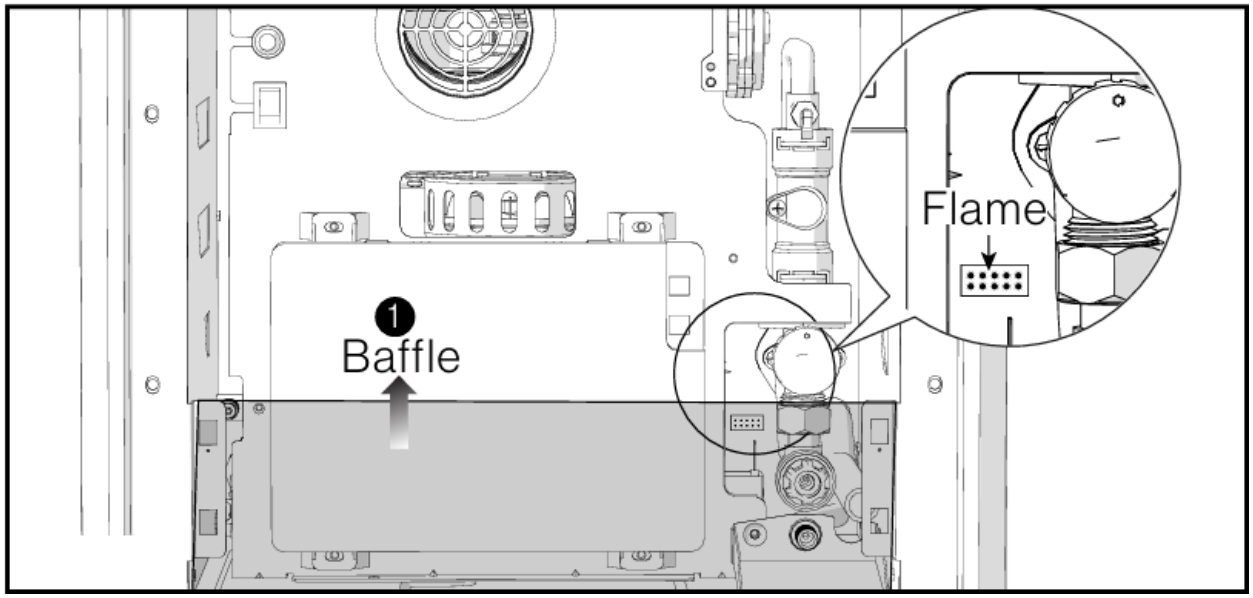


Figure 119. Location of the flame to inspect as well as the baffle.

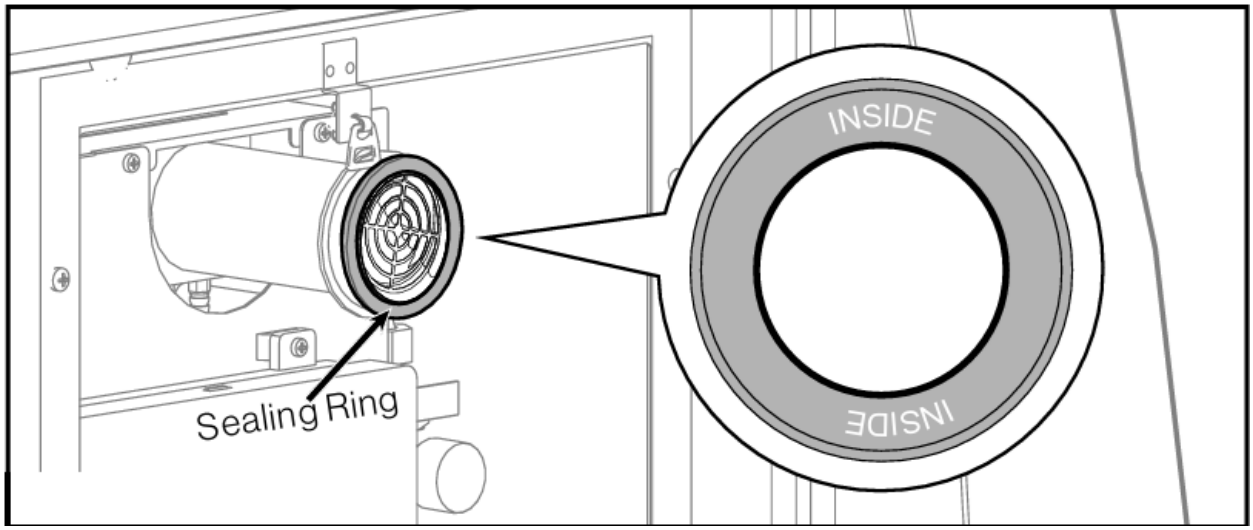


Figure 120. Location of the Sealing Ring on the Chimney.

11. A sealing ring is assembled on the chimney. Inspect to make sure the seal does not have any cracks or breaks, and that it is in good condition. Contact Furrion for replacement. **NOTE:** When installing the seal, make sure the words "INSIDE" are facing inward.

Filter Cleaning

There is a filter screen on the Water Heater inlet water line connection. The filter screen needs to be cleaned periodically to prevent blockages from forming. Follow below steps below to clean the filter (refer to Figure 117.)

1. Open the door of the Water Heater, remove the baffle.
2. Unscrew the filter cover by hand or a proper tool counterclockwise.
3. Clean the screen filter by flushing any debris accumulated.

Pressure Safety Valve Maintenance

⚠CAUTION

- **NEVER ACTUATE THE PRESSURE RELIEF VALVE WHILE THE APPLIANCE IS IN OPERATION.**
- **NEVER TAMPER WITH THE PRESSURE RELIEF VALVE.**

The unit is equipped with a water pressure safety valve. The pressure safety valve needs to operate once each year to ensure this safety device is effective. Refer to Figure 118 for location.

The pressure relief valve is a safety component and must not be removed for any reason other than replacement.

ℹ	The pressure relief valve must be replaced by a certified ser vice technician if defective

Tampering with the pressure relief valve will void the warranty.

1. On the back of the water heater, rotate the pressure safety valve handle (Red) about 3~5 times counterclockwise.
2. Check the drain hose for water (Figure 121.) Water in the drain hose indicates the pressure safety valve is working properly.

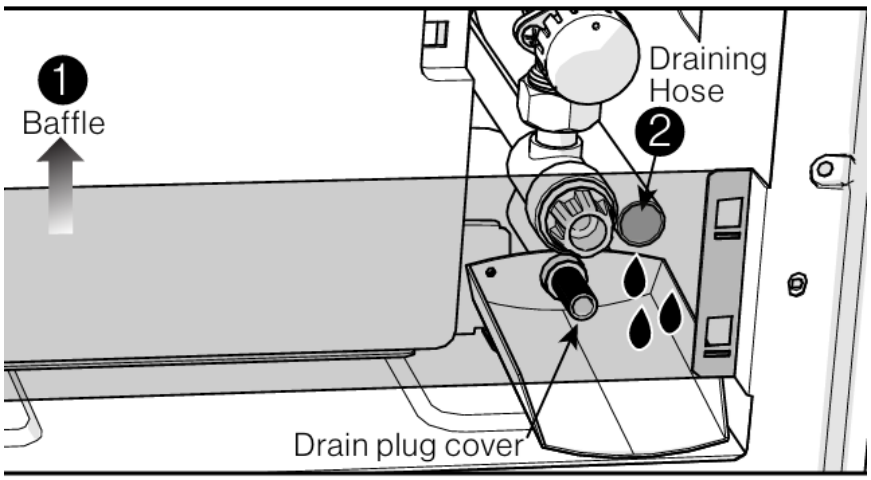


Figure 121. Evidence of the pressure relief valve properly draining, at the front lower right corner.

