



Coachmen®

RECREATIONAL VEHICLE COMPANY, LLC

GENERAL MAINTENANCE
& TROUBLESHOOTING



INTRODUCTION TO THE GENERAL MAINTENANCE & TROUBLESHOOTING GUIDE

Welcome to Coachmen's growing family of satisfied RV owners. Hours of relaxation, adventure, and enjoyment await you in your new Coachmen RV.

This General Maintenance & Troubleshooting Guide has been prepared to help you maintain your Coachmen RV to assure year of trouble-free service. This manual contains instructions for the general care and maintenance of your RV. The manual also contains a Troubleshooting section that outlines some simple checks if, by chance, a component in your RV is not operating properly. Any repair required beyond the procedures listed should be performed by your dealer or qualified technician.

It is also important that you read and follow the instructions in your Chassis (if applicable), Appliance, and Accessory booklets provided with your RV.

Maintenance & Troubleshooting instructions for appliances and accessories were obtained from the respective manufacturer's owner's manuals and are used with the permission of the various manufacturers. Coachmen reserves the right to present edited portions of this material.

Coachmen RV Company works year round to improve its product. Therefore, the information within this manual is subject to change without prior notice or obligation to the consumer.

If you have any questions regarding the instructions in this manual, please contact your dealer or Coachmen RV (1-800-453-6064) so we can assist you. Your long-term satisfaction is of utmost importance to us. Thank you for selecting a Coachmen recreational vehicle.

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LEGEND

THE FOLLOWING LEGEND IS INTENDED TO EXPLAIN THE VARIOUS ICONS (PICTURES) WHICH ARE USED THROUGHOUT THE MANUAL. THEY ARE USED PRIMARILY FOR YOUR CONVENIENCE AND TO BRING ATTENTION TO THE INFORMATION AT HAND.



WARNING!!!

THIS SYMBOL IS USED TO ALERT THE USER TO PRECAUTIONS THAT INVOLVE YOUR PERSONAL SAFETY AS WELL AS VEHICLE DAMAGE.



CAUTION !!!

THIS SYMBOL INDICATES THAT A FAILURE TO OBSERVE OR FOLLOW THE INSTRUCTIONS COULD RESULT IN DAMAGE TO THE VEHICLE OR EQUIPMENT.

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The interior of your recreational vehicle is comprised of several different types of materials. This section is a guide to the proper care and maintenance of the major interior components of your recreational vehicle.

COUNTERTOPS

There are two types of countertop surface materials: solid surface (i.e. Corian®) and laminant (Formica®).

Solid surface countertops and sinks:

Solid surface materials are easy to care for and if damaged, easy to repair.

- ✓ Soapy water or ammonia-based cleaners will remove most dirt and stains.
- ✓ A damp cloth followed by a dry towel will remove watermarks.
- ✓ Difficult stains can be removed with a soft scouring pad (i.e. green Scotch Brite® pad) and a mild abrasive cleaner.
- ✓ Disinfect periodically with diluted household bleach (1 part bleach: 1 part water).
- ✓ For cuts and scratches, sand lightly with 220 fine grit sandpaper until cut/scratch is gone. Restore finish with soft scouring pad and mild abrasive cleaner.
- ✓ Excessive and constant heat will damage the solid surface stove cover. Remove cover when oven pilot is lit, or when the stove or oven is in use.

Urethane or Fiberglass Surfaces (Matte Finish):

- ✓ For normal use, simply wipe clean with soapy water and wipe dry. For stubborn stains, use a Scotch-Brite pad and a household cleaner to maintain the matte/satin finish.

Laminant surface countertops and sinks:

- ✓ Clean regularly with damp cloth and mild soap detergent.
- ✓ Use a household cleaner/detergent and a soft bristled brush to remove stains such as coffee or tea.
- ✓ For persistent stains, scrub lightly with a paste of baking soda and water. Excessive or forceful scrubbing may cause damage to material.
- ✓ Quick use of household bleach will work for stubborn stains. Prolonged contact, however, may cause damage.

Helpful hints:

- ✓ Use cutting boards to prevent unnecessary damage to tops.
- ✓ Use potholders or trivets before placing hot pots and pans on countertop. Heat will damage materials.
- ✓ Turn cold water on when pouring hot/boiling water (solid surface sinks).

WOOD CUTTING BOARDS

- ✓ Warping and cracking can be prevented by "seasoning" cutting board with a vegetable oil.
 - Before first use, wash board with mild detergent soap and rinse. Wipe dry. Pour a dab of vegetable oil on a paper towel and wipe on cutting board, wipe off excess oil.
 - After using cutting board, wash board and re-apply vegetable oil.
- ✓ Periodically disinfect by using a one-part bleach to one part water solution on board.

DOORS & CABINETS

To keep hardwood doors and cabinet fronts looking like new:

- ✓ Regularly dust with soft cloth.
- ✓ Every 90 days wipe with soft cloth and dusting spray.
- ▲ ✓ ***DO NOT*** use furniture polishes that have acid in their contents (i.e. Lemon Pledge®).

Your cabinet doors, drawer fronts, cabinet fronts, and wall panels may be manufactured with simulated wood grain materials.

- ✓ Use mild soap and water with soft cloth to clean and dust regularly.
- ▲✓ **DO NOT** use abrasive cleaners, scour pads or harsh solvents to clean.
- ▲✓ **DO NOT** use acid based cleaners and polishes such as, Fantastic®, Formula 409® or lemon oil products.
- ✓ Fill scratches and nicks with a like colored putty stick. Interior wall panels are covered with either vinyl or wood grain paper as described above. Follow the above instructions to clean both types of wall panels. With the vinyl wall board, Fantastic® or Formula 409® can be used, but only sparingly and applied to a soft cloth before wiping clean.
- ▲✓ **DO NOT** use harsh cleaners or alcohol.
- ▲✓ **DO NOT** scrub heavily on the soiled area as the print may fade, discolor or rub off completely.
- ▲✓ **DO NOT** use tape or adhesive backed products on simulated wood grain materials, as tearing will occur if removal is attempted.

CEILING FABRIC

Ceiling fabric, featured on select products and models, is comprised of Polypropylene or Polyester fibers. Because these materials are made from synthetic fibers, they clean very well with virtually no damage to the color or construction itself. Most commercially available carpet and upholstery cleaners will do an excellent job removing stains. From time to time, additional cleaning methods may need to be employed to remove stubborn or difficult stains. As with any stain or contamination, a quick response is the best, especially when performed in conjunction with the proper cleaner for the type of stain.

IMPORTANT: make sure you have selected the right cleaning agent from the list below before you begin the cleaning process. Always check to see that the cleaner used will not cause damage to the material or fabric, by testing on an area out of sight.

Stain Treatment

Type of Stain	Cleaning Agent	How to Remove
Mustard.....	dry clean solvent	scrub-soak-blot dry
Ketchup*	high strength detergent	scrub-rinse-blot dr
Coffee*.....	high strength detergent	scrub-rinse-blot dry
Chocolate*.....	detergent	scrub-rinse-blot dry
Tea*.....	high strength detergent	scrub-rinse-blot dry
Chewing Gum	dry clean solvent	scrub-soak-blot dry
Oil	high strength detergent	scrub-soak-blot dry
Grease	high strength detergent/degreaser....	scrub-soak-blot dry
Tar/Asphalt	K-1 kerosene/thinner	scrub-soak-blot dry
Wax	detergent	hot iron on detergent soaked towel or cloth
Rust	rust remover	soak-rinse-blot dry
Dirt*.....	detergent	scrub-rinse-blot dry
Lipstick	dry clean solvent	soak-blot dry
Nail Polish	dry clean solvent	soak-blot dry
Shoe Polish.....	dry clean solvent	soak-blot dry
Crayon.....	high strength detergent	scrub-rinse-blot dry
Vomit*.....	high strength detergent	scrub-rinse-blot dry deodorize with vinegar
Urine*.....	high strength detergent	scrub-rinse-blot dry deodorize with vinegar
Blood*.....	high strength detergent	scrub-rinse-blot dry
Excrement*	high strength detergent	scrub-rinse-blot dry deodorize with vinegar

NOTE: In many cases listed above, repeated steps may be required to fully extract contaminant from material. Items listed above with (*) may also be removed through steam extraction method by a professional cleaner or service.

Vinyl "Soft-Touch" Fabric Ceiling

- ✓ Periodically wipe vinyl ceiling material with a damp cloth to keep clean.
- ✓ Use a mild soap detergent & water solution or household cleaner (i.e. Formula 409) to clean stubborn dirt areas. Follow with a damp cloth moistened with fresh clean water.

DECOR ITEMS

Decor items such as pleated shades, doors or curtains, decor glass, bedspreads and venetian blinds should be taken care of as follows:

Window Treatments, Curtains and Bedspreads

- ✓ Due to fire retardant chemicals in these items they must be dry cleaned only.
- ✓ Dry cleaner should be made aware that the items are fire retardant.
- ✓ Occasionally vacuum with soft brush attachment.

Pleated Shades (including day/night) and Doors

- ✓ Dust occasionally with a vacuum and soft brush attachment.
- ✓ If soiled, use a mild soap and water on area only. ***DO NOT*** use upholstery or fabric cleaners.
- ✓ Plastic rails can be cleaned with Formula 409® applied with a soft cloth.
- ✓ Pleated shades have a tension adjustment cord. These cords may stretch after a period of time causing the shades to hang unevenly. This can be corrected by removing the bottom of the shade and pulling the cord tighter and tying a new knot. Spool attachments may also be tightened by wrapping the cord around the spool.

Venetian Blinds

- ✓ Periodically dust with a vacuum and soft brush attachment or venetian blind duster.
- ▲ ***DO NOT*** soak venetian blinds in water.

Wall Paper Border

- ✓ Wipe clean with damp cloth.

FLOORING MATERIALS

Coachmen uses a quality continuous nylon filament carpet featured in select products. It has passed extensive testing for appearance retention, pile density, height, color fastness, adhesion of backing and more. It is important to keep your carpet as clean as possible. To keep your carpet attractive:

Carpet

- ✓ Vacuum regularly with a vacuum cleaner equipped with revolving brush or beater bar. Be sure vacuum has no teeth, combs or rough edges as they may damage the carpet. It is important to remove loose soil and debris while it is on the surface.
- ✓ Heavily traveled areas (i.e. walkways, areas in front of furniture) may be protected with small throw rugs to prolong the life of the carpet.
- ✓ Some spills contain chemicals that will destroy carpet fibers and dyes. If you have doubts about what caused the spot, contact a professional carpet cleaner. The following chart can be used to clean the stains listed.

Stain	Treatment	Stain	Treatment
Acids	A, W, T	Greases.....	S, D, W, T
Alcoholic beverages....	D, A, V, T	Inks.....	S, D, A, V, W, T
Ammonia.....	W, V, T	Medicines.....	S, D, A, V, W, T
Candle Wax.....	S, T	Oils.....	S, D, A, W, T
Cements and Glues.....	S, D, A, W, T	Paints.....	S, D, A, W, T
Chewing gum.....	S, T	Rust.....	V, T
Coffee.....	D, V, T	Shoe polish.....	S, D, A, V, W, T
Cosmetics.....	S, D, A, V, W, T	Soft drinks.....	D, A, V, W, T
Dyes.....	S, D, A, V, W, T	Tars.....	S, T
Food Stains.....	S, D, A, V, W, T	Urine.....	D, V, T

D - Detergent
 S - Dry cleaning solvent
 V - White vinegar solution
 A - Ammonia solution
 W - Water
 T - Tissues or towel

NOTE: When following the procedures suggested above, wear rubber gloves to protect hands. Always test cleaning agent in an inconspicuous area for color fastness.

Ceramic Tile

- ✓ Vacuum regularly to remove dirt and gritty particles. Follow with a mop or sponge dampened with a non-abrasive "soapless" household cleaner.
- ✓ ***DO NOT*** use cleaning agents with acids, as the tile will etch, and the grout will deteriorate prematurely.

Linoleum Flooring

- ✓ Vacuum or sweep regularly to remove dirt and gritty particles. Mop occasionally using a non-abrasive cleaner that is not soap-based.
- ▲ ***DO NOT*** use Mop & Shine® or soap products as they may leave a dull film on the floor.
- ✓ Wipe up spills as quickly as possible as prolonged contact may stain the linoleum.

Wood Plank, Parquet and Composite Flooring

- ✓ Sweep, vacuum or dust mop regularly to keep clean and prevent dust from dulling or damaging the surface.
- ✓ Periodic waxing of floor, with a quality floor wax product, will help preserve shine and finish.
- ▲ ✓ ***DO NOT*** damp mop with water. Use a slightly damp cloth on spills and in all areas that require cleaning.

FURNITURE

Coachmen selects only fabrics that are wear dated as "Heavy Duty". This means that Coachmen fabrics have been tested for durability beyond 15,000 double rubs. All upholstery products should have a manufacturers label that contain a cleanability code. Below is a list of codes and cleaning instructions.

- ▲ **W** Clean only with water based shampoo or foam upholstery cleaner. ***DO NOT*** over wet. ***DO NOT*** use solvents to spot clean. Pile fabrics may require brushing to restore appearance. Cushion covers should not be removed and laundered.
- S** Clean only with dry cleaning solvent. ***DO NOT*** saturate. ***DO NOT*** use water. Pile fabric may require brushing to restore appearance. Cushion covers should not be removed and dry-cleaned.
- WS** Clean with shampoo, foam or dry cleaning solvents as desired. ***DO NOT*** saturate with liquid. Pile fabrics may require brushing to restore appearance. Cushion covers should not be removed and dry-cleaned.
- X** ***DO NOT*** clean with either water or solvent-based cleaner. Use vacuuming or light brushing only.

Sofas and Chairs

- ✓ It is recommended that they be professionally cleaned.
- ✓ Spot cleaning with a damp soft cloth and a mild detergent will clean most types of soiling.
- ✓ Grease, oil and ink stains can be cleaned with a product called C-60® by Spray Away®. Over the counter upholstery cleaner will work too, be sure to test in an inconspicuous area for discoloration.
- ✓ Regularly vacuum using soft brush attachment.

Leather chairs and sofas

- ▲ ✓ Routine maintenance involves simply wiping with a soft, white damp cloth. ***DO NOT*** use soaps or detergents as they will upset the PH balance of the leather and cause premature aging and cracking.

Vinyl seat

For vinyl utilized in seats, use the following chart. Regular cleaning with a damp cloth will help preserve the vinyl material.

Stain	Treatment
Betadine	B, A
Chewing Gum.....	D, A, B
Eye shadow	B
Motor Oil.....	B
Spray Paint.....	B, E
Mildew or Wet Leaves*	C, A, B
Shoe Polish*	D, B, E
Yellow Mustard	A, B, C
Oil Base Paint (fresh)	D, B, E
Oil Base Paint (dried).....	D, A, B
Suntan Lotion*.....	A, B, E
Tar/Asphalt	D, A, B
Lipstick.....	A, B
Latex Paint.....	A, B, E
Crayon	D, B
Ketchup.....	A, B
Grease	D, B, E
Ballpoint Ink*.....	A, B, E
Household Soil.....	A, B
Permanent Marker*	B, C, E
Coffee, Tea, Chocolate	B

A Medium soft brush, warm soapy water /rinse/ dry.

B Fantastic Spray Cleaner®/ rinse/ dry.

C One (1) tablespoon ammonia, one-fourth (¼) cup hydrogen peroxide, three-fourths (¾) cup of water/ rinse/ dry.

D Wipe or scrape off excess (Chill gum with ice).

E #M Citrus Base Cleaner® / rinse/ dry.

F Denatured alcohol/ rinse/ dry.

NOTE: All cleaning methods must be followed by flushing thoroughly with water.

*Suntan lotion, shoe polish, wet leaves, and some other products contain dyes that stain permanently.

Certain household cleaners, powdered abrasives, steel wool and industrial cleaners can cause damage and discoloration and are not recommended. Dry cleaning fluids and lacquer solvents should not be used as they will remove the printed pattern and gloss. Waxes should be used with caution. Many contain dyes or solvents that can permanently damage the protective coating. Always remove stains immediately.

Vinyl "Soft-Touch" Fabric Ceiling

- ✓ Periodically wipe vinyl ceiling material with a damp cloth to keep clean.
- ✓ Use a mild soap detergent & water solution or household cleaner (i.e. Formula 409) to clean stubborn dirt areas. Follow with a damp cloth moistened with fresh clean water.

Vinyl Spare Tire Cover

- ✓ Follow the cleaning instructions above.
- ✓ Protect tire cover from discoloration and premature deterioration by putting a plastic liner over tire before installing vinyl tire cover.

MISCELLANEOUS INTERIOR

LP & CO Detectors require minimal maintenance.

- ✓ Test, by pressing Test/Reset button, at: • Beginning of camping season. • Prior to each trip. • Monthly.
- ✓ Use damp cloth or towel to clean exterior covers.
- ▲ ✓ **DO NOT** spray cleaners on or around detectors.
- ✓ According to the manufacturer, the LP detector sensor (not the entire unit) should be replaced annually. Part number is SA-186-5.

Smoke Detector

- ✓ Replace dry cell battery at least yearly or as necessary.
- ✓ Test at: • Beginning of camping season. • Prior to each trip. • Monthly.

Important factors to remember in caring for and keeping your interior articles attractive are:

1. Clean and dust regularly.
2. Clean spills and dirt as quickly as possible.
3. Soft cloths and mild detergents are the general rule for cleaning unless otherwise noted.

Unless you have experience in working with LP gas appliances, we recommend having your appliance maintenance requirements performed by your Coachmen dealer or an appliance manufacturer authorized service center.


