



Marketing & Distribution LLC

# RUGGED RV OWNER'S MANUAL

## IMPORTANT INFORMATION IS ENCLOSED!

All of the information contained in this owner's manual May Not relate to your specific Rugged RV model.

- **Before operating your New Rugged RV:**  
Please read **ALL** of the important information provided in the Owner's Packet and manuals.  
Rugged RV and your Rugged RV Dealer want you to have a safe and enjoyable time using your Rugged RV. Reading and complying with this important information and knowing how to safely operate and maintain your RV will ensure years of enjoyment in your new Rugged RV

- **Be sure to read and save this and all your Rugged RV individual component's manuals.**

They will show you how to safely operate and maintain each of the appliances in your Rugged RV, have the contact information for each of the component's manufactures and some include warranty registrations to send in.

**Your Rugged RV dealer will explain to you how to properly use your new Rugged RV.**

Thank You for choosing a Rugged RV ®™  
HAPPY FISHING, HUNTING and CAMPING in your new RV!!

© AMERICAN SURPLUS & MANUFACTURING, INC.  
Providing Year Around Fun For All Of Your Outdoor  
Recreational Activities Since 1993

# Thank You for choosing a Rugged RV

**All of the information contained in this owner's manual may not relate to your specific Rugged RV Model.**

This manual covers all Rugged RV. There are manuals and booklets supplied by most of the individual component manufacturers of the components installed on your specific Rugged RV model included in your Owner's packet that will provide any additional information needed and may contain additional warranty registration cards to be completed and sent.

**This owner's manual is designed as a reference guide for the safe operation, proper care and maintenance of your new Rugged RV.** For more complete instructions regarding safety, maintenance and operation of the individual components installed and used in the manufacturing of your RV, please carefully read each individual component's manufacture's manuals and booklets supplied by the individual component manufacturers and send in all manufacturer's required warranty registrations.

**NOTICE: The Component Manufacturer's instructions, manuals and warranties precede, come first, and replace all information contained in this Rugged RV Owner's Manual, Instructions and Warranty.**

Rugged RV models are built using the high standards set by, and following the guidelines set forth by the Recreational Vehicle Industry Association, (RVIA), as well as complying with the requirements of applicable state and federal agencies.

Please carefully read the Rugged RV Limited Warranty. American Surplus and Manufacturing, Inc., your Rugged RV Manufacturer, has no other expressed or implied warranties of any type. You, as the owner, are responsible for providing proper maintenance as outlined in this manual and as set forth in this and the component manufacturer's booklets included in the Rugged RV Owner's Packet.

Be sure to save this and all of your Rugged RV components manuals.

## *Rugged RV and your Rugged RV Dealer want you to have a safe and enjoyable time in your new RV*

Rugged RVs are not equipped for ice fishing but can be converted easily and inexpensively.

# Table of Contents

Limited 1 Year Warranty.....	4
Warranty Summary.....	5
Taking Delivery of your New Rugged RV.....	5
Rugged RV Dealer Responsibilities.....	5
Rugged RV Owners Responsibilities.....	6
<b><u>Before Moving Your Rugged RV.....</u></b>	
Operating Your Drop Down Suspension Operation (Cable & Hydraulic)..	7
Drop Down Cable and Hydraulic Maintenance.....	7
<b>Tires, Tire Maintenance, Wheels (Rims), Wheel Assemblies, Axle....</b>	
<b><u>Wheel Lug Torque Before Each Trip !</u></b> .....	7
Wheel Bearing Maintenance.....	7
Tires.....	8
Frame and Frame Maintenance.....	8
<b>Proper Loading and Balancing of Trailer</b> .....	9
Trailer and Tow Vehicle Hitch.....	10
<b>Leveling Your Rugged RV</b> .....	11
<b>Electrical</b> .....	11
Exterior Trailer Running Lights.....	11
12V Electric Brakes, Electric Break Away Brakes.....	11
Connecting To An Outside Power Source.....	11
Electrical Converter Operation, Breakers and Fuses.....	12
Battery Installation, Operation and Charging.....	13
Smoke/Fire Detector Operation.....	14
CO Detector Operation.....	14
Fire Extinguisher Operation.....	14
LP Hook Up and Operation.....	14-15
LP Fuel Systems, Containers & LP Component Equipment.....	15
LP Gas System Check.....	16
Furnace & Thermostat Operation.....	16-17
A/C Operation and Maintenance.....	17
<b>Range/Oven/Hood Vent Operation and Maintenance</b> .....	18-19
Microwave Operation.....	19
Radio, TV, Satellite and Antenna Operation & Connection.....	19
Door and Window Operation, Emergency Exits and Maintenance.....	19-20
Slide Out Operation, Care & Maintenance.....	20
Sofa Into Sleeper, Upper Bunks and Dinette Into Bunk Operation.....	20
Maintenance.....	21-23
Condensation and Humidity.....	21
Prolonged Occupancy.....	21
Frame Extrusions & Aluminum Surfaces.....	22
Curtain & Cushion Covers Care & Maintenance.....	22
Roof, Siding, Windows & Doors.....	22
Exterior Cleaning.....	22
Storing Your Rugged RV.....	23
Formaldehyde From Building Materials.....	23

## LIMITED 1 YEAR WARRANTY

**COVERAGE:** American Surplus & Manufacturing, Inc., (ASM) 3134 E. Highway 7 - P.O. Box 326, Montevideo, MN 56265, Manufacturer of Rugged RV's (Warrantor) warrants to the ORIGINAL CONSUMER PURCHASER ONLY (Purchaser), when purchased from an Authorized Rugged RV Dealer, for a period of (1) one year from the of purchase (Warranty Period), that the body structure of this Rugged RV shall be free of substantial defects in materials and workmanship attributable to Warrantor.

**EXCLUSIONS FROM THIS WARRANTY:** Warrantor expressly disclaims any responsibility for damage to the unit where damage is due to condensation, normal wear and tear or exposure to elements. Warrantor makes no warranty with regard to, but not limited to, the chassis including without limitation, any mechanical parts or systems of the chassis, axles, tires, tubes, and batteries, required routine maintenance, equipment and appliances, or audio and/or video equipment. Their respective manufacturers and suppliers may warrant some of these items. Warranty information with respect to these items is included with your Rugged RV Owners Packet or may be available from your dealer or the individual Component Manufacturer.

No action to enforce express or implied warranties shall be commenced without prior written notice to the manufacturer and/or warrantor at the address listed above of the alleged defect or nonconformity or the authorized repair facility's failed repair attempt and MANUFACTURE, AT ITS DIRECT OPTION, shall have a final opportunity to remedy.

**WARRANTOR'S OBLIGATIONS:** Warrantor will remedy substantial defects in materials and workmanship caused by Warrantor. Warrantor shall elect to remedy the defect by repair or replacement. Warranty performance can only be obtained at Warrantor's facility (address above) or only upon prior approval from the Warrantor at Warrantor's authorized dealer service center, at the discretion of the Warrantor. All costs incurred in transporting this recreational vehicle for warranty service shall be borne by Purchaser. Warrantor shall remedy the defect within a reasonable amount of time, after appointment and delivery by Purchaser. All of Warrantor's expenses in remedying the defect shall be borne by the Warrantor.

**PURCHASER'S OBLIGATIONS:** Purchaser and Rugged RV Dealer must complete, sign and return the owner's registration within (10) ten days of purchase date to validate this Warranty. The return of this registration is a condition precedent to warranty coverage; failure to return the completed registration to the Warrantor within (10) ten days from the purchase date will invalidate this warranty. Purchaser shall deliver this recreational vehicle for warranty service within a reasonable time after discovery of the defect and in no event after expiration of the Warranty period, which Warranty Period is (1) one year. All expenses incurred by Purchaser in obtaining warranty service shall be borne by Purchaser. Warranty service shall, whenever possible, be scheduled with or through the selling dealer, by an appointment in order to avoid possible delays. No action to enforce express or implied warranties shall be commenced without prior written notice to the manufacture and/or warrantor at the address listed above of the alleged defect or nonconformity or the authorized repair facility's failed repair attempt and MANUFACTURE, AT ITS DIRECT OPTION, shall have a final opportunity to remedy.

**EVENTS DISCHARGING WARRANTOR FROM OBLIGATION UNDER THIS WARRANTY:** Misuse or neglect, including but not limited to failure to provide reasonable and necessary maintenance, unauthorized alteration, accident, and improper loading, use as a permanent residence, commercial use, rental or leasing of the recreational vehicle shall discharge Warrantor from any obligation under this Warranty.

**PARTS AND DESIGN CHANGES:** Warrantor reserves the right to change the parts and design of its recreational vehicle at any time without notice and with no obligation to maintain spare parts or make corresponding changes in its products previously manufactured.

**OWNER ASSISTANCE:** Your confidence is important to us at Rugged Marketing & Distribution LLC and ASM, as is maintaining a pleasant relationship with our Rugged RV Dealers. Rugged Marketing & Distribution LLC and ASM recognizes that there may be occasions when a warranty or service problem is not handled to your satisfaction, resulting in misunderstandings.

After discussing the situation with your Rugged RV Dealership management, if your problem has not been resolved to your satisfaction we welcome you to contact ASM at the address listed above (and on the back of this manual). We will be happy to work with you and your Rugged RV Dealer to hopefully correct the situation.

**THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE AND PROVENCE.**

## **Rugged RV Warranty Overview**

Rugged RV comes with a 1 year warranty that includes all material and workmanship defects that may occur.

If you need warranty work performed by Rugged RV at American Surplus' facility, it is the owner's responsibility to deliver and pick up the RV to and from our manufacturing facility located at: 3134 East Highway 7 in Montevideo, Minnesota. Any hauling done by American Surplus & MFG Inc. or anyone else that is affiliated with ASM may be subject to a minimum charge of \$2.00 per mile.

Some items that are not covered by the Rugged RV Warranty are:

- Individual Components Manufactured by others
- Rust on the Frame
- Wavy Siding caused by expanding and contracting due to heat or cold.
- Any Damage or Issues caused by excessive use, abuse, neglect or misuse by the owner.

