

# KING AIRE

## 2011

### OWNER'S GUIDE



WHEN YOU KNOW THE DIFFERENCE



# Welcome, Friends!

Welcome to the Newmar family...and what a family it is. Born on Christian principles, and from the desire to build not the most, but the best, the legacy associated with the name Newmar is one of family pride and quality. We take humble pride in our history of innovation. We introduced the industry to the first "slide out" rooms, and continued our tradition of innovation with the first slide-out in a motorized RV, the "Flush Floor" slide-out, and the smooth "seamless" fiberglass body.

Your new King Aire is more than just another recreational vehicle. It is the culmination of decades of RV design and building experience. It is at the forefront of current technology, built by the skilled hands and quality conscious eyes of craftsmen.

Here at Newmar, we recognize that a craftsman's final product is only as good as the materials they use, so we are selective about what we put into our coaches. We start with a foundation forged in the strength of steel and aluminum. We fill it with beautiful, durable hardwoods, and select name brand appliances and components, then build it on chassis that are icons in the fire truck and RV industry because they stood the test of time. Then we hand finish our units with an artists gentle touch.

It is important to us that you not just enjoy your new unit, but be proud of it, too. Your King Aire has been built to the highest standards we have ever set and attained. That's why we back it with the best warranty in the industry. A heritage of quality and dependability make it easy for us to offer that kind of coverage.

The King Aire is a special RV. It stands on the shoulders of the industry innovating giants that came before it, like the London Aire, Kountry Aire, and New Aire. King Aire proudly carries the Newmar torch into the new century, as a new generation of RV'ing begins. We share your excitement at this moment, and with you look forward to the years and miles of adventure the RV lifestyle offers you in your new King Aire. Whether camping at your favorite remote fishing hole, or tailgating at the big game with your friends, have fun in the knowledge that Newmar is with you 24 hours a day, 7 days a week.

Thank you again for your purchase of a King Aire, and welcome to the Newmar family.

Newmar Corporation







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## GENERAL INFORMATION

Welcome to the world of King Aire... a legacy of luxury, a heritage of innovation...

Your King Aire is a very special vehicle. Beyond an existence as just another RV, your King Aire is more than a home on wheels. It is a statement. It is an image.

It is a lifestyle.

The King Aire is a proud addition to the Newmar line of luxury motor coaches, blending cutting edge technology with an old world eye for detail, and a commitment to unrelenting craftsmanship. The Newmar heritage is one of innovation and creativity. From its inception, the King Aire was designed to raise the bar to a new level of convenience and luxury.

### Taking Delivery of your new King Aire

The day you take delivery of your King Aire is a special time. It is when your dealer will walk you around the unit, familiarizing you with the different components and their operation. Because of the size and complexity of the King Aire, it is a process that can seem overwhelming, even if you are an experienced RV'er.

Throughout the manufacturing process your vehicle has been inspected by our qualified technicians. However, our final inspection at the factory is not to be the last one. The pre-delivery inspection and systems check your dealer performs are the final inspections done to the unit prior to you receiving your new coach. Your dealer is also available to assist you in understanding the limited warranties and completing any necessary forms to activate the warranties for the various appliances and accessories installed in your unit.

### Dealer Responsibilities

1. A pre-delivery inspection and systems check. Thoroughly inspecting the vehicle and the operation of the factory installed components.
2. A customer walk-through. This is done to familiarize the customer with the vehicle, its systems and components, and their operation.
3. Delivery of the Owner's Information Package. This package contains the warranty cards and registrations for the vehicle and factory installed components that carry a separate warranty. The detailed operating and maintenance instructions on these components are also included in this package.
4. Assisting the customer in completing the component registration forms, at the customer's request. To avoid loss of warranty coverage, the dealer should review the limited warranty provisions with the customer stressing the importance of filing warranty cards and registrations to the component's manufacturers within the prescribed time limit.
5. Providing the customer with information regarding warranty and non-warranty work on the vehicle and its separately warranted components whether the customer is in or out of the area.

### Customer Responsibilities

The customer is responsible for regular and proper maintenance of the vehicle. Properly maintaining your vehicle will prevent conditions arising from neglect that are not covered by your Newmar limited warranty. The maintenance guidelines in this manual and any other applicable manual should be followed. It is your responsibility and obligation to return the vehicle to an authorized dealer for repairs and service.

To assist you in avoiding problems with your vehicle, we recommend you do the following:

- A. Read the warranty. Go over it thoroughly with your dealer.



B. Inspect the vehicle. Do not accept delivery until you have gone through the unit with the dealer. Newmar has provided a check list to be used during retail delivery. Check each item on the list and make sure the dealer does the same. Do not sign this checklist until you have done this.

**NOTE: The sales literature versus actual specifics to the vehicle's measurements, weights, or quantities may vary.**

- C. Ask questions about anything that you do not understand concerning your recreational vehicle.
- D. When taking delivery, set an appointment for adjustments. This appointment should be approximately two (2) weeks after you accept delivery.
- E. Responsible use. Your vehicle is designed to be used for recreational or temporary living purposes. It is not designed to be used as a full-time residence or for commercial use. Commercial use means using as a business asset such as a mobile office or using the vehicle for lease/rental purposes.

### Owner's Information Package

Included in this package are valuable documents about your vehicle and its components and systems. The Newmar Owner's Guide does not cover every possible detail of the equipment, standard and/or optional, installed on or in your vehicle. Consulting the booklets and instruction manuals in this package will help you safely operate, maintain, and troubleshoot these items.

Read all of the information and understand the safety and operating instructions included in the Owner's Information Package. To assure full warranty coverage, it is essential that all maintenance instructions are followed.

### The Newmar Warranty on your new King Aire

The Newmar Corporation Limited Warranty was provided to you by your selling dealer prior to purchase. Please refer to this document when inquiring about the Newmar Warranty. To receive an additional copy, please refer to the contact information below.

### Warranty Service Deadline

Warranty service required needs to be completed during the term of the warranty. Service work scheduled or performed after the expiration of the Newmar warranty **WILL NOT** be covered.

### Customer Relations

If you wish to schedule maintenance work, schedule service work, or order parts you should notify your local authorized Newmar Service Center to setup an appointment. If you are unsure of the location of the closest authorized Service Center, please contact us as follows:

Newmar Corporation  
Warranty Department  
72185 C.R. 3  
P.O. Box 30  
Nappanee, IN 46550-0030

Call us at: 1-800-731-8300

Visit us at [www.newmarcorp.com](http://www.newmarcorp.com)



## Reporting Safety Defects

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

To contact NHTSA, you may either call the Auto Safety Hotline toll free at 1-888-327-4236 (TTY #1-800-424-9153) or write to: NHTSA, 400 Seventh Street, S.W., Washington, DC 20590. NHTSA also has established a website where you can contact them:

<http://www.safecar.gov>

## Owners Guide Information

This guide has been provided by Newmar Corporation solely for the purpose of providing instructions about the operation and maintenance of this vehicle and its components. Nothing in this manual creates any warranty, either expressed or implied. The only warranty offered by Newmar Corporation is set forth in the written limited warranty that applies to this vehicle.

Instructions are included in this manual for operating some of the components that are standard on this vehicle. Instructions are also given for components that are options and may not appear on all vehicles. For more detailed information on components refer to the individual manufacturer's operating instructions contained in the Owner's Information Package.

The limited warranties issued by the chassis and component manufacturers require periodic service and maintenance. The owner's failure to provide this service and/or maintenance may result in the loss of warranty coverage. The owner should review the Newmar Corporation Limited Warranty and other manufacturer's limited warranties on all components applicable to this vehicle. To activate the warranties on the components within your Newmar recreational vehicle, be sure to file the appropriate registration card with the component manufacturer as described with the individual instruction booklet.

Newmar Corporation has compiled the most current information available at the time of publication. If the components in your unit vary significantly from what is described within this manual, then consult the instructions provided by the component manufacturer found in the Owner's Information Package.

Throughout this guide, reference is made to the following terms: Warning, Caution, and Important. These terms indicate important information that must be understood and followed. The definitions of these terms are:

### WARNING

Emphasizes an area in which personal injury or even death could result from failure to follow instructions properly. Mechanical damage may also occur.

### CAUTION

Failure to observe a caution can cause damage to the equipment or unit. Personal injury is unlikely.

### IMPORTANT

Provides additional information to make a step easier or more clear.



## Placards and Labels

You will find a variety of placards and labels located throughout your new King Aire. These are installed to aid in the operation of a component, or to warn of potential dangers while operating a specific appliance, accessory, or system. These will include warnings regarding the electrical system, Propane gas system, fueling the RV, and so on. It is important to read these placards and warnings to insure the safety and proper operation of the item.

An example of such a label is given below. This label is affixed to your unit on or adjacent to your Propane tank:

**WARNING: DO NOT FILL CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY.** Overfilling the Propane gas container can result in uncontrolled gas flow, which can cause fire or explosion. A properly filled container will contain approximately 80 percent of its volume as liquid Propane gas.

**NOTE: Reading, understanding, and heeding all such labels and placards is critical to the safe, efficient use of your motorcoach.**

If you have questions regarding a warning label or placard for a component or appliance in your new King Aire, please contact your dealer or Newmar Corporation directly for assistance.

## Information Sheet / Appliance Data Label

Newmar has enclosed an Information Sheet for your convenience. This sheet contains important information about your coach. This label can be found in the largest wardrobe in the unit, usually either in the bedroom or bathroom area. Listed on this sheet is the six digit Newmar Serial Number. This number is needed whenever making an appointment for service or ordering parts through your Newmar Dealer or Service Center. Also listed is the Vehicle Identification Number (VIN). The VIN is the legal identification of the completed vehicle and is used by the state for vehicle registration. Both of these numbers are also listed on the Customer Care card Newmar issues upon receipt of registration.

Below is a sample of the information Sheet.

1. The Newmar Serial Number
2. Vehicle Identification Number (VIN)
3. Year/Brand/Type/Floorplan
4. Manufacturer, Model and Serial Number of factory installed equipment.

THANK YOU FOR PURCHASING A QUALITY NEWMAR PRODUCT! FOR YOUR CONVENIENCE, WE HAVE ENCLOSED A SERIAL NUMBER LIST OF IMPORTANT EQUIPMENT INSTALLED IN YOUR 2005XXXXX###. THE SERIAL NUMBER FOR YOUR UNIT IS #####.

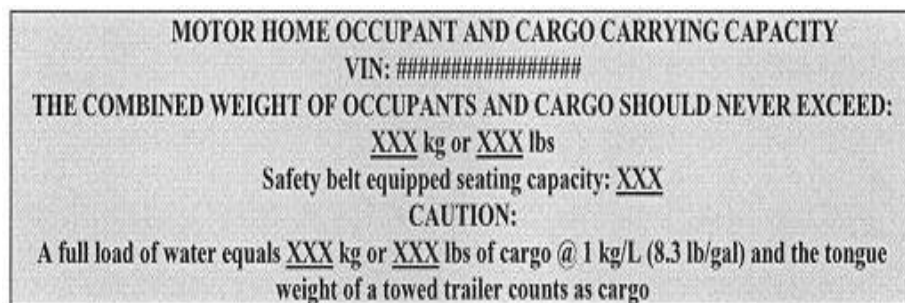
VIN# XXXXXXXXXXXXXXXXX		DECOR# XX5-###		WOOD/COLOR CHERRY	
CLIMATE SYSTEM		SERIAL #	ENERGY MANAGEMENT SYSTEM		AWNING
FRONT A/C	630015.321	33087	INVERTER	RV2012M	0063072
CENTER A/C	630015.321	33088	CONVERTER		
REAR A/C			GENERATOR	042702	32670
DASH A/C	RV200875	6534	AUDIO/VIDEO/NAVIGATION		
FRONT FURN.	SF42	05950	FRONT TV	24P V300	60675
REAR FURN.			REAR TV	20P S100	72234
AUX HEATER			TV #3		
APPLIANCES			EXT. TV	4361270	
W.C.	W.C.		FRONT	SEP18C	

**NOTE: The manufacturer, model, and serial number of the appliances and accessories installed at the factory in your unit are listed on this label for convenience. It is important that the label remain in the coach for identification purposes. Do not remove or relocate this label.**



## Weight Information

Below is a sample of a weight information label which may appear in your unit.



## WEIGHING THE UNIT

The following definitions are given to help in communications of issues of weight and your unit.

**GAWR:** Gross Axle Weight Rating is the maximum permissible weight for an axle.

**GCWR:** Gross Combination Weight Rating is the value specified by the manufacturer of the vehicle as the maximum allowable loaded weight of this motorhome and any towed trailer or towed vehicle.

**GVWR:** Gross Vehicle Weight Rating is the maximum permissible weight of this fully loaded motorhome. The GVWR is equal to or greater than the sum of the Unloaded Vehicle Weight plus the Cargo Carrying Capacity.