WATER HEATER

Refer to your water heater owner's guide for operation and maintenance instructions. Twice a year do the following:

- ✓ Check electrode for cracked porcelain and make sure gap between electrode and ground is set at 1/8".
- ✓ Clean module board circuits with a pencil eraser.
- ✓ Inspect and clean flu baffle. Presence of heavy soot formation indicates improper burner operation. Have a qualified technician clean flu baffle or follow instructions in water heater owner's manual.
- ✓ Maintain proper LP gas pressure at 11 inches Water Column, this needs to be done by a qualified technician.

REFRIGERATOR


Refer to your refrigerator owner's guide for operation and maintenance instructions. Twice a year do the following:

- ✓ Check for obstructions in upper & lower vent areas (i.e. spider webs, birds nests, etc.) Use a soft bristled brush to dust off the debris. Keep area at the back of refrigerator clean and free of debris.
-  ✓ Check LP connections to ensure they are tight and not leaking. With LP gas supply on, use a non-corrosive bubble solution on LP fittings. If bubbles are noticed – ***IMMEDIATELY*** shut off gas supply and have a qualified RV Service technician repair leak source.
- ✓ Maintain proper LP gas pressure at 11 inches Water Column, this needs to be done by a qualified technician.
- ✓ Inspect and clean flu baffle. Presence of heavy soot formation indicates improper burner operation. Have a qualified technician clean flu baffle or follow instructions in refrigerator owner's manual.

FURNACE


Due to the complex nature of the appliance a qualified RV technician should perform furnace maintenance at least once a year; more, if use of furnace deems necessary.

There are four important areas for proper operation of the furnace. They are:

1. Return Air: Keep return air grill free from obstructions.
2. Ducting: The ducting system is designed to meet the furnace manufacturer's specifications. Closing off ducts or covering them may cause unnecessary operation trouble.
 ***DO NOT*** store items on ductwork in cabinet spaces.
3. Maintain proper LP gas pressure at 11 inches Water Column, this needs to be done by a qualified technician.
4. Voltage Fully charged batteries are also vital to the proper operation of the furnace. Keep batteries in good working order and fully charged at all times. Refer to battery maintenance on page 31.

AIR CONDITIONER

Refer to air conditioner manufacturer's owner's manual for operation and maintenance instructions.

-  ✓ Periodically remove return air filter. Wash with warm water and soap, let dry and reinstall.
 - ***DO NOT*** run A/C without filter in place, dirt may accumulate on evaporator coil and substantially affect the performance of the unit.
 - Filter may require more frequent cleaning if environment deem necessary (i.e. smoky, dusty, etc.).
- ✓ Periodically check exterior cover for damages; if damages are present, have your Coachmen dealer repair.

RANGETOP

Refer to range manufacturer's owner's manual for operation and maintenance instructions.

- ✓ To prevent undue damage to porcelain top - use proper sized pans. Pans should not be more than 1" larger than grate. Maximum size is 10".
- ▲ ✓ Clean acidic (tomato) and sugary foods off stove top as quickly as possible. Be sure top grates are cool before cleaning. Keep clean with mild detergent, water and soft rag. ***DO NOT*** use harsh or abrasive cleaners as they may scratch and stain the stovetop.
- ▲ ✓ Keep burner assemblies clean and adjusted properly. ***DO NOT*** use caustic cleaners on any part of oven range assembly.

A/V EQUIPMENT – TV, VCR, DVD, STEREO

- ✓ Keep electronic equipment clean by frequently dusting with a soft cloth.
- ▲ ✓ ***DO NOT*** spray any type of liquid cleaner or water onto or around electronic equipment.
- ▲ ✓ Keep CD and DVD discs clean. Wipe with a clean, soft, and moist cloth. Wipe from the center of the disc outward. ***DO NOT*** wipe in a circular motion. Use water or cleaner designated for CD use. Wipe dry before installing into CD or DVD player.
- ✓ Follow all equipment manufacturer's operating and care instructions.

SEALANTS

Water is a recreational vehicle's worst enemy when it is allowed to enter where it's not intended. Sealants perform a very important function and should be inspected closely and maintained regularly.

Coachmen utilizes many different types of sealants, including: Butyl/Putty, Black Butyl encapsulated foam, Silicone - clear and colored, Roof Lap Sealant, and Foam Blocobond. Sealants in general ***DO NOT*** have set lifetimes. Varying environmental factors will affect pliability and adhesion of the sealants. As a preventative measure, we recommend you or your dealer:

- ✓ Inspect all sealants, a minimum of every six months. (A quick walkover before trips will help prevent potential problems during trips and vacations.)
 - Inspect the moldings, windows, clearance lights, compartment doors and all exterior attachments.
 - Check for cracks, voids, gaps, breaks, looseness, and any sign of physical deterioration.
 - Exterior cleaning (roof and sides) is a perfect time to inspect the sealants.
- ✓ Have the sealant replaced if you notice any of the above. Your local Coachmen dealer has the correct and necessary parts and experience to help you maintain your sealants.
 - Always use the same type sealant that was removed.
 - Immediately have dealership check moldings, windows and exterior attachments for leak source if you notice water inside of unit.

PAINTED GRAPHICS

There are several Coachmen & Shasta models that have painted and clear-coated body lines and graphics packages.

- ✓ Follow paint manufacturer's guidelines regarding the first 60 days of care.
- ✓ Wash monthly, or more frequently if needed. Use a mild soap detergent. Avoid alkaline or abrasive based cleaners.
- ✓ Wax once or twice a year with a high quality automotive wax.
- ✓ If paint becomes chipped or damaged, use touch up paint to repair or have your local body shop repair as necessary. Paint codes are located inside the vehicle (Mini-motorhomes: in driver's door jamb; motorhomes: behind driver's chair; Towables: in an overhead cabinet).

RUBBER ROOF MATERIAL

Proper care and maintenance of the Carlisle Brite-Ply® roof is important for trouble free performance. Normal maintenance is simple and easy. Regions where fruit/tree sap or harsh environmental fallout exist will require more frequent cleaning, and extended exposure will result in permanent stains. At least four times a year, clean the roof by:

- ✓ Rinsing complete roof with clean water to remove loose dirt and debris.
- ✓ Use a soap detergent and water and scrub roof with a medium bristle brush (i.e. push broom).
- ✓ Rinse thoroughly with clean water to avoid soap residue build-up on roof and sidewalls.
- ▲ ✓ ***DO NOT*** use general-purpose cleaners containing petroleum solvents, harsh abrasives, or that are citric acid based. Products like Armor All® dry out the rubber material and cause it to deteriorate prematurely.
- ✓ Persistent stains may be removed by using a rag dampened with mineral spirits. ***DO NOT*** apply mineral spirits directly or in large area.
- ✓ Bleach or windshield wiper fluid (fully concentrated) may also be used for stubborn stains.

RUBBER ROOF SEALANT

- ✓ Inspect at least twice a year. Refer to recommendations in rubber roof manufacturer literature and in Sealants on page 11. It is a good idea to inspect the sealants around the moldings, vents, and other attachments while cleaning the rubber roof material.
- ▲ ✓ ***DO NOT*** use Silicone sealants, as they will not perform well.
- ✓ Replace sealant if it becomes cracked or loose from roof or roof attachments (i.e. vents and moldings).
- ✓ Use Dicor's self-leveling lap sealant.

If rubber material becomes damaged, see your local Coachmen dealer as quickly as possible for proper repair. In the meantime, use Dicor sealant to seal damage, or cover to minimize water entry into roof assembly. Most RV Dealers & Parts Stores carry Dicor's® rubber roof patch kit and materials.

FIBERGLASS ROOFS

- ✓ Wash monthly or more frequently, if needed. Wash with mild soap such as dish detergent soap. Avoid using alkaline or abrasive cleaners.
- ✓ Wax once or twice a year with a high quality paste wax formulated for gelcoat surfaces.
- ✓ If chalking occurs, wash and try wax in a small area to see if the luster returns. If not, use a fine rubbing component followed by wax.
- ✓ If your gelcoat surfaces become scratched, nicked or cracked, have your local Coachmen dealer, or automotive body shop, inspect and repair.

CAPS

- ✓ Gelcoat - See care instructions for high gelcoat sidewalls on page 15.
- ✓ ABS Caps and Ground Effects

For surface cleaning ABS/Centrex/Acetal plastics should not be cleaned with solvent based cleaners (i.e. acetone, MEK). Citric based products should also be avoided, as they can cause hazing or cracking. On plastic components with a Korad (UV prohibitor) cap, citric based cleaners can cause the Korad to peel. Some recommended cleaners are:

Mild Soap Solution - 5% Ivory Flakes in water
Mild Detergent Solution - 3% Tide in water
25% or less isopropyl (isopropanol) alcohol in water
Household ammonia

To maintain the components original beauty, the part can be polished with any non-abrasive car wax or silicone glaze. If the surface becomes lightly scratched, it can be polished using a light or soft polishing compound. In addition, baking soda may be used as an effective, yet gentle, abrasive for removing surface mars. Deep scratches or gouges can not be polished out, because there is only a 0.025" cap of Centrex over the ABS.



FILON

Filon® sidewalls have a "fiber" look to them and are very easy to care for and protect the finish.

- ✓ Wash the exterior of RV with a liquid non-abrasive cleaner and water.
- ✓ Periodically wax with an automotive wax or cleaner/polish developed for boats, showers, and tubs. Simply follow directions on package.
- ▲ ✓ ***DO NOT*** use abrasive cleaners or rubbing compounds as they may damage the surface.
- ▲ ✓ ***DO NOT*** dry wipe surface, always clean with water and liquid detergent.
- ✓ Filon® can be affected by ultra-violet exposure, yellowing or fading may occur. Regular cleaning and waxing will help protect the finish.

METAL SIDEWALL

To protect painted finish:

- ✓ Wash regularly with a mild detergent and water solution, especially after trips
- ✓ Periodically wax with a quality automotive wax to protect paint and graphics.
- ✓ Be careful when waxing around tape graphics as the edge may curl up. Wax along the tape, not against it.

GELCOAT FIBERGLASS (WALLS, CAPS & BUMPER)

- ✓ Wash monthly or more frequently, if needed. Wash with mild soap such as dish detergent soap. Avoid using alkaline or abrasive cleaners.
- ✓ Wax once or twice a year with a high quality paste wax formulated for gelcoat surfaces.
- ✓ If chalking occurs, wash and try wax in a small area to see if the luster returns. If not, use a fine rubbing component followed by wax.
- ✓ If your gelcoat surfaces become scratched, nicked or cracked, have your local Coachmen dealer, or automotive body shop, inspect and repair.

NOTE: Once you notice water not beading on the walls, it is time to wax again. Most automotive waxes will provide 2-3 months of protection if applied properly and according to package instructions.



ESCAPE, SLIDER, JALOUSIE TYPES

Any ventilating window may permit some water inside, especially during heavy rainstorms or while driving. This is normal and water should only be seen in the lower track portion of the window frame.

Condensation will also cause water to accumulate on windows and in the tracks. Drainage is accomplished by the sloping sill and weep holes in the frame.

- ✓ Periodically vacuum inside window tracks to prevent dirt and dust from building-up and clogging weep holes.
- ✓ Periodically check outside weep slots for obstructions, and clean if necessary.

NOTE: If water is noticed entering the window between the glass and frame, take unit to a Coachmen dealer to have sealed.

- ✓ If water is entering between window frame and clamp ring, and running down wall, have your Coachmen dealer inspect window sealant to locate source of leak and correct as needed.
- ✓ Ensure that escape windows latches are properly adjusted. Window will pop open if not adjusted tight enough.



You will need to refer to your chassis owner's manual for maintenance instructions set by the manufacturer of Coachmen motorhomes chassis (e.g. Workhorse, Ford, Spartan, Freightliner or Chevrolet).

TIRES AND ALIGNMENT

- ✓ Prior to each trip, perform a general exterior inspection. Inspect and monitor closely tire wear and pressure.
- ✓ Abnormal tire wear, improper pressures and alignment can adversely affect your driving experience, safety and motorhome performance. It is vital to have proper inflation pressures, wheel alignment, and cargo weight distribution. Refer to Tire Maintenance on page 27.
- ✓ Follow chassis manufacturer's recommendation for tire rotation. Some recommend a side to side rotation only versus a front to rear rotation.
- ✓ Alignments are the responsibility of the consumer, unless otherwise noted by the chassis manufacturer.
- ✓ Contact your authorized chassis manufacturer servicing center for any alignment and/or tire wear concerns.

FRAME & METAL BUMPERS

- ✓ Rinse off periodically or as use requires, to remove road grime, tar, oil, mud and salt. Periodically (every 6 months) check frame for rust and if found, sand and paint with rust-preventing paint or undercoating.
 - Be sure vehicle is on level surface and wheels blocked before working or cleaning underneath.

ENTRANCE STEPS

- ✓ Clean regularly to keep step free of mud, salt and road grime.
- ✓ Lubricate all moving parts monthly with a quality moisture and heat resistant penetrating grease. Spray silicone and penetrating oils are not recommended.
- ✓ Kwikkee steps have specific lube points. Refer to your Kwikkee owner's manual for required procedures.
- ✓ Inspect for rust. If found, sand, prime and paint using a rust preventative paint.
- ✓ Keep electrical connections clean and tight.

UNDERBELLY MATERIAL

- ✓ Periodically inspect and clean underbelly material. If damaged, have your Coachmen dealer repair as soon as possible. You may use duct tape for limited time.

RECEIVER HITCH

- ✓ Keep clean along with general frame maintenance. Sand, prime, and paint if rust is present.
- ✓ At beginning of season and monthly thereafter, clean inside of receiver tube with a wire brush and spray with WD-40®.
- ✓ Always remove utility mount from receiver when not in use. This will prevent the utility mount from rusting to tube.
- ✓ Periodically check bolts for tightness. They need to be torqued to 75 ft/lbs.



FRAME & METAL BUMPERS

- ✓ Rinse off periodically or as use requires, to remove road grime, tar, oil, mud and salt. Check frame for rust and if found, sand and paint with rust-preventing paint or undercoating.
 - Be sure vehicle is on a level surface and wheels blocked before working or cleaning underneath.

COUPLERS

- ✓ Clean & lubricate ball socket and ball clamp with wheel bearing grease monthly.
- ✓ Check towing latch, ball and coupler for signs of wear before each trip. Replace coupler if damaged or worn.
- ✓ Immediately contact your dealer if you notice a problem.

FIFTH WHEEL-COUPLER

- ✓ Follow frame inspection and maintenance procedures.
- ✓ Keep hitch plate and locking mechanism generously lubed with a quality high temperature grease. Inspect prior to each trip.

ENTRANCE STEPS

- ✓ Clean regularly to keep step free of mud, salt and road grime.
- ✓ Lubricate all moving parts monthly with a quality moisture and heat resistant penetrating grease. Spray silicone and penetrating oils are not recommended.
- ✓ Inspect for rust. If found, sand, prime and paint using a rust preventative paint.

SAFETY CHAINS

- ✓ Inspect at beginning of camping season and prior to each trip.
- ✓ Replace if worn and weakened.

UNDERBELLY MATERIAL


- ✓ Periodically inspect and clean underbelly fabric. If damaged, have your Coachmen dealer repair as soon as possible. You may use duct tape as a temporary repair if a tear is noticed. Clean area with mineral spirits to ensure tape will stick.

AIR BAGS


As a vehicle is loaded, the steel suspension springs are pushed down. Your vehicle's suspension system is designed to give optimum performance and handling at one specific weight. Often, with an RV or truck you lose some of the performance when the unit is too heavily loaded. As the springs deflect, the ride may become "mushy" and you may encounter sway and handling problems. Air helper springs become an active part of the suspension as weight is added to the vehicle. The more air pressure in your air springs, the more weight they support. Air helper springs utilize this principle to keep your vehicle level and aid in reducing the sway and handling problems found in a heavily loaded vehicle.

Rear:

- ✓ Minimum operating pressure: 20 p.s.i.
Maximum operating pressure: 100 p.s.i.
Recommended range: 60-80 p.s.i. depending on load.
- ✓ Check inflation pressure weekly. Air bags will normally lose 3-4 p.s.i. per week. A higher rate indicates leakage. Allow 1 p.s.i. of air pressure for every 40 lbs. of weight (i.e. 50 p.s.i. to support 2000 lbs).

 ✓ Periodically check bags for any cracking. If cracking is noticed contact your Coachmen dealer for repair or replacement of the bag if necessary. **CAUTION:** Be sure the wheels are blocked before crawling underneath the unit to inspect the bags.

Front:

-  ✓ Class A Motorhomes built on the Workhorse chassis have a coil spring / air bag front suspension. Air bags should be inflated to 80-90 p.s.i. under load. **DO NOT** allow air pressure to fall below 10 p.s.i.
- ✓ Routinely inspect brackets for loose bolts or damage.



Weigh unit periodically to ensure you have loaded your unit within its weight specifications and have weight distributed as specified in your owner's manual. If weights are exceeded, remove and/or redistribute cargo accordingly.

SUSPENSION

- ✓ Inspect suspension components at least every 6-months/6,000 miles for signs of excess wear, elongation of bolt holes, and loose fasteners.
- ✓ Replace worn parts if necessary.

WHEELS & BEARINGS

- ✓ Inspect bearings, clean and lubricate annually or at 12,000 miles.
- ✓ Inspect wheels regularly; if rust is noticed or paint is chipped, sand and paint with rust preventing paint.
- ✓ Using a torque wrench, check wheel lug torque prior to each trip;
 - 13" wheels require 50-75 ft-lbs. of torque.
 - 14", 15" & 16" wheels require 90-120 ft-lbs.

BRAKES







- ✓ Adjust brakes after first 200 miles, then every 3,000 miles or as use requires.
- ✓ Make sure brake controller and brakes are properly synchronized prior to each trip.
- ✓ Inspect at beginning of season or annually:
 - Check shoes for uneven wear, contamination or wear down to 1/8" thickness.
 - Check magnets for uneven wear, replace if necessary.
 - Make sure moving parts (actuator arm and spring) work freely.
 - Lubricate with thin film of anti-seize compound or grease.
 - Check wire connectors, replace if insulation is worn, torn or cracked.