⚠ CAUTION

NEVER ACTUATE THE DRAIN PLUG AS LONG AS THE APPLIANCE IS STILL HOT.

Hard Water and Decalcification

For prolong usage, when exposed to higher water hardness concentrations, it is advised to provide a proper water treatment device for the incoming water to the coach. Hard water may lead to performance reduction of you appliance overtime. Contact Furrion for decalcification instructions.

Suburban Tankless Water Heater (If Equipped)

Your Delta RV may have the Suburban ST-60 Tankless Water Heater. This unit provides a source of rapid hot water via a propane burner system. The unit will start when hot water is requested **and** the control panel, shown below, is turned ON.

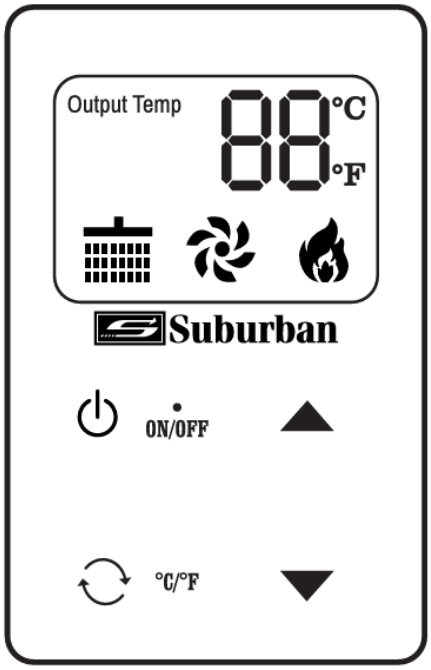
The tankless hot water heater is a great appliance for providing a lot of hot water for the RV. However, there are unique operational differences between it and a traditional tanked water heater. As such, it is important to read this and the following **Tankless Water Heater Troubleshooting** section, below, which includes details about the expected sequence of operation.

	Suburban ST-60 Operation and Maintenance Manual

Control Panel

Unlike a traditional tank water heater, the tankless water heater uses a remote control panel to set the expected temperature and help activate the water heater. The control panel must be turned on to enable hot water to flow once a faucet is opened and the burner has started.

	It may take upwards of 30 seconds to feel hot water depending upon the location of the faucet being used. When activated, the hot water heater must start up, and heat the initial water, then travel through the pipes where it will loose some heat initially. For more information, see the Sequence of Operation section inside Troubleshooting, below.



SYMBOL	FUNCTION	DESCRIPTION
	WATER FLOW	This icon is displayed when water is flowing through the unit (i.e. hot water demand).
	BLOWER	This icon is displayed when the blower is running.
	FLAME	This icon is displayed when the burners are on.
88 °C °F	OUTLET WATER TEMP SETTING	This icon displays the outlet water temperature set point.
BUTTON	**FUNCTION**	**DESCRIPTION**
ON/OFF	ON/OFF	Power Button. Switch from turning unit ON or turning unit OFF.
°C/°F	UNITS	Press to switch between degrees (°) Celcius or degrees (°) Fahrenheit.
	UP	Increase Set Temperature by 1 degree increments. Setting range is 95°F/ 35°C to 131°F/ 55°C.
	DOWN	Increase Set Temperature by 1 degree increments. Setting range is 95°F/ 35°C to 131°F/ 55°C.

Figure 122. Control panel use for the ST-60 tankless water heater.

Operation

4. On the control panel, turn the heater ON via the power button.
5. For best results, open hot water faucet fully until hot water arrives, then reduce flow and mix cold water as needed to achieve desired temperature. Many people find that using only the hot water, and setting the desired temperature directly, is the best way to operate.

	The water heater operates based off of hot water demand. **There must be a hot water faucet open to a minimum of 0.7 GPM for the unit to operate.**

	• If too much cold water is mixed, the flow of the hot water will be too low and the system will turn off. • If the burner does not light, the system will automatically attempt two more tries for ignition before lock-out.

6. To change the water temperature setting, press the up or down arrow to the desired temperature.
7. A child lock prevents outlet water temperature set point from exceeding 122°F. To remove the child lock, hold the up arrow on the User Control Panel for five (5) seconds. This will allow the maximum outlet temperature to reach 131°F.
8. When use of hot water is complete, simply close the faucet valves. The water heater will remain in a “ready” state and automatically turn on the next time hot water is flowing.

9. When the system is no longer needed (i.e. after a trip is over) simply turn OFF the water heater at the control panel. Also turn OFF the power button that is on the face of the water heater, and shut off the propane gas supply.

General Notes:

- Before the water heater can operate, the power switch outside must be turned “ON”. This switch does not need to be switched OFF during a trip, but should be turned off when storing the RV.
- When not providing water, and the Power Button is “ON” at the Control Panel, the system will rest in a “ready” state, and ignite the burner when
    - A hot water faucet is turned on
    - The water temperature in the heater drops below 41°F. As long as the electrical power is on at the outside switch and the gas supply is on, this will occur for freeze protection, and run for five (5) seconds.
- After supplying hot water, and a hot water faucet is turned off, the system will automatically shut off and return to the “ready” state. A blower fan will continue to run for 20 seconds to remove exhaust gasses.
- It is suggested NOT to use the shower head stop-flow button, as the interruption of flow of hot water will turn off the heater.

Suburban Tankless Water Heater Troubleshooting

Sequence of Operation

Knowing the expected operation of an appliance or device can greatly assist in pinpointing what might be happening incorrectly, or clear up confusion about what should be happening. The following steps will occur, as long as the control panel is turned on, and propane gas is available to the water heater:

1. Turning ON a hot water faucet activates the appliance.
2. The water heater measures the flow of water, inlet water, and outlet water temperatures.
3. The water heater proves that the combustion air fan is working.
4. The combustion chamber is then purged of any remaining raw gas.
5. The burner will ignite and prove the flame.
    a. The approximate time from turning ON the faucet to ignition is 7 seconds. After the initial lighting sequence and the water heater is maintaining temperature, the ignition cycle is reduced to approximately 5 seconds.
    b. Burners will stay ON until the water flow is shut OFF.
6. The flow of hot water begins approximately 3 seconds after ignition but will not reach the faucet until the hot water lines leading to the faucet are cleared of any remaining water. This time is determined by the length of the hot water line.
7. When the hot water faucet is turned OFF, the water heater shuts down and will remain in a ready state until hot water is called for again.

	The Blower motor will operate for approximately 20 seconds after the hot water faucet is turned OFF.

8. If the User Control Panel is left ON, no further action is required by the user.
9. If the water heater fails to light for any reason, a second Trial For Ignition (TFI) will automatically begin. If the second TFI fails, the water heater will automatically begin a third TFI. If the third TFI fails, the water heater will go into a lock out mode and will not try to light the burner again. To reset, on the User Control Panel, turn ON/OFF button OFF, then back ON.