**UVW:** Unloaded Vehicle Weight is the weight of this motorhome as built at the factory with full fuel, engine oil, and coolants. The UVW does not include cargo, fresh water, Propane gas, or dealer installed accessories.

**CCC:** Cargo Carrying Capacity is equal to GVWR minus each of the following: UVW, full fresh (potable) water weight (including water heater), full Propane gas weight and SCWR.

**GVW:** Gross Vehicle Weight is the weight of the unit with all items and supplies that are loaded into the unit at any point in time.

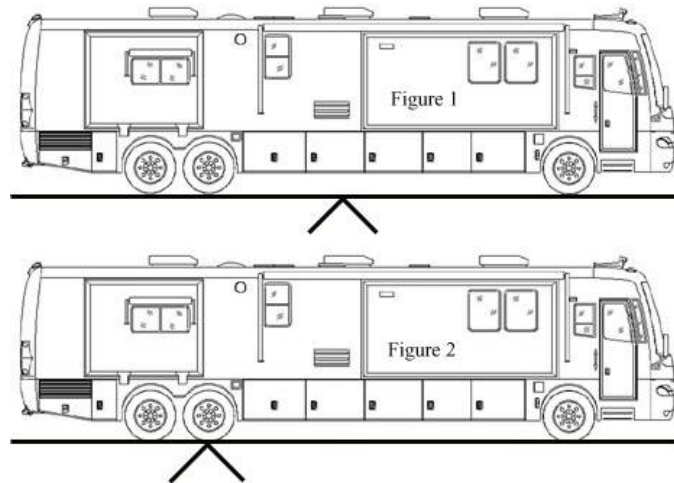
**SCWR:** Sleeping Capacity Weight Rating is the manufacturer's designated number of sleeping positions multiplied by 154 pounds (70 kilograms).

**NOTE:** The sales literature may give approximates or standards. Each individual unit may weigh differently based on the factory and/or dealer options added. To assure the accuracy of your weights be sure the unit is always level during weighing. The unit has been built to comply with the component suppliers recommended limits and give you a realistic CCC. When loading the unit, distribute the items so that not all of the weight is added to one area of the unit. If you have questions as to what the weight of the unit is after it has been loaded, take the unit to a drive-on scale or use individual wheel scales and verify that the weights are within the limits of those specified for the unit. When weighing the unit, follow these instructions. Failure to follow these instructions may give an erroneous weight reading.

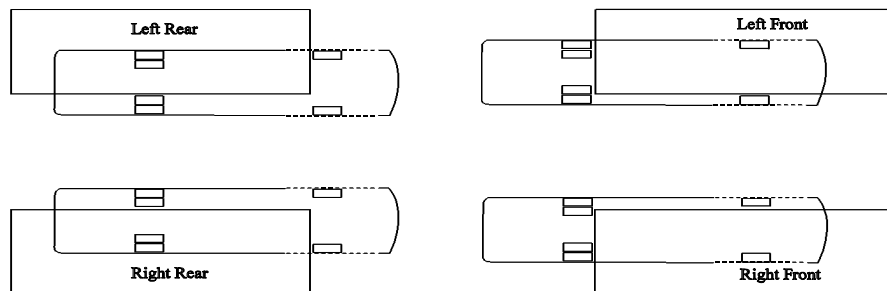
1. Pull the unit onto the scales shown in Fig. 1. This is the total weight of the unit. To do this, pull the unit onto the scales so that all of the wheels are on the scale. Record the weight. This is the GVW and should not exceed the GVWR supplied by Newmar for the unit.



2. Move the unit so that the front wheels are off the scales as shown in Fig. 2. Record the weight. This is the total weight of the unit except for the front axle. This weight should not exceed the total rating of the axles remaining on the scales. The front axle weight is determined by subtracting this weight from the GVW that was obtained in Step One (1). This amount should not exceed the listed front axle weight rating.



The recommended procedure to weigh a motorhome accurately is on individual corner scales. Since these are not always available, below is a diagram of how to weigh a motorhome on a typical truck scale. Note: Since only one corner can be weighed at a time, the remaining three corners need to be as close to the scale as possible without being on the scale and the unit needs to be as level as possible. Remember, wind and rain can cause inaccuracies of weights.





# GENERAL TIRE INFORMATION

## Tire Nomenclature

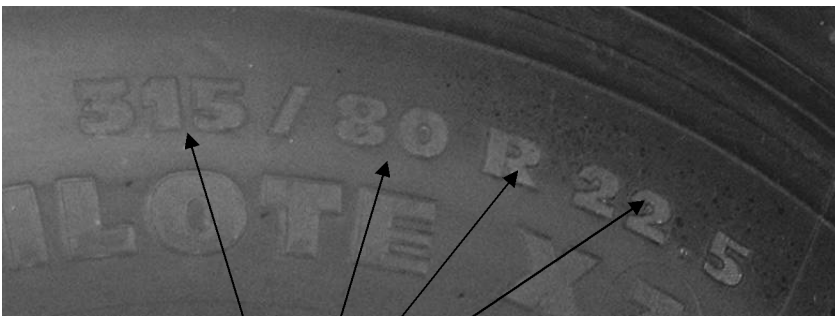
It is important to locate and read all the information located on the sidewall of your tires to insure proper use and long, safe life. The two primary areas of concern are the tire size information, and the operation / inflation information.

## Tire Inflation Information

The sidewall of the tire also contains an information block that contains more detailed construction information (number of plies, etc.), and inflation and carrying capacity information. It is critical that you become familiar with this information, and operate the vehicle within the capacity parameters outlined in the detailed tire inflation information. Failure to follow and monitor tire pressure guide lines closely can result in premature tire failure.

## Tire Size

The tire size is given in the following markings:



This tire size is 315 / 80 R 22.5. From this size, we can determine the physical dimensions of the tire, as well as its basic construction. The tire size breaks down like this:

The first number, “315”, is the section width of the tire in millimeters. Section width is the measurement of the tire from outside sidewall to outside sidewall.

The second number is the height of the sidewall, expressed as a percentage of the section width. In this case, the number is “80”, so the sidewall height is 80% of the section width of the tire.

The “R” in the tire size indicates that this tire is “radial” in construction. The belts are wrapped around the tire in a radial design, from bead to bead.

The final number in the size designation is “22.5”, which is the rim size the tire was designed to fit. This tire fits a 22.5” diameter wheel.

The sidewall of the tire also contains other information that is important to know to insure proper use of the tire, as well as to maintain long life. Take the time to become familiar with the size, load rating, and pressure information noted on the sidewalls of the tires, and note that these readings can change depending on whether they are used in single tire or “dual” tire situations. Note that it is critical that tires on the same axle are inflated to the same pressures.

**THE MOST ACCURATE WAY TO DETERMINE THE PROPER PRESSURE FOR YOUR TIRES IS TO WEIGH YOUR UNIT LOADED AS YOU WOULD TRAVEL, AND ADJUST THE PRESSURES TO MATCH THE TIRE MANUFACTURERS INFLATION AND LOAD TABLES.**



## IMPORTANT RV TIRE INFORMATION

**READ AND UNDERSTAND THE FOLLOWING INFORMATION BEFORE TAKING YOUR FIRST TRIP IN YOUR RV!**

### WARNING

To insure your tires are operating safely, regular inspection of your tires, and checking of tire pressures is absolutely mandatory. **FAILURE TO FOLLOW PROPER INFLATION GUIDELINES MAY RESULT IN TIRE FAILURE, WHICH, UNDER CERTAIN CIRCUMSTANCES CAN CAUSE LOSS OF VEHICLE CONTROL OR ACCIDENTS THAT MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY, AND / OR DEATH.**

For safe operation and maximum weight carrying capacity, it is imperative that the tires be inflated to and maintained at the listed tire pressures on the Federal ID Tag that is affixed to the interior wall just behind the driver's seat in motorhomes, and to the lower front corner of the road side sidewall on fifth wheel trailers. Below is a sample of the Federal ID Tag you will find with your RV.

**IT IS PARAMOUNT TO THE SAFE OPERATION OF THE VEHICLE TO MAINTAIN PROPER TIRE PRESSURES. TIRE PRESSURES SHOULD BE CHECKED AND ADJUSTED BEFORE AND AFTER EACH TRIP, AND SHOULD ALWAYS BE CHECKED AND ADJUSTED WITH THE TIRES COLD. NEVER ADD OR RELEASE PRESSURE FROM THE TIRES WHEN THEY ARE HOT (AFTER HAVING DRIVEN A MILE OR MORE).**

**For additional information on your tires, contact Newmar Corporation.**

MANUFACTURED BY / FABRIQUE PAR:			DATE:		
GVWR/PNBV		KG (	LB)		
GAWR/PNBE		TIRES/PNEU		RIMS/JANTE	COLD INFL. PRESS./PRESS. DE GONFL. A FROID
FRONT/ AVANT	KG LB				KPA SINGLE DUAL PSI(LPC) <input type="checkbox"/> <input type="checkbox"/>
INTERM/ INTERM	KG LB				KPA SINGLE DUAL PSI(LPC) <input type="checkbox"/> <input type="checkbox"/>
REAR/ ARRIERE	KG LB				KPA SINGLE DUAL PSI(LPC) <input type="checkbox"/> <input type="checkbox"/>
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE. THIS VEHICLE CONFORMS TO ALL APPLICABLE STANDARDS PRESCRIBED UNDER THE CANADIAN MOTOR VEHICLE SAFETY REGULATIONS IN EFFECT ON THE DATE OF MANUFACTURE. - CE VEHICULE EST CONFORME A TOUTES LES NORMES QUI LUI SONT APPLICABLES EN VERTU DU REGLEMENT SUR LA SECURITE DES VEHICULES AUTOMOBILES DU CANADA EN VIGUEUR A LA DATE DE SA FABRICATION.					
V.I.N./N.I.V.:		TYPE/TYPER:		FD-228	



## CUSTOMER ASSISTANCE

Newmar Corporation.....	1-800-731-8300
Ford Motor Company.....	1-800-444-3311
Freightliner Custom Chassis.....	1-800-FTL-HELP
Spartan Motors.....	1-800-543-4277
Spartan Roadside Companion.....	1-888-890-1741
Workhorse Custom Chassis.....	1-877-946-773

## COMPONENT PART SUPPLIERS

### Accessories

Back Up Monitor	Total Vision Products .....	520-623-0790
Back Up Monitor (Panasonic)	Mito .....	888-433-6486
CB Radio (Cobra)	Tri Star Distributing .....	800-456-3340
Computer TripTek	River Park, Inc. ....	800-442-7717
DVD (Pioneer)	CTD. ....	800-777-4856
DVD (Sony)	River Park, Inc. ....	800-442-7717
Furniture (Upholstered)	Flexsteel Industries.....	563-556-7730
	Villa International .....	714-535-7272
Navigation	Riverpark .....	800-442-7717
Roof Vent	FanTastic Vent Corp.....	800-521-0298
	Ventline .....	574-848-4491
Security System	Trimark Corp.....	554-486-1683
Stereo (VR209/VR182,Jensen)	A. S. A. Inc .....	574-266-1886
Stereo (Kenwood)	TriStar.....	800-456-3340
Stereo (Sony/Bose)	River Park, Inc. ....	800-442-7717
Stereo (Eclipse/Tom-Tom)	Mito. ....	888-433-6486
Toilet	Thetford. ....	800-521-3032
TV Antenna	The Winegard Co. ....	800-288-8094
Television	River Park, Inc. ....	800-442-7717
Satellite Dish (Winegard)	The Winegard Co. ....	800-288-8094
Satellite Dish (MotoSat)	MotoSat. ....	800-247-7486
Satellite Dish (KVH)	River Park, Inc. ....	800-442-7717
Satellite Dish (King Dome)	King Controls.....	800-982-9920

### Air Conditioning

Dash Air	Evans Tempcon.....	800-354-7088
Roof Air	Dometic .....	800-544-4881
Basement Air	Suburban Mfg. ....	800-659-2138

### Appliances

Dishwasher	Midwest Sales .....	574-287-3365
Freezer	Norcold.....	800-543-1219
Ice Maker	U-Line.....	800-779-2547



Microwave (Dometic)	Dometic .....	800-544-4881
Microwave (GE)	Midwest .....	574-287-3365
Range	Atwood-Greenbrier .....	815-877-5700
	Magic Chef .....	515-792-7000
Refrigerator	Dometic .....	800-544-4881
	Norcold .....	800-543-1219
Water Heater	Atwood Mobile Prod. ....	815-877-5700
	Suburban Mfg. ....	800-659-2138
	Oasis ITR.....	800-993-4402
	Precision Temp.....	800-934-9690
Washer/Dryer, 1-piece	Splendide .....	800-736-4127
Washer/Dryer, 2-piece	Whirlpool.....	800-442-1111

### **Electrical (tires and batteries separately warranted)**

Batteries - 12Volt	Interstate .....	800-872-4100
Batteries - 6 Volt	Interstate .....	888-772-3600
Converter	IOTA .....	877-682-4682
Generators	Onan .....	800-888-6626
	Power Tech .....	800-760-0027
Inverters	Magnum.....	425-353-8833

### **Exterior**

Awning & Hardware	A & E.....	800-544-4881
	Girard.....	800-382-8442
Axle & Components	Dexter Axle.....	574-295-1900
Hitch (CA & DP)	Cequent.....	877-764-5485
Jacks (CA & DP)	H W H Corporation .....	800-494-3213
Jacks (FW & TT)	Intertek.....	574-294-4300
Rubber Suspension	Mor-Ryde, Inc. ....	574-293-1581
Steps, Electrical	Kwikkee Products .....	800-736-9961
Steps, Manual	Hickory Springs Mfg. ....	501-646-6161
Tires	Goodyear .....	800-227-1999

### **Heating**

Furnaces	Atwood Mobile Prod. ....	815-877-5700
	Suburban Mfg. ....	800-659-2138



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## DRIVING AND SAFETY INFORMATION

### WARNING

Prior to driving your vehicle, be sure you have read this entire owner's guide and that you understand your vehicle's equipment completely and how to use the equipment safely.