**Send in your Rugged RV and Individual Component Manufactures Warranty registrations cards within ten (10) days of purchasing your Rugged RV.**

**Failure to do so could void these important warranties.**

**Please, contact the Rugged RV Dealer you purchased your Rugged RV from for ANY warranty issues.**

Your Rugged RV Dealer is your important FIRST contact for any warranty or non-warranty related issues. Many Rugged RV Dealers are capable of addressing and/or performing some or all of the warranty or non-warranty services that may arise.

You may contact your Rugged RV Dealer for help with obtaining warranty service from the individual component Manufacturer. Many Rugged RV Dealers are capable of performing warranty service for these companies and/or can assist you with getting warranty service from the individual component Manufacturers.

OR

You may also contact the Manufacturer of the individual component for warranty service. You can find many of the individual component Manufacturer's contact

information in the specific manuals included in your Rugged RV Owners Packet. Please review the individual component Manufacturer's manuals in your Rugged RV Owners Packet.

## **Taking Delivery of your New Rugged RV**

When picking up your New Rugged RV from your Rugged RV Dealer you will complete two important documents: the Dealer / Customer Delivery Check List and the Rugged RV Warranty Registration Card. These are important documents and information. Every Rugged RV Dealer and New Owner must complete the Dealer / Customer Delivery Check List, together, and perform a 'walk-through' of your new Rugged RV with you to ensure that you have been shown the proper safe use and care of each component of your new Rugged RV.

If you did not complete a Dealer / Customer Delivery Check List and Rugged RV Warranty Registration Card and perform a complete 'walk-through' with your Dealer, please contact your Rugged RV Dealer immediately and complete these important documents and instructions. Be sure to completely understand information and proper functioning of each of the components of your New Rugged RV to ensure you have a safe and enjoyable experience!

## **Rugged RV Dealer Responsibilities**

Your Rugged RV Dealer is responsible for performing a Pre-delivery inspecting of both the Rugged RV Factory and Dealership installed components on your Rugged RV for proper operation.

Your Rugged RV Dealer is required to provide you with a complete and thorough 'walk-through' of the operation, use and care of each component of your Rugged RV before you take possession of the trailer. ASM and your Rugged RV Dealer want you to know the complete and safe operation of each component.

Your Rugged RV Dealer is required to provide you with and review a complete Rugged RV Owner's Manual and provide you with Rugged RV Owner's Packet that includes all the operation manuals and warranty registrations cards for individual components installed on your Rugged RV.

## Rugged RV Owners Responsibilities

As the Owner of a Rugged RV, you have the responsibility to understand the complete, safe and proper operation and maintenance of your unit and each component installed. You are responsible to properly maintain your new RV and have periodic and preventative maintenance performed in a timely manner, and properly winterize your RV if necessary. Please do not ignore proper maintenance or ignore problems.

Complete and send in all warranty registrations cards. This will ensure the individual component manufacturers enact (start) your warranty and have your contact information so they may contact you regarding any warranty or recalls on their products installed on your New Rugged RV in a timely manner.

NOTICE: Your Rugged RV was not designed to be used as a permanent dwelling, rather for recreational use. Use of your RV as a permanent dwelling, rental property or commercial use may reduce or possible void your warranty coverage.

## PRE-TRAVEL CHECK LIST FOR YOUR Rugged RV

### Notice to ALL BUYER - Before traveling with your Rugged RV ALWAYS:

1. SHUT OFF REGRIGERATOR AND ALL GAS APPLIANCES BEFORE REFUELING TOW VEHICLE!
2. Check tire lug nuts to make certain that they are tight each time you travel.
3. Check tire inflation pressure and inspect tires for damage or wear.
4. Set and check trailer brake system on tow vehicle (if equipped).
5. Connect and ensure 12V to trailer break away braking system (if equipped).
6. On Hydraulic Drop Down Suspension trailers: It is recommended that you disconnect the remote pendant (yellow push button remote connected directly to the hydraulic pump) AND place the wireless remote in a safe storage area (not in your pocket!!), to minimize accidental activation of the Hydraulic Power Unit (HPU). Check Pump, Cylinders, Connectors and Hoses for damage or leaks. Check Pump Reservoir Fluid Level.
7. Make sure hitch pin is installed (on hydraulic drop down suspensions).

8. Make sure hitch and leaf spring cable tension is released (on cable drop down suspensions).
9. Make sure leaf spring and hitch safety pins are installed (on cable drop down suspensions).
10. Make sure slide-outs are retracted and secured (if equipped).
11. Make sure the deadbolt is locked on the door.
12. Make sure toy hauler ramp door is secured and locked (if equipped).
13. Make sure windows are closed.
14. Make sure stove hood vent damper door is locked.
15. Make sure external electrical is disconnected.
16. Make sure water and drain connections are disconnected.
17. Make sure upper bunks are secured.
18. Make sure personal items in trailer are properly stowed and secured.
19. Make sure your trailer is properly balanced and not overweight !

## **DO NOT EXCEED 55 MILES PER HOUR!!!**

## Operating Your Rugged RV Drop Down Suspension

### **WARNING!!!!**

For your safety, before operating the winches or hydraulics on your Rugged RV, check ALL clamps and cables to guarantee they are tight and in good working order.

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY CAUSE SERIOUS BODILY INJURY OR DEATH AND / OR DAMAGE TO YOUR RUGGED RV.

## Directions for DROP DOWN CABLE Hitch & Leaf Spring Equipped Rugged RV's

When lowering your Rugged RV, remove safety pins on hitch and leaf springs, let the front hitch winch down first and then lower the side winches down. When lowering or raising your RV **DO NOT** lean over the leaf spring...stand behind the winch and stand clear of the hitch, wheels and frame.

Keep hands and feet clear of the frame when lowering the front and side winches of your fish house. When raising your Rugged RV, raise both side winches first, then the front hitch winch, install safety pins on hitch and leaf springs, and then remove tension from all the winch cables before moving the trailer.

## Directions for **DROP DOWN HYDRAULIC Hitch & Leaf Spring Equipped Rugged RV's**

- When lowering your Rugged RV, remove safety pin on the hitch.
- Keep hands and feet clear of the frame when lowering or raising your Rugged RV and stand clear of the hitch, wheels and frame.
- After raising your Rugged RV install safety pin on hitch.

## Drop Down Cable and Hydraulic Maintenance

### Cable Drop Down / Lift System:

In order to keep the cable drop down/lift system working throughout the year, occasionally you will need to exercise the assembly by lifting the house up and down with the winches. While doing this, it is a good time to grease the fittings on the rotating shaft. It works the best to take the weight off of the shaft by blocking your Rugged RV up, so that the grease can work through shaft effectively. We recommend that this is done every few weeks throughout the year, to prevent any freeze up or rusting on the pivot arm and winch assemblies.

### Hydraulic Drop Down / Lift System:

- Hydraulic oil reservoir should be checked each time before operating the system.
- Hydraulic system (pump, rams and hoses) needs to be checked for leaks and/or damage each time before operating the system.

Use only specified hydraulic fluid in the hydraulic reservoir. Use a premium hydraulic oil to ensure optimum performance and system life. Select oil that has anti-wear properties, rust and oxidation inhibitors, foam inhibitors and good stability.

Examples of premium grade hydraulic oils: Chevron Rando HDZ, Mobil DTE 10, DTE 20 series, AMSOIL, and Shell Tellus.

<u>Ambient Temperature Range</u>	<u>ISO Viscosity Grade</u>
- 20°F to +32°F (-29°C to +0°C)	15**
+14°F to +120°F (-10°C to +49°C)	22, 32, ATF*

\*Automotive Transmission Oils are acceptable under normal conditions.

\*\*Aviation Oils such as Valvoline ROYCO series or Mobil Aero HF or HFA may be used in prolonged, extreme cold environments.

DO NOT Use Biodegradable Hydraulic Fluid.

DO NOT Mix Fluid Types.

DO NOT OVERFILL THE HYDRAULIC FLUID RESEVOIR.

Fluid fill level marks are on the side of the reservoir (depending on installation of pump, the fluid fill marks may be on the back side of reservoir).

Full Hydraulic Fluid Reservoir level is when fluid level is about 1½" from top of reservoir.

Add Hydraulic Fluid to Reservoir level when fluid level is about 2" from top of reservoir.

**DO NOT ALLOW THE HYDRAULIC FLUID RESEVOIR TO BECOME LESS THAN ½ FULL.**

**Tires, Tire Maintenance, Wheels (Rims), Wheel Assemblies, Axle(s)**

## Wheel Lug Torque

**NOTICE: SECURE ATTACHMENT OF THE WHEEL TO THE HUB/DRUM WITH A TORQUE WRENCH BEFORE EACH TRIP! DO NOT GUESS AT LUG TORQUE – USE A TORQUE WRENCH!!**

**Make sure all of the lug nuts are secure before each trip.**

Inspect tires for proper inflation, uneven wear patterns on the tread, cracks, foreign objects or other signs of wear or damage.

Checking tires for proper inflation, lug nut tightness and tire wear is imperative to safely towing your RV.

Periodic packing of the wheel bearings, inspection of the trailer electrical and breaking system (if your model is equipped with trailer breaks) is important to the longevity and safe operation of your RV.

Checking that all the running/clearance, brake and turn signal lights are working should be done before each trip.

## Wheel Bearing Maintenance

**NOTICE:** It is imperative that trailer wheel bearings be repacked (re-greased) yearly, after periods of storage and/or every 2000 miles of travel to prolong life of hub and axle assemblies.

**NOTICE:** THIS MUST BE DONE REGULARLY AND IS THE RESPONSIBILITY OF THE OWNER TO ENSURE IT IS ACCOMPLISHED.

Rugged RV's use tires that are 205/75/15, 225/75/15 and 225/75/16 sizes. These are an ST rated tire and are rated at a **maximum speed of 65 MPH.**

## **Tires**

The following information is provided to make tire safety a regular part of your Rugged RV and tow vehicle maintenance routine.