	Air in the gas line after changing propane tanks is the main reason for not lighting the burner. A simple method to purge air from the gas line is to ignite a burner on the installed cooking appliance inside your RV.

The following table lists a summary of known problems people experience with tankless water heaters.

Table 27. Troubleshooting operation of the ST-60 tankless water heater.

WHAT IS HAPPENING?	WHY?	WHAT SHOULD BE DONE?
No hot water, the burner is not lighting.	No electrical power to water heater.	1. Ensure outside power switch is ON. 2. Ensure control panel power switch is ON. 3. Ensure propane cylinder is turned ON (at least one.) 4. Ensure propane cylinder is not empty or near empty.
	Water flow below 0.7 gpm.	1. Ensure water is not being used in other locations in the RV (clothes washer, toilet, other sink or shower.) 2. Ensure any water filtration device is not over-restricting flow. 3. Ensure city water source can provide adequate flow. This can be tested by the time it takes to fill a five gallon bucket. It should fill within 7 minutes, 15 seconds.
Water temperature fluctuates drastically.	Water flow near or below 0.7 gpm.	When the water flow drops below 0.7 gpm, the burner will turn off. Then a rise in flow will re-light the burner. This will cause noteable temperature fluctuation. Often, this is caused by mixing too much COLD water with the HOT water at the faucet. Suggest using less COLD water, or if possible, use no COLD water and reduce the temperature setting on the control panel.

Blower fan runs after the hot water is turned off and the burner shuts off.	The blower fan is removing exhaust gasses.	Normal operation.
The water heater turns on and runs for five (5) seconds unexpectedly.	Freeze Protection	The water heater has built-in Freeze Protection and will cycle the burner for 5 seconds when the water temperature has fallen below 41°F. To provide this freeze protection, the gas supply must be ON, gas must be available and electrical power must be ON.
The Temperature and Pressure (T & P) relief valve appears to leak.	Thermal Expansion	In a closed water system, there may be significant thermal expansion of the water. When hot, the water may be hot or high enough pressure to relieve the pressure at this location. Contact an authorized service center for further assistance.
	Hard Water contamination on the mechanism in the valve.	Hard water deposits can foul the action of this valve, causing it not to close after it's been used to drain the system or relieve pressure (see above.) Contact an authorized service center to have the valve replaced or if exercising the valve (quickly opening and shutting) does not solve the issue.

Suburban Tankless Water Heater Maintenance

⚠WARNING

- **FOR YOUR SAFETY, ALL REPAIRS AND/OR MAINTENANCE OF UNIT SHOULD BE PERFORMED BY YOUR DEALER OR A QUALIFIED SERVICE TECHNICIAN.**
- **IF THE USER OF THIS APPLIANCE FAILS TO MAINTAIN IT IN THE CONDITION IN WHICH IT WAS SHIPPED FROM THE FACTORY OR IF THE APPLIANCE IS NOT USED SOLELY FOR ITS INTENDED PURPOSE OR IF APPLIANCE IS NOT MAINTAINED IN ACCORDANCE WITH THE INSTRUCTIONS IN THIS MANUAL, THEN THE RISK OF A FIRE AND/OR THE PRODUCTION OF CARBON MONOXIDE EXISTS WHICH CAN CAUSE PERSONAL INJURY, PROPERTY DAMAGE OR LOSS OF LIFE.**
- **LABEL ALL WIRES PRIOR TO DISCONNECTION WHEN SERVICING CONTROLS. WIRING ERRORS CAN CAUSE IMPROPER AND DANGEROUS OPERATION. VERIFY PROPER OPERATION AFTER SERVICING.**
- **NO CLEANING OR ADJUSTMENT OF THE BURNERS IS PERMITTED. IF BURNER OPERATION IS SUSPECTED TO BE FAULTY SHUT OFF APPLIANCE IMMEDIATELY AND CONTACT A QUALIFIED SERVICE CENTER.**

As per the Maintenance Schedule:

- Periodically inspect unit for soot. If soot is present anywhere on water heater, immediately shut unit down and contact your dealer or a qualified service person. Soot is a sign of incomplete combustion and must be corrected before operating water heater.
- Other areas and things to check would include:
  - Check for an obstruction in vent.
  - Check vent to see that no foreign material has accumulated to prevent flow of combustion and ventilating air.
  - Check to be sure there is no flame present at burner orifice or burner whenever main gas valve is closed. This can be checked by turning the ON/OFF switch to the OFF position.
  - Periodically check wiring and wire connections to be sure wiring is not damaged/frayed and that all terminals and connections are tight.

Draining and Storage

Follow these steps to fully drain the water heater:

1. Turn OFF electrical power to water heater either by flipping the circuit breaker, removing fuse, or powering off User Control Panel.
2. Shut OFF gas supply to water heater.
3. Turn OFF pressure pump on water system.
4. Follow steps 1-6 of the **Winterizing** process in the section for the Nautilus water system. Note that removing the drain plug is not required.

System will have to be refilled with water and all air removed from lines before unit will re-light.

Winterizing

If RV is to be stored during winter months, the water heater system must be drained to prevent damage from freezing. Follow the steps listed in **Draining and Storage**, and then continue to follow the remaining steps shown in the **Winterizing** section of this manual. It is suggested to fill the system with NON-TOXIC RV antifreeze to assure no damage.

Descaling Information

Each year, drain the water from the system and flush the heat exchanger with an approved descaling solution.

Toilet

Alliance RV uses the best in class 310 series Dometic RV toilet. Each toilet is 100% factory tested to assure watertight seal in the toilet bowl before it even leaves Dometic. After installation by Alliance RV, the entire waste system is flood tested for leaks by filling the system with water to the rim of the bowl.

Operation

To use the toilet, first add water to the toilet by pressing the flush pedal only partially down. Water will flow into the bowl while the flush ball remains closed. If the flush ball moves, let up slightly on the pedal until the ball closes. Adding water to the empty bowl acts as a trap and helps prevent holding tank

odors from entering the RV. Adding water is always recommended prior to flushing solids and/or toilet paper.

To flush the toilet, press the pedal down until it contacts the floor. Release the pedal after the flush is complete. When flushing liquids, quick press of the pedal for 1 to 2 seconds will do. When flushing solids, the pedal should be pressed until the contents are rinsed from the bowl. Never flush longer than needed as this will cause holding tank capacity to be used up and require more frequent black tank dumps. A small amount of water should collect in the bowl after a flush, this will create an airtight seal. Further instructions and information can be found in the toilet owners/users manuals.

	If water will not stay in the bowl, you may have to add plumber's grease to the Flush Seal (the black rubber piece separating the bowl from the flat bottom valve.) You can shut off water behind the bowl, have a helper hold down the flush pedal, and apply the grease in a thin film around the bottom and inside of the seal. If this doesn't solve the problem, replacing the Flush Seal is an easy repair. Be mindful of not dropping the seal into the tank, and make sure to orient it correctly as well.

	WYKW: Toilet Ball Valve Quick Tip

	How Do I Fix My Alliance RV Toilet?

Dumping Your Waste Tanks

Delta trailers are equipped with manual termination valves. Based on floorplan, these may be cable termination valves, where the handle is routed away from the gate valve, or they may be traditional gate pull valves located near the dump hose connection.