Read and understand all of the instructions and precautions in this owner's guide and the chassis manufacturer owner's manual before operating your new motorhome. Listed below are some safety precautions that must be adhered to while your motorhome is in motion. These precautions, as well as others that involve possible damage to equipment, are also listed in the appropriate areas in this manual.

### Before Driving Away

The following is a brief list of procedures that will aid in your driving safety and extend your equipment's life.

- i Windows, mirrors, and light lenses are to be clean and unobstructed.
- i Tires should be checked for proper cold inflation pressure.
- i Wheel lug nuts should be checked for proper tightness.
- i Fluid levels, including engine oil, transmission fluid, coolant, power steering fluid, and windshield washer solvent should be checked and filled if necessary.
- i Disconnect the unit and store the sewer and water supply hoses as well as shoreline power cords.
- i Secure all cargo in the storage compartments in the event of a sudden stop.
- i Verify that the entrance step has retracted prior to engine ignition.

### Driving

There are various adjustments that need to be made prior to starting and moving the vehicle.

- i Among them are the driver's seat, the tilt steering, and the exterior rear view mirrors.
- i The dashboard may contain several gauges and controls you have not previously used. Become familiar with all of these devices and their operation before starting out.
- i The cruise control is not to be operated on icy roads, extremely wet roads, winding roads, heavy traffic, or in any other traffic situation where a constant speed cannot be maintained.
- i While driving on slippery surfaces, use care when accelerating or decelerating. Skidding and loss of vehicle control may be the result of abrupt changes in speed.
- i Driving through water deep enough to wet the brakes may affect the stopping distance or cause the vehicle to pull to one side. If you have driven through deep water, check the brake operation in a safe area to be sure they have not been affected. Never operate a vehicle if a difference in braking efficiency is noticeable.
- i Extreme terrain and adverse weather may affect the handling and/or performance of your vehicle. Please refer to your chassis manual for related information.

### Dash Instrumentation and Controls

The dash in your new King Aire is designed to be ergonomically efficient as well as aesthetically pleasing. It features instrumentation that allows you to monitor the engine, chassis, and power train as you drive. Warning and status lights alert you to conditions that require your attention, and switches, buttons, and accessories are positioned at your fingertips. All dash gauges are "back-lit" for enhanced visibility during night driving. The gauges are arranged as follows:



## Left Cluster:

**Voltage:** Displays DC voltage at the chassis battery terminals. Note that some variation in the readings on this gauge is normal. With the ignition key in the “run” position, but the engine shut off, it will read chassis battery voltage. If the engine is running, the voltage displayed reflects the DC voltage being supplied by the engine alternator as measured at the chassis batteries.

**Fuel:** Displays the approximate level of fuel left as a fraction of a tank (“Full”, “3/4”, “1/2”, “1/4”, and “Empty”). Note that accuracy of this gauge is greatly influenced by motion of the unit, or sloped terrain. The readings are an approximation of the remaining fuel in the tank.

**Front Air Tank:** Displays the air pressure in the front air tank. The normal operating range for this air system is 90 – 125 PSI. Air from the engine mounted compressor fills the tank when the engine is running. The air is used to inflate air suspension bags, and to operate the air brakes on your King Aire, as well as any other air powered accessories.

**Rear Air Tank:** Displays the air pressure in the rear air tank. The normal operating range for this air system is 90 – 125 PSI. Air from the engine mounted compressor fills the tank when the engine is running. The air is used to inflate air suspension bags, and to operate the air brakes on your King Aire, as well as any other air powered accessories.

## Center Cluster

**Speedometer:** Reads vehicle speed in miles per hour / kilometers per hour.

**Odometer:** Cumulative miles on your King Aire are displayed on the screen located at the bottom of the speedometer. This electronic digital display allows for easy reading. The odometer also incorporates two separate “trip” odometers, which can be reset to “0” using the button at the bottom of the display. This feature is useful for reference mileages when measuring fuel economy or trip distances.

## Right Cluster

**Tachometer:** Displays engine RPM’s (Revolutions per Minute) when running.

**Oil Pressure:** Displays engine oil pressure in PSI (Pounds per Square Inch). Oil pressure will vary widely with engine temperature and engine operating RPM’s.

**Temperature:** Displays engine operating temperature. Normal operating temperatures are 180 – 220 degrees, depending on how the coach is being used. Towing heavy loads or operating in the mountains will cause the engine temperature to run higher.

## Jacks Down Warning Light

Your unit features a “Jacks Down” warning as part of the “Message Center” under the instrument cluster. The display and alarm will continue until all of the jacks have returned to their “stored” position or unit air system has been replenished.

## Antenna Up Warning Light

This warning also appears in the “Message Center” when the television antenna (NOT the DSS satellite dish) is in the extended position. It will turn off when the TV antenna is retracted completely into the “travel” position. There is no accompanying alarm with this warning.



## Warning Lights and Signals



The Spartan Lightbar Message Center is located in the instrument cluster panel, and is designed to provide information to the driver regarding the engine and power train of your King Aire.

The following diagrams and information regarding the Lightbar Message Center are provided by Spartan to give you a better understanding of their use and operation. Please refer to the Spartan Chassis Owner's guide for further detailed information on your Spartan chassis.

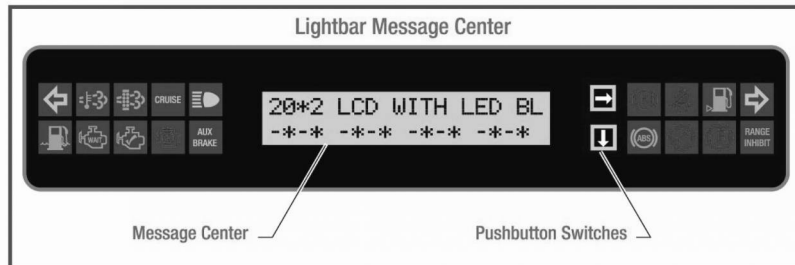
Newmar encourages you to become familiar with the instrumentation and other monitoring systems incorporated into your King Aire. With the advent of new low sulfur diesel fuels, and the engine management components and electronics that are necessary to comply with Government Emissions Standards, there are changes in the way you operate and maintain your diesel powertrain that you may not be aware of. Reviewing the information provided here, and in the Spartan chassis manual will help familiarize you with the direction needed to properly operate your King Aire.



# Spartan Lightbar Message Center

## 1 Introduction

The Spartan Instrumentation System (i.e., the *System*) consists of a speedometer, a tachometer, a number of smaller gauges, and a light bar. The light bar contains 18 telltales, a Message Center, a “buzzer”, and two pushbutton switches. Telltales are shown and identified in Table 1-2 on page 1-3.



**Figure 1-1** Light Bar, Telltales, and Message Center

### 1.1 Message Center

The two-line Message Center displays odometer, fuel economy, trip, and other information and also helps you check the operation of the System.

### 1.2 Pushbutton Switches

The light bar contains two pushbutton switches (“Right” and “Down”) that let you select what is displayed, configure various display options, and help you check various parts the operation of the entire System. Chapter 2 contains details of how to use the pushbuttons.

### 1.3 Audible Warning

The light bar contains an audible device that sounds when the system detects a potentially hazardous condition (for example, low air pressure).

### 1.4 Activating the System

When the ignition is off, the System is “asleep”; however, you can view the odometer and hourmeter without an ignition key by pressing either pushbutton.

Turning the ignition on “awakens” the System which then becomes fully operational.

#### 1.4.1 Initialization Sequence

Each time you turn the ignition on, the System lets you verify it is working by performing the initialization sequence shown in Figure 1-2. The System should be serviced if it does not function as shown.



## System Initialization Sequence

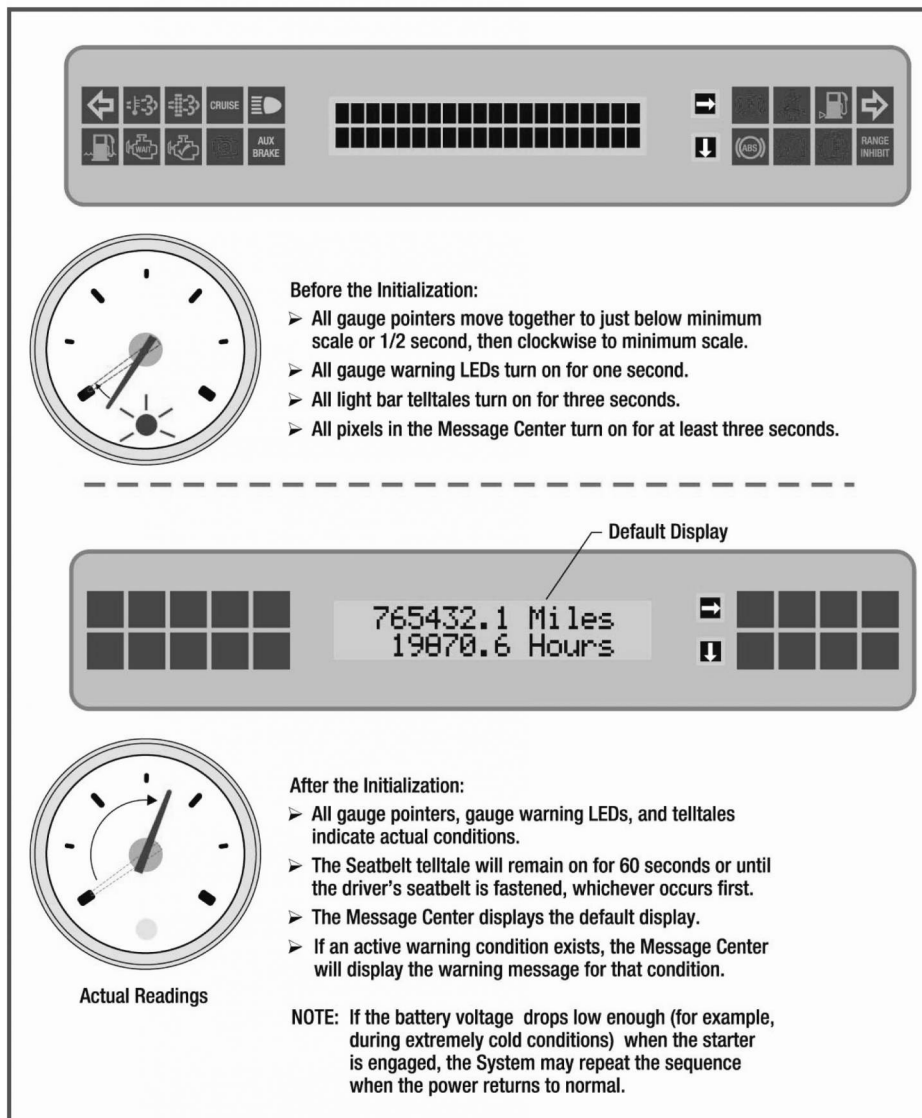


Figure 1-2 System Initialization Sequence





















## “Telltale” Warning Light Information

### *User Guide, Spartan Light Bar Message Center System*

#### 1.5 Telltales

The light bar in your instrumentation system contains the telltales shown in Table 1-2.

SYMBOL	NAME	MEANING	SYMBOL	NAME	MEANING
	Cruise	Cruise control is engaged		Low Fuel	On = Less than 1/8 tank Off = More than 1/4 tank
	Auxiliary Brake	Auxiliary brake status okay		Left Turn	Left turn signal on
	Check Trans	Problem with transmission		High Beam	High Beam on
	Trans Temp	Transmission overheating		Right Turn	Right turn signal on
	Range Inhibit	Inhibits shifts from Neutral		Park Brake	Park Brake engaged
	Water In Fuel	Fuel has water in it		Seat Belt	Seat belt reminder
	Wait To Start	Wait to start engine		ABS System	ABS malfunctioning
	Check Engine	Problem with engine		HEST Lamp	Active regeneration has been initiated and exhaust system temperatures will be elevated above normal levels for the vehicle operating conditions
	Stop	Stop engine immediately		DPF Lamp	Filter has not been able to regenerate and is in need of assistance in order to perform an active regeneration.