Tire pressure is the most important factor in the life and performance of your tire.

- ✓ Inflation pressure should be as recommended by the manufacturer or as the federal label for the trailer dictates.
- ▲ ✓ Pressure should be checked when tires are cold. ***DO NOT*** bleed air from hot tires.
- ✓ Check inflation pressures weekly to insure maximum tire life and travel wear.
- ✓ Periodically check spare tire inflation pressure.
- ✓ The following tire wear diagnostic chart will help you pinpoint the causes and solutions to some common tire wear problems.

TIRE WEAR DIAGNOSTIC CHART

NOTE: Tire wear should be checked frequently. Once a wear pattern becomes established in a tire, the stopping capability is significantly reduced, even if underlying cause is corrected.

	WEAR PATTERN	CAUSE	ACTION
	Center Wear	Over Inflation	Adjust pressure to particular load per tire catalog
	Edge Wear	Under Inflation	Adjust pressure to particular load per tire catalog
	Side Wear	Loss of camber or overloading	Make sure load doesn't exceed axle rating. Align at alignment shop
	Toe Wear	Incorrect toe-in	Align at alignment shop
	Cupping	Out-of-balance	Check bearing adjustment and balance tires
	Flat Spots	Wheel lockup and tire skidding	Avoid sudden stops when possible and adjust brakes

TONGUE JACKS - ELECTRIC/MANUAL (TRAVEL TRAILERS & CAMPING TRAILERS)**ELECTRIC JACK:**

- ✓ Check connections at battery and keep clean and tight.
- ✓ Prior to camping season, or at least twice a year, extend jack leg as far as possible and clean inner ram tube.
- ✓ Coat tube with a light coat of a quality silicone spray lubricant.
- ✓ The Electric Drive Motor Landing Leg system is protected by a 30 amp fuse at or near the battery compartment. If replacement is necessary, replace only with a Buss Type AGC-30 fuse or equivalent, available in automotive supply stores.
- ✓ Inspect jack prior to each use for damages and bent parts.
- ✓ Should jack become difficult to operate, remove, clean and oil. Inspect for bent and worn parts.
- ✓ If unable to get jack to operate freely, replace immediately.

MANUAL JACK:**Every six months/twice a year:**

- ✓ Extend jack as far as possible and clean dirt from ram.
- ✓ Lube inner ram with SAE 30 heavy oil.
- ✓ Squirt oil in oil hole located at top of outer ram.
- ✓ Remove clip and top cover and lubricate gears with a quality wheel bearing grease.
- ✓ Inspect jack prior to each use for damages and bent parts.
- ✓ Should jack become difficult to operate, remove, clean and oil. Inspect for bent and worn parts.
- ✓ If unable to get jack to operate freely, replace immediately.

FIFTH WHEEL LANDING JACKS**ELECTRICAL CONNECTIONS**

- ✓ Twice a year check electrical connectors at the jack and at the wall connector.
- ✓ Clean prongs of any corrosion for proper , trouble free operation.

Once each year:

- ✓ Extend landing legs as far as possible and clean drop tube and inner ram tube. Coat exposed surface of tubes with silicone spray lubricant.
- ✓ Coat inside of handle alignment tube with silicone spray lubricant.
- ✓ Oil shaft bushing in gearbox and leg gear heads with SAE 30 oil.
- ✓ Lubricate gears in gearbox and landing leg gear heads with extreme pressure grease.

Twice each year:

- ✓ For Electric Drive Motor Landing Legs, check wiring connections at battery. Also, refer to Battery Maintenance on page 31.

NOTE: Electric Drive Motor is lubricated at factory and requires no further lubrication.

- ✓ The Electric Drive Motor Landing Leg system is protected by a 30 amp fuse at or near the battery compartment. If replacement is necessary, replace only with a Buss Type AGC-30 fuse or equivalent, available in automotive supply stores.

- ⚠ ✓ Always be sure that you ***DO NOT*** exceed jack leg's rated capacity. Jack failure will occur if weight capacity is exceeded and warranty will be voided.

Standard Duty (models 237 to 279)
2,000 lbs./leg, 4,000 lbs./system

Heavy Duty (models 285 to 370)
3,000 lbs./leg, 6,000 lbs./system

Weigh unit periodically to ensure you have loaded your unit within its weight specifications and have weight distributed as specified in your owner's manual. If weights are exceeded, redistribute cargo accordingly.

STABILIZER JACKS

- ✓ Inspect jacks prior to each use for damage, bent or worn parts.
- ✓ Along with frame maintenance, inspect for rust; if found, sand, prime and paint with rust preventative paint.
- ✓ Lubricate pivot points and gear assembly every 6 months with a quality silicone lubricant.
- ✓ Simply extend jacks to ground until they are snug.

 **CAUTION: DO NOT** lift trailer with stabilizer jacks: this may cause damage and require replacement.

With the use of more electronic equipment in recreational vehicles, the electrical system has become increasingly important. The key to consistent performance and minimal trouble is to understand the functions of the basic components (batteries, generator and shore line cord). Additionally, there is a power center that includes a converter to provide 120V AC and 12V DC when shore line is plugged in or when generator is running.

BATTERY CARE

A battery is only a storage container for energy. It cannot manufacture energy, but only releases energy after it has been charged. Coachmen uses heavy-duty deep cycle batteries. Replacement batteries should be of the RV/Marine Deep Cycle type. Proper maintenance will provide trouble free operation and help prolong the life of the battery.

⚠️ WARNING: Always disconnect the negative (-) cable prior to working near batteries to reduce risk of arcing and igniting explosive battery gas.

General Maintenance Instructions

- ✓ If under extensive or continuous use, inspect and maintain battery electrolyte levels weekly by adding distilled water as needed to reach split-level marker on battery.
- ✓ Keep battery cable connections clean and tight.
- ✓ Keep batteries fully charged - specific gravity should read between 1.215 and 1.250.
- ✓ Be sure vent caps are tight; replace if cracked.
- ✓ Periodically clean with a diluted solution of baking soda and clean water followed by a clean water flush.

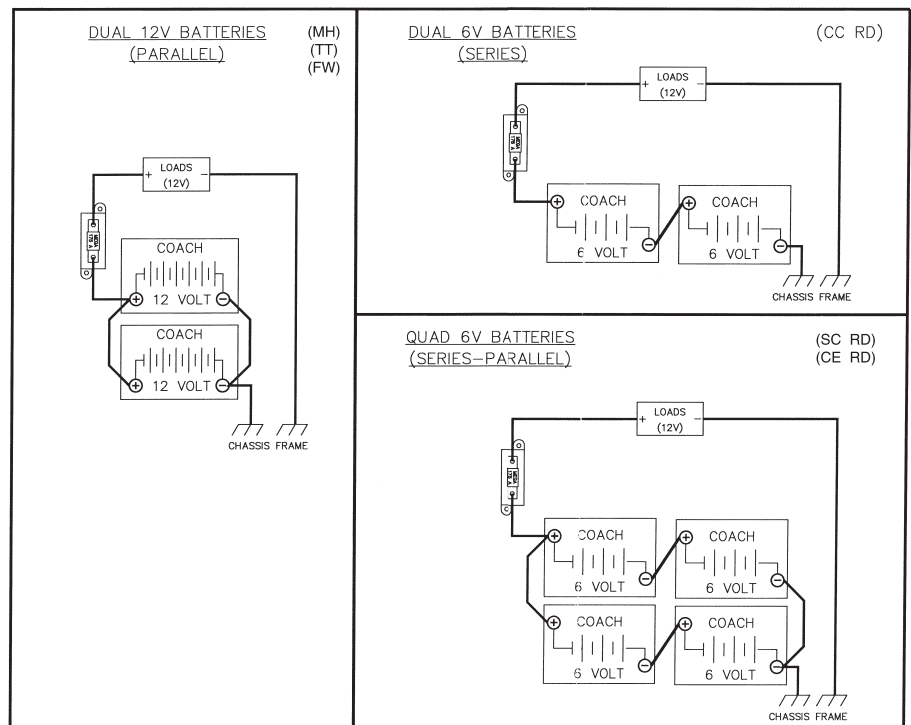
Battery Storage Instructions

- ✓ During storage it is important to inspect your batteries every two weeks.
- ✓ Prevent discharge and sulfation by disconnecting battery cables and re-charging every month. Hook up a battery charger at least once a month to prevent discharge and sulfation.
- ✓ The procedure for disconnecting battery cables is as follows:
 - Disconnect the ground (negative "-") cable first; then
 - Disconnect the positive ("+") cable from the battery.

Battery Installation

Refer to the diagrams below for battery hook-up examples.

- ✓ For most gas motorhomes, the dual 12VDC battery hook-up will apply (Diag. A).
- ✓ Travel trailers and fifth wheels may also have this type of hook-up. Vehicles with two or more slide-outs should have 2 batteries.
- ✓ Cross Country Rear Diesel motorhomes will usually have the dual 6VDC battery hook-up (Diag. B).
- ✓ Cross Country Elite and Sportscoach Rear Diesel motorhomes will typically have the Quad 6VDC battery hook-up (Diag. C).



Helpful Hints

- ✓ A "dead" battery, one with a low rate of charge, may be "jumped" using the following procedure:
 - Use approved or UL listed jumper cables - they should be 4 gauge or larger.
 - Connect the positive lead to the "good" battery.
 - Connect the negative lead to the "good" battery.
 - Connect the positive lead to the "dead" battery.
 - Connect the negative lead to frame ground that is common to the "dead" battery ground.
- ⚠ **WARNING: DO NOT CONNECT ON TO NEGATIVE BATTERY POST.** The final connection can cause sparking and sparks could ignite hydrogen formed at discharged battery, resulting in an explosion.
- Wait approximately 60 seconds before using any 12 volt devices.
- Remove the jumper cables in reverse order from above.
- ✓ Batteries are charged one of two ways while a RV is in use:
 - A trickle charge from the converter/charger.
 - A fast charge from the motor vehicle alternator.
- ✓ Take into consideration the condition of the battery while dry camping. If it isn't being recharged and power is being drawn from it, it will eventually discharge. Typically, a deep cycle battery contains 75-100 amps. If you run the furnace and refrigerator, you will be using (7.5 + 2.0) 9.5 amps per hour. Not including 12 volt lights, water heater or other appliances. At that rate, a 75-amp battery will only last 9-12 hours depending on frequency of operation. Batteries discharge at a faster rate as energy levels become depleted.

SHORE LINE CORD

- ✓ Recreational vehicles may carry a 30 Amp or a 50 Amp shoreline service (power cord), depending on your particular model and option.
- ✓ Inspect and clean prongs on cord plug regularly. "Shine" prongs with a soft emery cloth if corroded.
- ✓ Inspect cord for cuts, cracks and worn insulation. Replace cord if these symptoms are noticed.
- ✓ Not all locations have 50 amp service campsites, and sometimes 30-amp service isn't available. In these cases you may need to adapt "down" to the available service ratings with appropriate plug adapters (or run a generator if available and appropriate).
- ✓ If you adapt "down" to a lower amperage, (i.e. 30 amps to 15 amps) be aware of the limitations that affect your RV. For instance, at 15 amps, you will not be able to run your microwave along with any other 120 volt appliance or tool. On the following page is a chart of typical amperage ratings for appliances and accessories.
- ✓ An additional factor to take into consideration is your vehicle's circuit ratings. There are applications where there are several receptacles on one circuit. If the circuit is rated at 15 amps, then you are limited to that usage. For example from the chart, you may not be able to make toast and coffee at the same time (10 amps + 8.3 amps = 18.3 amps) on a 15 amp circuit. You will experience the annoyance of a circuit breaker tripping.
- ✓ If extension cords are required, be sure to use the heavy-duty type. Your amperage availability will also be limited to the extension cord rating.
- ⚠ **WARNING:** Using too small of an extension cord poses an electrical hazard and may cause a fire or other electrical problems.
- ✓ You can determine appliance and tool amperage ratings by dividing watts used by voltage supply. (i.e. 1200W/120V = 10 amps.)

110 VOLT AMP RATING

Coffee Maker	8.3 amps	Refrigerator-Dometic.....	2.7 amps
Converter	8.0 amps	Refrigerator-Norcold	2.9 amps
Food Processor.....	5.6 amps	Roof Air Conditioner-Cool.....	13.3 amps
Electric Skillet.....	6.0 to 12.0 amps	Roof Air Conditioner-Heat	16.0 amps
Hair Dryer	9.0 to 12.0 amps	Television.....	1.5 amps
Ice Maker	2.9 amps	Toaster	8.0 to 10.0 amps
Microwave.....	10.0 amps	Vacuum Cleaner	6.2 amps
Microwave/Convection Oven	13.0 amps	VCR Tuner.....	2 amps
Power Center	5.8 amps	Washer/Dryer	14.6 amps
Chest Freezer	6 amps		

12 VOLT AMP RATING

Air Bag Compressor	2.0 amps	LP Detector	1 amps
Air Horn Compressor.....	12.0 amps		
Interior Lights:			
Antenna Booster	8.0 amps	Aisle Light	1 amps
Auxiliary Auto Heater	8.0 amps	Bar Light	2.8 amps
Back-up Camera.....	1.8 amps	Decorator Ceil. (per bulb).....	9 amps
Back-up Monitor	2.0 amps	Fluorescent Light.....	1.5 to 2.1 amps
Ceiling Fan.....	4.0 amps	Map Light.....	1.0 amps
Cruise Control	(16 milliamps)	Pancake Light	1.4 amps
Dash AC/Heater.....	18.0 amps	Wall Lamp (per bulb)	9 amps
Defroster Fan	1.8 amps	Leveling Jacks.....	4.0 to 300.0 amps
Electric Mirror-Adjust.....	4.0 amps	Power Roof Vent	1.4 amps
Electric Mirror-Defrost.....	2.8 amps	Power Seat.....	12.0 amps
Electric Step.....	12.0 amps	Power Window	12.0 amps
Radio-CB/Stereo	4.0 to 4.6 amps		
Exterior Lights:			
Clearance Light (Ea.)	1 amps	Refrigerator-Dometic.....	14.6 to 13.8 amps
Headlights-Low Beam.....	16.0 amps	Refrigerator-Norcold	1.8 amps
Headlights-High Beam	24.3 amps	Security System	1.0 amps
Landing Lights.....	5.5 amps	LED Off.....	(20 milliamps)
Parking Lights.....	9.4 amps	LED Armed	(30 milliamps)
Porch Light	1.1 amps	Television.....	4.9 amps
Spot Light.....	7.0 amps	VCR Recorder/Player.....	2.0 amps
Storage Comp. Light (Ea.)	1.4 amps	Water Heater	1.0 amps
Taillights	2.4 amps	Water Pump	4.0 amps
Furnace.....	11.0 amps	Windshield Washers.....	3.0 amps
Generator (Cranking).....	300.0 amps	Windshield Wipers (Wet)	8.0 amps
CO Detector.....	1 amps	Range Hood	2.3 amps

POWER CENTER & DISTRIBUTION PANEL

This is the "breaker box" of your Coachmen recreational vehicle. All 120-volt circuit breakers are located here as well as most of the 12-volt fuses.

- ✓ At the beginning of camping season, inspect all breakers and fuses with shore line plugged in.
- ⚠ ✓ Turn each breaker OFF and back ON. Replace breaker with one of the same rating if breaker trips.
WARNING: DO NOT use a larger rated amperage breaker. Doing so will increase the risk of an electrical fire.
- ⚠ ✓ Inspect 12-volt fuses, replace if necessary. Always use a replacement fuse of the same rating.
WARNING: DO NOT use a larger rate amperage fuse. Doing so will increase the risk of an electrical fire.

INVERTER

- ✓ In motorhomes where an inverter is available, it is important to remember that the inverter system is designed to temporarily run appliances such as the TV, microwave, and a few 110 volt receptacles.
- ✓ The switch on outside, for most cases, should be left in the "Off" position. System can be turned on and off from remote panel inside of coach. This will prevent premature wear down and discharge on batteries.
- ✓ Inverters "step up" 12 volts battery power to 120 volts AC power.
- ✓ They require fully charged batteries to operate properly.

GENERATORS

Onan Generators

Starting & Stopping Procedures:

For simple steps for starting and stopping your Onan genset, see your Onan operator manual.

RV Genset Exercise

It may seem strange that "not" using a machine could cause performance problems, but with RV gensets that's exactly the case.

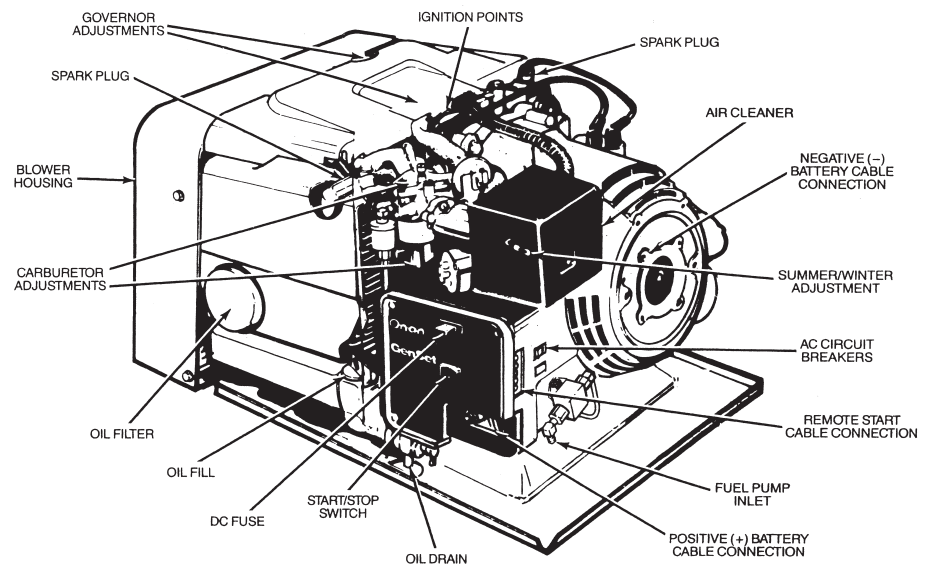
RV genset exercise is important both in terms of moisture and fuel system damage. Often RV gensets are used infrequently and over time, in as little as 30 days, the gasoline housed in a genset can break down into gums and varnishes. Gum and varnish can clog the fuel system, causing fuel pump, fuel line and carburetor plugging, resulting in hard starting and surging, (never settling on a stable operating speed).