When dumping tanks, here are some helpful tips:

- Only dump one tank at a time. That is to say, it is best not to have more than one tank valve open at any one time.
- It is common for people connected to septic systems to leave their Grey tank open, but this is not always advised, even if you put a "p-trap" configuration in your dump hose, as sewer flies can traverse water traps and get into your waste tanks. In such a case as high use, people will then only open the tank valve while in high-use water situations (many showers back-to-back, etc.) and otherwise leave them closed.
- Try not to close a black tank valve unless you're sure it is well drained to prevent any solids of paper getting into the valve seal area.

Normal Dump Process (all tanks)

Many RVers use a process like the one below for dumping their waste tanks:

1. Remove the cap from the dump outlet on the off-door side of RV.
2. Connect a flexible sewer hose to the dump outlet.
3. Connect the other end of the sewer hose to an approved sewer dump inlet at your campsite or other approved sewer dump station. Most states require an air-tight and solid connection.
4. Pull the handle marked as your Black tank to drain into the approved dump inlet / station.

	Some people will first pull the Grey tank handle to let a bit of water into the system, wetting the hose prior to dumping the black tank. Only dump enough grey water to get the hose wet on it's full length, then close the valve..

5. When the black tank effluent stops flowing, it's time to rinse the black tank. Follow steps 4 through 7 of the next section if you're rinsing your black tank(s) before moving on to emptying your gray tank(s).
6. After the black tank is rinsed, its dump valve closed and while the sewer hose is still connected to the RV dump outlet and the approved dump inlet / station, pull the handle(s) marked as your gray tank(s) to drain into the approved dump inlet / station. This will pre-rinse your dump hose.
7. When the gray tank effluent stops flowing, close all gray tank valves, unhook the flexible sewer hose from the dump outlet of the RV, replace the dump outlet cap, elevate that end of the sewer hose slightly and walk that end over towards the approved dump inlet / station and lift it up higher to drain it into the dump.
8. Many people will use a dedicated garden hose to rinse clean water through the dump hose at this point. If you have flushed the black tank, it will already be connected and ready to use.
9. Disconnect the sewer hose from the sewer dump and store it away. If used, disconnect the garden hose from the TANK FLUSH inlet and the water source and store it.

Rinsing Black Tank Using the Tank Flush

Your black wastewater tank(s) is/are fitted with a tank spray nozzle on the side wall of the tank.

- When rinsing your black tank(s) during the process of emptying your gray and black tanks, use only steps 4 through 7 below in conjunction with the Dumping your Waste Tanks process previously discussed.
- When rinsing your black tank(s) as a standalone process, follow all steps below.

1. Remove the cap from the dump outlet on the off-door side of RV.
2. Connect a flexible sewer hose to the dump outlet of the RV.
3. Connect the other end of the sewer hose to an approved sewer dump inlet at your campsite or other approved sewer dump station. Most states require an air-tight and solid connection.
4. Pull the handle marked as your Black tank and allow the rinse water and remaining effluent to drain into the approved dump inlet / station.

	Some people will first pull the Grey tank handle to let a bit of water into the system, wetting the hose prior to dumping the black tank. Only dump enough grey water to get the hose wet on it's full length, then close the valve..

5. Connect a garden hose to the TANK FLUSH inlet on the off-door side convenience center panel. Connect the other end of the garden hose to a pressurized water source.

6. Fully open the faucet at the water source (50 PSI maximum) and flush the tank until the water coming out is clear.
7. When the water coming out is clear, fully shut off the faucet at the water source, then close the black tank valve.
8. Disconnect the garden hose from the TANK FLUSH inlet and the water source and store it.
9. Disconnect the sewer hose from the dump outlet of the RV, replace the dump outlet cap, disconnect the sewer hose from the sewer dump and store it.

Waste Tank Pull Valve Maintenance

The handles can become difficult to pull over time. Here are a couple of points to keep in mind:

- If possible, use waste tank chemicals that provide lubrication to the seals of the waste tank valves.
- When open, you might find it useful to add silicone lubricant to the valve push rod. This will allow it to work into the cable sleeve over several cycles.
- Always be sure to push the valve closed in such a way as to direct the closing force straight into the pushrod. Pushing sideways will often cause a bent pushrod. As they are Aluminum, these can be carefully straightened.

Should you need to access your dump valves, late model year trailers will have a Cloroplast patch material attached under the trailer in the location needed to access the valves. *It is normal upon delivery that there is no cut hole underneath the patches- those are placed by the factory to help you close up the hole if you ever need to make one.* One may remove the patch material, cut a U-shaped hole in the belly material (make sure the top of the "U" faces forward, and the opening toward the rear of the trailer,) and then use this patch to close up the opening.

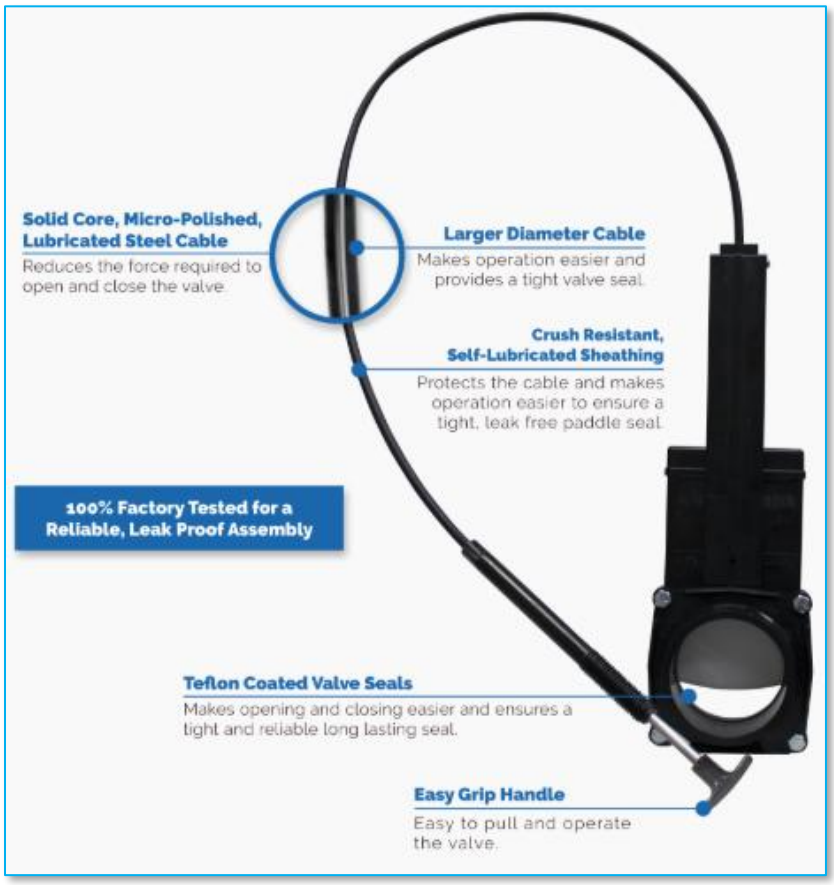


Figure 123. Valterra manual waste tank valve assembly.