**Table 1-2** Telltale Identification

#### 1.6 Gauge Warning LEDs

Each small gauge contains a red warning LED (light-emitting diode) and turns on when the item the gauge monitors is too high (in the case of temperature gauges) or too low (in the case of air pressure gauges). In some cases, this will be accompanied by the appropriate telltale in the light bar, and/or a warning message in the Message Center.



## Spartan Smart Wheel

(W/Power Pedal controls)

The Spartan “Smart Wheel” offers a touch pad switch panel that allows you to operate a number of different driver related functions without ever having to take your hands off of the steering wheel. It offers fingertip control of wipers, washers, headlamps.

On the sides of the steering wheel switch pad are three rocker switches. These switches control the tilt and telescope position of the steering column, and the position of the brake and throttle pedals. The first switch (on the left) tilts the Steering column up and down to allow for easy access to the drivers seat, while still allowing the driver to position the wheel for comfort and an excellent view of the instruments. The right side top switch allows the driver to telescope the steering wheel position in or out, again to provide for greater comfort and an unimpaired view of the gauges. The right side bottom switch moves the brake and throttle pedals under the dash. This allows for greater flexibility in seating position, as well as improved individual access to the pedals.



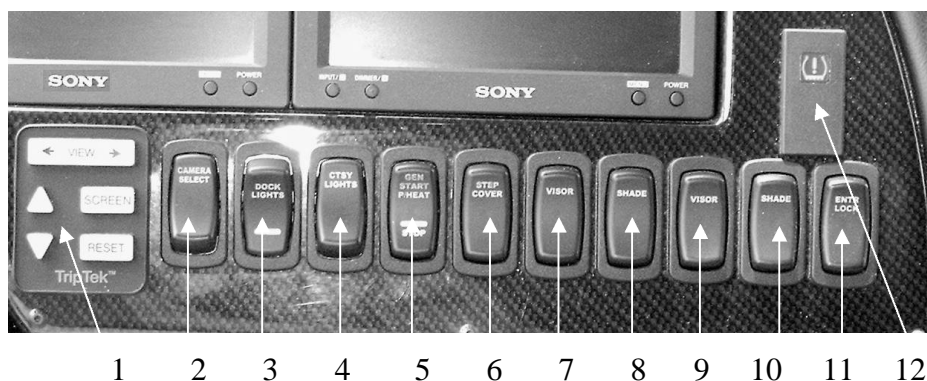
## Seat Memory

Your King Aire is equipped with a “Seat Memory” package that allows you to set and store up three different combinations of seat, steering wheel, pedal, and exterior rear view mirror positions for up to three different drivers.

To program a driving position, position the seat, the pedals, steering wheel and exterior rear view mirrors so they are set for travel. Press and hold “Set”, then press and release either the #1, #2, or #3 button. The position of each of those components is now stored in the memory. Any time you turn the ignition on and press the number button chosen, the seat, pedals, steering wheel, and exterior rear view mirrors will return to this preset position.

## Dash Switches

To ease operation of the various accessories and systems used during travel, the “cockpit” area has been designed to put controls and switches within easy reach of the driver. The following is a description of the switches and their functions.



Right side switch panel

1. Trip Tek control panel.
2. Camera Select (toggles between different rear, side, and interior vision cameras).
3. Docking Lights (operates exterior docking lights to aid in parking after dark).



4. Courtesy Lights (floor mounted pathway lighting).
5. Generator Start / Stop (starts and stops generator).
6. Step Cover (folds entrance steps to form a platform for passenger's side foot rest).
7. Driver's Side Sun Visor (operates driver's side windshield sun visor).
8. Driver's Side Sun Shade (operates driver's side window sun shade).
9. Passenger's Side Sun Visor (operates passenger's side windshield (sun visor).
10. Passenger's Side Sun Shade (operates passenger's side window sun shade).
11. Entrance Lock (locks and unlocks power lock on entrance door).
12. Tire Warning Light (indicates there is a pressure or temperature issue; driver should consult the Trip Tek Tire Monitor Screen).

### **Right Side Switches (above ignition switch)**

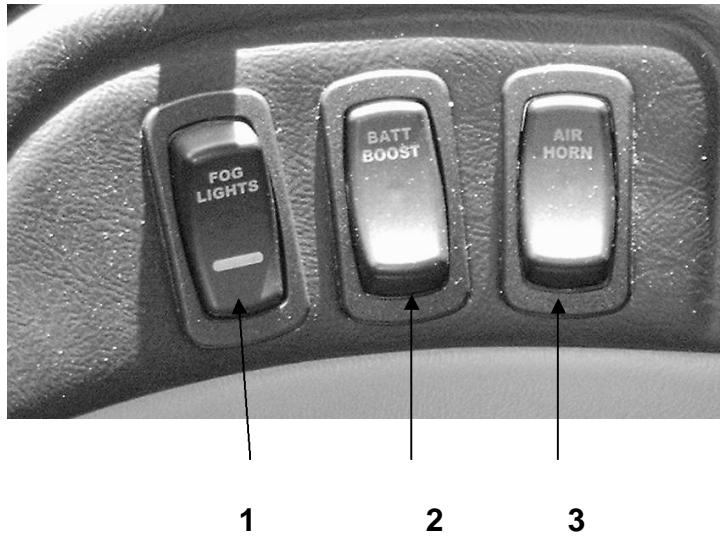
1. Front Fan (turns the front convector fan on and off, and allows you to select high or low fan speeds when operating the Oasis heating system).
2. Overhead Fans (turns on the fans in the front overhead cabinet to circulate air across the windshield).
3. Fan Speed (selects speed of front overhead fans).





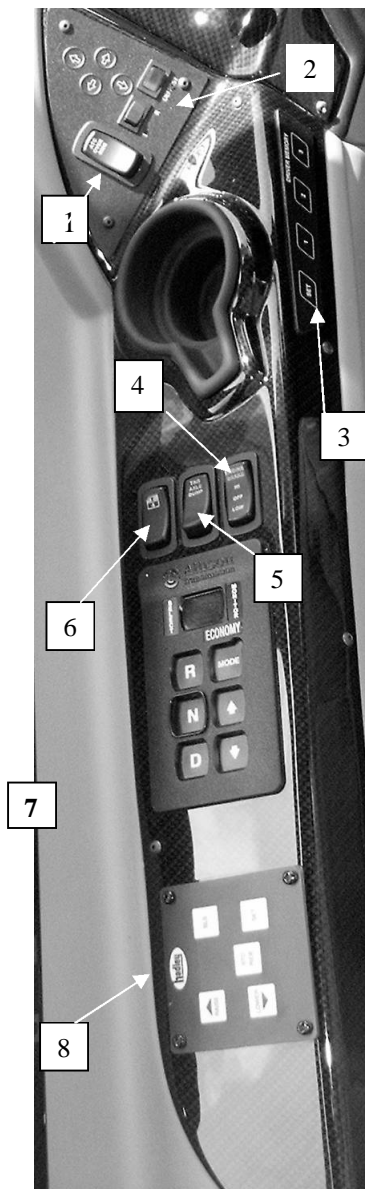
### Left Side Dash Switches

1. Fog Lights (operates exterior front “fog” lights).
2. Battery Boost (momentarily connects the house batteries and chassis batteries for additional cranking power).
3. Air Horn (selects between air and electric horns)

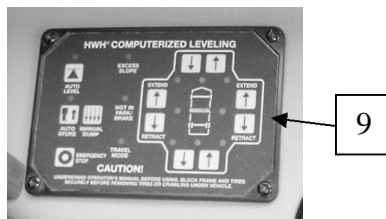




## Drivers Side Console Switches



1. ATC Switch turns the Automatic Traction Control system on and off.
2. Power Mirror Control Pad (adjusts exterior rear view mirror position. Also operates mirror heat for improved visibility in adverse conditions).
3. Memory Seat Control Pad (allows programming of up to three different driving positions into a memory).
4. Engine Brake Switch (operates engine brake; “Hi” and “Low” selectable).
5. Tag Axle Dump (bleeds the air out of the tag axle suspension to place more weight on the drive axle tires for improved traction in slippery conditions).
6. Driver’s Power Window Switch (operates driver’s side power window).
7. Transmission Selector Pad (operates Allison transmission).
8. Hadley Air Leveling system control pad.
9. HWH Leveling Jack Control Panel (located at the end of the driver’s side armrest).

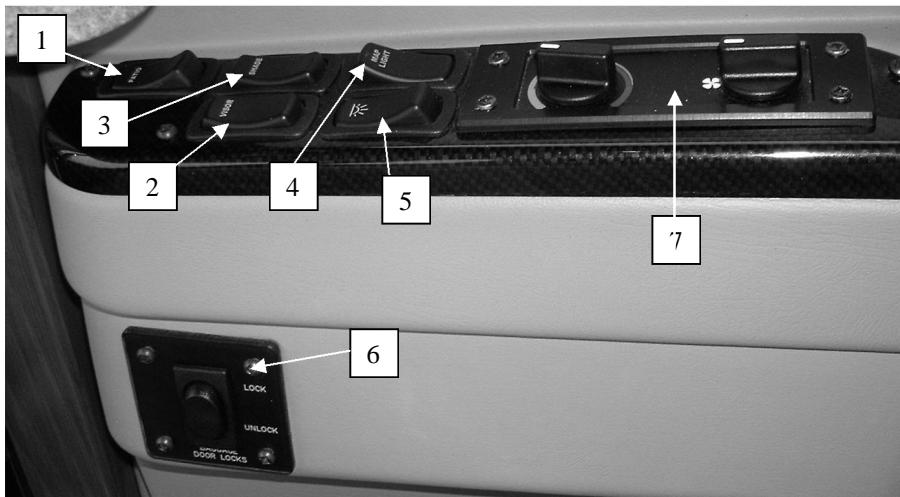


## Passenger’s Side Console Switches

1. Patio Light (operates exterior patio light).
2. Power Visor (operates passenger’s side front sun visor).
3. Power Shade (operates passenger’s side power sun shade).
4. Map Light (operates passenger’s side map light).
5. Interior Lights (operates the four front overhead interior lights to illuminate the steps as you enter).



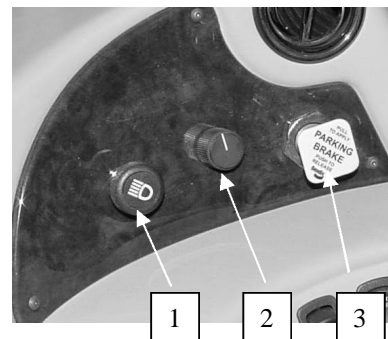
6. Power Door Locks (power locking for the entrance and basement doors).
7. Passenger's Side HVAC Control Panel (allows passenger to tailor the dash HVAC to their comfort).



## Headlamps and Parking Brake

To the left of the instrument cluster is a small panel that houses the headlamp controls and the parking brake switch.

1. The left switch turns the headlamps and parking / clearance lamps on and off. It also rotates to turn the driver's side map light off and on.
2. The left switch turns the headlamps and parking / clearance lamps on and off. It also rotates to turn the driver's side map light off and on.
3. The right knob engages and disengages the parking brake.



## Power Seat Operation

The driver and passenger front seats are mounted on power pedestals that offer a wide range of adjustments. The center “joystick” switch moves the seat horizontally and vertically. The front rocker switch tilts the front of the seat up and down. The first rocker switch aft of the “joystick” switch controls the tilt of the rear of the seat base. Additional switches control the recline angle of the seat back, and the inflatable “lumbar” support in the lower back region of the seat back.

A release lever allows the seats to rotate on the pedestal, allowing the seats to face into the living area.



## **Rear Vision System**

Your King Aire is equipped with a standard Rear Vision system. This closed circuit television system features a camera mounted on the top of the rear cap that is connected to the Sony in-dash video screen. This system comes on automatically when you put the transmission in reverse to allow you to see behind your unit when backing. Additionally, it can be manually turned on in transit to allow you to monitor your towed vehicle, or for additional assistance in passing maneuvers

## **Side View Cameras**

Your unit is equipped with “side view” cameras. These cameras are tied into the rear vision system and are activated by the turn signals. When a turn signal is activated, the monitor will switch to display that side of the unit. If the rear vision monitor is turned on manually, you can toggle through the cameras by using the “Camera Select” source button, allowing you to stay on any given camera that you chose.

## **Trip Tek Monitoring System**

Your King Aire is equipped with the “Trip Tek” Monitoring system. This system uses the rear vision monitor panel to display information regarding engine and powertrain use and maintenance, generator use and maintenance, trip, and tire temp and pressure information.

By using the Trip Tek control panel (located above the in dash radio), you can scroll through the various menus on the rear vision monitor screen to select the information you seek, and to program and reset service interval reminders.