To prevent this, Onan recommends you run your generator at approximately 50% of its capacity (2000 watts, or one air conditioner for a 4000 watt set) for two hours at least once every four weeks. a long two hour exercise period is preferable to several short periods.

- ✓ Inspect generator set prior to each trip and use.
- ✓ Check oil level prior to each trip.
- ✓ Keep unit clean and free from dirt and debris.
- ✓ Inspect wire and fuel connections, making certain they are tight and free of corrosion. Repair if necessary.
- ✓ Inspect fuel lines for cuts, cracks and abrasions, replace if necessary.
- ✓ Inspect exhaust system for leaks.
- ✓ Use fuel stabilizer when RV is in storage
- ✓ Refer to your ONAN RV Genset Handbook for maintenance and service guidelines.

If any discrepancy or problem is noted, contact your local Onan Service Center for repairs. If necessary, call 1-800-888-ONAN for your local Service Center.

Location of Basic Genset Components



Generators Continued

Refer to your operator's manual for specific instructions. Below is a chart showing required periodic maintenance as provided by Onan.

Service These Items	After Each Cycle of Indicated Hours				
	8 hrs	50 hrs	150 hrs	300 hrs	500 hrs
General Inspection	X 1				
Check Oil Level	X				
Check Battery Electrolyte Level		X			
Clean Out Spark Arrester	X				
Clean Governor Linkage			X 2		
Change Crankcase Oil and Oil Filter			X 2,6		
Change Air Filter			X 2		
Clean Carburetor & Combustion Chamber w/Onan "4C" Cleaner			X		
Check Spark Plugs					X 4,8
Inspect and Clean Internally, Engine Combustion Chamber				X 5	
Replace Fuel Filter (Gasoline) or Clean Fuel Filter (LPG)					X 3
Inspect and Pressure Test the LPG System				X 5,9	
Adjust Carburetor	As Required 5				
Check Generator Brushes	As Required 5				
Clean Generator Set	As Required 5				
Exercise Generator Set	As Required 5				

1- Before operating the set each day, or at least every 8 hours, check for oil and fuel leaks. Check exhaust system audibly and visually with generator set running. Shut down the set and repair any leaks immediately. Replace corroded exhaust and fuel line components before leaks occur. Make sure exhaust pipe extends beyond the perimeter of the RV.

2- Or once a year, whichever is first. Perform more often in extremely dusty conditions (i.e., check monthly, and change if dirty)..

3- Replace fuel filter at carburetor, clean screen at fuel pump .

4- Refer to Out-of-Service Protection if unit is to be stored.

5- Have your Onan service center perform.

6- First oil change during first year or 50 hours of operation, whichever is first.

7- During periods of non-use, exercise for 2 hours every 4 weeks.

8- Replace if necessary.

9- Perform more frequently if there are extended periods of non-use.

MISCELLANEOUS ELECTRICAL
GFI Receptacles

- ✓ Test all GFI receptacles monthly.
 - Push in test button, the reset button should pop out.
 - Push in reset button and it should hold. Replace receptacle if reset button does not hold and pops out.

Breakaway Switch

- ✓ Inspect at beginning of camping season and prior to each trip and make sure it is securely fastened to trailer.
- ✓ Have tested during brake system maintenance.

Exterior Fuses and Circuit Breaker

- ✓ Primarily located by the RV battery. Inspect regularly, prior to each trip or on a monthly basis to verify condition. Guard against corrosion. Clean if necessary and replace any that are damaged, corroded or non-functional



Dash fuse location – Gas Class A.
(Left side of driver's area)



Dash fuse location – Rear Diesel Class A.
(Under cup holders on dash)



Travel Trailer 12V mini-breakers.
(Front frame)



Fifth Wheel 12V mini-breakers.
(Front compartment)



Mini-Home Class C 12V mini-breakers.
(Under step area)



Rear Diesel battery disconnect solenoid and
12V mini-breakers. (Rear compartment)

CIRCUIT DEFINITIONS - MOTORIZED

120 Volt Circuits	Breaker Rating	Location
Microwave	15 Amp	Power Center
Converter	15 Amp	Power Center
Air Conditioner	20 Amp	Power Center/Generator
Washer/Dryer (optional)	20 Amp	Power Center
110V Receptacles	15 Amp	Power Center
110V Power Center	30 Amp	Generator
TV Lift	15 Amp	Power Center
12 Volt Circuits	Breaker Rating	Location
CO Detector	1 Amp / 15 Amp	Behind Detector/Power Center
Radio	5 Amp / 15 Amp	Battery/Power Center
	Class C	Battery Disconnects Area
	Class A	Battery Disc. Solenoid
Leveling System	175 Amp	Battery Disc. Solenoid
Slide-Out	30 Amp	Battery Disc. Solenoid
	20 Amp (Liftco)	Battery Disconnects Area
Electric Step	30 Amp	Behind Detector
LP Gas Detector	1 Amp / 5 Amp	Power Center
TV Booster	15 Amp	Power Center
Furnace	15 Amp	Power Center
Water Heater	5 Amp	Power Center
Refer	15 Amp	Power Center
Water Pump	15 Amp	Power Center
Range Hood	5 Amp	Power Center
Interior Lights	15 Amp	Power Center
Generator	175 Amp	Battery Compartment
Converter	40 Amp	Battery Compartment (manual reset)
	Class A	Battery Disconnects Area
Distribution Panel	40 Amp	Battery Compartment (manual reset)
	Class A	Battery Disconnects Area
Ext. Entertainment Center	50 Amp	Power Center
	Class C	Power Center
Compartment Lights	15 Amp	Power Center

LIGHTS & BULB RATINGS - MOTORIZED
Coach Lighting

12V Dinette Light:#921	12V Dome Light:.....#93
12V Pancake:#1141	12V Single Compartment Light:.....#168
12V Large Fluorescent:....#F8T5/WW & F8T5/CW	12V Double Compartment Light:.....#1003
12V Small Fluorescent:#F15T8/WW	O/S Security:.....#1295
12V Brass Lights:#1076	3 1/4 Round Halogen:.....10W
12V Wardrobe Lights:.....#2112	12V Frosted Vanity:.....#9019F
12V Isle Lights:.....#161	12V Single Dome "C":#901
12V Security:.....#1156	12V Single Contact Bulb:#1383

LIGHTS & BULB RATINGS - MOTORIZED (CONTINUED)**Exterior Lighting****Aurora**

Headlight – Low	#H1
Headlight – High	#H1
Running Light.....	#168
Front Turn Signal	#1156
Clearance Lights FRT/RR.....	#194
Mirror Lights.....	#194
Side Marker Lights	#194
Tail-Light – Stop.....	#2157
Tail-Light – Turn/Stop	#2157
Tail-Light – Running.....	#3157
Tail-Light – Back Up.....	#2156
License Plate Light	#53
Dome Lights.....	#1003
Porch Light	#1003

Mirada

Headlight – Low	#H7U
Headlight – High	#H7U
Running Light.....	#168
Front Turn Signal.....	#3457A
Clearance Lights FRT/RR.....	#194
Mirror Lights.....	#194
Side Marker Lights	#194
Tail-Light – Stop.....	#1157
Tail-Light – Turn/Stop	#1157
Tail-Light – Running.....	#1157
Tail-Light – Back Up.....	#1156
License Plate Light	#194
Dome Lights.....	#1003
Porch Light	#1003

SportsCoach

Headlight –High/Low.....	#9007
Running Light.....	#168
Front Turn Signal.....	#3157A
Front Turn Signal.....	#194A
Marker Lights/Mirror LTS.....	#194
Clearance Lights FRT/RR.....	#194
Side Marker Lights	#194
Tail-Light – Stop.....	#3157
Center Brake Light.....	#912
Tail-Light – Turn/Stop	#3157
Tail-Light – Running.....	#3157
Tail-Light – Back Up.....	#3156
License Plate Light	#53
Driving Lights	#H3
Dome Lights.....	#1003
Porch Light	#1003
Cornering Lights.....	#3157
Docking Lights.....	#H7614
Center Docking Lights	#912

Cross Country

Headlight – Low	#H1
Headlight – High	#H1
Running Light.....	#168
Front Turn Signal	#1156
Marker Lights/Mirror LTS.....	#194
Clearance Lights FRT/RR.....	#194
Side Marker Lights	#194
Tail-Light – Stop.....	#2157
Tail-Light – Turn/Stop	#2157
Tail-Light – Running.....	#3157
Tail-Light – Back Up.....	#2156
License Plate Light	#53
Driving Lights.....	#894
Dome Lights.....	#1003
Porch Light	#1003

Rendezvous

Headlight – Low	#H7U
Headlight – High	#H7U
Running Light.....	#168
Front Turn Signal.....	#3457A
Clearance Lights FRT/RR.....	#194
Mirror Lights.....	#194
Side Marker Lights	#194
Tail-Light – Stop.....	#2157
Tail-Light – Turn/Stop	#2157
Tail-Light – Running.....	#2157
Tail-Light – Back Up.....	#2156
License Plate Light	#194
Dome Lights.....	#1003
Porch Light	#1003

CIRCUIT RATINGS & LOCATIONS - NON-MOTORIZED

120 Volt Circuits	Breaker Rating	Location
Microwave	15 Amp	Power Center
Water Heater	15 Amp	Power Center
Main Air Conditioner	20 Amp	Power Center
2nd Air Conditioner	20 Amp	Distribution Panel
Refrigerator (GFCI)	15 Amp	Power Center
Receptacles & 120 V Lights	15 Amp	Power Center
(most receptacles are GFCI protected through kitchen or bath GFCI receptacles.)		
Washer/Dryer	15 Amp	Distribution Panel
Ceiling Fan	15 Amp	Power Center
Converter (50A system)	30 Amp	Distribution Panel

*Distribution panel is separate from the power center, but is located right next to the power center.

12 Volt Circuits	Fuse Rating	Location
Slide out switch	5 Amp	Behind Switch
Slide out	25 Amp	Battery Compartment
LP leak detector	1 Amp	Behind Detector
	5 Amp	Power Center
Monitor Panel	5 Amp	Power Center
Range Hood	5 Amp	Power Center
Radio/Cassette	15 Amp	Power Center
	5 Amp	Behind Radio
TV Booster	15 Amp	Power Center
Interior Lights	15 Amp	Power Center
Refrigerator	15 Amp	Power Center
Furnace	15 Amp	Power Center
Water Heater	5 Amp	Power Center
Water Pump	15 Amp	Power Center
CO Detector	1 Amp	Behind Detector
	5 Amp	Power Center
Landing Jacks	30Amp	Battery Compartment
Battery Power/Charge Line	30 Amp Fuse	Battery Compartment
Battery Power/Charge Line	40 Amp Breaker	Battery Compartment
Generator	175 Amp	Battery Compartment

LIGHTS & BULB RATINGS - NON-MOTORIZED

Interior	Bulb Size
12V Ceiling Lights	#1141
120V Ceiling Lights	60W
120V Lamp	60W
120V 3-bulb Ceiling Light	40W
Refrigerator Light	Phillips 12866 RVW
Range Hood	#912
Exterior	Bulb Size
Taillight	#1157
Porch & Utility Lights	#93/105
Clearance Lights.....	#194

For the most part, the fresh water system needs just periodic sanitization and winterization. These two functions will take care of all the components within the plumbing system.

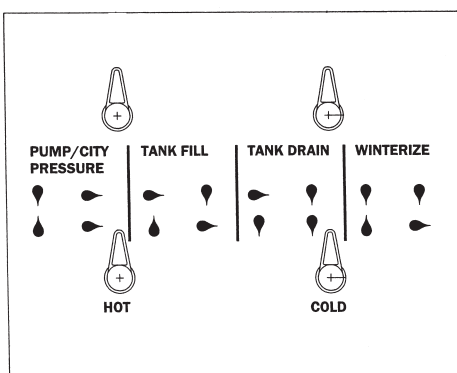
- ✓ Sanitize your system:
 - At the beginning of each season.
 - When the system becomes contaminated.
 - After 3 months of use.
 - At end of each camping season.
- ✓ Winterize the water system:
 - At end of camping season; or
 - When temperatures will fall below 32°.
- ✓ At end of every trip drain water from the fresh water tank, water lines, and hot water heater. This will discourage the growth of bacteria and other organisms that can contaminate the water supply.

NOTE: Contaminants and minerals in the water cause fresh water system odors. All water contains these particles and by using treated water with a controlled particle content, odors can be reduced significantly. Untreated well water is a major source of water system odors.

SANITIZING THE FRESH WATER SYSTEM

- ✓ Prepare a chlorine solution using 1/4 cup of chlorine bleach to a gallon of water. Prepare one gallon of solution for every 15 gallons of fresh water capacity (e.g. 2 gallons of solution for 30 gallon system capacity).
- ✓ For products with a Water Filter System, remove filter and install bypass line or, if equipped, place bypass valve in the bypass position. Replace with a new filter after the sanitizing procedures are completed.
- ✓ For products that have a Gravity Water Fill (Diag. A), pour the chlorine solution into the fresh water tank via the gravity fill. Fill remaining portion of tank with clean fresh water.
- ✓ For products with the Water Works Panel (Diag. B & C), remove fitting from the suction plug and connect hose to it and place other end of hose in container with the chlorine solution. Place water valves in the “FILL” position as indicated by the pictorial diagrams on the Water Works Panel. Turn Water pump on and after the recommended amount of solution is in the tank, connect a water supply hose to the city wall fill connection and complete filling the tank with clean fresh water. Turn water pump off. Place valves in the “USE” position after tank is filled. Turn the water pump on to pressurize the water system.

DIAGRAM – A

Gravity water fill
DIAGRAM – B

Four Valve Water Works Panel
DIAGRAM – C

Five Valve Water Works Panel

- ✓ Open hot water lines on all faucets (kitchen, lavatory, tub/shower, and if equipped, the outside shower) until the solution begins to flow continuously and a chlorine smell is noticed. Close and repeat with the cold side of the faucets.
- ✓ Let solution remain in system for at least 3 hours.
- ✓ After required period of time, open faucets, low point line drains, and remove water heater drain plug to drain the system. Drain fresh water tank. Some solution will remain in the water heater, but will flush out in the following steps.
- ✓ Close all drains and faucets and reinstall water heater drain plug. Fill fresh water tank with clean fresh water. Turn pump on and allow water to flow through water heater, all faucets, lines and drains until tank is empty. If a chlorine taste lingers, flush system with a solution consisting of one quart of vinegar to five gallons of fresh water. Follow with another clean fresh water flush.
- ✓ Follow local public codes regarding dumping gray water tank.

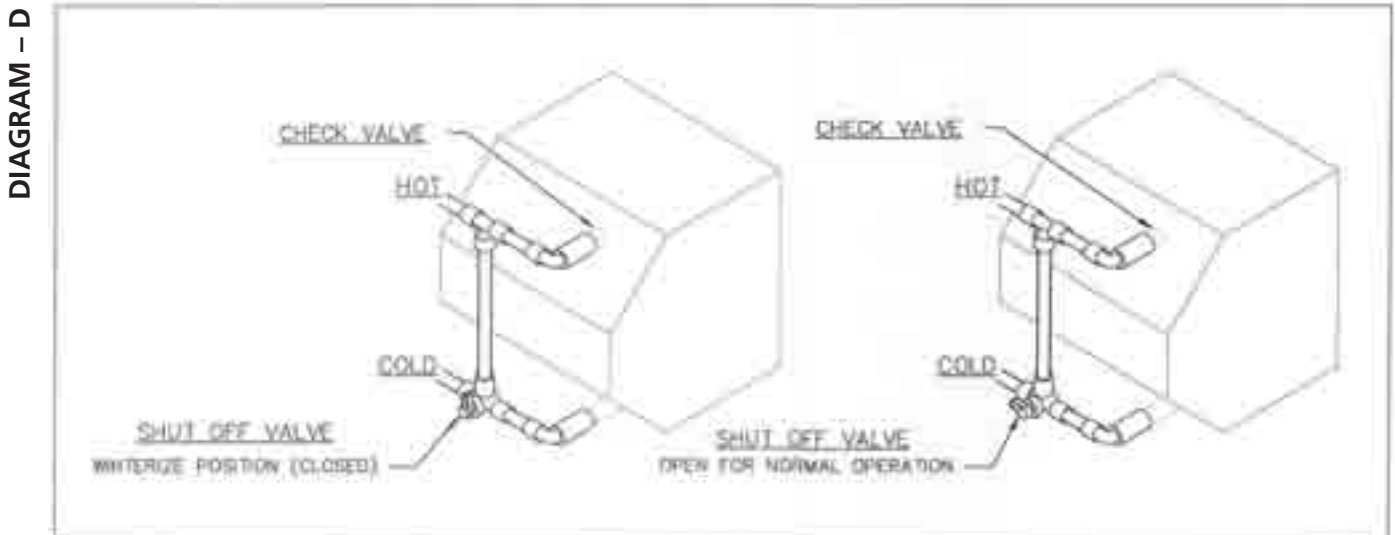
WINTERIZING YOUR RV

This procedure usually will take 2-3 gallons of non-toxic RV anti-freeze. Only use the pink non-toxic RV anti-freeze.