Monitoring Your Water System

The Monitor Panel shows the fill levels of the fresh water, grey water and black water tanks. You will also operate the heaters on the holding tanks here (if equipped) and as well as the power to the fresh water pump (you'll also find a water pump switch at the convenience station in the pass-through. When the water pump is on, you will note a small indicator LED labeled "WP" or "WP Power". Refer to the section **MONITOR PANEL : Holding Tank & Battery Charge Interface** on page 157 for details on these controls.

Tank Heaters (If Equipped)

Some Delta trailers come with fresh water and holding tank heating pads installed on the bottom of the tanks. They are thermostatically controlled, meaning they will only turn on when the temperature drops

below 45°F (5°C) and will turn off when they reach a temperature of 67°F (20°C.) When one activates these heaters via the monitor panel, the panel switch will illuminate, whether the tank heater is currently heating or not. The light is an indicator that it is enabled.

As per the Owner's Manual for the pads, **no harm will come to the tank if the heating pads are ON and the tank is empty**. It is suggested to turn the pads off in such a case as they will cycle On and Off with no liquids in the tanks.

INTERIOR

Window Blinds

Alliance Delta trailers come with United Shade E-SERIES manual roller shades. The shades provide a tension adjustment to enable the shade to roll up faster or slower as desired.

- To lower the shades, simply pull down on the shade hem bar.
- To raise the shade, pull down and release the hem bar. Note that a quick tug is required to release the spring mechanism which will raise the fabric.

	Do NOT pull the shade open to a point where you have exposed the end of the fabric. If this has happened, reach up and turn the roller tube with your hand to release and raise the shade. DO NOT pull on the fabric that has reached its limit as that action may damage your shade.

Window Blind Maintenance

The blinds have a tension setting that allows one to adjust how fast or slow the shade rolls up. The adjustment knob is at the left end of the shade, as seen from inside the window. Reach up into the window valence and rotate the knob clockwise (when looking at the end of the roller) to increase the tension, and counterclockwise to reduce tension.

Removing and Replacing a Roller Shade Assembly

The blinds use two to four clips (depending upon length) mounted to the valence to maintain their position. Careful examination using a flashlight pointed up into the valence will show two to four clear plastic clips along the base of the assembly – with the outer clips being within a few inches of the end of the shade assembly.

- Push inward on these tabs (toward the middle of the shade) to release the shade assembly.
- To replace the assembly, you will need to place the edge of the shade base against the valence and ensure it catches on the metal hooks opposite the tabs. Then roll the shade assembly ‘flat’ to clip it into the spring-loaded side of the clips.

FURNITURE

You'll find a range of styles and sizes of furniture in your RV, below is some information on the different types of furniture you may see in your RV.

⚠WARNING

MOVING PARTS CAN PINCH, CRUSH OR CUT. KEEP CLEAR AND USE CAUTION.

Theatre Seating

A modular seating system that features electric controls and smoothly operating recliners which is assembled and installed by the factory for ease of use.

Every furniture component locks into place with each adjacent piece.



Figure 124. Modular components of the theater seating. At the right are details of the back connection, and module interlocking.

Sofa Seating

Two and three cushion sofas that fold out for additional sleeping.

To operate:

1. Remove the back cushions
2. Fold out the couch seat to expose the middle seat
3. Fold out the couch seat legs and set upright
4. Fold down the stationary back

5. User back cushions as headrest or pillows

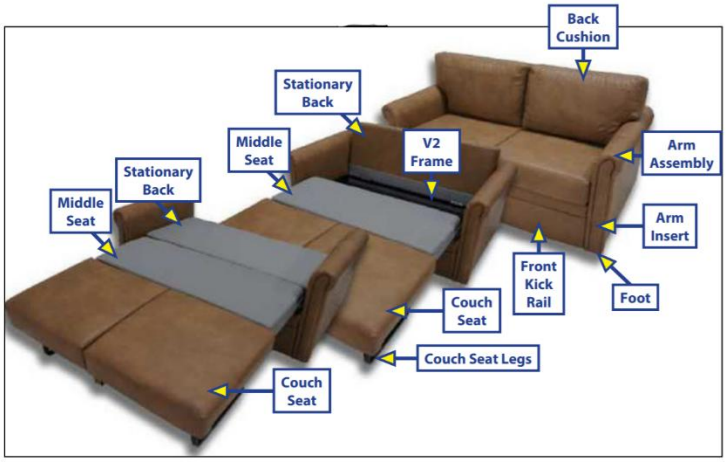


Figure 125. Operating the fold-out sofa.

A polyurethane fabric constructed and designed for all home furniture. Polyurethanes should be cleaned with a mild water based shampoo or soap. More stubborn stains can be cleaned with a mild, non-alcohol based cleaning fluid. Rinse with clean water afterward. For non-liquid stains such as mustard, remove any excess before cleaning. All stains and spills must be attended to promptly.

CARE & MAINTENANCE

An RV comes with a variety of surfaces that need to be cleaned and maintained both on the exterior and interior. Regular cleaning and maintenance of these different components is needed and will help keep the RV in the best possible condition both cosmetically and functionally. The rate of the breakdown and deterioration of the seals, sealants and gaskets on your RV is directly tied to the outside environment and the needed maintenance, cleaning and touch up of these crucial components may vary based on your specific experience. The Maintenance Schedule in this manual is based on minimum applicable intervals. This section will highlight some of the general items that need to be done not specifically covered elsewhere.

	WYKW: Should You Walk on Your Slide Roof?

	WYKW: Roof Seams and Air Bubbles

Roof Maintenance & Inspection

Keep your roof clean. Use Dicor roof cleaners (RP-RC320S spray or RP-RC160Cj concentrate) or standard products such as 409, Fantastik or mild detergents. Do NOT use harsh abrasives or products containing solvents. For stubborn spots, a rag dampened with mineral spirits is recommended. DO NOT SOAK (never apply mineral spirits directly to the roof.) Start by rinsing the roof membrane with clean water to remove any loose dirt or debris. Then, using a medium bristle brush along with a mild detergent / soap and a few gallons of water, scrub the entire roof and then rinse thoroughly, a rubber squeegee may be used to direct water off the roof.

NOTE: do not use abrasive pads or cleaning solutions that contain solvents.

A semi-annual inspection of the roof is suggested. Check the membrane for damage and check the lap sealant used at all termination areas (front, rear and side seams as well as roof attachments). The lap sealant has a limited life span, depending on the geographic region and conditions, and should be repair or replaced as needed. Use a self-leveling lap sealant on locations not near edges. Along edges and corners, use a non-self-leveling version to prevent the sealant from excessive spreading.

Washing & Waxing

When washing, start from the top and work your way down, try to stay out of direct sunlight. Often it is best to clean sidewalls after first cleaning the roof. Sidewalls and the front and rear skin or cap should be washed and waxed to protect and restore. Never take your RV through an automatic car wash and avoid using highly abrasive cleaning pads or high-pressure sprayers, the finish and decals/labels on your RV can be damaged by using such products. A soft bristled brush and a mild soap / detergent, if cleaned properly and frequently, will meet your needs. Normal automotive wax should be utilized when waxing your RV, we recommend waxing two to three times a year, at minimum.