### **Tire Maintenance**

Well maintained tires improve steering, stopping, traction, and load-carrying capability of your tow vehicle and your Rugged RV. Under or over inflated tires, overloaded (over weight) trailers, un-balance load in the trailer and overloaded tow vehicles are a major cause of tire failure. To avoid flat tires and other types of tire failures, inspect tires before each trip, maintain proper tire pressure, observe tire's condition, keep your load balanced, the weight below your RV (GVWR & GAWR) and your tow vehicle load limits, and avoid hazardous road conditions.

#### **Know Your Vehicle's Recommended Tire Pressure and Load Limits (GVWR & GAWR)**

The tire information and trailer certification label contains information on tires and load limits.

These labels indicate the trailer frame's manufacturer's information including:

- Recommended tire size.
- Recommended tire inflation pressure.
- Gross Vehicle Weight Rating (GVWR - the maximum occupant and cargo weight a vehicle or trailer is designed to carry).
- Gross axle weight ratings (GAWR - the maximum weight each axle is designed to carry).

### **Understanding Tire Pressure and Load Limits**

Tire inflation pressure is the amount of the air in the tire that provides it with load-carrying capacity and affects the overall performance of the tire and vehicle. The tire inflation pressure is a number that indicates the amount of air pressure, measured in pounds per square inch (psi) a tire requires to be properly inflated (this number is also expressed in kilopascals (kpa) which is a metric measuring system used Internationally).

Vehicle manufacturers determine this number based on the vehicles' design load limit which is the greatest amount of weight a vehicle can safely carry and the vehicle's tire size. The proper tire pressure for your vehicle is referred to as the 'recommended cold inflation pressure'. Tire pressure should always be measured when the tire is 'cold' to get an accurate measurement. A cold tire is one that hasn't been driven on for at least 3 (three) hours. As you drive, your tires get warmer causing the air pressure within the tire to increase.

Therefore, you cannot get an accurate measurement of tire pressure unless the tire is cold.

### **Checking Tire Pressure**

Because tires are designed to be used on more than one type of vehicle, tire manufacturers list the 'maximum permissible inflation pressure' on the sidewall of the tire. The number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

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

- Tires lose air pressure over time.
- Tires can lose air suddenly if you drive over a pothole, drive on ruff surfaces or strike the curb.
- With radial tires it is not always possible to determine under inflation by visual inspection.

For your convenience, purchase a good quality tire pressure gauge to keep in your tow vehicle.

### **Preventing Tire Damage**

Slow down if you have to go over a pothole, object in or a rough road.

Do not run over foreign objects in the roadway and try not to strike the curb when parking.

### **Tire Safety Checklist**

- Check tire pressure regularly (at least once a month and before each use), including any spare.
- Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or other signs of wear or trauma.
- Remove bits of glass, stones or any other foreign objects wedged in the tread.
- Make sure your tire's valve stems have valve caps to keep dirt out of them.
- Check tire pressure before going on every trip and before each leg of your trip.
- Do not overload your vehicle or load your trailer unbalanced. Check the tire information placard for the maximum recommended load for the vehicle (see Loading and Balancing section of this manual).
- Remember that some of the weight of the loaded trailer is transferred to the towing vehicle.

### **Frame and Frame Maintenance**

Periodic maintenance of the frame includes removing rust and touching up the paint (every 6 months). This will ensure your Rugged RV trailer lasts for years.



## Proper Loading and Balancing of Trailer

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY CAUSE SERIOUS BODILY INJURY OR DEATH, CAN CREATE UNSAFE DRIVING CONDITIONS, AND / OR CAUSE DAMAGE TO YOUR VEHICLE AND / OR YOUR RUGGED RV.

Determining the weight of a vehicle includes more than understanding the load limits of the tires. A weight certification label, located on the forward half of the road side of the unit, will indicate the gross axle weight (GAWR) and the gross vehicle weight (GVWR). This is the most weight the fully loaded vehicle can weigh. If there are multiple axles, the GAWR of each axle will be provided.

Look in your Yellow Pages or the internet for truck stops, gravel pits, storage companies or recycling facilities to find certified scales. Call in advance to determine if they offer public weighing service, their fees and hours of operation.

DO NOT OVERLOAD YOUR RUGGED RV.

DO NOT assume that you can fill all the water and holding tanks and all storage areas and still be within the GVWR.

THERE IS A LIMIT TO HOW MUCH WEIGHT and WHERE THAT WEIGHT CAN BE PLACED IN YOUR RV AND STILL OPERATE IT SAFELY ON THE ROAD AND NOT DAMAGE THE TRAILER OR TOW VEHICLE.

You are towing a trailer, remember that some of the weight of the loaded trailer is transferred to the towing vehicle via the trailer's hitch (tongue weight of trailer). Proper loading & balancing of your Rugged RV is imperative to the safe operation of your tow vehicle!

WHEN ESTABLISHING THE CARGO CAPACITY, WEIGH YOUR EMPTY RUGGED RV WITH THE FRESH WATER AND WASTE WATER HOLDING TANKS AS EMPTY AS POSSIBLE, LP TANKS FULL, AND NOTHING IN THE TRAILER (DO NOT PUT YOUR PERSONAL BELONGINGS OR ALLOW ANYONE TO BE IN THE EMPTY RV WHEN WEIGHING THE UNIT)

CARGO CAN BE ADDED TO YOUR RUGGED RV UP TO THE MAXIMUM WEIGHT SPECIFIED ON THE WEIGHT LABEL. THE COMBINED WEIGHT OF THE EMPTY RUGGED RV AND ITS' CARGO CANNOT EXCEED THE STATED GVWR OR THE GAWR

NOTICE: Your tow vehicle and tow vehicles hitch also have a maximum towing capacity and a maximum tongue weight capacity. Be sure that you do not exceed these weights!

NEVER EXCEED THE GVWR, FOR YOUR TOW VEHICLE, YOUR LOADED RUGGED RV'S FRAME, AXLE(S), WHEELS OR TIRE MANUFACTURER'S RECOMMENDATIONS FOR MAX LOAD WEIGHT (GVWR).

GAWR (Gross Axle Weight) PLUS (+) Tongue Weight EQUALS (=) GVWR (Gross Vehicle Weight)

GAWR - (Gross Axle Weight Rating) is the allowable weight, including cargo that can be safely supported by each axle.

GVWR - (Gross Vehicle Weight Rating) is the GAWR + Tongue Weight and is the maximum allowable weight of the fully loaded trailer.

### TONGUE WEIGHT

Tongue Weight is the weight of the tongue as it bears down on the hitch of the towing vehicle. It is important to note that the tongue weight will be added to the rear axle weight of the tow vehicle and will reduce the front axle weight of the tow vehicle.

Tongue weight should be determined with the RV fully loaded as it would be for travel.

Tongue weight will change when you load and how you load your RV.

Tongue and Trailer weight and loading will directly affect the handling of your tow vehicle.

NOTICE: Excessive, Not Enough or Negative tongue weight can cause dangerous adverse conditions in the tow vehicle, including, but not limited to, over or negative weight for tow vehicles rear axle, underweight for tow vehicles front axle, and could lead to unstable driving conditions of the tow vehicle MAKING IT DANGEROUS TO DRIVE THE TOW VEHICLE AND TOW YOUR RUGGED RV!!

UVW – (Unloaded Vehicle Weight) is the weight of the trailer as manufactured at the factory. It includes the complete weight of the trailer axle(s), tires and the tongue. If applicable, it also includes full fluids including LP tanks, and hydraulic pump fluids. UVW does not include the weight of full fresh water tanks, full holding tanks or whatever personal items you put inside.

CCC – (Cargo Carrying Capacity) is equal to GVWR minus the UVW. CCC is the weight of cargo you can safely put in your RV. Cargo weight includes fresh water weight and anything you put inside or on the RV.

The weight of fully filled propane containers is considered part of the weight of your RV before it is loaded with cargo and is NOT considered part of the cargo load (CCC) Water is a cargo weight (about 8.34 lbs per gallon). If there is a 15 gallon fresh water storage tank, when this tank is full it weighs over 125 pounds. If needed, water and your waste water holding tank can be emptied to keep the total amount of cargo added to the trailer within the limits of the GVWR and may lower your RV'S tongue weight. Understanding this flexibility allow you to make choices that fit your travel and camping needs.

Note: Before filling the fresh water tank, empty the Waste Water Holding tank. Most campgrounds, RV centers and some truck stops supply dump stations for this purpose. Doing this will provide more cargo capacity.

Note: If you find that you have exceeded the GVWR of your RV, you will have to remove items until you are within the specified limits. After you have determined how much weight you can safely carry, make a list and keep it for future reference. This will limit the amount of time it takes you to get ready for the road.

### **Rugged RV Trailer Load Limits**

After you have determined what cargo weight (CCC) makes up the allowable GVWR, you can then load your personal items into your RV without exceeding the GVWR, GAWR or Tongue Weight.

When loading your RV, remember to distribute the weight evenly so you get the proper amount of weight on the axles and hitch. Remember to also consider the weight of items you may purchase on your trip.

Do not place heavy items in the overhead cabinets. They could sift and fall during travel. Heavy items should be stored close to the floor in the center of the unit.

Luggage and similar cargo stored inside your RV must be secured to prevent possible damage if it should become necessary to make a sudden stop or in case of an accident.

Store emergency items such as flashlights, flares, tools, electrical cords and first-aid kits in an easily accessible storage compartment, taking care to keep those items in a waterproof container to keep them clean and dry.

Empty your Fresh Water and Waste Water Holding tanks before beginning each leg of your trip. Carry only as much water as needed for travel use or to balance the load.

### **Weight Distribution**

Weights of stored items will vary greatly and will affect total weight of the RV. Always weigh your RV at a certified weight station equipped with platform scales.