▲ WARNING: DO NOT use automotive anti-freeze in water or drainage systems. It is poisonous and corrosive.

- ✓ Drain holding tanks at an appropriate facility.
- ✓ Drain system by opening faucets, low point line drains, and removing water heater drain plug. For products with the 4 valve Water Works Panel (Diag. B), place hot and cold water line drain valves in the “OPEN” position.
- ✓ Turn the water heater bypass valve to the bypass position (Diag. D). The bypass valve is accessible from the interior and behind the water heater. A drawer and/or access panel may need to be removed.
- ✓ For products with the Water Works Panel (Diag. B & C), remove fitting from the suction plug and connect hose to it and place other end of hose in container with non-toxic RV anti-freeze. Place valves in the “WINTERIZE” position indicated by the pictorial diagrams on the Water Works Panel.
- ✓ For products with a Gravity Water Fill, pour enough non-toxic anti-freeze into the fresh water tank to fill the tank above the supply line fitting. This can take up to 8 gallons due to the many different fresh water tank sizes and shapes.

NOTE: There are after-market winterizing kits available that allow winterizing without putting RV anti-freeze in the fresh water tank and will use less RV anti-freeze in the winterizing procedure. Contact your local Coachmen dealer for additional information.



Water heater bypass valve



- ✓ For products with a Water Filter, remove the filter cartridge and install the bypass line or, if equipped, place the bypass valve in the bypass position.
- ✓ Turn the water pump on and the RV anti-freeze will be drawn into the water system. Turn cold water side of the faucets on until the anti-freeze flows out. Repeat with the hot water side of the faucets.
- ✓ Flush toilet until anti-freeze flows into the toilet bowl. Pour one gallon of RV anti-freeze down toilet to winterize the black holding tank. Open and close termination valve quickly to let anti-freeze coat termination valve blade and seal.
- ✓ Pour RV anti-freeze into the shower, lavatory, and kitchen drains to fill the p-traps. In either the lavatory or kitchen drain, pour one gallon of RV anti-freeze to winterize the gray holding tank. Open and close termination valve quickly to let anti-freeze coat termination valve blade and seal.
- ✓ To de-winterize, flush system with fresh water and follow sanitizing procedures.

HOLDING TANKS


To keep the sewage system in good working order:


- ✓ Empty only when at least 1/2 full.
- ✓ Always dump black (toilet) tank first, and then follow with gray tank. This will help keep sewer hose and connectors relatively clean.
- ✓ Maintain tank freshness during travel by flushing tank with fresh water after emptying.
- ✓ Keep tank clean by using holding tank chemicals (i.e. Aqua-Kem by Thetford).
- ✓ Recreational vehicles shake and vibrate while going down the road. It is possible for plumbing fittings to come loose. Check all fittings, pressure and waste, for leaks before each trip.
- ✓ Inspect faucet and sink connections (drain baskets).
- ✓ Inspect connections at the water pump and water heater.
- ✓ Remove access panels and inspect shower faucet fittings & shower/tub drain lines.

IMPORTANT SAFETY REGULATIONS—PLEASE READ CAREFULLY.

LP GAS SYSTEMS AND APPLIANCES


Coachmen Industries is required to furnish the following consumer information as provided by the National Fire Prevention Association and the American National Standards Institute. The information and warnings found here may also be found in sections of the Owner's Manual. Please see sections in Owner's Manual titled "Liquid Petroleum Gas System" and "Appliances" for other safety and operating information.

 **WARNING!** LP gas containers shall not be placed or stored inside the vehicle. LP gas containers are equipped with safety devices that relieve excessive pressure by discharging gas to the atmosphere.

 **WARNING!** It is not safe to use cooking appliances for comfort heating. Cooking appliances need fresh air for safe operation. Before operation:

1. Open overhead vent or turn on exhaust fan, and,
2. Open window.


A warning label has been located in the cooking area to remind you to provide an adequate supply of fresh air for combustion. Unlike homes, the amount of oxygen supply is limited due to the size of the recreational vehicle, and proper ventilation when using the cooking appliance(s) will avoid dangers of asphyxiation. It is especially important that cooking appliances not be used for comfort heating as the danger of asphyxiation is greater when the appliance is used for long periods of time.

 **WARNING!** Portable fuel-burning equipment, including wood and charcoal grills and stoves, shall not be used inside this recreational vehicle. The use of this equipment inside the recreational vehicle may cause fires or asphyxiation.

 **WARNING! DO NOT** bring or store LP gas containers, gasoline, or other flammable liquids inside the vehicle because a fire or explosion may result.

A warning label has been located near the LP gas container. This label reads: DO NOT FILL CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY. Over filling the LP gas container can result in uncontrolled gas flow that can cause fire or explosion. A properly filled container will contain approximately 80 percent of its volume as liquid LP gas.

The following label has been placed in the vehicle near the range area:


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

LP gas regulators must always be installed with the diaphragm vent facing downward. Regulators that are not in compartments have been equipped with a protective cover. Make sure that regulator vent faces downward and the cover is kept in place to minimize vent blockage that could result in excessive gas pressure causing fire or explosion.

LP GAS SYSTEM

Regular maintenance of the LP Gas System is extremely important to ensure the proper operation and safety of the system. At beginning of every camping season be sure to:

- ✓ Inspect lines and fittings for cracks.
- ✓ Make sure fittings are tight at LP tanks, manifold and appliances. If you smell gas at anytime:

- 
1. Extinguish any open flames, pilot lights and all smoking materials.
 2. **DO NOT** touch electrical switches.

3. Shut off the gas supply at the tank valve(s) or gas supply connection.
4. Open doors and other ventilating openings.
5. Leave the area until odor clears.
6. Immediately have the gas system checked and leakage source corrected by a Coachmen dealer immediately.

- ✓ Be sure to have your Coachmen dealer check the LP gas pressure at least once a year. Pressure should be set at 11 inches Water Column.
- ✓ Be sure LP tank is properly secured in place before each trip.
- ▲✓ If you notice any "skunk-odor" smell, have your LP Gas System checked immediately. ***DO NOT*** light any of the appliances or other flammables (i.e. matches, cigarettes, etc.).
- ✓ LP system should be checked every 30 days of use or 5,000 miles of travel by a Coachmen dealer or an authorized recreational vehicle LP gas center.
- ✓ Propane is sold with a small percentage of butane with it. The further south you travel or live, it is more likely that the butane percentage becomes greater. Because of the different freezing points of propane and butane (butane's being considerably higher), it is advisable to have anhydrous methanol added to the tanks when returning or traveling to colder climates. This will also have any moisture in the LP system absorbed and prevent freeze-ups.

As temperatures change, so does the pressure given by LP gas. As pressure changes, so does the BTU output. Below is a chart detailing BTU ratings relating to pressure and temperature ratings. One pound of LP gas will give 21,500 BTU's. So in colder climates, you will need to figure BTU usage accordingly.

65 lb. Under Mtd LP Gas Tank BTU Available At

% Full	+20°	0°	-5°	-10°	-15°
60%	95,600	47,800	36,000	23,900	12,100
50%	86,000	43,000	32,250	21,500	11,750
40%	77,000	38,500	29,250	19,250	9,625
30%	68,000	34,000	25,500	17,000	8,500
20%	58,000	29,000	21,750	14,500	7,250
10%	43,200	21,600	16,200	10,800	5,400

20 lb. Bottle BTU Available At:

% Full	+20°	0°	-5°	-10°	-15°
60%	36,000	18,000	12,750	8,500	4,250
50%	32,400	16,200	12,150	8,100	4,050
40%	28,800	14,400	11,400	7,600	3,800
30%	25,200	12,600	10,450	7,300	3,15
20%	21,600	10,800	8,100	5,400	2,700
10%	16,200	8,100	6,075	4,050	2,025

*30 lb. Bottle multiply x 1.40

It is important to remember that your furnace, refrigerator, water heater and range all use LP gas to operate. Each appliance has a different BTU rating, and you will need to take them into consideration to determine how long your LP gas supply will last.

To determine this, simply take BTU ratings for your LP appliances and divide into BTU availability (30# of LP = approx. 650,000 BTU's at 70°/sea level). In the example below, you would have approximately 16 hours of LP gas availability. Of course, these do not run 100% of the time you are camping, but this is an easy way to anticipate your LP gas availability.

Example:		
	Furnace	30,000 BTU's
	Refrigerator	1,500 BTU's
	Water Heater	9,000 BTU's
	Total	40,500 BTU's

SLIDE-OUTS

- ✓ The slide-out mechanisms are virtually maintenance free. Keep slide-out rails clean and free of dirt and road grime build up. It is recommended that a dry silicone lubricant be applied to the slide out rails, gears, and rollers.
- ▲ **DO NOT** use petroleum based lubricants (grease) as they will collect dirt and cause premature wear and tear.
- ✓ Batteries are very important to the operation of the electrically operated systems. The batteries should be fully charged. Refer to Battery Maintenance procedures on page 31.
- ✓ Watch closely as the slide-out room is opened and closed. Be sure the operating area is free and clear of any obstructions. Inspect room as it seals to the exterior wall when in the extended or retracted position.
- ✓ The slide-out room should not be extended or retracted too far (where the exterior wall moves under pressure). The rubber seals should touch and achieve approximately 50% compression.
- ✓ Damage can occur if the in/out switch is held down too long.
- ▲ ✓ On manual crank slide-outs, **DO NOT** use an automated means to open and close (such as a cordless drill).
- ✓ Contact your Coachmen dealer if the slide-out requires service. Only properly trained personnel should perform any adjustments or repairs.

HWH SLIDE-OUT & LEVELING SYSTEM - MOTORIZED

The slide out and leveling systems are integrated. They use many of the same components to operate. Consequently, maintenance procedures for both are similar.

- ✓ In order for the slide out to work, the leveling system must be set and the unit level before extending.
- ✓ Periodically check accuracy of leveling system.
 - Level the vehicle by placing a circular bubble level in the center of the freezer floor or location within the vehicle that is to be level. With the vehicle level, adjust the sensing unit until all yellow lights are off. This is done by drawing up the corresponding screw if the sensing unit is mounted below the surface as shown in FIGURE A or backing out the corresponding screw if the sensing unit is mounted above the surface. Bump the sensing unit to see that it has settled down in the level position.
- ✓ Prior to each trip, check oil supply in hydraulic oil reservoir located at the pump assembly. The oil level should be approximately one inch below the top of the reservoir when adequately filled. The jacks must be up and the room in. Use Dexron II or a high quality multi-purpose automatic transmission fluid (ATF).
- ✓ Periodically inspect hydraulic hoses for cracks, nicks and cuts. Check hose connections for tightness. Replace if necessary with HWH original parts.
- ✓ The batteries should be in good condition and fully charged. Weak batteries can cause erratic operation. Battery cable terminals and battery posts and connections should be kept clean. All electrical connections, especially ground connections, should be clean, tight and free from corrosion. Refer to Battery Maintenance on page 31.
- ✓ If driving conditions are unusually muddy, the jacks may become caked or clogged with mud. This condition may hamper the proper operation of the leveling system. This problem may be prevented or remedied by cleaning off each leveling jack if they become excessively muddy.
- ▲ **DO NOT** move the vehicle while the leveling jacks are still in contact with the ground. Make sure the jacks are in the store position and then visually check to see if the leveling jacks have returned to the STORE/TRAVEL position.
- ✓ In wet or icy weather leveling jacks may become encrusted with ice. This may cause the leveling system to function improperly. To eliminate this problem, periodically check the leveling jacks and break loose any ice that may be causing improper operation.

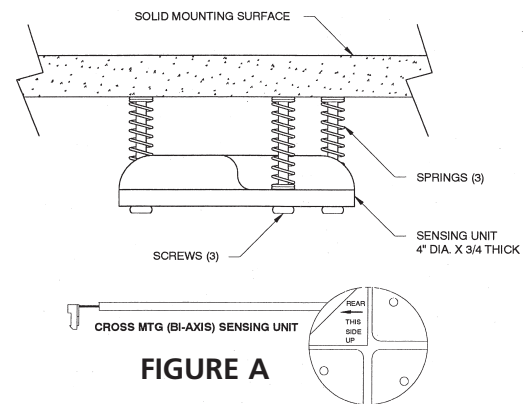


FIGURE A



HINGES, LOCKS, LATCHES

- ✓ Lubricate with a high quality silicone lubricant every 3 months or sooner if necessary. Salty air and dusty environments will require more frequent maintenance.

EXTERIOR DOORS

- ✓ Follow Filon® sidewall maintenance instructions.
- ✓ Water Heater, Furnace and Refrigerator exterior doors need to be kept clean and free of obstructions (i.e. insect nests, mud daubers) while appliances are in use.

AWNINGS

Awnings can be kept in great condition and costly repairs prevented if these steps are followed:

- ✓ If it looks like rain, drop one corner for water to drain off. Prevent water from pooling on fabric. If there is heavy rain or high winds roll up and lock awning. Leaving awning down in these conditions may cause damage to the awning and the RV.
- ✓ Keep clean.
 - Clean hardware items once a year to make sure they are tight, clean and lubricated. Inspect bolts and screws for tightness.
 - For vinyl fabric, clean with mild soap and water or 1/4 cup of bleach to 5 gallons of water for heavy soil and stains.
 - For acrylic fabric, spray often with water - dry completely before storing. Apply a water repellent once a year.
 - Be sure fabric is dry before rolling up awning.
 - Vinyl fabrics may develop pinholes and can be easily repaired with a vinyl liquid patch and a cotton swab.


 **IMPORTANT:** Awning must be closed and locked during travel, or when you will be away for an extended period of time.

ROOF VENTS

- ✓ Inspect roof vents for cracks, replace if necessary. Clean them as you are cleaning the roof assembly.
- ✓ Inspect sealants twice a year; refer to Sealant Maintenance on page 11.
- ✓ Inspect refrigerator and holding tank vents for blockages from birds and insects (i.e. nests & webs).

STORAGE

Properly preparing your recreational vehicle during lengthy time periods of non-use will prevent problems from arising. It will also make it easier to get started again for the following camping trip or season.

- ✓ To prevent costly freeze-ups winterize the plumbing system in colder climates. Refer to winterization instructions on page 42.
 - ✓ In warmer regions, drain and sanitize fresh water system. Refer to sanitization instructions on page 41.
 - ✓ Shut off the service valve(s) on the LP gas tank or bottles. Cover the LP regulator to prevent moisture from freezing and damaging regulator.
 - ✓ Turn thermostat on furnace to the OFF position.
 - ✓ Light a gas burner on range to consume any gas remaining in the lines. Once flame extinguishes itself, turn burner valve off.
 - ✓ Remove all perishables from refrigerator/freezer and cabinets. Defrost, wash and dry interior of refrigerator/freezer. Prop door open so air can circulate and prevent mildew.
 - ✓ Leave cabinet and closed doors ajar to allow air circulation and prevent mildew and musty odors.
 - ✓ Disconnect battery (ground cable (-) first). Add water and recharge if necessary. Store battery in a cool, dry ventilated area away from where extreme heat or sparks can occur.
 - ✓ Cover windows on the inside with a dark fabric, newspaper, or cardboard to protect interior fabrics from fading.
 - ✓ Close all exterior vents (on roof & sidewall) tightly.
 - ✓ Lubricate locks and hinges on exterior doors.
 - ✓ Inspect under trailer for any tears in underbelly material or openings into floor where animals may enter; seal if necessary.
 - ✓ Tape cardboard inside of refrigerator and water heater exterior vent doors to help prevent dust and debris from building up on burner components.
 - ✓ Wash and wax exterior of unit for easier spring start-up.
 - ✓ Cover furnace intake and exhaust vents with tape and foil to prevent dust and debris and varmints from entering.
 - ✓ Do a sealant inspection and repair as necessary. Follow sealant maintenance instructions on page 11.
 - ✓ Inspect and clean tires. Check for wear, cracks and inflation pressure. Take weight off of tires by placing your recreational vehicle on jack stands.
-  **CAUTION: DO NOT** use hydraulic jacks, as they tend to seep down over time.
- ✓ If unable to place unit on jack stands, you will need to periodically move unit to prevent flat spots on tires.
 - ✓ Cover tires to protect them from ultraviolet rays.
 - ✓ In areas of heavy snow and if unit is stored outside, periodically brush snow off to prevent excessive accumulation and possible roof damage.
 - ✓ Prepare motorized chassis portion of motorhome for storage in accordance with chassis manufacturer's owner's manual (i.e. fuel stabilizers, etc.).
 - ✓ Follow generator storage instructions on page 34.

START-UP

When Spring is around the corner or when you need to get ready for a trip; your recreational vehicle will require some preparation for a fresh start to your camping season. The following check list will help ensure a trouble free camping season.

- ✓ Wash exterior of unit.
- ✓ Do a sealant inspection and repair as necessary.
- ✓ Make sure 12V battery(ies) are fully charged and reinstall on your RV.

- ✓ Inspect shore line cord, clean contacts if necessary.
- ✓ Turn on circuit breakers, test GFCI circuits.
- ✓ Inspect LP containers, repair if necessary. Uncover regulator and turn on service valves. Inspect LP system as per instructions in LP Gas section on page 45.
- ✓ Remove coverings on furnace, refrigerator and water heater exterior vent doors. Clean these areas, be sure combustion areas are free from debris.
- ✓ Inspect and perform suspension and brake system maintenance.
- ✓ Uncover tires, check inflation pressures and let unit off of jack stands.
- ✓ Lube frame components according to maintenance requirements.
- ✓ Plug in shore line cord. Turn on 12V lights and check outlets for polarity.
- ✓ Remove window coverings; open windows and vents and let unit air out.
- ✓ Test pilot lights on range, refrigerator, furnace and water heater.
- ✓ Install new dry cell batteries and test smoke detector.
- ✓ De-winterize and sanitize water system according to instruction in the Plumbing section.
- ✓ Inspect and clean air conditioner filter and test run.
- ✓ Inspect and work exterior latches and locks; lube if necessary.
- ✓ Inspect jacks for operation; lube as necessary.
- ✓ Connect trailer to tow vehicle and test all exterior lights. Replace bulbs if they are burnt out.
- ✓ Clean and dust interior of unit.
- ✓ Have all maintenance requirements performed to appliances and generator (if equipped) as required by the manufacturers.
- ✓ Prepare motorized chassis portion of motorhome for the camping season in accordance with the chassis manufacturer's owner's manual.