	WYKW: How to Wash Your Alliance RV Walls or Roof

Harsh Environments

Exposure to salt can result in damage to exterior paints, finishes and other components, it is highly corrosive and should be cleaned off as frequently as possible. The more your RV is exposed to snow, rain, road salt, chemicals and saltwater, the more severe corrosion can be, therefore, a stricter cleaning and maintenance schedule may be needed.

Treating Rust

Periodically inspect the pin box, chassis, landing gear/leveling jack brackets, axles, wheels, and suspension components for spot rust.

If you find spot rust, use a wire brush to clean the spot. Wash off dust and allow to dry. Touch up the finish as needed with rustproof or rust-covering enamel paint as applicable. The more quickly you take care of this, the less damage it can cause and lead to bigger issues.

Exterior Seals

	WYKW: Inspecting Seals

Your RV is sealed all around to prevent water intrusion and damage to the RV. These seals and sealants (clear and colored) are crucial to your RV's protection from the outside environment. These seals and sealants should be inspected regularly and touched up and/or resealed as needed. Make sure to check the roof, slide-outs, the corner, termination and beltline trims and moldings on the exterior of the RV. For questions on required seals and sealants, please contact your dealer and Alliance RV.

Slide-out Seals

Inspection

Your slide-outs utilize wipe, cap and bulb seals to protect the room from the outside elements. Due to the nature of a slide-out room, these seals are not 100% watertight and should be checked regularly for any visual signs of damage and addressed immediately when found. Inspect the slide-out seals for proper contact as follows.

When slide-outs are closed: the top, forward, and rearward bulb seals should be approximately 50% compressed along their full length. If there are gaps or significant deviations, contact an RV repair center to have your slide closed position adjusted, or refer to the section Hydraulic Slide-outs: Advanced Maintenance.

When slide-outs are open- wiper seals: the forward and rear wiper seals should show approximately the same amount of deflection indicating the slide is centered in the opening. The top wiper seal should also show some deflection. All wiper seals should show an outward deflection. If any of these conditions are not present, contact an RV repair center to have them corrected appropriately.

When slide-outs are open- inside bulb seals: all three bulb seals (front, rear, and top) between the trim boards and interior wall should be in contact and compressed approximately 50%. If there are gaps or significant deviations, contact an rv repair center to have your slide open position adjusted, or refer to the section Hydraulic Slide-outs: Advanced Maintenance.

Conditioning

Spraying your slide-out seals with an appropriate spray for lubrication and conditioning will help keep the slide-out seals and gaskets malleable, flexible, in good working condition. Many commercial products are available and suitable for this purpose.

Interior

Keep your RV clean and well-kept during regular usage and always be sure to thoroughly clean after extended uses, long trips and before you store your RV. Sweep and mop floors as required, clean the kitchen and bathroom as you would in your own house. For appliances, sinks, countertops, toilets, showers and flooring, you'll want to use your regular household cleaners (always refer to the owner's manual of the individual component for additional information). Make sure that the RV is ventilated well when doing this, clean air is needed for your safety.

Strip your bedding down and clean as required, be sure to follow the care instructions on these soft goods. When wiping down cabinets, walls, ceilings and other surfaces, use a mild soap / detergent and warm water in order to not cause damage to these surfaces.

EXTENDED RECREATIONAL USE OF THE RV

In some cases you may find yourself in the RV for extended periods of time. Whether that be full time living, a long weekend or an extended stay, you may run into some challenges. We have put together some helpful tips for battling some of these challenges.

	WYKW: Cold Weather Camping Tips

Condensation & Mold

	WYKW: Controlling Moisture in Your RV

The normal living activities of even a few people in an RV can lead to rapid moisture saturation of the air inside the RV as well as accelerated wear and tear. This condensation, if left unaddressed, can lead to mold. A more aggressive maintenace schedule may need to be adopted. Below are some pointers to assist with some of the problems you may face while using the RV for extended periods of time.

- Use a dehumidifer.
- Use exhaust fans when showering and cooking.
- In warmer temperatures, use your air conditioner.
- Crack windows.
- Don't air dry clothes in the RV.
- Implement proper preventative maintenance and overall RV cleanliness.

⚠WARNING

CONDENSATION MAY CAUSE DAMPNESS, MILDEW AND MOLD. IF NOT ADDRESSED IMMEDIATELY, CAN RESULT IN DAMAGE AND POSSIBLY LEAD TO ADDITIONAL MOLD OR MILDEW ISSUES WHICH CAN BE HAZARDOUS TO YOUR HEALTH.

Exterior Plumbing

Alliance RVs are equipped with heating pads for the holding tanks and a dedicated heat vent to drop air down into the underbelly. Depending on your needs, it may be necessary for you to take additional protection steps. Keeping your water running and the additional use of heat tape on pipes, hoses, fresh water and sewer lines will all assist in keeping your RV safe from damage during use in freezing temperatures. If your RV will not be used in cold weather, ALWAYS have your RV winterized (covered in the plumbing section of this manual).

Formaldehyde

Formaldehyde is used in many products such as glues, fabrics, paint coatings, and even paper products. Formaldehyde is also released from many smoking, cooking, soaps and many other household products. While most of the formaldehyde used in products in construction is consumed during the manufacturing process, a very small amount remains. This leftover formaldehyde dissipates over time as it works its way out of the product. Proper ventilation by way of the available vents, fans and air conditioning units in your RV is key.

MAINTENANCE SCHEDULE

The following maintenance schedule will help keep your Alliance trailer operating at peak performance, and such maintenance is required to keep your warranty active.

For items listed as "Before Use": Most items are commonly quick inspections to assure a safe towing experience. It should be noted that some of these inspections require lengthy repair and/or special parts if the inspections should fail. As such, it is common for experienced RVers to perform these checks in days prior to expected travel.

For items listed as "Monthly": These items can be skipped if the unit is not in service but must be performed before the unit is used again.

Table 28. Required maintenance schedule.

MAINTENANCE REQUIRED	FREQUENCY						
	BEFORE USE	AFTER USE	MONTHLY	3 MONTHS	6 MONTHS	YEARLY / BEFORE STORAGE	AS REQUIRED
GENERAL EXTERIOR/SIDEWALL, INCLUDING SLIDEOUTS							
Inspect for Interior & Storage Compartment Leaks: Inspect for wet items or surfaces, or dried water stains. If witnessed, determine source and resolve.		X	X				
Inspect Exterior Seals/Sealants: Inspect for damage, cracks or voids in sealant used around items on the exterior walls, at corners, and the front and rear caps of the RV. If witnessed, repair or reseal as needed.		X		X			
Locks and Latches: Lubricate with silicone lubricant			X				X
Washing Exterior Walls, Slideouts, Chassis: Refer to the section Care & Maintenance: Washing & Waxing				X			X
Waxing Exterior Walls & Front Cap: Refer to the section Care & Maintenance: Washing & Waxing					X		
SLIDEOUTS							
Inspect All Slideout Seams: Inspect all T-molding joints, roof membrane seal along edges and T-molding, screws. Look for damaged sealant, eternabond tape, and loose or missing screws. Remove any damaged sealant or tape and clean, then replace.				X			