### **Trailer and Tow Vehicle Hitch**

Refer to YOUR vehicle's and YOUR vehicle hitch's manufacture's information for complete information on usage, care and manufacturer's warranty.

#### **Tow Vehicle Hitch**

It is very important to choose a tow vehicle hitch designed for your particular tow vehicle and have it properly installed. Choosing the correct hitch for use with your tow vehicle and Rugged RV will enhance the stability and maneuverability of your Rugged RV and tow vehicle combination. Always make sure the hitch has the correct size hitch ball.

(see hitch on trailer for correct size)

### **Safety Tow Chains**

On a Rugged RV and any trailer being towed, the safety chains should always be connected by crossing them under the trailer tongue. The right chain attaches to the left side of the tow vehicles hitch and the left chain attaches to the right side.

This will form a 'cradle' that could 'catch' the hitch coupler should it come loose from the tow vehicle. The end connectors should always be connected to the hitch base plate or another location specifically provided for this purpose on your tow vehicle's hitch. If the chains are too long, simply twist them to make them shorter so they do not drag on the ground.

NOTE: NEVER attach safety chains by looping around Ball Hitch Coupler (receiver).

NOTE: YOU MUST LOWER THE TONGUE'S HITCH LATCH AND INSERT THE SAFETY PIN INTO THE HOLE BEFORE MOVING YOUR TRAILER.

NOTE: AT NO TIME SHOULD THE WEIGHT OF THE FULLY LOADED UNIT EXCEED THE TOW VEHICLES' MAXIMUM WEIGHT TOW RATING.

## **Leveling Your Rugged RV**

NOTICE: Leveling your Rugged RV is necessary for the correct operation of the gravity flow waste water drains, sink operation, the cooling system of the refrigerator, the A/C system, the hydraulic system's fluid reservoir and proper water drainage of the windows, doors roof and roof gutters. Choose a site that is as level as possible. Be sure the ground is not soft and will support the weight of your Rugged RV. Before unhitching you Rugged RV from the tow vehicle, level your Rugged RV from side to side with the appropriate stacks and lengths of wood under the frame.

## **Electrical**

### **Exterior Trailer Running Lights**

Before each trip, check the operation of your Rugged RV's exterior running, clearance, turn signal and brake lights to be sure they are working correctly. Replace any cracked, broken or missing light covers to avoid moisture infiltration and possible damage to the electrical system.

### **12V Electric Brakes, Electric Brake Break Away**

Your Rugged RV trailer (if equipped with electric breaks) MUST have a 12V power supply connected to the trailer brake break away system for them to work in emergencies.

The electrical power for your RV is a dual source system operating with both 110V AC and/or 12V DC.

### **There are up to 3 electrical systems on your RV.**

1. 12V Power from tow vehicle for running lights and electric brakes.
2. 12V plug-ins, lighting, components, and charging system via the 110V converter.
3. 110V converter for 110V GFCI plug-in, 110V lighting, 12V components via the converter.

### **Connecting to an Outside Power Source**

Never use a two wire extension cord, a "cheater" adapter with the ground pin removed, or put a lower amperage plug on your power cord in place of the molded plug.

Connecting power cord to a non-grounded or improperly grounded source can result in a possibly fatal electric shock.

**American Surplus & Mfg CAN NOT BE HELD RESPONSIBLE SHOULD DAMAGE, INJURY OR DEATH RESULT FROM FAILURE TO CONNECT THE POWER CORD TO A PROPERLY GROUNDED POWER SOURCE.**

### **30 amp AC Power Cord Adapter**

A 30 amp power cord adapter provided to connect your Rugged RV to a grounded power source. You will need to purchase a 30 amp power cord the length of your choice. The electric utility service connection is located on the driver's side, near the rear. The 110V power may be provided by either connecting your RV to an outside power source when parked, or by use of a generator. When the 110V system is operational, power also passes through the electrical power converter, allowing the full use of all 12V functions in your Rugged RV.

### **Battery Charger Operation on 110V**

Batteries are recharged by the electrical power converter only when the RV is attached to an outside 110V power source, or a generator.

### **Electrical Converter Operation, Breakers and Fuses**

Refer to the electrical converter manufacturer's information in your Rugged RV Owner's Packet for complete information on usage, care and manufacturer's warranty.

### **Electrical Converter Operation**

The electrical power converter provided in your RV is a dual system, operating with 110V AC and/or 12V DC. The 110V power may be provided by either connecting your Rugged RV to an outside power source when parked, or by use of 110V generator. When the 110V system is operational, power also passes through a converter, allowing the full use of all 12V functions in your Rugged RV.

**110V functions in your RV include:** Electrical Converter, 110V outlets and 110V lights, refrigerator, roof mounted air conditioner(s), TV, and microwave oven. The refrigerator also has the option of running on LP gas when 110V power is not available.

All other electrical functions in your Rugged RV are supplied with 12V power.

### **12V Power Converter**

When it is not possible to access 110V power, the 12V system functions are supplied by the battery. The battery is recharged by the power converter when your

Rugged RV is attached to an outside 110V power source or to 110V generator.

The converter is also used to switch 110V electricity from an external power supply or generator to 12V electricity. If the converter does not have a 110V supply connected it automatically switches the batteries into the electrical circuit to 12V power. When reconnected to a 110V power source, it will automatically switch back to 110V power.

Under normal conditions, the converter requires no maintenance. The converter will run warm, which is normal. If, however, it gets too hot, it will turn itself off. After it cools, it will come back on. In most cases, shut down occurs due to poor ventilation.

A slight hum during operation is also normal for the converter. If you have no 12V power and no hum, check to see if 110V power to the converter has been interrupted.

### **110V GFCI (Ground Fault Circuit Interrupter)**

NOTE: THE GFCI DOES NOT PROTECT ANY CIRCUIT OTHER THAN THE ONE TO WHICH IT IS CONNECTED. EVEN WITH GFCI PROTECTION, PERSONS WITH SEVERE HEART OR OTHER HEALTH PROBLEMS MAY STILL BE SERIOUSLY AFFECTED BY AN ELECTRICAL SHOCK. THE GFCI OUTLET IS NOT A SUBSTITUTE FOR GOOD ELECTRICAL SAFETY. IT DOES NOT PROTECT AGAINST CONTACT OF THE HOT AND NEUTRAL WIRE AT THE SAME TIME.

The 110V outlets are equipped with a protective circuit interrupter. The ground fault circuit interrupter (GFCI), is designed to break the flow of current to the protected outlet when an imbalance of current is detected. Imbalances include electrical leakage in an appliance such as a shaver or hair dryer that have developed a weak spot in electrical insulation. The possibility of electrocution exists when using a faulty appliance, while you are at the same time in contact with an electrical ground such as water, plumbing or the earth.

GFCI outlets are designed to have additional outlets connected through them. When wired correctly, the additional outlets (called the load on the GFCI outlet) are also protected by the GFCI outlet.

If an imbalance is detected, the GFCI will trip and shut off power to the GFCI outlet and any additional (load) outlets properly wired to the GFCI outlet. Even with GFCI protection, the electrical shock will still be felt, but to a

lesser degree. It also does not protect against short circuits or system overloads. The 110V circuit breakers, (see next section on 110V circuit breakers) in the converter panel which supply power to the GFCI, will trip to protect against short circuits or system overloads.

The GFCI receptacle should be tested initially when the RV is purchased and at least monthly thereafter.

To test the GFCI Circuit, use the following procedure:

1. Make sure power to the circuit is ON.
2. Push the test button on the GFCI outlet.
3. The red reset button should pop out.
4. All power should be interrupted to outlets protected by the GFCI.

Testing of the GFCI outlet does not test the correct wiring of or any additional 110V outlets connected to the GFCI outlet. A special 110V GFCI circuit tester is available from your local hardware store that will enable you to test these additional outlets.

You can also verify Load outlets connected to GFCI outlet by plugging in a light at these outlets, and pushing in the red reset button. If the button does not pop out after pushing the test button, or GFCI circuit continues to trip, immediately turn off power at the circuit breaker panel and have a qualified electrician service it.

NOTICE: THE GFCI OUTLET DOES NOT PROTECT ANY CIRCUIT OTHER THAN THE ONE(S) TO WHICH ARE PROPERLY CONNECTED TO THE GFCI OUTLET VIA THE LOAD BRANCH OF THE GFCI OUTLET.

### **110V Circuit Breakers**

The 110V electrical system on your Rugged RV is protected by circuit breakers. These circuit breakers automatically trip if the circuit load is too heavy, or a short circuit occurs. If a circuit breaker has been tripped, do not reset the breaker until the cause of the problem is identified and corrected. Once the cause of the problem has been corrected, turn the tripped 110V circuit breaker to the full off position and then turn it to the full on position.

### **12V DC and 12V DC Fuses**

A 12V DC distribution panel is located in the electrical converter next to the 110V circuit breakers. The panel contains circuits with replaceable fuses for protection of 12V lines, 12V outlets and 12V appliances. If any line is loaded beyond the capacity of its fuse, the fuse will blow. A portion of the 12V load on the line must be turned off

to reduce the total load on the line to a level below the capacity of the fuse before replacing the fuse and re-energizing the circuit. Replace the fuse with only the same size amperage fuse. If this reduction of load on the line does not stop the blowing of the fuses, there may be a short somewhere along that 12V line, or at a 12V component plugged into the line. Check the 12V line and any components plugged into that line. Locate the short and take necessary steps to repair it. If you cannot locate the problem, contact your Rugged RV dealer or call a qualified electrician.

### **Battery Installation, Operation and Charging**

The deep cycle marine grade battery(s) are usually located in a compartment (under a seat or in a cabinet) and are inside of a vented battery box. It is important to be sure the battery(s) are kept charged. Take time to turn off all lights or other 12V conveniences when not in use. Connect the recreational vehicle to a 110V power source when possible, to prevent draining the battery(s) and so the converter can recharge the battery(s).

NOTE: Keep in mind that the converter's battery charge is a low amperage charger (commonly referred to as a "trickle" charger) that takes several hours to recharge your battery(s) completely.