For detailed operating instructions, please refer to the Trip Tek operators guide supplied with your new King Aire.

## **Sony In-Dash Stereo**

Your King Aire features a Sony AM/FM/CD in-dash stereo. This stereo plays through separate speakers from the other audio – video equipment in your coach. This radio features up to 18 radio presets, a variety of tone controls, and a CD player. It is also XM satellite radio capable, and also controls the standard 6 CD changer.

To operate the stereo, press the “Source” button in the upper left hand corner of the radio face. Pressing the source button once turns the stereo on playing the last mode selected (AM, FM, CD, etc.). Use the “Source” button to alternate between music sources.

For detailed operating instructions on your Sony stereo, please refer to the manufacturer’s information provided with your unit. XM satellite radio is available by contacting the XM provider directly. A monthly fee is involved to subscribe.

## **CD Changer**

A six disc CD changer is standard in the King Aire. It is designed to work with your factory mounted Sony in dash stereo. Use the “Source” button on the face of the Sony stereo to select the CD changer, then use the controls and display on the face of the stereo to select the disc and song you want to hear.

## **Navigation System**

Your King Aire is equipped with a GPS based Navigation system. This system uses GPS technology to guide you through maps and information for traveling assistance. It features voice prompts, and a remote control to make scrolling through the menus and getting information easy.

To begin operation, simply turn on the system and follow the simple commands that appear on the screen. Detailed manufacturer’s instructions are included with your King Aire literature.

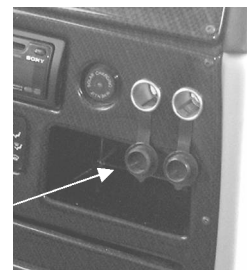


## Buddy Screen Passenger Side Navigation Monitor (optional)

As an option for the Pioneer Navigation system, a second monitor for the navigation system is available for the passenger side. This monitor is located under the front overhead cabinet, just inside the entrance door. It is mounted on a swiveling, tilting head so positioning it for maximum comfort is possible.

## DC Power Point Receptacles

At the bottom of the center section of the dash is a pair of DC “Power Point” receptacles. These allow you to plug in a variety of 12 volt DC accessories, including cell phone battery chargers, camera battery chargers, and so on. These are fused at 20 amps.



## Solar Panel Indicator

Your King Aire is equipped with a solar panel which charges the **chassis** batteries when exposed to sunlight. On the dash is a red LED charge indicator to show when the system is charging the batteries.

It is important to note that the system may not indicate a charge any time it is exposed to sunlight. The built in “regulator” will only allow the system to charge the chassis batteries when their voltage is low. The system will charge at the following rate:

<u>Battery Voltage</u>	<u>% of Battery Charge</u>
12.7 VDC	100%
12.4 VDC	75%
12.2 VDC	50%
12.0 VDC	25%
11.9 VDC	0%

For example, if the chassis batteries are above 12.7 VDC the solar panel indicator will not glow to indicate the system is charging.

## Transmission Shift Selector

The Allison Transmission control pad is located to the left of the driver on the switch panel. The shift selector allows you to shift the transmission into any one of six forward gears, or reverse. Additionally, it allows you to select an operating mode based on your particular driving style, or driving conditions.

When the transmission has reached normal operating temperature, (above 180 degrees) the transmission shift selector can be used to check the transmission fluid level. Press the up and down arrows simultaneously, and the display will either say “Trans OK”, or it will display a number, and a + or - sign. The number displayed is the amount of quarts in the transmission that are over or under the correct level, and should be adjusted accordingly. No action is required if the display reads “Trans OK”.



## Safety Precautions

### WARNING

- i Portable fuel-burning equipment, including wood and charcoal grills and stoves, shall not be used inside the recreational vehicle. The use of this equipment inside the recreational vehicle may cause fires and/or asphyxiation.
- i Seats equipped with seat belts are the only ones to be used while the vehicle is in motion.
- i While the vehicle is in motion, all seats should be locked in the forward facing position.
- i Passengers should never be allowed to stand or kneel on seats in a moving vehicle.
- i All passengers must have seat belts fastened in a low and snug position so that the force exerted by the belt in a collision will be spread across the hip area. Pregnant women should wear the lap-shoulder belt, with the lap belt portion worn low and snug.
- i The fire extinguisher should be inspected monthly for proper charge and operating condition. The smoke alarm should also be tested on a regular basis. The label on the detector should be removed when preparing the unit for the first trip. In addition to the recommended inspection, these should also be checked prior to a vacation or extended trip.
- i Sleeping facilities are not to be used while the vehicle is in motion.
- i Become familiar with the operation of the escape window, but use this window strictly as an emergency exit.

## PROPANE GAS & FUEL

### WARNING

Propane cylinders shall not be placed or stored inside the vehicle. Propane cylinders are equipped with safety devices that relieve excessive pressure by discharging propane to the atmosphere. FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

### 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
- (2) Open window

FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

Unlike homes, the amount of oxygen supply is limited due to the size of the recreation vehicle, and proper ventilation when using the cooking appliance(s) avoids 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

DO NOT FILL PROPANE CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY. Overfilling the propane container can result in uncontrolled propane flow, which can cause fire or explosion. A properly filled container contains approximately 80 percent of its volume as liquid propane. FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.



## WARNING

Portable fuel-burning equipment, including wood and charcoal grills and stoves, shall not be used inside the recreational vehicle. The use of this equipment inside the recreational vehicle can cause fire or asphyxiation. FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

## WARNING

DO NOT BRING OR STORE PROPANE CYLINDERS, GASOLINE, OR OTHER FLAMMABLE LIQUIDS INSIDE THE VEHICLE. FAILURE TO COMPLY COULD RESULT IN FIRE OR EXPLOSION

## DANGER

IF YOU SMELL PROPANE:

- (1) Extinguish any open flames, pilot lights, and all smoking materials
  - (2) Do not touch electrical switches
  - (3) Shut off the propane supply at the container valve(s) or propane supply connection
  - (4) Open doors and other ventilating openings
  - (5) Leave the area until odor clears
  - (6) Have the propane system checked and leakage source corrected before using again
- FAILURE TO COMPLY COULD RESULT IN EXPLOSION RESULTING IN DEATH OR SERIOUS INJURY.

## CAUTION

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

### Propane Gas System General Information

A warning label has been placed near the Propane gas container. This label reads:

**WARNING: DO NOT FILL CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY.** Overfilling the Propane gas container can result in uncontrolled gas flow, which can cause fire or explosion. A properly filled container will contain approximately 80 percent of its volume as liquid Propane gas.

The Propane gas system components in your unit have been approved for use in camping vehicles by a nationally recognized testing laboratory. Propane gas is a clean-burning dependable fuel when properly handled. The Propane gas tank mounted on your unit contains liquid propane gas under high pressure. The liquid gas vaporizes as the fuel is used and passes through the tank valve to a regulator that automatically reduces the pressure. The low-pressure gas is then distributed to the appliances through the pipe manifold system. Appliance lighting problems are commonly caused by an improperly adjusted gas regulator. Never attempt to reset the regulator yourself. Have an authorized service technician make any necessary adjustments. We recommend that you have the Propane gas system checked by an authorized service technician at least once a year and after every extended trip. Although the manufacturer and dealer carefully test for leakage, travel vibrations could loosen fittings. Leaks can be easily found by applying leak detector solution at the connections. If leak detector solution is not available, a soapy water solution made with dish soap can be used. Tightening the fitting usually stops any leaks. If this does



not work, shut off the main gas valve at the tank and immediately consult an authorized service technician for repairs. If a leak is suspected, the identifying odor smells similar to rotten eggs (sulfur). Never test for a leak by lighting a match or having an open flame where you suspect leaking gas.



## WARNING

Shut off the main gas valve at the tank when the camping vehicle is not in use. Also, shut off the valve when refueling to avoid potential danger from pilot lights igniting fuel fumes. Some appliances, such as the refrigerator, have DSI (direct spark ignition) boards, so it is important that you turn the appliances off when the Propane gas is off. The ignition in the appliances will continue to spark even if there is no Propane gas available.

### Propane Regulator

The regulator acts as the heart for the Propane gas system. The Propane gas in the tank is under high pressure. The regulator reduces the pressure of this gas so that it is safe to use with the various appliances in your unit. If corrosion is noticed, contact a qualified Propane gas service technician. Do not adjust the regulator. It is factory preset. Adjustments are to be made by a qualified Propane service technician using specialized equipment.

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

### Propane Distribution Lines

The primary manifold is a black steel pipe running the length of your unit. Most secondary lines leading to gas appliances are made of copper tubing with flare fittings. If any of the gas lines rupture, do not attempt to splice them. Always run a new line. We recommend gas distribution work be performed by an authorized service technician. The main valve at the Propane tank must be closed when removing or servicing any gas appliance. This will prevent dangerous gas leakage that could result in an explosion and possibly serious injury. If a leak is suspected, have the systems inspected and repaired by a qualified service technician.

### Precautions & Recommendations

- i Inspect the Propane fill valve for foreign materials before refueling.
- i Shut the pilot lights off prior to refueling Propane gas tanks.
- i Never check for gas leaks with an open flame (match, lighter, etc.).
- i Gas lines should be visually inspected periodically.
- i Have the gas system inspected yearly and before and after extended trips.
- i The gas system should be inspected and repaired by qualified technicians only.



## WARNING

The Propane system in your recreational vehicle is designed for liquefied petroleum gas only. Never attempt to connect natural gas or butane gas in this system.

### Fire Safety

The possibility of fire exists in all areas of life, and the recreational life-style is no exception. Recreational vehicles are complex machines. They are made up of many materials, some of which are flammable. Like most hazards, the possibility of fire can be minimized, if not totally eliminated.



This is done by recognizing the danger and practicing common sense safety and maintenance habits. For safety reasons, your unit is furnished with both a fire extinguisher and a smoke alarm.

## Fire Extinguisher

The fire extinguisher is rated for Class B (grease, gasoline, diesel fuel, flammable liquids) and Class C (electrical) fires. These are the most common types of fires in vehicles. Read the operator's manual and the instructions on the fire extinguisher. Be sure to know how and when to use the extinguisher and where it is located.

Fire extinguishers are mechanical, pressurized devices. Care must be exercised when they are handled. They must be maintained as the operator's manual instructs for proper and safe operation. The extinguisher should be inspected at least once a month. More frequent inspections may be required if the extinguisher is exposed to the weather or to possible tampering. Do not test the extinguisher by partially discharging. Doing this will cause a loss of pressure.

If a fire occurs in the vehicle, evacuate the vehicle as quickly and as safely as possible. Consider the cause and the severity of the fire and the risk involved before trying to extinguish it. If the fire is major or fuel fed, move away from and stand clear of the vehicle and wait for emergency assistance to arrive.



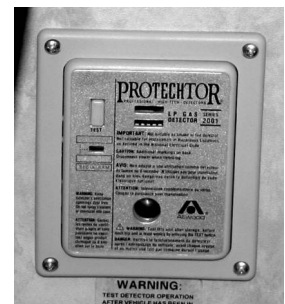
## IMPORTANT

NEVER spray any type of aerosol or cleaner directly onto or into the Propane, CO, and Smoke detectors. Spraying any type of material into the opening on any of these detectors can render them useless, and would not be covered by the manufacturers warranty.

## Propane Detector

Propane gas is extremely flammable. The Propane detector in your coach is located in the main living area close to the floor. It is wired to the 12 volt "house" electrical system in your unit, and controlled by a switch in the front overhead cabinet. On the face of the detector are operating instructions and a test button. The Propane detector should be tested before every trip, and any time the unit is pulled out of storage.

In the event the detector alarms while in use, immediately turn off all potential sources of ignition (furnace, water heater, refrigerator, stove / range, etc.), and close the Propane valve to shut off the flow of Propane gas. Open the windows and doors to facilitate ventilation of the unit, and evacuate the unit until the Propane gas has dissipated. Have the Propane system checked for leaks by a qualified RV technician.



## CO Detector

Carbon Monoxide is a colorless, odorless gas that is manufactured during the burning of fossil fuels. The CO detector is located on the ceiling of your unit. It is operated with a 9 volt DC battery and alarms any time carbon monoxide levels beyond the normal range are detected. It should be tested before every trip, and any time the coach has been in storage. If the alarms sounds, open windows and vents to allow any carbon monoxide that has built up to dissipate, and evacuate the vehicle until the alarm has stopped. The CO detector can be cleaned by vacuuming the openings in the side of the case.



## Smoke Detector

The battery powered smoke detector is mounted on the ceiling in the living area of the unit. Read the operating instructions for details on the testing and care for this important safety device. Test the smoke detector after the unit has been in storage, before each trip, and at least once a week during use. The detector should never be disabled because of nuisance or false alarm from cooking smoke or a dusty furnace. Ventilate the unit with fresh air and the alarm will shut off. Never disconnect or remove the battery from the smoke alarm. The battery should be replaced once a year or when the low battery signal sounds.