Motorized Maintenance Chart

	Pre-Trip	Weekly	Monthly	3 Months	Bi-Annually	Annually	As Necessary
Interior							
Clean & dust interior fabrics		■					■
Clean & dust countertops & cabinets		■					■
Oil hardwood doors				■			
Clean & dust floors		■					■
Exterior							
Clean roof				■			■
Clean walls				■			■
Sealants							
Inspect	■				■		
Replace						■	■
Electrical System							
Inspect battery	■	■					
Check battery fluid level	■	■					
Check 12V fuses & 120V breaker	■					■	
Check GFI Receptacles			■				
Generator							
Inspect Generator	■						
Follow Generator maintenance instructions							■
LP System							
Have LP pressure checked-set at 11" WC						■	
LP tanks secured properly	■						

Motorized Maintenance Chart

	Pre-Trip	Weekly	Monthly	3 Months	Bi-Annually	Annually	As Necessary
Plumbing Systems							
Sanitize plumbing system			■			■	■
Winterize plumbing system							■
Check plumbing system fittings	■		■				
Appliances							
Water Heater							
Water Heater maintenance instructions							■
Operate pressure relief valve						■	
Flush tank					■		
Check burner for proper adjustment					■		
Check electrode gas & porcelain					■		
Check module board circuits					■		
Refrigerator							
Refrigerator maintenance instructions							■
Inspect & clean exterior vent					■		
Inspect LP fittings					■		
Inspect & clean baffle					■		
Furnace							
Furnace maintenance instructions						■	
A/C							
A/C maintenance instructions							■
Clean air filter			■				■
Inspect for exterior damage	■					■	
Range Top							
Range maintenance instructions							■
Inspect & clean burner assembly					■		

Motorized Maintenance Chart

	Pre-Trip	Weekly	Monthly	3 Months	Bi-Annually	Annually	As Necessary
Frame & Chassis							
Follow Chassis Maintenance Instructions (Lube, Oil, Filter & Suspension) (Refer to Chassis Owner's Manual)							■
Inspect & Clean Frame Components				■			
Inspect & Clean Hitch Receiver	■		■				
Inspect Mor-Ryde Shocks						■	
Tag Axle							
Check Tire Pressure & Wear		■					
Suspension							
Check Air Bag Pressures	■						
Inspect Wheel Bearings						■	
Inspect Brake Assemblies						■	
Hydraulic Slide-Out & Leveling System							
Check Oil Level	■						
Check Hydraulic Lines	■						
Check Adjustment	■						■
Miscellaneous							
Lubricate locks, hinges, latches				■			

Towable Maintenance Chart

	Pre-Trip	Weekly	Monthly	3 Months	Bi-Annually	Annually	As Necessary
Interior							
Clean & dust interior fabrics		■					■
Clean & dust countertops & cabinets		■					■
Oil hardwood doors				■			
Clean & dust floors		■					■
Exterior							
Clean roof				■			■
Clean walls				■			■
Sealants							
Inspect	■				■		
Replace						■	■
Frame & Chassis							
Inspect & clean frame				■			■
Inspect & lubricate couplers and steps	■		■				
Inspect jack assembly	■						
Clean & lube jacks					■		
Slide-out adjustment	■						■
Inspect hydraulic lines, where applicable	■		■				
Inspect slide-out hydraulic fluid, where applicable	■						
Adjust brakes				■			■
Check suspension					■		
Inspect and repack bearings					■		
Check wheel torque	■						
Inspect brakes						■	
Check tire pressure and wear	■						

Towable Maintenance Chart

	Pre-Trip	Weekly	Monthly	3 Months	Bi-Annually	Annually	As Necessary
Electrical System							
Inspect battery	■	■					
Check battery fluid level	■	■					
Check 12V fuses & 120V breaker	■					■	
Generator							
Inspect Generator	■						
Follow Generator maintenance instructions							■
LP System							
Have LP pressure checked-set at 11" WC						■	
LP tanks secured properly	■						
Plumbing Systems							
Sanitize plumbing system			■			■	■
Winterize plumbing system							■
Check plumbing system fittings	■		■				
Appliances							
Water Heater							
Water Heater maintenance instructions							■
Operate pressure relief valve						■	
Flush tank					■		
Check burner for proper adjustment					■		
Check electrode gas & porcelain					■		
Check module board circuits					■		

Towable Maintenance Chart

	Pre-Trip	Weekly	Monthly	3 Months	Bi-Annually	Annually	As Necessary
Appliances							
Refrigerator							
Refrigerator maintenance instructions							■
Inspect & clean exterior vent					■		
Inspect LP fittings					■		
Inspect & clean baffle					■		
Furnace							
Furnace maintenance instructions						■	
A/C							
A/C maintenance instructions							■
Clean air filter			■				■
Inspect for exterior damage	■					■	
Range Top							
Range maintenance instructions							■
Inspect & clean burner assembly					■		
Miscellaneous							
Lubricate locks, hinges, latches				■			

This troubleshooting section has been developed to help solve some of the simple problems which could occur in your recreational vehicle. It is not intended to be a repair manual or a substitute for your dealer's involvement in making the necessary repairs to your unit.

⚠️ WARNING: LP Gas and electrical problems can cause personal injury and property damage. For any LP Gas or electrical problems, you should immediately return your recreational vehicle to a Coachmen dealer for service.

We have included some technical tips for qualified service personnel if your dealer should not be available.

The inconvenience of what may appear to be a "problem" may be avoided by following some of the troubleshooting tips listed in this manual. Never overlook the simple but obvious solutions.

For your convenience, please find a list of phone numbers at the end of this guide of appliance/component manufacturers who can refer you to their local service centers. Should you require Coachmen's assistance, please call the Coachmen RV Customer Service Department at 1-800-453-6064.

AIR CONDITIONERS

Nothing works.

- ✓ Check to make sure thermostat is set below room temperature.
- ✓ Make sure 120 Volts AC is available from generator or shore power.
- ✓ Check coach circuit breakers.
- ✓ Make sure the unit is turned on.

Runs but coil freezes and compressor cycles too soon.

- ✓ Control may be set too low.
- ✓ Make sure the filter is clean and unobstructed.
- ✓ Check to see if too many outlet vents are closed.

Doesn't get cold enough.

- ✓ Give the air a head start on the heat of the day.
- ✓ To offset heat gain:
 - Close windows and blinds.
 - Limit use of entrance doors.
 - Use awnings.
 - Avoid heat-producing appliances.
- ✓ Make sure outside coil is not blocked or damaged.
- ✓ Make sure 120 voltage is not below 108 volts.

Should your A/C not work after the above checks have been made, contact a qualified service facility to perform more extensive testing. To receive information on the location of an authorized service center, contact The Dometic Corp. at 1-800-544-4881.



Heat/cool thermostat

BATTERY DISCONNECT (MOTORIZED UNITS ONLY)

Pressing "Use/Store" switch will not connect battery

- ✓ Battery may be fully discharged. Recharge battery or "jump" with direct connections.
- ✓ Check fuses on solenoid and replace if blown with same type and rating (5 Amp). Solenoid locations vary, be familiar with the location in your RV.
 - Behind passenger headlight (Gas Chassis)
 - Rear compartment (Diesel Chassis)
 - Under step (Mini Homes)

12 Volt RV power operates normally but indicator lights/volt-meter will not illuminate.

- ✓ Check fuses on solenoid (same locations above) and replace if blown with same type and rating (5 Amp).



Battery Disconnect Panel Class C



Battery Disconnect Panel

Battery switched to "Store" position but indicator light remains on.

- ✓ RV is plugged in to 120 volt AC shore power or operating on gen-set.

Gen-set will not crank.

- ✓ Check that Coach battery is switched to "Use".

RV engine will not crank or chassis accessories will not operate.

- ✓ Check that Chassis battery is switched to "Use".
- ✓ Check 175A fuse at disconnect solenoid.



Rear Diesel battery disconnect solenoid and 12V mini-breakers



Gas Chassis / Mini-Home Class C battery disconnect solenoid and 12V mini-breakers

ELECTRICAL BRAKING SYSTEMS (TRAVEL TRAILERS & FIFTH WHEELS ONLY)

No brakes.

- ✓ Check fuse at battery connection.
- ✓ Bargman plug not fully connected.
- ✓ Faulty controller - test and correct.

Weak brakes.

- ✓ Clean corroded connections at pigtail plug.
- ✓ Adjust controller sensitivity.
- ✓ Weigh trailer to determine if weight is excessive. See Federal sticker or weight sheet located in unit for guidelines.

Harsh brakes.

- ✓ Adjust controller sensitivity on controller.

Surging brakes.

- ✓ Faulty controller. Test and correct.

Dragging brakes.

- ✓ Faulty breakaway switch. Repair or replace.
- ✓ Brake shoes need adjusting. Return to dealer.

ELECTRICAL POWER**No electrical power to unit (110V or 12V).**

- ✓ Make sure you have power to the shoreline receptacle.
- ✓ Circuit breaker (120V) may be off or tripped. Reset breaker(s) at power center.
- ✓ Check for low battery or dead battery.
- ✓ Circuit breaker (12V) may be tripped. Reset breaker at battery compartment.
- ✓ Make sure the Battery Disconnect (motorized product only) is turned to "USE".

ELECTRICAL STEP**Step will not extend/retract.**

- ✓ Check that step switch is in the on position.
- ✓ Check battery power/voltage. Charge or replace battery.
- ✓ Check step frame for damage/lubrication. Replace or lubricate.
- ✓ Check 5 amp fuses located at step. Check secondary breaker located:
 - Battery compartment (Mini Motor Home-30 Amp).
 - By battery disconnect solenoids or under hood on driver's side (Class A).
- ✓ Check door switch alignment. Re-align or repair.

Step operates intermittently.

- ✓ Check door switch alignment. Realign.
- ✓ Check step frame for damage, lubrication. Replace or lubricate.

FURNACE**Furnace does not ignite.**

- ✓ Be sure gas bottles are full and have gas pressure set to 11" water column pressure with three appliances running. (Gas pressure should be checked periodically by dealer.)
- ⚠ ✓ Return air grille should not be obstructed. ***DO NOT*** store anything in furnace compartment.
- ✓ Check fuse in fuse panel and replace if necessary.
- ✓ Remove any obstructions that may be covering floor or wall heat outlets. Make sure that any closeable registers are open.
- ✓ Remove any screens over furnace exhaust.
- ✓ Inspect and clean exhaust tube of furnace.
- ✓ Voltage below 10.8 volts.

Blower motor will not run.

- ✓ Check fuse panel
- ✓ Make sure thermostat is set above current temperature.
- ✓ Make sure thermostat is on.
- ✓ Check breaker on furnace exterior.



Furnace breaker – exterior location.

Furnace does not light and fan does not run.

- ✓ Replace fuse with one of the same ampere rating.

The furnace does not light after several attempts.

- ⚠ ✓ Turn the thermostat and the furnace gas control valve OFF and contact your Coachmen dealer or authorized service center. ***DO NOT ATTEMPT REPAIR OR ADJUST THE FURNACE YOURSELF.***

GENERATOR

Generator cranks (while holding start button down) but will not start.

- ✓ Generator may be out of fuel. Check the fuel level (should be at least 1/4 full).
- ✓ Generator may be low on oil. Check the oil level.
- ✓ Generator may be flooded. Wait a few minutes before trying to start again.

Generator starts but no power.

- ✓ Fuse on the generator may have blown. Replace fuse with one of the same ampere rating.
- ✓ Breaker switches may be off or tripped at generator. Reset breaker.
- ✓ Distribution panel circuit breaker may be off or tripped inside power center. Reset main breaker.

Generator has clicking sound when trying to start.

- ✓ Check for poor ground or battery connections.
- ✓ Low battery condition.
- ✓ Battery disconnect switch not engaged in the proper position.

INTERIOR LIGHTS

Lights flickering.

- ✓ Loose fuse holders. Tighten or replace fuse holder.
- ✓ Blown fuse. Replace fuse with one of the same ampere rating.
- ✓ Broken connection or wire. Replace connection and/or wire.
- ✓ Bad ground. Make sure ground connection is secure.
- ✓ Converter overheating. Let converter cool down, reduce load.

Lights dim or half bright.

- ✓ Bad battery. Check battery condition.
- ✓ Possible converter malfunction. Have converter checked by an authorized service center.
- ✓ Possible low voltage from shoreline. Make sure voltage to shoreline is not too low (108 volts minimum)

LEVELING JACKS

The pump runs but the jacks will not extend.

- ✓ If the voltage is below 10 volts, there is a connection, cable, ground or battery problem from the 12 volt source. If voltage is OK, check the 50 amp fuse at the coach disconnect located in one of the outside storage compartments.

NOTE: Batteries under no load should read 12.7 volts. Batteries must maintain good voltage underload and must be in good condition with no weak cells. The system will draw up to 200 amps. An alternator, converter or battery charger will not supply enough power for the system to operate properly.

The pump does not come on.

- ✓ Check the pump fuse. If the pump fuse is not blown, check Terminal 1 of the pump relay for +12 volts on the pump. If voltage is not present, the problem is the connection, the battery cable or the battery.

Location of fuses for the jack controller.

- ✓ Diesel Units - Driver's side under the dash.
- ✓ Gas Units - Passenger side under the dash.

Jacks will not retract.

- ✓ Jack pad may be stuck in the ground. Free from earth.
- ✓ Problem in solenoid manifold. Turn T-handles counter-clockwise until seated. After jacks retract close valves.
- ✓ Shuttle valve on manifold stuck. Open bleeder screw.

One jack will not retract.

- ✓ Jack tube is bent. Remove.
- ✓ Spring pad is off. Re-install.
- ✓ Hose is kinked. Locate and correct.



Power Gear leveling system manifold.

LP GAS**Smell gas in and/or around unit.**

- ✓ Stove burner valve open. Identify and close.
- ⚠ ✓ Possible LP tanks over filled. Excess gas will bleed off naturally through relief valve. ***DO NOT*** bleed yourself.
- ✓ Possible gas leak in system. Follow these instructions:
 - Extinguish any open flames, pilot lights and all smoking materials.
 - ***DO NOT*** touch electrical switches.
 - Shut off the gas supply at the tank valve(s) or gas supply connection.
 - Open doors and other ventilating openings.
 - Leave the area until odor clears.
 - Have the gas system checked immediately and leakage source corrected by your dealer or qualified service center before using again.

MICROWAVE OVEN**Microwave oven will not operate.**

- ✓ No power to oven. Check power supply and circuit breaker.
- ✓ Door open, or timer OFF. Close door and turn timer ON.

MONITORING PANEL**Full System - No lights on panel when switch is pressed.**

- ✓ Check wiring or voltage supply.
- ✓ Check fuse.
- ✓ If 12 volts DC is present at panel but display is dead, the Printed Circuit Board may be bad.

Tanks - False readings (i.e., 1/3 or 2/3 indication in an empty tank)

- ✓ Verify tank is empty.
- ✓ Debris built up across probes. Clean and flush tank using four parts vinegar mixed to two parts water.

LPG : Display indicates "E" all the time.

- ✓ Check sending unit for damage or sticking.
- ✓ Add gas to tank and retest.

Display indicates "F" all the time.

- ✓ Disconnect orange wire and short to ground and retest. If display is "E", the problem is in the wiring or sending unit.
- ✓ Check for open connection at gauge on tank or sending unit.

OUTSIDE RECEPTACLE

No power to outside receptacle.

- ✓ GFI (Ground Fault Interrupt) receptacle switch may be off or tripped. Reset GFI at receptacle (kitchen or bath).
- ✓ Bad power source. Make sure you have power from shoreline.

OVENS

Oven too hot (burns food).

- ✓ Too large of a baking dish being used restricting air circulation.

Oven is slow heating up, poor baking, poor ignition of burners, popping sound from top burners, carbon on the pilot shield, or flame burns too low or too high.

- ✓ These conditions may be caused by a defective gas pressure regulator. Have the regulator tested by your gas dealer.

Oven pilots will not light or stay lit.

- ✓ Have gas pressure regulator tested.
- ✓ Be sure oven control knob is not in the "Pilot Off" position.

Top burners won't light.

- ✓ Check the position top burners and flash tubing.
- ✓ Clogged burner ports. Clean with a toothpick.

Oven burner won't light.

- ✓ Check to see that the constant pilot is lit.

Gas smell.

- ⚠ ✓ Check all connections with leak detector solution. Never use a match or flame to check for leaks!

NOTE: All LP connections should be checked periodically as vibrations from travel may cause them to loosen.

Cakes burn on bottom.

- ✓ Oven too full for proper circulation.
- ✓ Using pan with dark bottom.

Oven door not closing properly.

- ✓ Because of expansion and contraction of metal, sometimes the oven door will slightly open at left or right hand corner. Adjustments can be made by opening the oven door and slightly loosen four sheet metal screws holding the door panel to the liner. Reset door and tighten screws back down.

POWER CONVERTER

Converter makes a clicking noise.

- ✓ Circuit overload. Reduce load on circuit.
- ✓ Circuit breaker (120V) may be off or tripped. Reset breaker(s) at power center.
- ✓ Short in recharge line. Locate and fix short.
- ✓ Battery wires reversed.