### **Battery Maintenance**

Battery maintenance is important. While Rugged RV may not have installed your battery, we want to provide you with the following information. Checking the condition of a battery at regular intervals will help ensure its proper operation.

### **Recommendations for checking and servicing the batteries.**

- Keep the battery mounted securely. Excessive vibration can cause early battery failure and/or damage to the battery and leaking.
- Check the electrolyte level of the auxiliary batteries at regular intervals. Keep each cell filled with distilled water, to just above the plates. Once the plates have dried out, they cannot be reactivated, and the capacity of the battery is reduced in direct proportion to the area of plate surface that has become dry. This kind of damage can occur quickly.
- Keep the battery clean. Corroded terminals make poor contact. Battery sulfation occurs when the battery has been standing in a discharged condition over a long period of time, or when the battery has

been operated continually in a state of partial discharge.

- Check the outside condition of the battery. Look for cracks in the case or vent plugs. If the battery's outer case if the vent plugs are cracked, the battery must be replaced.
- Watch for overcharging by testing voltage regulator output.
- Never place a battery directly on the ground, cement slab or asphalt.

NOTICE: When removing a battery, disconnect the ground battery clamp first. When installing a battery, always connect the grounded battery clamp last. When a battery needs to be replaced, make sure to replace it with a battery of the same specification as the original equipment. Consult your Rugged RV Dealer for advice on battery replacement.

### **BATTERY SAFETY**

NOTICE: BATTERIES CAN EXPLODE!

NOTICE: ALWAYS SHIELD YOUR EYES WHEN WORKING NEAR BATTERIES.

DO NOT SMOKE OR EXPOSE BATTERY TO ELECTRIC SPARK OR FLAME.

When charging or discharging, batteries generate hydrogen. Hydrogen and air is a very explosive mixture.

DO NOT SHORT ACROSS THE BATTERY TERMINALS. The spark could ignite the gases.

DO NOT where metal jewelry or a watch when working on a battery.

DISCONNECT the battery cable and the 110V power cord before working on electrical system.

DO NOT reconnect the cables until all work has been completed.

Battery electrolyte is a corrosive, poisonous, sulfuric acid. Avoid contact with skin, eyes, clothing or any painted surface.

### **Battery Charging**

The converter also operates as a battery charger when it is connected to a 110V power source. If the battery is below a full charge, the converter charger will begin operation at a rate that reflects the level of discharge. When the battery is again fully charged, the converter charger drops its charging level back to a maintenance level to keep the battery fully charged.

### **Smoke Detector Operation**

Refer to the Smoke Detector manufacturer's information in your owner's packet for complete information on usage, care and warranty.

**NOTICE:** There are no 12V or 110V electrical wires to the smoke detector. The smoke detector is operated only by a single 9V battery. Be sure to change the battery every 3 months.

**NOTICE:** Never ignore alarms on safety devices. If the alarm sounds and you are not absolutely certain of the source, get everyone out immediately.

### **CO/LP Detector**

Your Rugged RV is equipped with a dual purpose CO/LP detector.

#### **CO portion of the Detector**

The carbon monoxide detector is designed to detect carbon monoxide from any source of combustion. It is NOT designed to detect smoke, fire or any other gases. This detector is hard wired to the RV's 12V converter system and will operate as long as there is 110V to the converter or as long as the 12V battery is connected and has a charge. Test alarm each week while in use and before beginning a trip. Press the "TEST" button. IF the alarm fails to sound replace the unit immediately. DO NOT attempt to repair the detector.

#### **LP portion of the Detector**

They sense propane gas in the air, not smoke or fire or other gases. It detects the presence of propane gas at the sensor, explosive gas may be present in other areas. Test you LP detector weekly. DO NOT attempt to repair the detector. If it fails, replace the unit immediately.

#### **In the event of an LP detector alarm:**

IF the detector senses the presence of LP gas, the light will turn from green to red, accompanied by an audible alarm. Immediately evacuate all occupants from the RV. Extinguish any open flames, pilot lights and all smoking material. DO NOT touch any electrical switches. Shut off the gas supply at the tank. Open doors and windows to ventilate. DO NOT USE THE RANGE HOOD OR OTHER POWER VENTS. The alarm will continue to sound as long as LP gas is detected or until turned off.

DO NOT bring or store LP gas cylinders, gasoline or other flammable liquids inside the vehicle. A fire or explosion could result.

LP gas regulators must always be installed with the regular vent facing downward.

Regulators that are not in compartments have been equipped with a protective cover. Be sure the

regulator cover is kept in place to minimize vent blockage that could result in excessive gas pressure causing fire or explosion.

DO NOT rely upon being able to smell LP gas leaks as the odor may not be sufficiently strong enough to detect.

If you detect a sulfur or 'rotten egg' odor, DO NOT, turn on any appliances. Shut off all operating appliances. Extinguish any open flames, including cigarettes. DO NOT touch any electrical switches. Open windows and doors and exit the vehicle. Shut off the gas supply at the LP tank (or source).

### **Fire Extinguisher Operation**

Refer to the fire extinguisher manufacturer's information located directly on the Fire Extinguisher for complete information on usage and care.

**NOTICE:** The fire extinguisher provided with this RV is a chemical type suitable for extinguishing small fires. Extinguishers are designed to put out a fire in its initial stage, not if it is blazing out of control.

**IF A FIRE CANNOT BE APPROACHED WITHIN 10' DO NOT ATTEMPT TO PUT IT OUT, IMMEDIATELY EVACUATE THE RV AND CALL 911.**

### **LP Hook Up and Operation**

**WARNING:** LP (Propane) Gas regulators must always be installed with the regulator vent facing downward. Regulators that are not in compartments have been equipped with a protective cover.

Owners must make sure that the regulator vent faces downward and that the cover is kept in place to minimize vent blockage that could result in excessive propane pressure causing fire or explosion.

### **LP System**

The liquid petroleum (LP) gas system in your recreational vehicle furnishes the fuel for cooking, heating and hot water. LP gas can also be used as an alternate energy source for refrigeration. It is a clean, efficient and safe form of energy ONLY when proper handling and safety precautions are observed. The gas is stored with extreme pressure in the tank(s), with space in the tank to allow for expansion into vapor. This vapor is reduced in pressure by passing through a regulator. The regulator reduces the pressure in a two-step process which assures consistent pressure for use, regardless of outside temperatures, weather or altitude.

## LP Regulator

LP gas is under high pressure in the tank. The purpose of the regulator is to reduce the pressure inside the tank to allow operation at a safe pressure for use.

LP gas regulator most commonly used on LP tanks are:  
18 PSI (pressure per square inch) single stage LP gas regulator, most commonly used on single tanks.  
30 PSI (pressure per square inch) two stage LP gas regulator, most commonly used on dual tanks.

NOTE: Always keep your regulator attached to a tank to prevent dirt from getting into the regulator and tank connectors.

DO NOT adjust or repair the regulator. Regulators are preset at the factory to certain specifications and should only be adjusted by a qualified propane service technician. To avoid potential problems, have your LP gas system checked at least once a year by an authorized service center and after each extended trip. Be sure to keep the service valve on an empty tank closed where you suspect a leak.

## Regulator Cold Weather Factors

As outside temperatures drop, the BTU value of the LP gas is lessened. The colder liquid LP in the tank(s) require heat from the surrounding air to vaporize. The lowering of BTU value can significantly affect the performance of the system. Keeping your LP tanks as full as possible in cold weather and reviewing the BTU/hr rating plates on LP appliances will help ensure proper LP management.

## Regulator Freeze-Up

The term 'regulator freeze-up' is a misleading one. Regulators and LP gas do not freeze. However, the moisture that can be contained in the gas will freeze as the gas expands and cools passing through the regulator. This freezing of the moisture in the gas can build up and partially or totally block the passage of the gas through the regulator. Freezing can also occur when outside temperatures are low enough to contribute to the freezing of the moisture in the gas.

The source of the moisture is varied. It can occur at the refinery or gas bulk plant, in the cars used to transport the gas, or even within your own LP tanks. Moisture in an LP tank can occur when a tank service valve is left open, allowing moist air to enter and become trapped. A two-stage regulator helps reduce the possibility of

freeze-up because of its larger orifice size and that heat is being transferred through the walls of two regulators instead on only one.

NOTICE: DO NOT overfill the LP tank.

## Tips to help prevent regulator freeze-up

- Make sure your LP tank is free of moisture before refilling.
- If freezing occurs, have your LP dealer purge the LP tank before refilling.
- Check with your dealer to determine what deicing agent is approved to add to the LP tank.
- Keep the regulator connected to a tank and the tank(s) and regulator covered at all times.

NOTE: If freeze-up does occur, shut the LP off at the tank(s). A frozen regulator may permit LP gas to flow at high pressure, resulting in leaks at appliances or in the gas lines. NEVER ATTEMPT TO THAW WITH AN OPEN FLAME! A small wattage light bulb can sometimes be useful to provide heat and air in the thawing process. Once the line is thawed, be sure to take the proper steps to prevent a recurrence. Have the system checked by your Rugged RV dealer.

## LP Pigtail

The LP pigtail is the hose that connects to the LP regulator on the tank through which the LP fuel flows. This safety feature is generally recognized by the large green nut that attaches to the outside of the valve on the regulator. This will limit excessive gas flow and prevents gas from flowing unless the connection is tight.

## LP Fuel Systems, Containers, LP Component Equipment

Refer to each LP use component manufacturer's information in your owner's packet for complete information on usage, care and Manufacturer's warranty.

## Propane (LP) Containers

### **\*\* WARNING: IF YOU SMELL PROPANE \*\***

- Extinguish any open flames, pilot lights, and all smoking materials.
- Do not touch electrical switches.
- Shut off the propane supply at the container valve or propane supply connection.
- Open doors and other vent openings.
- Leave the area until odor clears.
- Have the propane system checked and leakage source corrected before using again.