## Emergency Exit Window

In the bedroom of you unit, there is an emergency exit (egress) window. This window is designed to be used as an additional exit in emergency situations. It can be easily identified by the red color of the handle and the red “EXIT” label. To open the egress window, rotate the handle and push outward on the window. The window can be closed by pulling it back into the frame and rotating the handle to the down or locked position.





## Chapter 3

# HVAC, APPLIANCES & ACCESSORIES

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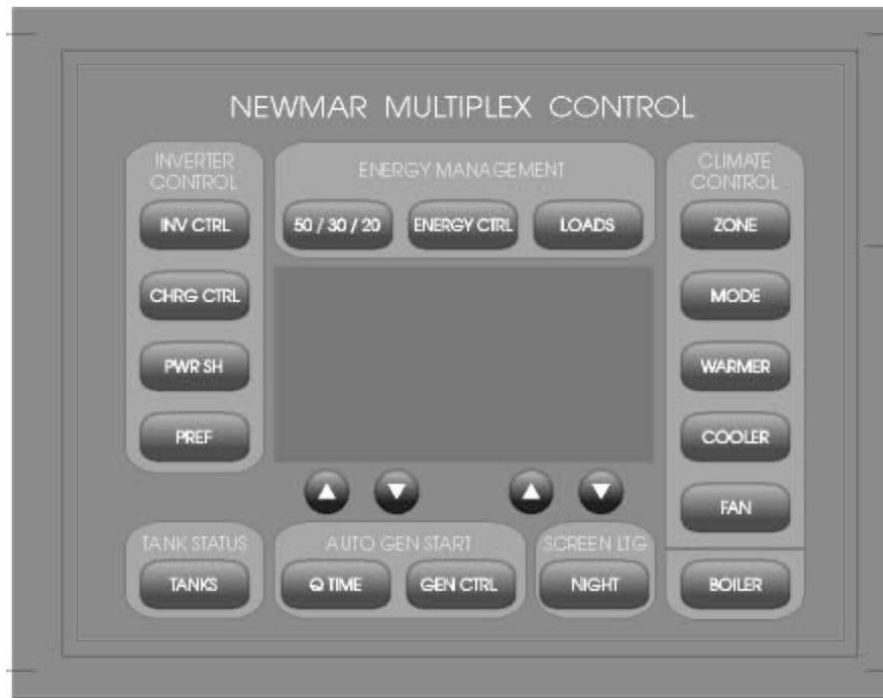






## TOUCH SCREEN MULTIPLEX

Your King Aire has been equipped with a Touch Screen Multiplex system that combines the operation of a number of systems into one convenient, easy to operate message and control center. This display features the ability to move from one system to the next while maintaining settings on all other controlled systems and equipment.



From this display you will control the following functions:

- **HVAC** (all functions of normal thermostat, including temperature programming, zone selection, source selection, and fan speed).
- **Inverter** (all functions of inverters operation, including inverting, charging, and battery maintenance).
- **Energy Management System** (all functions of Energy Management System, including power sharing, load shedding and incoming amperage selection).
- **Auto Genset Start** (controls all automatic start and stop parameters for the generator).
- **Holding Tank Monitor Panel** (gives accurate readings of fluid levels in black, gray, fresh, and Propane tanks. A separate small panel is also provided in the basement water compartment for monitoring tank levels while draining or filling the tanks).

Select the system you want to operate, and use the buttons around the LCD display to move through the functions and establish the desired settings.



# E-PLEX CONTROLS

## INTRODUCTION

The E-Plex control system consists of one major component and many sub-components. The major component is known as the “Clock”. It houses the microprocessor control, a touch screen operator interface with display, and the multiplexing communications bus.

The clock microprocessor control along with the program memory performs the actual command and control processes for the system.

The remainder of the E-Plex system consists of control, monitoring, display, and combination modules that are connected to the multiplexing bus. These modules execute the control commands from the clock and report their status back to the clock, as well as to the other modules on the network.

The **control modules** are used to turn on and off various devices, like water pumps, lights, etc.

The **monitoring modules** are used to report the status of environmental and mechanical conditions such as air temperature, tank levels, electrical loads, on or off statuses, etc.

The **display modules** are the various touch screen displays that are available with the E-Plex system.

The combination modules are just as the name implies. They combine certain functions of the various modules into a single module. There are combination modules such as the dual relay input module that combines two relay outputs for on / off control with four inputs for status monitoring. There are also combination modules that are made up of a touch screen push button control with a small display window such as the tank bay display panel.

## NORMAL OPERATION

During normal operation the user will generally be operating either the system clock, one of the touch screen display modules, or some type of switch panel.

The clock and touch screen controls have many different operations screens which can be selected by pressing the various buttons surrounding the display window on the clock or on the touch screen display. These screens are made up of six main categories. The categories include Inverter Control, Energy Management, Tank Status, Climate Control, Auto Generator Control, and Screen Lighting as shown on the clock face overlay. See the following example of the system clock face:



## CLOCK FACE



The clock face consists of two sections, the “Display” section and the “Button” section. The “Display” section displays the status of the control functions, and the “Button” section which surrounds the “Display” section contains the buttons that select the settings for the control functions. Notice that the “Button” section has the buttons grouped into the six previously mentioned control categories. The entire user controlled system functions can be accessed from the “Button” section.

## CONTROL FUNCTIONS

### INVERTER CONTROL

#### INV CTRL

Pressing the clock button labeled “INV CTRL” will display the initial inverter control functions.

User Selectable Settings:

**INVERTER ON/OFF:** Controls the inverter-charger that “inverts” the 12VDC coach battery power to 120VAC. This 120VAC power can be used to power various appliances throughout the coach.

#### *Page Display*

```
INVERTER:    OFF
CHARGER:     OFF

DC AMPS:     23
DC VOLTS:    12.8

STATUS:
CHARGER OFF
```

**STATUS** - Displays data from the Inverter-Charger.



**CHRG CTRL** - Pressing the clock button labeled “CHRG CTRL” will display the initial charger control functions.

#### *User Selectable Settings*

**CHARGER ON/OFF**: Controls the battery charger function that “charges” the 12VDC coach batteries.

#### *Page Display*

```
INVERTER:    OFF
CHARGER:     OFF

DC AMPS:     23
DC VOLTS:    12.8

STATUS:
CHARGER OFF
```

**STATUS**: - Displays data from the Inverter-Charger.

#### **PWR SH**

Pressing the clock button labeled “PWR SH” will display the Shore Power control functions. Pressing the left most set of up/down arrows will scroll between Shore Power and Search Watts. Pressing the right most set of up/down arrows will scroll between the allowable settings for the functions.

#### *User Selectable Settings*

SHORE POWER: 50, 30, 20, 15, and 5 Amp Service.

SEARCH WATTS: 50, 30, 20, 15, and 5 Watts Capacity.

#### *Page Display*

```
<>SHORE POWER:
    30A
SEARCH WATTS:
    20W

FAULTS:      v1.1
NONE
```

**FAULTS**: - Displays Inverter Fault Data (See Inverter manual for further details).

#### **PREF**

Pressing the clock button labeled “PREF” will initially display the same page as the “PWR SH” button. Pressing and holding the “PREF” button for 5 seconds will display the battery set-up function pages. The second page is accessed by use of the left most set of up/down arrows. Pressing the right most set of up/down arrows will scroll between the allowable settings for the functions.



## *User Selectable Settings*



### IMPORTANT

Verify all Battery Specifications before making any changes to these pages!

## **EQUALIZE**

**BATTERY TYPE:** AGM, GEL CELL, or LEAD ACID

**BATTERY SIZE:** 200, 400, 600, 800, or 1000 AH

### *Page Display*

```
<>EQUALIZE  
  
BATTERY TYPE:  
LEAD ACID  
  
BATTERY SIZE:  
400 AH
```

**BATT. TOPOFF:** This setting will initiate an Automatic Generator Start to recharge the batteries when the battery voltage level drops below this set point, provided the system is set for automatic generator operation.

### *Page Display*

```
BATT. TOPOFF:  
12.0V
```



**CHARGE AMPS:** 10, 20, 30, 40, 50, 60, 70, 80, 90, or 100%

**BATT. CUTOFF:** Minimum Voltage level that will keep the DC battery power active.

**VAC CUTOFF:** Minimum Voltage level that will keep the AC power active.

**BATT. TOPOFF:** This setting will initiate an Automatic Generator Start to recharge the batteries when the battery voltage level drops below this set point, provided the system is set for automatic generator operation.

*Page Display*

```
<>CHARGE AMPS:
      100%
      BATT. CUTOFF:
      10.0V
      VAC CUTOFF:
      80V
      BATT. TEMP: 95 °F
```

## ENERGY MANAGEMENT (EMS)

### 50/30/20

Pressing the clock button labeled “50/30/20” will initially display the Energy Management control functions page. Pressing this button again after the page is displayed scrolls between the current settings.

### *User Selectable Settings*

**MANAGE:** 20A, 30A, or 50A (Selects the available Shore Power Current Capacity)

*Page Display*

```
SHORE      EMS:ON
POWER
      L1    L2
VAC  119    120
AAC   6     23
HZ   60.2
MANAGE: 30A
```



## ENERGY CTRL

Pressing the clock button labeled “ENERGY CTRL” will initially display the same page as the “50/30/20” clock button. Pressing the button again after the page is displayed will toggle the Energy Management System power setting between on and off.

### *User Selectable Settings*

**EMS:** ON/OFF (Toggles the Energy Management System setting between On and Off.)

#### *Page Display*

```
SHORE      EMS:ON
POWER

      L1    L2
VAC  119    120
AAC   6      23
HZ    60.2

MANAGE: 30A
```

## LOADS

Pressing the clock button labeled “LOADS” will select the Energy Management Load Shedding page. This page displays the status of the AC loads that are capable of being shed when the amperage exceeds the selected settings.

### *User Selectable Settings*

NONE

#### *Page Display*

```
ENERGY MAN.

BLOCK HTR: ENABL
WATER HTR: ENABL
      A/C 1: OFF
      A/C 2: OFF
      A/C 3: OFF
```



## TANK STATUS

### TANKS

Pressing the clock button labeled “TANKS” will select the Tank Status page. This page displays the status of the Water Tanks, the LP Tank (if so equipped), and the Water Pump Status. Pressing the right most up arrow will toggle the Water Pump On. Pressing the right most down arrow will toggle the Water Pump Off.

#### *User Selectable Settings*

PUMP: ON/OFF

#### *Page Display*

```
      TANKS
FRESH:#### 9a|
GREY:#### 9a|
BLACK:#### 9a|
  LP: ####%
TANK:    PUMP: OFF
TOP-OFF  ON  OFF
```

## CLIMATE CONTROL / HVAC

### ZONES

Pressing the clock button labeled “Zone” will select the Climate Control pages. These pages display the current zone temperature, outside temperature, user selectable settings of the HVAC Zones, and the current system time. Pressing the “Zone” button again will scroll through the available Zone control pages.

#### *User Selectable Settings*

ZONE: LIVING RM, BATH, BEDROOM

#### *Page Display*

```
INSIDE: 76 °F
SET POINT: 70 °F
OUTSIDE: 86 °F
<ALL ZONES OFF!>
ZONE: LIVING RM
FAN: AUTO
MODE: OFF
ON/OFF <<ALL>>
```



## MODE

Pressing the clock button labeled “MODE” will initially select the Climate Control pages just like the “Zone” button. Once the Climate Control pages have been selected, pressing the “MODE” button again will scroll through the Mode settings for the currently selected Zone page.

### *User Selectable Settings*

MODE: OFF, FAN ONLY, COOL, HEAT PUMP, or FURNACE.

### *Page Display*

```
INSIDE : 76 °F
SET POINT : 70 °F
OUTSIDE : 86 °F

ZONE : LIVING RM
FAN : AUTO
MODE : OFF
ON/OFF <<ALL>>
```

## WARMER

Pressing the clock button labeled “WARMER” will initially select the Climate Control pages just like the previously mentioned buttons. Once the Climate Control pages have been selected, pressing the “WARMER” button again will increment the temperature set point up one degree at a time for the currently selected Zone page.

### *User Selectable Settings*

WARMER: - Increases the Zone temperature set point.

### *Page Display*

```
INSIDE : 73 °F
SET POINT : 71 °F
OUTSIDE : 86 °F

ZONE : #1
FAN : AUTO
MODE : OFF
TIME : 10:12AM
```



## COOLER

Pressing the clock button labeled “COOLER” will initially select the Climate Control pages just like the previously mentioned buttons. Once the Climate Control pages have been selected, pressing the “COOLER” button again will decrement the temperature set point down one degree at a time for the currently selected Zone page.

### *User Selectable Settings*

COOLER: - Decreases the Zone temperature set point.