REFRIGERATORS**The control panel lights are not illuminated.**

- ✓ Check coach circuit breakers & GFI receptacle.
- ✓ Check 12 volt DC at terminal block on rear of refrigerator.

Lights are illuminated but no cooling.

- ✓ Use a proper power source that is available and operating to specification.
- ✓ Make sure the refrigerator is level.
- ✓ Make sure the vents and chimney at the rear of the refrigerator are clear and unobstructed.
- ✓ Make sure the burner jets or burners are not dirty or damaged.
- ✓ Check the fuses in the black electrical box on the rear of the refrigerator.
- ✓ Allow sufficient time for proper cool down and load with pre-cooled foods.

Refrigerator does not cool properly.

- ✓ Burner jet clogged. Clean.
- ✓ Make sure the refrigerator is level.
- ✓ Venting problem. Restriction in air flow across cooling unit at roof vent (bird nest).
- ✓ Heavy frost buildup on evaporator fins. Defrost.
- ✓ In extremely hot weather refrigerator performance is better on LP gas.

RV BATTERY**Dead or Depleted Battery.**

- ✓ Excessive draw over time.
- ✓ Bad battery. Low water level in battery.
- ✓ Check connections for tightness and clean.

RV battery boiling.

- ✓ Water low in battery. Refill water to correct level in battery.
- ✓ Bad battery. Replace battery.
- ✓ Defective converter. Have converter checked by an authorized service center.

RUNNING LIGHTS**No running lights.**

- ✓ Blown fuse. Replace fuse with one of the same ampere rating.
- ✓ Bad bulbs. Replace bulbs.
- ✓ Bad ground (rear only). Check white ground wire at rear frame.

SLIDE-OUT ROOMS

There are four different types of slide-out systems used on Coachmen units. In all installations battery voltage is critical for operation. Just having 12 volt DC power available may not be enough if the motors can not draw the correct amps for operation. In the event that the room will not extend or retract, first check the battery condition.

- ✓ Check 12V mini-breakers at battery compartment.
- ✓ Check 5A fuse behind switch.

RBW ELECTRIC SLIDE-OUT

Room will not retract.

- ✓ Check for correct voltage or blown fuse.
- ✓ Check inner slide tubes for corrosion. Clean rust.
- ✓ For manual operation instructions, see Appendix A on page 73.

HWH HYDRAULIC SLIDE-OUT

Room will not retract.

- ✓ Check for correct voltage or blown fuse.
- ✓ Leveling jacks not fully retracted. Perform extend and retract sequence.
- ✓ For manual operation instructions, see Appendix A on page 73.
- ✓ Disconnect switch must be turned to “use” position.
- ✓ Use provided 1/4” nut driver to open the release valve on the hydraulic solenoid (see page 74).

LIFTCO ELECTRIC SLIDE-OUT ROOM

Room will not retract.

- ✓ Make sure ignition switch is off.
- ✓ Check for disconnected battery or blown fuse.
- ✓ Check for a low charge in the battery.
- ✓ Check for bad connections at the switch, control and motor.
- ✓ For manual operation instructions, see Appendix A on page 73.

POWER GEAR ELECTRIC SLIDE-OUT ROOM

Room will not retract.

- ✓ Check for disconnected battery or blown fuse.
- ✓ Check for a low charge in the battery.
- ✓ Check for bad connections at the switch, control and motor.
- ✓ For manual operation instructions, see Appendix A on page 73.

TERMINATION VALVE

Termination valve leaks.

- ✓ Debris blocking valve from seating properly. Clear debris from and around valve O-ring seat.
- ✓ Bad gasket. Replace gasket.

SATELLITE & TV ANTENNA

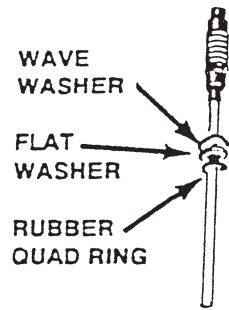
TV antenna has poor reception.

- ✓ Power jack not turned on. Turn power jack switch on.
- ✓ Bad connections at TV or wall plate. Make sure the connections are good at both TV and wall plate.
- ✓ Cut or nicked cable. Replace bad cable where needed at TV and antenna.
- ✓ Antenna not pointed in direction of "sending" station. Point antenna in direction of "sending" station.

Water entering vehicle through gear housing.

- ✓ Lubricate rubber quad ring on elevating shaft (Diag A) which is below worm gear with silicone spray lubricant at least twice yearly. This will keep quad ring from becoming brittle which could result in leaks down elevating shaft.
- ✓ Apply non-hardening sealing compound such as silicon or butyl caulking between base plate and roof of vehicle (Diag B).

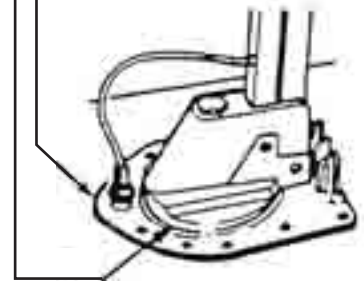
▲ CAUTION: DO NOT get sealing compound on bearing surface between base plate and rotating gear housing. **DO NOT** paint top of base plate or around rotating gear housing.


Diagram A
Tuning antenna

Step 1 Your receiver should indicate it is receiving a signal. To tune your antenna for the best signal strength, **SLOWLY** move the antenna left, then right until you have found the position that gives the highest signal strength. **It is important to turn the antenna slowly; since the signal is digital the receiver takes a few second to lock on.**

Step 2 Place rotation clamp in the **LOCK** position. This prevents the antenna from moving and losing the signal.

Step 3 **SLOWLY** raise, then lower the antenna until you have peaked the signal. **You are now ready to watch satellite TV!**


Diagram B
Lowering antenna to travel position

Step 1 Set rotation clamp to the **ROTATION** position.

Step 2 Rotate antenna until pointer on directional handle aligns with the screw on rotation lock lever.

Step 3 Turn elevating crank (counter clockwise) **in direction of "DOWN" arrow until resistance is met.** The number of turns will vary according to the elevation angle the antenna was set to.

Step 4 Move rotation clamp to the **LOCK** position. Antenna is now locked in travel position.

Step 5 Snap elevation crank into place

▲ CAUTION: NEVER lower antenna in any position except travel position.

Do's

- ✓ Do check parking location for obstructions before raising antenna.
- ✓ Do carefully raise, lower and rotate – if difficult, check for cause.
- ✓ Do rotate slowly when searching for the satellite(s) and check fine tuning on TV set to make sure it is properly adjusted.
- ✓ **Do lower antenna before moving vehicle.**
- ✓ Activate programming by calling programming service for your receiver.

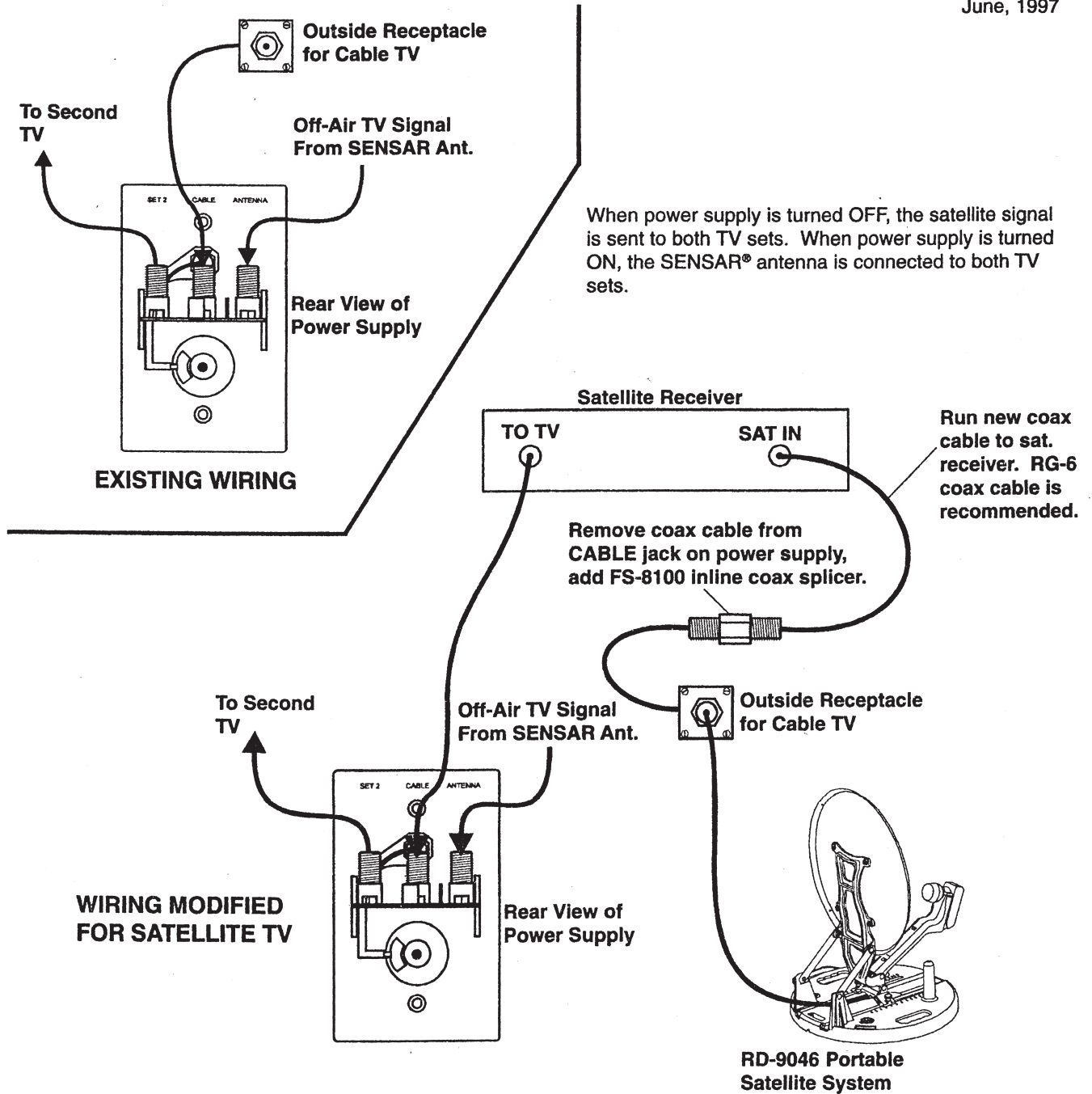
Do Not's

- ▲** ✓ **DO NOT** move RV/coach with the antenna in the **UP** position. This will **VOID** your warranty. This may also cause damage to your roof.
- ▲** ✓ **DO NOT** force elevating crank up or down. Check for cause of trouble.
- ▲** ✓ **DO NOT** rotate direction handle hard against stops.
- ▲** ✓ **DO NOT** apply paint over top of base plate or anywhere on lift.
- ▲** ✓ **DO NOT** apply sealing compound on gear housing.

How To Hook A Satellite System To A RV Cable Input

Winegard
F.Y.I.

June, 1997

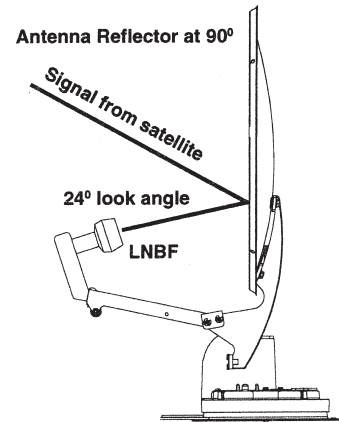


When power supply is turned OFF, the satellite signal is sent to both TV sets. When power supply is turned ON, the SENSAR® antenna is connected to both TV sets.



Satellite Antenna Continued**You have no picture**

- ✓ Be sure you have a clear line of sight. The signal from the satellite(s) **WILL NOT** pass through trees, buildings, mountains etc. Remember the antenna has a 24° offset, this means that when the antenna is straight up and down (90°) it is looking 24° into the sky (Diag. C).
- ✓ Do you have the TV set tuned for the correct channel 3 or 4 (same channel as output of receiver)?
- ✓ Have you entered the correct zip code into the receiver? If zip code is wrong, you might be looking in the wrong direction/elevation for the satellite.
- ✓ Check connections at receiver, TV, and antenna.
- ✓ Check the TV. Does it receive pictures from off-air TV stations/VCR?
- ✓ Inspect antenna. Make sure that it has not been damaged. If antenna is even slightly bent, the receiver may not receive any signal.
- ✓ Contact Dealer or Winegard Service Department.

**Diagram C****Antenna does not rotate, or is hard to rotate**

- ✓ Inspect antenna on roof. Make sure that mount has not been damaged.
- ✓ Check for caulking between gear housing and base plate.
- ✓ Be sure cables are not binding, and that they are installed properly.
- ✓ Contact Dealer or Winegard Service Department.

Antenna does not rotate, or is hard to rotate

- ✓ Inspect antenna on roof. Make sure that mount has not been damaged.
- ✓ Check for caulking on elevating shaft.
- ✓ Contact Dealer or Winegard Service Department.

WASTE TANK**Waste tank will not drain.**

- ✓ Build-up in tank. Check for build-up in tank at stool. Make sure stool holds water.

WATER HEATERS**Temperature-pressure relief valve weeping**

- ✓ Weeping or dripping of relief valve while water heater is running **DOES NOT** mean it is defective. The Atwood water heater tank is designed internally with an air gap at the top of the tank to reduce the possibility of this occurring. In time, the expanding water will absorb this air. To replace air:
 - Turn off water heater.
 - Turn off incoming water supply.
 - Open a faucet in the coach.
 - Pull handle of relief valve straight out and allow water to flow until it stops.
 - Allow relief valve to snap shut; close faucet; turn on water supply.

Removing odor

- ✓ If your fresh water source has the rotten egg odor, you will need to find another source of fresh water before flushing and refilling the entire RV water storage system.
- ✓ Turn off your main water supply; that is, your pump or your water hook-up source.
- ✓ Drain your water heater tank. Approximately two quarts of water will remain in the bottom of the tank. If you notice during draining that the water is flowing sporadically or trickling (instead of flowing) you

Water Heaters Continued

should first open your relief valve to allow air into the tank. Secondly, take a small gauge wire or coat hanger device and prod through the drain opening to eliminate any obstructions.

- ✓ After thoroughly draining the tank, flush the entire system from water inlet all the way to holding tank.
- ✓ Fresh water should be pumped into the tank with the assistance of the on-board pump or with the assistance of external water pressure. Once again, external pressure may be hosed into the unit either through the inlet or outlet found on the rear or the relief valve support located on the front of the unit. Continue this flushing process for approximately five minutes allowing ample time for the fresh water to agitate the stagnant water on the bottom of the tank and force the deposits through the drain opening.
- ✓ Upon completion of the steps above, close off the drain valve as well as the relief valve.

NOTE: If you use your vehicle frequently or for long periods of time, flushing the water heater several times a year will prolong the life of the storage tank.

WATER PUMPS

Pump will not start/blows circuit.

- ✓ Check electrical connections, fuse or breaker, main switch, and ground connection.
- ✓ System pressurized. Relieve pressure.
- ✓ If the motor is hot, the thermal breaker may have triggered. It will reset when cool.
- ✓ Check charging system for correct voltage and good ground.
- ✓ Check for an open or grounded circuit or motor.

Will not prime/sputters. (No discharge/Motor runs)

- ✓ Check for hose kinked between tank and pump.
- ✓ Check the in tank strainer to see if clogged with debris.
- ✓ Check if there is water in the tank, or if air collected in the hot water heater.
- ✓ Check to see if the inlet tubing/plumbing is sucking in air at plumbing connections (vacuum leak).
- ✓ Proper voltage with the pump operating (+/-10VDC minimum).
- ✓ Check pump housing for cracks or loose drive assembly screws.
- ✓ Make sure the valves or internal check valve are not being held open by debris or if rubber is swollen.

Noisy or rough operation.

- ✓ Check for plumbing which may have vibrated loose.
- ✓ If the pump is plumbed with rigid pipe, insulate or add fastener.
- ✓ Check for mounting feet that are loose or are compressed too tight.

Rapid cycling.

- ✓ Check pressure switch shut-off adjustment.
- ✓ Water filter/purifier should be on separate feed line.
- ✓ Check for restrictive plumbing, flow restrictors in faucets/shower heads.

Leaks from pump head or switch.

- ✓ Check for loose screws at switch or pump head.
- ✓ Check switch diaphragm to see if ruptured or pinched.
- ✓ Check for punctured diaphragm if water is present in drive assembly.

Pump will not shut-off/runs when faucet is off.

- ✓ Check outside plumbing for leaks, and inspect for leaky valves or toilet.
- ✓ Check for air trapped in outlet side (water heater) or pump head.

- ✓ Check for correct voltage to pump.
- ✓ Check for loose drive assembly or pump head screws.