Propane cylinders shall not be placed or stored inside your RV. Propane cylinders are equipped with safety devices that relieve excessive pressure by discharging propane to the atmosphere. This will prevent discharge of LP inside your Rugged RV.

**Warning! IT IS NOT SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING.**

Unlike homes, the amount of oxygen supply is limited due to the size of the recreational vehicle, and proper ventilation when using the cooking appliances avoids dangers of asphyxiation.

Unlock the exterior damper and turn on the stove's exhaust hood fan when using stove or oven. Open a window to allow make up air into your RV for the stove's exhaust hood fan to draw air from.

**Warning:** Leave your window slightly open for your safety, if you plan on spending the night.

**Warning:** DO NOT fill propane containers to more than 80% of capacity.

Overfilling the propane container can result in uncontrolled propane flow, which can cause fire or explosion. A properly filled container contains approximately 80% of its volume as liquid propane. An 80% automatic shut-off valve has been installed on the LP tank which will automatically prevent further filling when the gas volume has reached 80% of capacity.

**LP Gas System Check**

To ensure proper operation, have the LP gas system checked frequently for leaks and road damage. The entire LP gas system should also be checked semi-annually for proper regulator pressure. Have the system checked by a qualified LP gas service technician using proper equipment.

**Furnace & Thermostat Operation**

Refer to the furnaces manufacturer's information in your owner's packet for complete information on usage, care and manufacturer's warranty.

**NOTE:** Before operating the furnace check the location of the furnace vent to be sure it will not be blocked by the opening of any door on the fish house (or by exterior items such as bushes, or trees).

ALWAYS open a window slightly to allow a little fresh air into your Rugged RV.

The furnace is ignited simply by moving the thermostat's temperature setting indicator to the right and set it at a temperature above the current room temperature. Parking your RV so that the wind hits the front or back will assist in ensuring the furnaces (and refrigerator's) air intake and exhaust vent are not being affected by the wind.

**Thermostat Operation**

Many factors influence the temperature inside your RV. There are several things you can do to help manage the inside temperature and keep your furnace operating in the most extreme conditions. Keep doors, vents and windows (other than your fresh air window you opened before starting the furnace) closed as much as possible. Setting and leaving the thermostat at a temperature setting will allow the device to detect changes in temperature and operate efficiently. If you lower the temperature setting at night or when leaving, when you return simply reset the thermostat to the desired temp. It is recommended to set the thermostat at a comfortable temperature and leave it.

Tips to assure continued safe operation of the furnace:

- Inspect furnace venting to ensure it is free of obstruction and does not have soot build up. Soot build up may indicate the furnace is not working properly and is in need of technical maintenance.
- Periodically have the main burner flame observe by an authorized technician to ensure it is burning with a hard blue flame. If the flame appears yellow or 'lazy', shut the furnace down. The burner may need to be cleaned or replaced.'
- Keep the furnace intake grill area clear of any combustible materials, gasoline or other flammable vapor and liquids.

To avoid over-stressing your furnace:

- Check to be sure there are no gaps in windows or doors that would allow loss of heat other than the window you have chosen to provide fresh air into your fish house
- Park the Rugged RV so the front or rear of the unit takes the brunt of wind force.
- Have your furnace checked to ensure it is operating at its highest capacity.
- Keep all vents free of obstruction.

**NOTE:** Whether using the HEATING or the COOLING, condensation is always an issue. Keeping your RV at a constant temperature helps keep condensation at a minimum. For more information on the effects of



condensation refer the Condensation portion of in this manual.

### Troubleshooting Furnace

If you are having problems with your furnace, there are a few things to check to ensure that the furnace will work flawlessly throughout the season.

- Read the manufacturer's manual and follow the manufacturer's operation and maintenance procedures.
- Make sure that your battery is fully charged and holds a good charge. Voltage to the furnace should be between 10.5 and 13.5 VDC during operation with the interior lights and other electrical components ON or OFF. When you are operating your Rugged RV on battery power only, you can deplete the battery to the point there is not enough voltage to operate the furnace fan and the furnace will shut down.
- Check the fuses and breakers in your converter to ensure nothing is tripped or a fuse has not blown.
- Make sure your LP tank has sufficient amount of gas, and if it is a new tank, be sure that the tank was purged when the first initial fill was done. A nice warm furnace is great when the outside temperature gets cold, unfortunately though, cold is an enemy of LP gas (see proceeding LP section in this manual). **The BTU capacity of LP gas decreases as the outside temperature gets colder.** Based on how full the LP tanks are, the ambient temperature outside and how many BTU's the furnace is, there may not be enough gas to sustain ignition on the furnace. See chart below on BTU vaporization capacity of a 30 lb LP Tank.

% Full	20 F	0 F	-10 F
60%	50,400	25,200	11,900
50%	45,360	22,680	11,340
40%	40,320	20,160	10,640
30%	35,280	17,640	10,220
20%	30,240	15,120	7,560

- Check all vents, interior and exterior, make sure they are free from any obstruction to the air flow. This will overheat the furnace and put it into a lockout mode (refer to Furnace Manufacture's Manual).
- If you are having a hard time getting the furnace to start, first turn your thermostat switch to 'off' (completely to the left and you will hear a click as it goes to the full 'off' position), wait 15-20 seconds, then turn your thermostat back on by moving the temperature setting indicator to the right and set it

at a temperature above the current room temperature. This may restart the furnace.

- If you continue to have problems with your furnace, have the system checked by your Rugged RV Dealer, a qualified LP gas service technician using proper equipment or an authorized RV center.

**WARNING:** At any time that you need to look at your furnace to try to figure out what is wrong with it, do not loosen or unhook any gas line fittings. This may cause gas to leak into your RV.

### A/C Operation and Maintenance

Refer to the A/C Manufacturer's information in your owner's packet for complete information on usage, care and Manufacturer's warranty.

Cooling tips:

- Park the RV in a shaded area whenever possible.
- Use window shades (blinds or curtains) and consider buying a door window cover, to help keep the heat and sun out and the cold air in.
- Keep windows and doors shut and minimize usage.
- Avoid the use of heat producing appliances.

Starting the air conditioner in the morning and giving it a head start on the expected high outdoor ambient temperature will greatly improve its ability to maintain the desired indoor temperature.

**NOTE:** ALWAYS TURN OFF AIR CONDITIONER (AND ALL ELECTRICAL APPLIANCES) BEFORE DISCONNECTING THE RV FROM ITS' 110 VOLT POWER SOURCE.

**NOTE:** IF YOU COVER THE OUTSIDE PORTION OF YOUR AIRCONDITIONER DURING PERIODS OF STORAGE, BE SURE TO REMOVE PROTECTIVE COVER BEFORE REUSING. We at Rugged Marketing & Distribution LLC and ASM are an OEM only. We are not a service center for any of the components that are installed in your unit. For any assistance on issues that may come up, please contact your dealer or the manufacture of the A/C (their contact information can be found in their manual).

## Range, Oven, and Hood Vent Operation and Maintenance

Refer to the Range/Oven Manufacturer's information in your Rugged RV Owner's Packet for complete information on usage, care and Manufacturer's warranty.

### Hood Vent Operation

**NOTICE:** Any time the range (cook top) or oven are used the hood vent must have its exterior damper unlocked, be turned on and a window slightly opened.

A warning label is located in the cooking area to remind you to provide an adequate supply of fresh air for combustion. Unlike your home, the amount of oxygen supply is limited due to the size of your RV, and proper ventilation when using the cooking appliance(s) will avoid the dangers of asphyxiation.

### Range (cook top) and Oven

The most common type range oven installed in a Rugged RV is a three burner built-in range oven. The surface burners will feature manual match light.

Before Lighting Range or Oven:

- Open a window a little to allow the hood vent to draw air from.
- Unlock the hood vent's exterior damper door and turn on the exhaust fan.
- Be sure all control knobs are in the 'OFF' position before supply gas to the appliance.
- Be sure the main LP gas supply is on before lighting the burner.
- DO NOT TURN THE CONTROL KNOB 'ON' AND ALLOW GAS TO ESCAPE BEFORE LIGHTING THE MATCH OR LIGHTER.

**NOTICE:** IF THE BURNER DOES NOT LIGHT WITHIN 4 TO 5 SECONDS OR IF THE FLAME SHOULD GO OUT DURING COOKING, TURN THE BURNER OFF. IF GAS HAS ACCUMULATED AND A STRONG GAS ODOR IS DETECTED, OPEN A WINDOW AND/OR THE DOOR AND WAIT 5 MINUTES FOR THE GAS ODOR TO DISAPPEAR BEFORE RELIGHTING THE BURNER. ALSO REFER TO THE PROCEEDING 'BLEED AIR FROM GAS LINE' SECTION IN THIS MANUAL.

### Lighting Range (cook top) Burners

Match Light Ignition

- Open a window a little to allow the hood vent to draw air from.
- Unlock the hood vent's exterior damper door and turn on the exhaust fan.

- **IMPORTANT:** Only turn on and light one surface burner at a time.
- Place a pan on the burner grate.
- Hold a lighted match next to the desired surface burner head.
- Push in and turn the surface burner control knob to the LITE position.
- When the burner lights, adjust the knob between HI and LOW to select the desired flame size.
- After cooking, turn the surface burner knob to the OFF position.

**NOTICE:** WHEN YOUR RUGGED RV IS NOT IN USE OR WHILE TRAVELING, TURN ALL KNOBS TO THE OFF POSITION AND TURN OFF THE MAIN GAS SUPPLY

**NOTICE:** When using the oven, DO NOT cover bottom or entire rack with aluminum foil. Covering the convection holes on the sides of the burner pan (above the burner plate) or covering the cooking rack can cause the oven to malfunction.

### Lighting Oven Pilot

The oven features a pilot ignition. Be sure all control knobs are in the OFF position before supplying gas to the appliance. Be sure gas supply to the appliance is on before lighting pilot or oven burner. If the appliance has not been operated for a period of time, the oven pilot may be difficult to light due to air in the gas line, lighting a burner before lighting the oven will bleed off the air in the gas line (REFER TO THE PROCEEDING 'BLEED AIR FROM GAS LINE' SECTION IN THIS MANUAL).