#### *Page Display*

```
      INSIDE: 73 °F
SET POINT: 71 °F
      OUTSIDE: 86 °F

ZONE: #1
FAN: AUTO
MODE: OFF
TIME: 10:12AM
```

## FAN

Pressing the clock button labeled “FAN” will initially select the Climate Control pages just like the previously mentioned buttons. Once the Climate Control pages have been selected, pressing the “FAN” button again will scroll between the Fan settings for the currently selected Zone page.

### *User Selectable Settings*

FAN: AUTO, LOW, or HIGH

#### *Page Display*

```
      INSIDE: 73 °F
SET POINT: 71 °F
      OUTSIDE: 86 °F

ZONE: #1
FAN: AUTO
MODE: OFF
TIME: 10:12AM
```



## BOILER

Pressing the clock button labeled “BOILER” will display the Boiler Control page. This page will allow the Boiler control functions to be selected by means of the left most set of up/down arrows and the function settings to be changed by means of the right most set of up/down buttons.

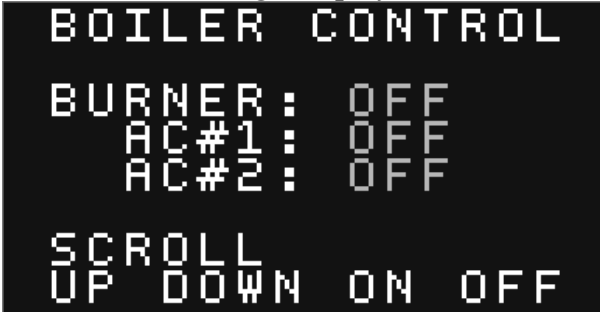
### *User Selectable Settings*

BURNER: ON/OFF

AC#1: ON/OFF (120VAC Heating Element)

AC#2: ON/OFF (120VAC Heating Element)

### *Page Display*

A monochrome LCD screen displaying the 'BOILER CONTROL' page. The text is arranged in several lines: 'BOILER CONTROL' at the top, followed by 'BURNER: OFF', 'AC#1: OFF', and 'AC#2: OFF'. At the bottom, there is a section labeled 'SCROLL' with 'UP' and 'DOWN' on the left, and 'ON' and 'OFF' on the right.

BOILER CONTROL  
BURNER: OFF  
AC#1: OFF  
AC#2: OFF  
SCROLL  
UP DOWN ON OFF

## AUTO GENERATOR CONTROL

### Q TIME

Pressing the clock button labeled “Q TIME” will display the generator Quiet Time control page. Pressing the button again will scroll between the Quiet Time Start, Quiet Time Finish, and Current Time setup pages. The Quiet Time settings control when the generator can run in automatic mode.

### *User Selectable Settings*

Hours & Minutes

### *Page Display*

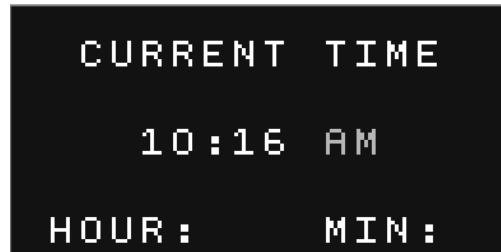
A monochrome LCD screen displaying the 'QUIET TIME START' page. The text shows 'QUIET TIME START' at the top, followed by the time '10:16 AM'. At the bottom, there are labels 'HOUR:' and 'MIN:' for setting the time.

QUIET TIME  
START  
10:16 AM  
HOUR: MIN:

A monochrome LCD screen displaying the 'QUIET TIME FINISH' page. The text shows 'QUIET TIME FINISH' at the top, followed by the time '10:16 AM'. At the bottom, there are labels 'HOUR:' and 'MIN:' for setting the time.

QUIET TIME  
FINISH  
10:16 AM  
HOUR: MIN:





## IMPORTANT

If there is no "Quiet Time" needed, it may be necessary to compress the "Start / Finish" parameters for full time generator operation. Also, if the AGS system is set and the generator is turned off at any switch, it will clear the AGS settings.

### **GEN CTRL**

Pressing the clock button labeled "GEN CTRL" will display the Generator Control page. Providing that the parking brake is set and the generator access is closed, pressing the left most set of up/down arrows scrolls through the page selections, and pressing the right most set of up/down arrows will select the On/Off condition for the selections.

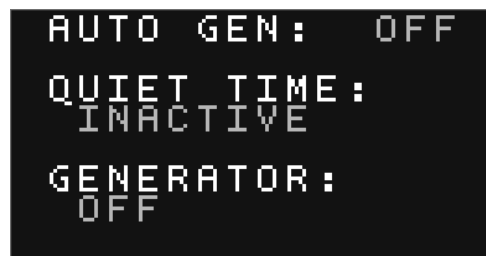
#### ***User Selectable Settings***

AUTO GEN: ON/OFF (Generator will automatically start for Low Battery Charging and HVAC operating power)

QUIET TIME: ACTIVE/INACTIVE (Status only; not a selectable setting)

GENERATOR: ON/OFF (Generator Status)

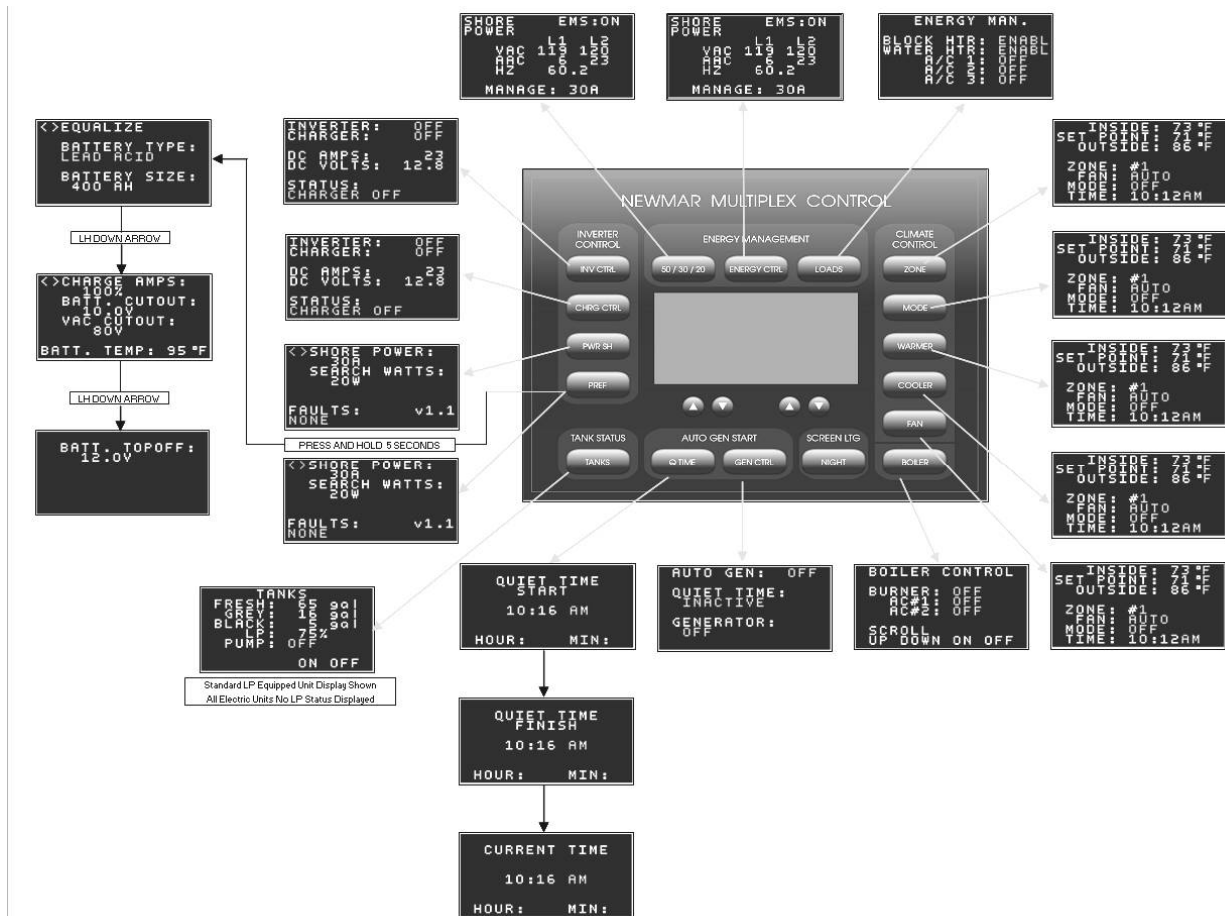
#### ***Page Display***





## NIGHT

Pressing the clock button labeled “NIGHT” will toggle the screen backlighting between Day and Night settings.





# HEATING AND AIR CONDITIONING



## IMPORTANT

When selecting “Cooling”, “Heat Pump”, or “Furnace” mode, all areas must have the same mode selected, or be in the “Off” mode. It is not possible to run cooling and heating simultaneously in separate zones.

### Air Conditioning

The air conditioners installed on your coach will operate only when the unit is supplied with 120 volt AC power from the power cord or the generator. The air conditioner’s circuit breaker must be in the ON position to work.

To assist the air conditioners in cooling the coach, park in the shade and keep the drapes or blinds closed. Set the thermostat to the desired temperature.

Air conditioners can use a large portion of the available electric power. RV parks may experience low voltage on days with high heat or humidity. This is commonly referred to as a “brown out.” A “brown out” may trip the air conditioner’s circuit breaker. The circuit breaker protects your air conditioner from damage and is necessary during low voltage conditions. The tripped breaker is not a fault in your electrical system.

The cool air from the air conditioners is ducted throughout the coach through ceiling air ducts. The Touch Screen controls all functions of the air conditioners and the furnace. Simply select the desired temperature. The blower will cycle automatically, or you may choose low, medium, or high fan settings. Remember all three air conditioners must be in the same mode. Please consult the air conditioner’s manufacturer’s owner’s manual for further assistance.

### Heat Pump Mode

The standard air conditioners on the King Aire are Dometic “Heat Pumps”. A heat pump uses a special valve that reverses the flow of Freon in the system to change the air conditioner to a heater. This system is effective at heating your unit down to approximately 30 degrees (f), and uses the same air duct system as the air conditioning system.

To operate the system in “Heat Pump” mode, use the Touch Screen E-Plex system as described on page 3:12 in this guide and select “Heat Pump” in the zones you want heat in. Set the temperature to your comfort, and the heat pumps will engage and distribute heat throughout the unit. The “Heat Pumps” operate in the same zones as the air conditioners.

### Heating

For your comfort, your new King Aire is equipped with the Oasis hydronic heating system. This system uses a “boiler” and a pump to heat and re-circulate hot fluid through a series of convectors placed strategically throughout your unit. Fans located on the convectors provide circulation of the warmed air for more even, efficient heating.

The Oasis system uses two different sources for heat. The first, and most efficient, is the diesel burner. This uses diesel fuel from the motor homes fuel tank to burn and create heat. The second heat source is a pair of electric heating elements. It is important to note the difference in the two systems.

The output of the diesel burner is 50,000 BTU’s. This is the primary heat source for the Oasis system. The electric heating elements each have 5000 BTU output, and should be used only to help maintain the temperature once the diesel burner has brought the system up to proper operating heat levels. From a cold start, the 5000 watt electrical heating element will not operate the system alone.



For heating, your unit is divided into three “areas” on the Touch Screen Multiplex. They are as follows:

**Living Room Area:** Dash and Kitchen Convectors: These convectors are located under the dash and kitchen cabinets, and control heat in the dash, living room, and kitchen areas. Note that the dash mounted convector is the only one in your King Aire that has a two speed fan. The switch controlling the fan speed is located in the front overhead cabinet adjacent to the diesel boiler switch.

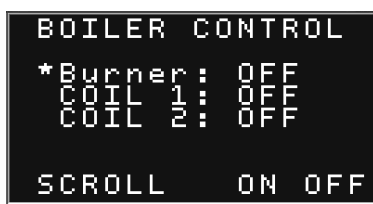
**Bath Zone Area:** Bathroom Convectors: These convectors are located in the bathroom cabinetry and stool room. Please note that the fan switch for the stool room (marked “HEAT”) must be in the “ON” position to get heat in the stool room. It should also be noted that for stool room heat, a “rear” zone (bathroom or bedroom areas) must be chosen on the CCC thermostat.

**Bedroom Zone Area:** Bedroom Convectors: These convectors are located throughout the cabinetry and walls of the rear bedroom area.

## Operating the Oasis System

To activate the system, select your heat source, either diesel or electric, using the “Boiler” screen in the E-Plex touch screen system in the front overhead cabinet.

Once you have selected your heat source (diesel or electric), and the boiler is operational, use the Touch Screen Multiplex to select “Furnace” in the zones you want to heat.



### IMPORTANT

The Oasis “diesel burner” heat source provides approximately 50,000 BTU’s of heat, and is designed to start up and operate the system to full capacity. The electrical heating elements provide approximately 5000 BTU’s of heat each. The electrical heating elements will help maintain temperature in the system, but are not capable of bringing it to full temp from a cold start. Note that BOTH the Burner and the Heating Elements can be used at the same time for improved performance.