Inspect Slide Seals: Ensure the rubber is not cracked or torn, and for proper compression. Refer to the section Slide-out Seals: Inspection				X			
Condition Slide Seals: Refer to the section Slide-out Seals: Conditioning						X	
Electric Through-Floor Slideouts (both types): Actuate each one. Ensure one full cycle of retraction and extension is completed. Note any unusual movements or behavior, perform slide seal inspections at each end of movement. Resolve any identified issues.			X				
Perform System Inspection and Maintenance of Electric Slide-Outs: Execute all procedures listed in the section BAL NXG Electric Slide-out Maintenance or Lippert Electric Slide-out Maintenance as appropriate.						X	
Lubricate Gear Packs in the Lippert Electric Slide-outs: Refer to section Lippert Electric Slide-out Maintenance: Lippert Electric Slide-out Gear Pack Lubrication.						X	X
BAL Exact-Slide Slide-out (if equipped): Verify Proper Cable Tension: With slide fully closed (in), manually test cable tension with thumb and index finger. The bottom cable should be able to move 1/4" up and down at the middle and the top cable should be able to move 1/2" up and down. See the section BAL Exact-Slide Maintenance: Adjustment Procedure for details.							X
ROOF							
Inspect the PVC Membrane & Attachment Points/Seams: Refer to the section Roof Maintenance & Inspection				X			
Wash the Roof: Refer to the section Roof Maintenance & Inspection					X		
FRAME & UNDERBELLY							
Inspect the Frame & Underbelly: Check for damage, loose wires, loose brake lines/wires, and debris. Repair any damage to underbelly material, wires, or brake lines as needed.						X	X
Inspect Undercarriage For Chipped Paint & Rust: Refer to the section Care & Maintenance: Treating Rust					X		
CHASSIS/TOWING							
Inspect Tires & Check Pressure: Refer to the section Tire and Wheel Maintenance: Inspect Tires and Check Pressure	X		X				X

Check Wheel Lug Nut Torque: Refer to the section Tire and Wheel Maintenance: Wheel Nut Torque	X						
Verify Breakaway Switch Operation: Refer to the section Brake Actuator Maintenance: Breakaway Switch Operation				X			
Brake Inspection: To be performed by a qualified technician.						X	
Bearing Inspection and Grease Repacking: Every 12k miles OR one year, whichever comes first, have a qualified person perform this service.						X	
Tow Plug Inspection & Wire Lug Torque Check: Refer to the section Tow Plug Maintenance	X						
Leaf Spring Suspension System (if equipped)							
Inspect the Spring Hangers & Leaf Springs: Refer to the section Leaf Spring Suspension Maintenance: Spring Hanger and Leaf Spring Inspection	X						
Inspect the Equalizer (if equipped): Refer to the section Leaf Spring Suspension Maintenance: Equalizer Inspection	X						
Check Leaf Spring Bolt Torque: Refer to the section Leaf Spring Suspension Maintenance: Leaf Spring Bolt Torque	X						
Check Axle U-Bolt Torque: Refer to the section Leaf Spring Suspension Maintenance: Axle U-Bolt Torque	X						
BAL LS 5.3 Automatic Leveling System							
Inspect All Power Unit Electrical Connections: If corrosion is evident, spray connections with electrical contact cleaner.					X		
Clean Landing Gear & Jacks: Remove road debris.					X		
Lubricate Jacks & Stabilizer: Apply a small amount of grease to each jack and stabilizer screw using the access ports or directly on the stabilizer screw.					X		
Check Torque on Jacks and Stabilizer: Refer to the section Auto Leveling System Maintenance: Inspection and Greasing					X		
Electrical							
Test GFCI Outlet: Press the TEST button to activate the internal electrical testing function. The RESET button should pop out and the outlet should not be functional, nor will downstream outlets function. RESET the GFCI outlet. If there are problems, contact a qualified servicing dealer.				X			

Perform General Battery Maintenance: Refer to the section Battery Maintenance				X		X	
Inspect and Perform a Torque Check for your Power Center: Refer to the proper section for the Power Control Center (Progressive Dynamics or WFCO) installed in your trailer.						X	
Solar Equipment (if equipped)							
Perform General Maintenance on the RICH Solar Charge Controller: Refer to the Maintenance section of your controller's information in this manual for proper maintenance procedures.						X	
Inspect & Perform a Torque Check of the Victron Solar Charger (if equipped): Inspect the housing and area for any signs of water damage, damage, or wire damage. Rectify any found issues immediately. Using a torque wrench with proper adapter, ensure all screw terminals have the proper torque.						X	
Propane & Safety							
Inspect Propane System: Referring to the section Propane System Maintenance: Inspection (Owner), make sure all components visibly look secure and in good condition. Close both cylinders immediately and contact a qualified service provider to rectify any problem seen.				X			X
Professional Propane System Inspection: Have a certified technician or propane professional inspect the propane system for safe operation.						X	
Test Alarms / Detectors (Smoke, CO/LP): Activate the Test feature of each alarm to ensure proper operation and notification methods are functional.	X		X				
Check Fire Extinguisher Mounting and Charge: Make sure Fire Extinguisher is accessible, yet secure. Also verify the charge is still good using whatever method is printed on the label.			X				
Test Emergency Exit/Egress Windows: Open each Emergency Exit/Egress window and reclose. If any window will not open, contact an authorized service center.			X				
Water/Utility Systems							

Clean AC Filter: During periods of use, clean the inside filters as per the procedure listed for your Air Conditioner model.			X				
Perform AC Coil Cleaning: Using standard techniques, ensure both inside (evaporator) and outside (condenser) coils are cleaned.						X	
Inspect Furnace Exhaust and Air Return: Prior to and during times of use, periodically inspect these areas as per the section Suburban Furnace Maintenance: Inspection				X		X	
Perform the Routine Inspection of the Furrion Tankless Water Heater: Complete all steps in this procedure **before** the unit is used each year. Refer to the section Furrion Tankless Water Heater Maintenance						X	X
Exercise the Pressure Relief Valve of the Furrion Tankless Water Heater: Complete this procedure **before** the unit is used each year. Refer to the section Furrion Tankless Water Heater Maintenance						X	
Inspect Suburban Tankless Water Heater: Ensure no soot is visible anywhere on the water heater or around the exhaust. Also ensure no flame is present after the burner turns off, and that there is no leak in the system. Check all wiring to ensure it's tight. Refer to the section Suburban Tankless Water Heater Maintenance				X		X	
Drain Fresh Water Tank: Use the large white pull handle and drain located below the fresh water tank.		X					
Empty and Flush (Black Tanks) Waste Tanks: For flushing the black tank(s) refer to the section Rinsing Holding Tanks / Tank Flush		X					
Inspect the Fresh Water System: At all points throughout the RV where fresh water lines can be inspected (below sinks or in cabinets, on the roof of storage areas, behind the nautilus panel) ensure no evidence of leaks exist while the fresh water system is pressurized. Repair any leaks found.			X				
Sanitize the Fresh Water System: Following standard sanitizing methods when using bleach, or following the instructions provided with commercially available sanitizing treatments, ensure the fresh water system is cleaned.						X	

OTHER							
Clean & Inspect Awning: Refer to the section Awning Maintenance: Cleaning & Inspection		X		X		X	
Check Seals & Lubricate Refrigerator Doors: If your refrigerator has a dual door with central flap attached to a door, open the other door and make sure the flap fully closes flat. Lubricate hinge points with silicone lubricant if needed. Also lubricate any latch rotation points. Using a fresh dollar bill, open a door and place bill where seal will close. Close door and attempt to pull bill. Resistance should be felt. Test all areas of the seals, several inches apart. If any point has no or very little resistance, replace seals as per manufacturer recommendation.				X			

VENDOR WARRANTY AND CONTACT INFORMATION

Below you will find a listed supplier, related warranty information and warranty / tech support contact information should you need it. Some of this information may change without notice. Alliance RV will make all efforts to keep this manual as up to date as possible. **This is a summary of the component manufacturer warranty only. For details on individual component warranties, see their warranty information.**

Table 29. Vendor contact and warranty information.