### To Light Oven Pilot

- Be sure all controls are in the OFF position.
- Push in and turn the OVEN knob to PILOT ON position.
- Open the oven door and locate the oven pilot (beneath the oven burner plate, on the right side of the burner). While pushing in the OVEN knob (in the PILOT ON position), hold a match next to the oven pilot for 10-15 seconds or until a small flame is visible without needing to continue holding the match next to the oven pilot.
- Once the pilot is lit, continue to hold the OVEN knob depressed and in the PILOT ON position for about 30 seconds to a minute to allow the OVEN PILOT'S thermos coupler to reach temperature.
- The pilot will remain lit as long as the OVEN knob is left in the PILOT ON position or at a temperature setting to the right of the PILOT ON position.

- If the OVEN knob is turned to the OFF position, gas supply to the pilot will be turned off and the pilot flame will extinguish and need to be relit when you want to use the oven.

Since each oven has its own personal baking characteristics, do not assume your new oven will perform exactly like your oven at home. You may find that the cooking times, oven temperatures and cooking results differ greatly from your home oven. Allow a period of learning and experimentation with cooking times and temperatures as you learn to operate and use the new oven in your Rugged RV.

### Using Oven Temperature Control Knob

The OVEN knob is used to select and maintain the oven temperature. After the pilot is lit on the oven (see above section on lighting pilot), push in and turn this knob just to the desired temperature. DO NOT set it at a higher temperature then turn it back. Setting it at the desired temperature will provide more accurate oven temperature. When you are done using the oven you can either:

- Turn the OVEN knob to the PILOT ON position if you wish to use the oven in the near future and the oven's pilot will remain lit.
- Turn the OVEN knob to the OFF position if the oven will not be used or when traveling.

### Oven Shutdown Instructions

When your Rugged RV is not in use or while traveling, turn the OVEN knob to the OFF position and turn off the main gas supply. This will turn off the oven pilot.

### Microwave Oven Operation

Read and follow the instructions in the Microwave Oven owner's manual provided in your owner's packet.

### Microwave General Operation

- The oven light in the microwave oven will only be on during operation or if the door is open.
- The oven automatically cooks on full power unless set to a lower power level.
- When the STOP/CLEAR pad is touched during the oven operation, the oven stops cooking and all information is retained. To erase all information (except the present time), touch the STOP/CLEAR pad once more. If the oven door is opened during operation, all information is retained.
- If the START pad is touched and the oven does not operate, check the area between the door and door seal for obstructions and be sure the door is closed securely (the oven will not start cooking until the

door is completely closed and/or the program has been reset).

## Radio, TV, Satellite and Antenna Operation & Connection

### Radio

Your Rugged RV may have stereo and sound system installed in it. Please refer to the stereo manufacturer's manual included in your owner's packet for any information on the stereo's operation.

Your Rugged RV may be prewired for and equipped with a roof mount or side mount mast antenna (over the air), satellite, or cable television. The most current televisions can run on 12V DC with the use of a 12V/110V inverter. Your Rugged RV must be connected to an outside power source or generator power to run your TV on 110V A/C power.

### Digital HDTV Over-the-Air Television Antenna

Read and follow the instruction in the digital antenna's owner's manual provided in your owner's packet.

- Turn on antenna power at the wall mount plate.
- Turn on signal meter power button on side of rotational knob enclosure.
- Rotate attenuator dial full clockwise.
- LED lights will illuminate from left (next to power) to right. All LED lights may not illuminate depending on signal strength.
- Depress button on rotational knob and rotate antenna until maximum number of LED lights illuminate on signal meter.
- Rotate attenuator dial counter clockwise until last illuminated LED light flickers.
- Rotate antenna to illuminate last flickering LED light.
- Follow instruction for TV to scan for available channels.

### Satellite Dish Antennas

Due to the diversity of Satellite Dish Antennas you will have to refer to and follow your particular manufacturer's manual for installation, tuning, use and care of your Satellite Dish.

## Door and Window Operation, Emergency Exits and Maintenance

Leveling your Rugged RV is necessary for the proper water drainage of the windows, doors, roof and roof gutters. Clean window weep holes and gutters frequently to keep them flowing and free of debris.

**NOTICE:** RAIN WATER MAY COLLECT IN THE BOTTOM OF THE WINDOW FRAME AND DRAIN OUT OF THE WEEP HOLE SLOTS. THE WEEP HOLE SLOTS ARE MADE FOR THAT PURPOSE. IF YOUR UNIT IS NOT LEVEL, THE WATER MAY NOT DRAIN OUT PROPERLY. THIS COULD CAUSE WATER DAMAGE TO THE WINDOW OR WALL AND COULD BREED MOLD DUE TO CONDENSATION.

Emergency Exit Window(s)

**NOTICE:** DO NOT COVER EMERGENCY WINDOW(S). EXIT WINDOWS MUST REMAIN ACCESSIBLE AT ALL TIMES. BE SURE ALL OCCUPANTS KNOW WHICH WINDOWS ARE THE EMERGENCY EXIT WINDOWS AND UNDERSTAND HOW TO USE THEM.

### **Slide Out Operation, Care & Maintenance**

Before extending a slide out room, check the exterior of the unit to be sure the room will not hit anything outside when it is fully extended. Locate the slide out's rocker switch and hold the switch in the 'OUT' position. Continue to hold the switch down until the room stops moving. To bring the room in, reverse the procedure. If power fails or the room does not function electrically, you can manually operate the room.

**NOTICE:** FOR OPTIMUM PERFORMANCE, THE SLIDE OUT SYSTEM REQUIRE FULL BATTERY CURRENT AND VOLTAGE. IF THE BATTERY IS FULLY CHARGED AND YOU STILL DO NOT HAVE POWER, CHECK THE TERMINALS AND OTHER CONNECTIONS AT THE BATTERY. Operate the slide with A/C power applied whenever possible.

---

In the event of a power failure or low battery, the slide out room may be operated manually with a crank handle (If you do not have one, you may order one from your Rugged RV dealer). The manual crank shaft is located on the motor transmission housing. Turn the crank counter clockwise to move the room 'IN', and clockwise to move the room 'OUT'.

### **Sofa into Sleeper, Upper Bunk(s) and Dinette into Bunk Operation**

#### **Sofa into Sleeper Conversion**

Some Rugged RV models are equipped with a Jackknife Sofa Sleeper. You can convert your Sofa easily into a bed by lifting the front edge of the Sofa's seat up about 12" while pulling the seat toward you as you lift and then lowering the seat back down.

Sofa will lay flat and even with the seat and your Sofa is now a Sleeper.

To convert the Sleeper back into a Sofa, simply lift up about 12" on the front edge of the sleeper while pushing in and then down on the seat and the Sofa's back will fold up and back into a Sofa.

**NOTICE:** Be sure to keep hands and body parts out of the Jackknife Sofa's mechanical mechanisms while converting it

#### **Upper Bunk(s) Raising and Lowering**

Upper Bunks are easily raised and held in the up position by raising the bunk and sliding the two shackles 'out' and then turning the shackle 'down' into the locked position. Reverse the process to lower the Bunk.

#### **Dinette into Bunk Conversion**

Dinettes in Rugged RV's are easily converted into a bunk as follows:

- Remove the cushions from the Dinette.
- To remove a **WALL MOUNTED** Dinette Table:
- Raise the outer edge of the Dinette table about 12".
  - Reach under the table, depress the table leg stabilizer latch and fold the leg back under and flat against the underside of the tabletop.
  - Lift the table top about 3" higher while lifting forward (toward you) and remove the table top from the wall bracket.

To remove a **FREE STANDING** Dinette Table:

- Lift the Dinette table top off the metal tube table legs.
- Remove the metal tube table legs from their floor grommets and store them.
- Place the table top between the Dinette's seats resting the table top on the front edge of each seat making sure to place the marked side on the seat. There will be a sticker located under the table telling you which side to rest on the dinette seats
- Replace the cushions, using the Back cushions to cover the dinette table area.

Reverse the above processes to convert back to a dinette.

#### **Awning Operation**

Due to the variety of available Awnings please refer to the Manufacturer's manual for proper operation and storing for travel. Your Rugged RV Dealer can also educate you on the proper operation.

## Maintenance

Preventative maintenance will pay for itself many times over by catching or preventing problems before they occur. Many repair costs are greatly increased by ignoring preventative maintenance procedures.

Keep good records of maintenance performed and be sure to follow all Owner Obligations and Manufacturer required maintenance as required.

Periodic maintenance and cleaning of your Rugged RV is necessary to retain the dependability, safety and appearance that will provide you with many miles of trouble free operation as well as protecting your investment.

It is also important to note that operating conditions will affect periodic maintenance service intervals. If you are towing or using your RV in extreme conditions such as heavy dust, continuous short trips, or start and stop heavy traffic, snow, rain and ice, means that the length of time between service appointments may have to be changed. Discuss a service interval timetable with your Rugged RV Dealer or trusted RV service center of your choice.

Ignoring small problems and issues will only allow them to become larger problems and possibly voiding your warranty due to neglect, misuse or abuse. If left unattended, small problems may also begin to affect other parts and systems of your fish house.

## Condensation

**NOTICE:** Condensation on a window is not a warrantable issue.

**NOTICE:** DAMAGE CAUSED BY MOLD OR MILDEW IS A MAINTENANCE ISSUE AND IS NOT WARRANTABLE.

Condensation is the change of water from its gaseous form (water vapor) into liquid water. Just as moisture collects on the outside of a glass of cold water during humid weather, moisture can condense on the inside surfaces of your camper. This condition is increased due to the small volume of space and the airtight construction of your Rugged RV.

Condensation and moisture can collect on inside surfaces during cold weather when inside humidity is high. While your Rugged RV is in use, multiple occupants

can vaporize up to three gallons of water daily through daily living.