For additional assistance, please contact your dealer, Coachmen's Technical Service Department at 1-800-453-6064 or the appropriate component manufacturer at the number indicated below:

COMPONENT	MANUFACTURER	PHONE NO.
Air Conditioning (Dash)	Evans	239-361-2681
Air Conditioning (Roof)	Coleman	316-832-3400
	Duo-Therm (Dometic)	800-544-4881
Alarm Systems	Code Alarm (Security)	800-421-3209
	Magnadyne (Security)	310-639-2200
	MTI (CO & LP)	800-383-0269
Antenna	Winegard	800-288-8094
Awning	A & E	800-544-4881
	Carefree	800-622-3230
	Zip Dee	708-437-0980
Back Up Cameras	Audiovox	800-688-3135
	Sony	800-222-7669
Batteries	Douglas	800-368-4527
	Interstate	800-237-6126
	Interstate Locator	800-582-7000
Battery Disconnect	Intellitec	800-251-2408
	KIB	574-262-0518
Chassis Contacts (Chevrolet)	Chevrolet Customer Assistance	800-367-2438
	Chevrolet Motorhome Assistance	800-222-1020
Chassis Contacts (Ford)	Ford Customer Assistance Hotline	800-392-3673
	Ford Motorhome Assistance Hotline	800-444-3311
Chassis Contacts (Freightliner)	Freightliner Customer Assistance	800-385-4357
Chassis Contacts (Spartan)	Spartan Service	800-543-4277
	Allison Transmission	317-242-3549
	Cummins Diesel	800-343-7357 (800-DIESELS)
Chassis Contacts (Workhorse)	Workhorse Custom Chassis	877-946-7731
Converters/Power Centers	Parallax	800-443-4859
	Heart Interface	800-446-6180
Countertops	Bristol Laminating	574-848-4461
	Marble Creations (ONYX)	574-269-7242
	Kevco (ARVAN)	574-262-2531
Fiberglass	Filon (Kemlite)	800-467-8600
	Hi Gloss Gelcoat (Goldshield)	260-728-3219
Food Center	Nutone	800-543-8687
Furnace	Hydro-Flame	800-873-4328
Furniture	Flexsteel	574-831-4050
	Pilotseats-IA	563-556-7730
	Lux	574-295-0229
	Mastercraft	574-294-2541
Generators	Generac	414-544-4811
	Kohler	414-457-4441
	Onan (Referral)	800-888-6626
	Onan (Service)	612-574-5000
Ice Makers	Dometic	800-554-4881
	U-Line	414-354-0300

COMPONENT	MANUFACTURER	PHONE NO.
Inverter	Heart Interface	800-446-6180
Jacks	Atwood	800-825-4328
	(Travel Trailer, Truck Camper & Fifth Wheel)	
	HWH (Leveling)	800-321-3494
	Liftco Bumper Jack	574-266-5551
Microwaves	Samsung	800-726-7864
	Dometic	800-544-4881
Mirrors	Ramco	574-294-7691
	Velvac	414-786-0700
Monitor Panels	KIB	574-262-0518
Pumps	Shurflo	800-854-3218
Refrigerator	Dometic	800-544-4881
Rubber Roof	Dicor	574-264-2699
Slide-Outs	Power Gear/Dewald	800-334-4712
	HWH	800-321-3494
	Liftco	574-266-5551
Steps Electric	Kwikkee	800-736-9961
Suspension	Hickory Springs	800-643-2102
	Dexter Axle	574-295-1900
	Mor-Ryde	574-293-1581
	Ride-Rite	800-248-0892
Tanks (Fuel, LP)	Manchester (LP)	800-877-8265
Tanks (Fresh, Holding)	Amerikart	574-848-7462
Televisions-VCRS	Audiovox	800-688-3135
	Samsung	800-726-7864
	RCA	800-626-2224
	Sony	800-222-7669
Tires	B.F. Goodrich	800-521-9796
	Carlisle	800-827-1001
	Firestone	800-356-4644
	Good Year	800-321-2136
	Michelin	800-847-3435
Toilets	Sealand	800-321-9886
	Thetford	800-521-3032
Tubs	Duo-Form	616-663-8525
Washer/Dryer	Splendide	800-736-4127
		504-229-4922
Water Heater	Atwood	800-825-4328
Windows & Windshields	Hehr	219-935-5122
	Creation	800-862-3131
Windshield Wipers	Diesel Equipment	910-373-8334

SLIDE-OUT ROOM MANUAL OPERATION (LIFTCO-CLASS "C") (LEPRECHAUN / SANTARA / CATALINA SPORT)

MAIN SLIDE-OUT ROOM & BEDROOM SLIDE-OUT ROOM

- ✓ Locate manual override switch. It can be found next to slide-out operation switch or on the exterior of the dinette cushion base.
- ✓ Turn to off position.
- ✓ Locate and remove plug on outside of slide-out that covers manual crank access port.
- ✓ Insert manual crank that is provided (or use 3/4" socket), begin cranking the room in.
- ✓ When the room is fully retracted, return the override switch to the normal position.

IMPORTANT: Please be sure to place override switch in on position before traveling.

Should you require additional assistance, please do not hesitate to call Coachmen Customer Service at 800-453-6064.

SLIDE-OUT ROOM MANUAL OPERATION (LIFTCO-CLASS "A") (MIRADA / PATHFINDER / RENDEZVOUS)

MAIN SLIDE-OUT ROOM & BEDROOM SLIDE-OUT ROOM

- ✓ Locate manual override switch. It can be found next to slide-out operation switch or on the exterior of the dinette cushion base.
- ✓ Turn to off position.
- ✓ Locate and remove plug on outside of slide-out that covers manual crank access port.
- ✓ Insert manual crank that is provided (or use 3/4" socket), begin cranking the room in.
- ✓ When the room is fully retracted, return the override switch to the normal position.

IMPORTANT: Please be sure to place override switch in on position before traveling.

Should you require additional assistance, please do not hesitate to call Coachmen Customer Service at 800-453-6064.

SLIDE-OUT ROOM MANUAL OPERATION (AURORA)

MAIN SLIDE-OUT ROOM

- ✓ Locate the manual override switch at the main control panel and have someone depress and hold.
- ✓ Locate override shaft in driver's side rear wheel well in front of dual tires.
- ✓ Using a 1 1/8" socket and ratchet, crank room in.
- ✓ When retracted, release switch.

BEDROOM SLIDE-OUT ROOM

- ✓ Remove access panel located on bed base side facing back of coach. This will expose a 3/4" manual override hex collar.
- ✓ Locate the manual override switch at the main control panel and have someone depress and hold.
- ✓ Using a 3/4" socket and ratchet, crank room in.
- ✓ When retracted, release switch.

Should you require additional assistance, please do not hesitate to call Coachmen Customer Service at 800-453-6064.

SLIDE-OUT ROOM MANUAL OPERATION (SPORTSCOACH)

MAIN SLIDE-OUT ROOM

- ✓ Locate the manual override switch at the main control panel and have someone depress and hold the switch for the front slide.
- ✓ Locate override shaft in driver's side front wheel well behind tire.
- ✓ Using a 1 1/8" socket and ratchet, crank room in.
- ✓ When retracted, release switch.

BEDROOM SLIDE-OUT ROOM (IF EQUIPPED)

- ✓ Remove access panel located on bed base side facing living quarters (front of coach). This will expose a 3/4" manual override hex collar.
- ✓ Locate the manual override switch at the main control panel and have someone depress and hold the switch for the rear slide.
- ✓ Insert socket (not provided) and begin to crank in the room in. When the room is fully retracted, return the override switch to the normal operation position.

Should you require additional assistance, please do not hesitate to call Coachmen Customer Service at 800-453-6064.

SLIDE-OUT ROOM MANUAL OPERATION (CROSS COUNTRY)

MAIN SLIDE-OUT ROOM

- ✓ Locate the manual override switch at the main control panel and have someone depress and hold.
- ✓ Locate override shaft in driver's side front wheel well behind the tire.
- ✓ Using a 1 1/8" socket and ratchet, crank room in.
- ✓ When retracted, release switch.

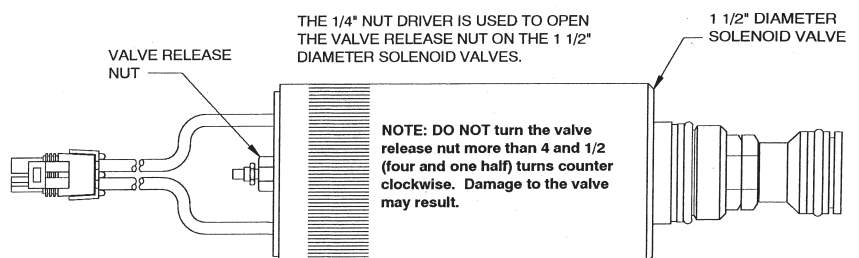
POWER GEAR ELECTRIC BEDROOM SLIDE-OUT ROOM (IF EQUIPPED)

- ✓ Remove access panel located on bed base side facing living quarters (front of coach). This will expose a 3/4" manual override hex collar.
- ✓ Locate the manual override switch at the main control panel and have someone depress and hold the switch for the rear slide.
- ✓ Insert socket (not provided) and begin to crank in the room in. When the room is fully retracted, return the override switch to the normal operation position.

HWH HYDRAULIC BEDROOM SLIDE-OUT ROOM (IF EQUIPPED)

- ✓ Locate slide-out hydraulic pump located in compartment directly below driver's cockpit and open valve on pump.
- ✓ Push room by hand until closed.
- ✓ Return valve on pump to closed position.

Should you require additional assistance, please do not hesitate to call Coachmen Customer Service at 800-453-6064.



POWER GEAR SLIDE-OUT ROOM-TOWABLES

**DEWALD
MANUFACTURING
INCORPORATED**



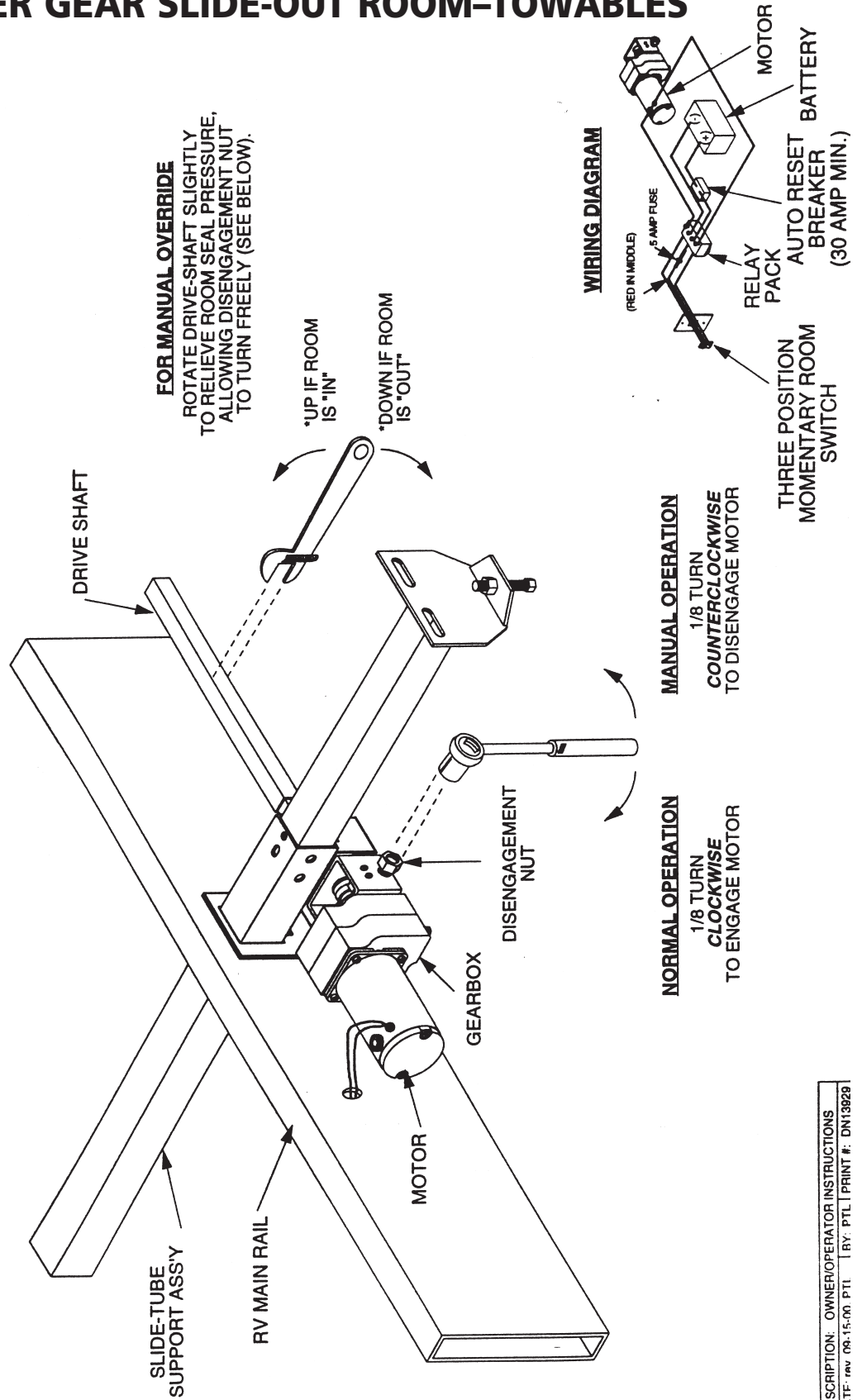
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TOLL FREE: 1-888-DEWALDS

**DEWALD "POSI-LOK"[™]
ELECTRIC RACK & PINION
SLIDE-OUT SYSTEM**

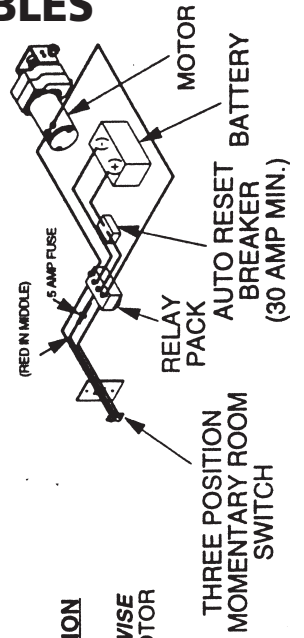
THE DEWALD "POSI-LOK"[™] SYSTEM UTILIZES TWO WORM GEAR ASSEMBLIES TO POSITIVELY LOCK THE ROOM IN PLACE. ABSOLUTELY NO ROOM DRIFTING THROUGH THE MOTOR AND GEARBOX IS POSSIBLE.

**OWNER/OPERATOR
INSTRUCTIONS**

August 2000



WIRING DIAGRAM



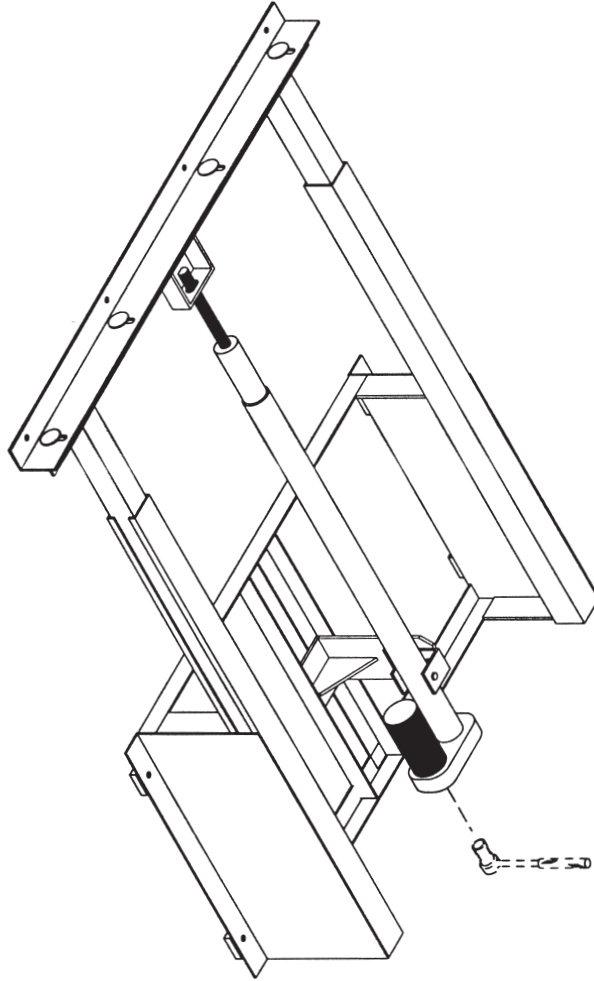
MANUAL OPERATION
1/8 TURN
COUNTERCLOCKWISE
TO DISENGAGE MOTOR

NORMAL OPERATION
1/8 TURN
CLOCKWISE
TO ENGAGE MOTOR

DESCRIPTION: OWNER/OPERATOR INSTRUCTIONS
DATE: rev. 08.15.00 PTL | BY: PTL | PRINT #: DN13929

**POWER GEAR SLIDE-OUT
BEDROOM-TOWABLES**

NOTES:
 IN THE EVENT OF A LOSS OF ELECTRIC POWER,
 THE BEDROOM SLIDE CAN BE RETRACTED USING
 ANY WRENCH APPLIED TO THE HEX NUT AT THE
 BACK OF THE MOTOR, AS SHOWN (5/8" HEX).



REV	DESCRIPTION	ECH#	DATE	BY

 <p>DEWALD MANUFACTURING INCORPORATED</p> <p>1217 E. SEVENTH STREET • MISHAWAKA, INDIANA 46544-0703 FAX: (219) 253-5029 • 1-888-DEWALDS (339-2537) • PH: (219) 254-5265</p> <p><small>The document and the information contained herein is the sole property of DEWALD MANUFACTURING, INC. (D/M). It contains proprietary information which is confidential. Any use or reproduction of this drawing without authorization from D/M may warrant legal action against user.</small></p>	<p>TOLERANCES: .0000" ± .005" .0000" ± .010" .00" ± .03" .0" ± .06" ANGULAR ± 1°</p>	<p>DWG. TITLE: MANUAL OVERRIDE, BEDROOM SLIDE</p>
	<p>DATE: 07-16-00</p>	<p>PRODUCT TITLE: (Elect. Bed. Slide)</p>
<p>RAW MAT'L:</p>	<p>DRAWN BY: MPMC</p>	<p>APPR. BY:</p>
<p>SHEET NO.: 1</p>	<p>OF: 1</p>	<p>PART / ASS'Y NO.: OK</p>

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To Our Valued Customer

If you have a problem obtaining satisfactory and timely warranty service that may substantially impair, use, value or safety of your Coachmen product, please call our Owner Relations Department toll free at 1-800-453-6064 so that we may attempt to resolve your concerns.

You can also contact us through our Service Support website at:

www.coachmenrv.com