COMPONENT	BRAND	PHONE EMAIL WEBSITE	MANUFACTURER WARRANTY
Air Conditioner	Coleman	(423) 775-2131 rvpsupport@airxcel.com www.airxcel.com	2-Year Limited
Air Conditioner	Furrion (Lippert Components)	(574) 537-8900 customerservice@lci1.com www.lci1.com	1-Year Limited
Awnings	Lippert Components	(574) 537-8900 customerservice@lci1.com www.lci1.com	1-Year Limited
Axles, Brakes, Leaf Springs (Delta variant)	Dexter Axle	(574) 295-7888 warranty@dexteraxle.com www.dexteraxle.com	1-Year Limited (Grease & Oil Seals) 2-Year Limited (Electric/Hydraulic Brake Actuators) 5-Year Warranty (Axles and Suspension System)
Axles, Brakes, Leaf Springs (Ultra Lite, SOLO variants)	BAL - Norco Industries	(877) 557-7788 baltechsupport@norcoind.com https://balrvproducts.com/	1-Year Limited
Chassis / Frame (Delta variant)	Lippert Components	(574) 537-8900 customerservice@lci1.com www.lci1.com	1-Year Limited
Chassis / Frame (Ultra Lite, SOLO variants)	BAL - Norco Industries	(877) 557-7788 baltechsupport@norcoind.com https://balrvproducts.com/	3-Year Limited

Entry Steps	Lippert Components	(574) 537-8900 customerservice@lci1.com www.lci1.com	1-Year Limited
Fireplace	LaVanture	(800) 348-7625 service@alliancerv.com www.lavanture.com	1-Year Limited
Furnace	Suburban	(423) 775-2131 rvpsupport@airxcel.com www.airxcel.com	2-Year Limited
Furniture	Lippert Components	(574) 537-8900 customerservice@lci1.com www.lci1.com	1-Year Limited
Leveling System (if equipped)	BAL - Norco Industries	(877) 557-7788 baltechsupport@norcoind.com https://balrvproducts.com/	1-Year Limited
Mattress	Lippert Components	(574) 537-8900 customerservice@lci1.com www.lci1.com	1-Year Limited
Microwave	Insignia	(877) 467-4289 www.insigniaproducts.com/email-us www.insigniaproducts.com	1-Year Limited
Microwave	Samsung	(800) 442-7717 Technicalsupport@riverparkinc.com www.riverparkinc.com	1-Year Limited
Oven / Cooktops	Insignia	(877) 467-4289 www.insigniaproducts.com/email-us www.insigniaproducts.com	1-Year Limited
Oven / Cooktops	Lusso	(574) 848-1118 warrantydept@collins-n-co.com https://www.collinssupport.com/	1-Year Limited
Oven / Cooktops	Greystone	(574) 971-4490 www.customerservice@wayinterglobal.com www.wayinterglobal.com	1-Year Limited
Power Center & Converter	WFCO	(574) 294-8997 technicalsupport@wfcoelectronics.com https://www.wfcotech.com/	2-Year Limited
Refrigerator	Norcold / Thetford	(800) 543-1219 info@thetford.com www.thetford.com	1-Year Limited

Refrigerator	Everchill	(574) 971-4490 www.customerservice@wayinterglobal.com www.wayinterglobal.com	1-Year Limited
Roof Membrane	Dicor	(574) 264-2699 dmetzger@dicor.com www.dicor.com	15-Year Limited
Slideout Systems (NXG and Cable)	BAL - Norco Industries	(877) 557-7788 baltechsupport@norcoind.com https://balrvproducts.com/	1-Year Limited
Slideout Systems (Lippert Electric)	Lippert Components	(574) 537-8900 customerservice@lci1.com www.lci1.com	1-Year Limited
Solar Charge Controller	Renogy	(574) 294-2684 warranty@dehco.com www.dehco.com	Varies
Stereo (JBL)	Riverpark Inc	(800) 442-7717 Technicalsupport@riverparkinc.com www.riverparkinc.com	1-Year Limited
Stereo (Jensen)	ASA Electronics	(800) 688-3135 info@asaelectronics.com www.asaelectronics.com	1-Year Limited
Tires & Wheels	Lionshead	(574) 533-6169 bscott@lionsheadtireandwheel.com www.lionsheadtireandwheel.com	1-Year Guarantee 5-Year Limited
Toilet	Dometic	(800) 366-3242 techservice@dometic.com www.dometic.com	1-Year Limited
TV	LG	(800) 243-0000 www.lg.com/us/support/email-appointment www.lg.com	1-Year Limited
TV Antenna	Winegard	(800) 288-8094 www.winegard.com/support/contact-us www.winegard.com	2-Year Limited
Water Heater	Lippert Components (Furrion)	(574) 537-8900 customerservice@lci1.com www.lci1.com	1-Year Limited
Water Heater	Suburban	(423) 775-2131 rvpsupport@airxcel.com www.airxcel.com	2-Year Limited

EXPLORE OUR LINE-UP

FROM LUXURY FIFTH WHEELS TO LIGHTWEIGHT TRAVEL TRAILERS AND NOW INTRODUCING DESTINATION TRAILERS

At Alliance RV, our vision is to create a product driven by our customers, through their experience and input, and execute on those ideas at the highest level. Innovation and product development is best done in collaboration with the RVing community, and we are listening. Many of us here at Alliance RV have spent the majority of our careers in the RV industry, and we believe our RV owners and dealer partners will welcome an independent and truly different manufacturer that is transparent and dedicated to their customers.



DELTA | AVENUE | BENCHMARK | –VALOR– | PARADIGM

Product information is as accurate as possible as of the date of publication of this brochure. Alliance RV is commitment to continuous product improvement thus - floorplans, materials, components, features, measurements, specifications, options, etc. are subject to change at any time without notice or obligation. Certain conditions may require additional equipment. Advertising and marketing Photography may show optional equipment or props used for photography purposes only.

Alliance publishes approximate base weight of the trailer without optional equipment included. Optional equipment will impact the weight of the trailer. Please locate the weight sticker attached to the trailer you are considering for the most accurate trailer weight.

Tow Vehicle Caution: Retail owners of Alliance recreational vehicles are solely responsible for the selection and proper use of tow vehicles. All customers should consult with a motor vehicle manufacturer or their dealer concerning the purchase and use of suitable tow vehicles for Alliance products. Alliance disclaims any liability or damages suffered as a result of the selection, operation, use or misuse of a tow vehicle. Alliance's limited warranty does not cover damage to the recreational vehicle or the tow vehicle as a result of the selection of the tow vehicle.

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ALLIANCE RV

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