Mold occurs when condensation is left for prolonged periods of time and is extremely difficult to kill. Controlling condensation inside your unit is the best way to avoid mold and dampness issues, both of which can cause damage to your unit and/or its' contents.

Condensation can infiltrate the insulation, motors, working parts of appliances or plumbing connectors, just to name a few. Even though you may not see condensation, it may be inside the walls, cupboards or under the floor so it is best to watch for indications of too much humidity at take every precaution to avoid it from occurring. Generally, an area that is dark, warm, and where moisture can accumulate, is a potential breeding ground for mold.

It is especially important to air out your RV when storing it or if you do not anticipate using it for an extended period of time. Empty the refrigerator and freezer, clean and dry it completely. Dry the inside of the sinks), shower and shower head.

Check for any leaks at the kitchen sink, toilet and bathroom sink. Check your unit periodically to ensure there is no condensation forming on the windows, which would indicate there is too much moisture in your unit.

If you see signs of too much moisture, take the necessary steps to remove the moisture to prevent possible damage to the contents or your RV itself. Rust on pipes, plumbing connectors or other parts of heating, plumbing or air conditioning equipment is also a sign of too much humidity.

**NOTICE:** REMEMBER THAT MOLD IS A MAINTENANCE ISSUE AND AS THE OWNER, PROPER MAINTENANCE OF YOUR RV IS YOUR RESPONSIBILITY. CONTROLLING HUMIDITY INSIDE YOUR RUGGED RV WILL HELP TO PREVENT DAMAGE WHICH MAY OCCUR DUE TO NEGLECT.

## Prolonged Occupancy

Your Rugged RV was designed for recreational use and short-term occupancy. If you expect to occupy your RV for an extended period of time, be prepared to deal with condensation and the humid conditions that may be encountered.

### **Frame, Extrusions and Aluminum Surfaces**

Check the condition of the frame regularly. Keep it clean and repaint as necessary, to help avoid rust. It is especially important to keep underbody components clean when driving the recreational vehicle in the winter in areas where road salts are used.

To help avoid surface pitting, clean and wax all extrusions when waxing your Rugged RV's siding. Special aluminum cleaners are available to restore the original luster to painted aluminum surfaces. Be sure to follow the instructions for use as outlined on the product package.

### **Curtain and Cushion Covers Care & Maintenance**

Curtains and Cushions are covered in a 50% Cotton/50% Polyester blended material.

The cushions have zipper covers that are easily removed for proper cleaning.

Machine wash in cold water. Tumble dry low. Remove promptly. Do not use bleach.

### **Roof**

Inspection of roof components at least twice a year is very important to make sure seams, seals and caulking are not cracked or worn. Proper maintenance of seals and caulking are necessary to keep moisture from entering and causing severe damage, rot, mold or mildew. If you encounter dry, cracked or weathered seals or caulk, replace seals or re-caulk as necessary. Check with your Rugged RV dealer for the type of caulking required for your RV's roofs and correct methods of re-sealing or re-caulking. A mild household soap solution and a soft brush can be used to clean roof.

### **Siding**

Siding finishes are the same as automotive finishes. Any finish will deteriorate with time. Dulling and fading can be increased by exposure to extreme sunlight, air pollutants and excessive moisture. Regular washing will help prevent this from occurring. If surface deterioration such as yellowing or chalking occurs, consult with your Rugged RV dealer or an RV center for proper corrective procedures.

**NOTE:** Physical damage to siding or roof should be addressed immediately to avoid moisture entering through breaks and causing problems with interior walls and components. Cover damaged areas in the siding or roof with plastic and sealing the edges with tape until proper repairs can be made.

### **Seals and Adhesives**

It is important to maintain the seals and adhesives to prevent moisture from entering and destroying your unit's components. When washing your RV, inspect the seals for signs of drying out and wear. Be aware that weather and road vibration will have an effect on seals, causing them to dry, crack or separate.

### **Windows and Doors**

Check the seals around the windows and door(s) regularly, to make sure sealant is present and completely adhered. Reseal or replace and reseal if sealant repair is necessary. If you are unsure about the correct methods, check with your Rugged RV Dealer.

Adjust and lubricate latches and moving parts annually, to ensure windows remain operative. Also check the condition and operation of door locks, adjusting and lubricating as necessary. If you are unsure about the correct methods of lubrication and adjustment, check with your Rugged RV Dealer.

Vinyl seals around windows and doors should be cleaned regularly and kept flexible by using a silicone spray or lubricant. Be sure to follow the directions on the product's container.

A mild household soap solution and a soft brush can be used to clean all the exterior of your Rugged RV

- Wash the exterior monthly with warm water and a mild detergent.
- Avoid spraying water directly into refrigerator and furnace vents.
- Immediately remove bird droppings, tree sap, insects and tar to avoid staining.
- Wax at least once a year with a standard automotive liquid or paste wax.
- Prolonged storage of unit should be in a sheltered environment if possible.

Keep screens and window slides clean and free of debris. Periodically test the operation of all windows and their components. If you are unsure about the correct methods of lubrication and adjustment, check with your Rugged RV Dealer.

## Storing Your Rugged RV

When storing your RV, certain precautions need to be taken to protect your unit. The following steps are general and your Rugged RV Dealer can help you choose those which are most appropriate for your needs.

1. Park your Rugged RV on a level surface
2. Clean your recreational vehicle thoroughly, inside and out, as previously outlined in this section.
3. Winterize the Waste and Fresh water systems, 'P' traps and Hot Water Heater if equipped.
4. Follow the Winterizing procedure outlined earlier in this manual.
5. Follow all component Manufacturer's instruction regarding their particular components (if their procedure differs from this manual, follow the component Manufacturer's instructions).
6. Follow the Refrigerator Manufacturer's directions for shut down and storing your refrigerator. Empty, defrost, clean the refrigerator, and then install the 'Door Stay Storage Clip(s)' that hold the door(s) open to prevent mold and mildew from forming on this inside of the refrigerator.
7. Drain and allow the insides to dry, any water hoses you use for connection to outside water sources you may be storing inside your Rugged RV and connect the male and female ends of the hoses to prevent contamination.
8. Keep the LP tanks connected and full to prevent contaminants, insects and dirt from entering the gas lines and regulator.
9. Turn the LP gas off at the tanks.
10. Turn off all electrical switches and appliances.
11. Be sure the stove's hood vent damper door is 'locked' on the outside of your RV.
12. Close all shades and curtains.
13. Be sure all windows, doors and vents are securely closed and locked.
14. Cover exterior appliance vents to prevent moisture and insects from entering during storage.
15. Be sure the Fresh Water, City Water Connection and Waste Water drain caps are secure.
16. Consider a screened cover for the Waste Water Holding tanks roof vent (available at many RV centers) to keep spiders and wasps out of the Waste Water Holding vent and tank.
17. Consider purchasing and using an RV cover for your Rugged RV.
18. Check the interior of your RV periodically to be sure leaks have not developed or that condensation has not formed, causing damage to interior components. Condensation can be observed

as moisture accumulation on windows, mirrors, metal faucets and metal surfaces.

19. Air out the RV occasionally during storage ON A DRY, LOW HUMIDITY DAY to reduce the possibility of condensation.
20. Be sure that both the electric brake's battery, hydraulic or electric drop down battery and auxiliary battery(s) have the proper electrolyte level and that they are fully charged.
21. A discharged battery will freeze and crack the case. In storage, a battery will gradually loose charge after 30-45 days, even when disconnected or when using of the battery disconnect switch. Rugged RV recommends that you check the battery for charge once a month. If the charge is 80 or less, it must be recharged. You may wish to remove the battery and store it in a heated area and NOT in direct contact with the ground, concrete or asphalt floor (still checking it monthly for a good charge as even when kept in a warm environment the battery level must be maintained).
22. Consider storing your Rugged RV where external power can keep the Power Converter running which will keep the battery charge/maintenance charger running and the battery(s) will remain charged and maintained throughout the storage period.
23. Be sure the tires are inflated to correct pressure and check them periodically.
24. Consider covering your tires to keep the sun from drying them out.
25. Consider parking your tires on wood planks.
26. Keep the roof free from leaves, snow and ice. Check it periodically and after a heavy snowfall.

## Formaldehyde from Building Materials

Certain building products such as particleboard, fiberboard and hardwood plywood are manufactured with an adhesive containing urea-formaldehyde. These products emit a small quantity of formaldehyde into the air. Other products containing formaldehyde or formaldehyde resins are used in some carpets, draperies, upholstery, fabrics, deodorizers, cosmetics and permanent press fabrics. Formaldehyde is also a by-product of combustion and is produced by cigarettes and gas appliances.

The concentration of formaldehyde in the indoor air depends upon the quantity and emission rates of all emission rates of all emitting products in the structure compared to the volume of indoor air and the fresh air ventilation rate. As with other indoor pollutants, ventilation should reduce formaldehyde levels.

This notice applies to Rugged RV'S that are equipped with a Toy Hauler/Ramp Door.

**!! DANGER !!**

Vehicles and equipment powered by internal combustion engines and placed in recreational vehicles may cause carbon monoxide poisoning or asphyxiation, which could result in death or serious injury. The flammable liquids used to power these items can cause a fire or explosion, which can result in death or serious injury.

To reduce risk:

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

## **Thank You for choosing Rugged RV**

Built like a Custom Cabin - Travels like an RV

**[www.RuggedRVs.com](http://www.RuggedRVs.com)**

**Rugged Marketing and Distribution LLC**

**Rugged RV ®™**

20071 Welborn Rd  
North Fort Myers, FL 33917

Phone: (239) 699-4262

Fax: (239) 703-7609

Email: [info@ruggedrvs.com](mailto:info@ruggedrvs.com)

**© AMERICAN SURPLUS & MANUFACTURING, INC.**

3134 E. Highway 7 - P.O. Box 326  
Montevideo, MN 56265

Phone: (320) 269-5428

Fax: (320) 269-6540

E-mail: [generalinfo@icecastlefh.com](mailto:generalinfo@icecastlefh.com)