The system will turn convector fans off and on according to the temperature settings. In two locations, there is a fan switch that allows you to turn those fans off if desired (note that they must be “ON” for the fan to operate when activated by the thermostat). The first location is at the dash. The convector fan under the dash is operated by a switch on the dash. It has settings for on, off, and speed selections.

The second convector fan that is controlled independently is in the “stool room” in the bathroom area. It is controlled by the wall switch labeled “Heat”, and allows the occupant to tailor the room temperature to their comfort separately from the rest of the bathroom.



### IMPORTANT

In the event of E-Plex System failure, heat can be restored to the unit via the vendor supplied Oasis Control Panel. This panel is in the basement attached to the compartment wall where the Oasis heating system is located.

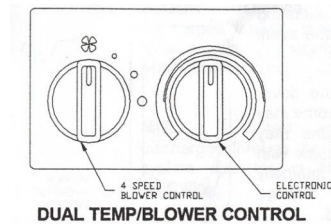
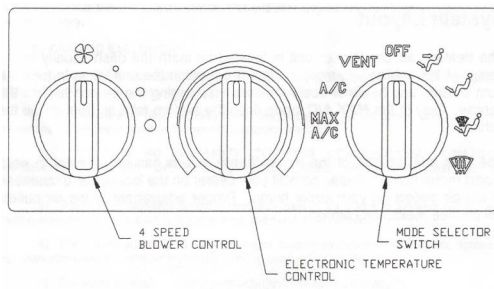


## Dual Zone HVAC Dash HVAC System

For maximum driver and passenger comfort, the King Aire features a “dual zone” dash HVAC system that allows driver and passenger to adjust their individual areas to their own comfort level.

The Main Control Panel enables the driver to control the volume (speed) and temperature of the air for the driver’s side of the unit, and the air discharge location from the system for both occupants.

The Passenger Control Panel enables the passenger to control the temperature and volume (speed) of the air being discharged to the passenger side of the vehicle.



## APPLIANCES AND ACCESSORIES

### Generator

#### WARNING

All internal combustion engines give off carbon monoxide as a byproduct of their exhaust. Carbon monoxide is a colorless, odorless gas that is lethal. Symptoms of carbon monoxide poisoning are:

Dizziness	Headache
Nausea	Weakness or sleepiness
Vomiting	Inability to think coherently

IF YOU EXPERIENCE ANY OF THESE SYMPTOMS, GET TO FRESH AIR IMMEDIATELY. IF SYMPTOMS PERSIST, SEEK MEDICAL ATTENTION RIGHT AWAY. Shut down the genset and do not operate it again until it has been inspected and repaired. ALWAYS MAKE SURE THE CARBON MONOXIDE DETECTOR IN YOUR UNIT IS OPERATING.

Your unit is equipped with an Onan generator as standard equipment. Please refer to the operating manual that was supplied with your particular unit for detailed directions on your genset.

Before starting your generator for the first time each day, and subsequently after each 8 hour cycle of running, the generator manufacturer recommends you perform the following “quick checks” to make sure it is ready to be used.

1. Make sure the CO detectors in your unit are working.
2. Check for signs of fuel or exhaust leaks.
3. Make sure there is adequate clearance around the genset for proper ventilation, and to make sure sloping ground or other terrestrial interference has not occurred. Tall grass or other items that come in contact with the genset or its exhaust may interfere with ventilation or be combustible and cause a fire.
4. Check the oil and coolant levels; inspect for leaks.
5. Check the battery connections to make sure they are tight and clear of corrosion.
6. Inspect genset compartment for road debris or damage that might affect genset performance or safety.



7. Turn off major appliances (such as air conditioners, TV's, and other electronics that may excessively load the genset or may be sensitive to initial voltage surges as the genset stabilizes it's voltage).

The generator can be started from the rocker switch on the dash, from the remote start switch on the generator itself, from a third switch located by the bed in the bedroom, or by the remote switch in the shore power cord compartment in the basement. To start the genset, rock the switch to the "start" position. Depending on the ambient temperatures, the generator may "pre-heat" prior to cranking. This pre-heat condition is noted by flashing the light on the generator start switch until the cycle is complete (up to 15 seconds). Once it has pre-heated sufficiently, the starter will engage and the engine will start. Release the switch once the genset starts.

### IMPORTANT

Excessive cranking can damage the starter motor. Do not crank the generator more than 30 seconds at a time, and allow at least 2 minutes before trying again if the attempt to start fails.

To stop the generator, press the rocker switch to the "stop" side.

### IMPORTANT

Before stopping the generator, be sure to turn off all major loads, such as roof A/C's, Oasis heating elements, TV's, washer, drier, dishwasher, and other major electronics.

## Auto Genset Start

### WARNING

It is **CRITICAL** that the AGS system be turned off any time the generator is going to be serviced. Failure to deactivate the AGS system may result in damage, injury, or death if the genset should start unexpectedly.

Your generator can be programmed to start and stop automatically under certain parameters through the AGS (Auto Genset Start) system, which is controlled by the Touch Screen Multiplex system.

## Dishwasher (optional)

Your King Aire may be equipped with an optional "Dish Drawer" dishwasher. This appliance is mounted in the kitchen cabinetry below the range, and features a wood paneled front to blend in with the décor.

The dishwasher operates on 110 volt AC. For detailed directions on loading dishes, adding soap and cleaning agents, and total operation, refer to the manufacturer's directions and video. As with any appliance, maintenance is the key to keeping your dishwasher in top working order. Detailed instructions for cleaning and maintenance are included in the manufacturer's owner's manual.

### IMPORTANT

It is critical that the dishwasher drawer be locked into place any time the unit is in transit. If it is not, it can extend suddenly and without warning, potentially damaging the dishwasher, its contents, the cabinetry, and anyone standing near it. Before traveling, lock the dishwasher drawer in the closed position, and turn the breaker off to the appliance in the 110 breaker panel to insure the lock does not release until desired. The lock will release when power is restored.



## Washer / Dryer (optional)

Your King Aire may be equipped with an optional combination washer / dryer. Depending on your floorplan, your coach may be equipped with separate, stackable washer and dryer units. The washer / dryer will be located in a cabinet either in the bathroom or bedroom of your unit.

For detailed instruction on operating the washer / dryer, refer to the manufacturer's information that is supplied in your literature bag. This literature provides detailed direction on operation, care, and maintenance of your new appliance.

### WARNING

It is CRITICAL that the sewer hose be connected, the grey water gate valve be open, and the hose be routed to a "Dump Station" prior to operating the washer. Failure to do so can result in sudden unexpected filling of the grey water tank, resulting in damage to the tank, plumbing, and motorhome.

## Norcold Side by Side Refrigerator

The Norcold Side by Side Refrigerator w/Water Dispenser and Ice Maker built in is the standard refrigerator in the King Aire. This refrigerator offers the convenience of water and access on the freezer door.

The control panel for the refrigerator is located on the front of the appliance between the right side freezer and refrigerator doors. It features a digital display that allows you to select the incoming power source (AC current or Propane gas), and allows thermostatic control of the operating temperature. If your unit is equipped with the "All Electric" option, the accompanying Norcold refrigerator will only offer AC current as the power source.

For detailed operating instructions, please refer to the Norcold Operators Manual that was supplied in the literature bag of your King Aire.

## Norcold Freezer

Your King Aire features a factory installed basement mounted Norcold freezer. This freezer operates on 12 volt DC current, or 110 AC current as available. The side mounted thermostat can be used to adjust the freezer cabinet to the desired temperature. Latches secure the lid for a tight seal, and for traveling. For ease of access, the freezer is mounted on a slide tray.

## Princess Recessed Cook Top

Your King Aire features a Princess two burner Propane cook top as standard equipment. It features electronic spark ignition. To use the cook top, simply press down and turn the burner control to the desired setting, and the electronic ignition will spark to create a flame. The burner controls will vary the flame to your cooking requirements. Complete operating directions are included with the user's manual in the Literature Bag provided with your coach.

## Princess Electric Cook Top (optional)

If your King Aire is equipped with the "All Electric" option, it will feature the Princess Electric Cook Top in lieu of the standard Propane cook top. Complete operating directions are included with the user's manual in the Literature Bag provided with your coach.

To operate the electric range, press and turn a burner control. The burner selected will begin to heat.



## GE Advantium Microwave / Convection Oven

The GE “Advantium” microwave / convection oven is an available option in your new King Aire. Using GE’s “SpeedCooking” technology, it boasts amazingly fast food preparation times. It uses a combination of lights, microwaves, and convection heat to cook entire meals in a fraction of the time it takes in a conventional oven, evenly browning meats as the cooking process progresses.

For detailed operating and programming directions please refer to the GE Advantium Microwave / Convection Oven Operators Guide.

## Leveling Systems

### WARNING

It is recommended that the leveling and stabilizing procedure is complete before operating any room extension. Note: The slide out can be operated without utilizing the leveling system, but it is recommended to have the unit as level as possible.

Your King Aire is equipped with both air and hydraulic leveling systems. There are four hydraulic jacks, and they always operate in pairs: front, right side, left side, and rear. Before extending, the engine must be off, the ignition switch must be in the “ACC” position, and the transmission must be in park. The parking brake needs to be set and the tires blocked securely.

The “Air Leveling” system uses the air in the suspension air bags to level your unit for temporary use. It uses a separate “Hadley” air suspension operation panel located on the driver’s side armrest. As with the hydraulic system, always set the parking brake before leveling.

### IMPORTANT

It is recommended that you read the detailed operating directions in the “HWH Operator’s Guide” prior to operating the leveling systems on your new King Aire. The Operator’s Guide was provided in the literature bag with your unit at the time of delivery.

### WARNING

Be sure the ground on which you are parked will support the weight of your unit. Use caution when leveling on hot asphalt, sand, and grass as the weight of the unit may cause the jacks to sink into the ground. Pads may need to be placed under the jacks to spread the weight over a larger area. ALWAYS look under your unit prior to leveling to make sure the jacks are clear of debris and other foreign materials that may interfere with leveling.

## “Air” Leveling

### IMPORTANT

When air leveling the unit, it is important to have the engine running to provide air to the system. Newmar recommends reading the manufacturer’s leveling instructions thoroughly prior to using the air leveling system.




## IMPORTANT

**Check the parking spot and look under your unit for clearance issues prior to operating the air leveling system. The body of the motorhome can raise and lower during the leveling process, so it is important to be certain there are no obstacles (concrete parking stops for example) the coach may lower onto.**

The “Air” leveling system is designed to be used for minor, temporary leveling of the unit (when overnight camping in a parking lot, for example) for basic comfort and convenience. Please note that while this will bring the unit to a “relatively” level stance while on slightly sloped surfaces, it does not deploy the hydraulic leveling jacks to raise the unit significantly or stabilize the unit on the ground. As a result, you may still experience some movement of the coach when walking through it.

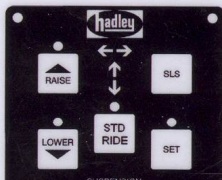
Included with your unit you will receive a “Self Leveling System Quick Reference Guide” laminated card. This reference card will help you quickly perform the basic steps required to level the unit using the air suspension.

Self-Leveling System:  
Quick Reference Guide



2851 Prairie S.W.  
Grandville, MI 49418  
616.530.1717  
WWW.HADLEY-PRODUCTS.COM

4600 Wyland Drive  
Elkhart, IN 46516  
574.293.5669

	Mode	Function	Indicators
	SLS	Press once to activate the SLS system and initiate the “Level Find Mode”	Level indicator arrows for X (short) and Y (long) axis: <i>Solid Green</i> : vehicle is near level. <i>Flashing Green</i> : Adjustment possible and within range. <i>Flashing Amber</i> : Marginal conditions, possible self-level. <i>Solid Amber</i> : Excessive slope, self-leveling may not be possible.
		Press once again to turn “OFF” the SLS system	Level indicator arrows OFF
	SET	Press once to activate the “self-leveling” process (vehicle must be stopped and park brake applied)	Set light flashes as the system levels. Set light ON solid after leveling process is complete
		Press once again to turn “OFF” “Self Leveling”	Set light OFF
	Fault	Flashes when low system pressure	Air Pressure Light

**CAUTION:**  
 Ensure air suspension is inflated prior to moving vehicle after storing leveling jacks.  
 STD RIDE light will flash while suspension is inflating and will illuminate solid when air suspension is inflated.  
 Consult self leveling system manual for proper operation  
**FAILURE TO DO SO MAY CAUSE DAMAGE TO VEHICLE**

Once parked, with the parking brake applied, a quick glance at the lights on the Hadley control pad will tell you if the location is suitable for air leveling. The lights will illuminate as follows:

**Solid Green:** Unit is near level.

**Flashing Green:** Adjustment is possible and within acceptable range.

**Flashing Amber:** Marginal conditions, possible self leveling.

**Solid Amber:** Excessive slope; self leveling is not possible.

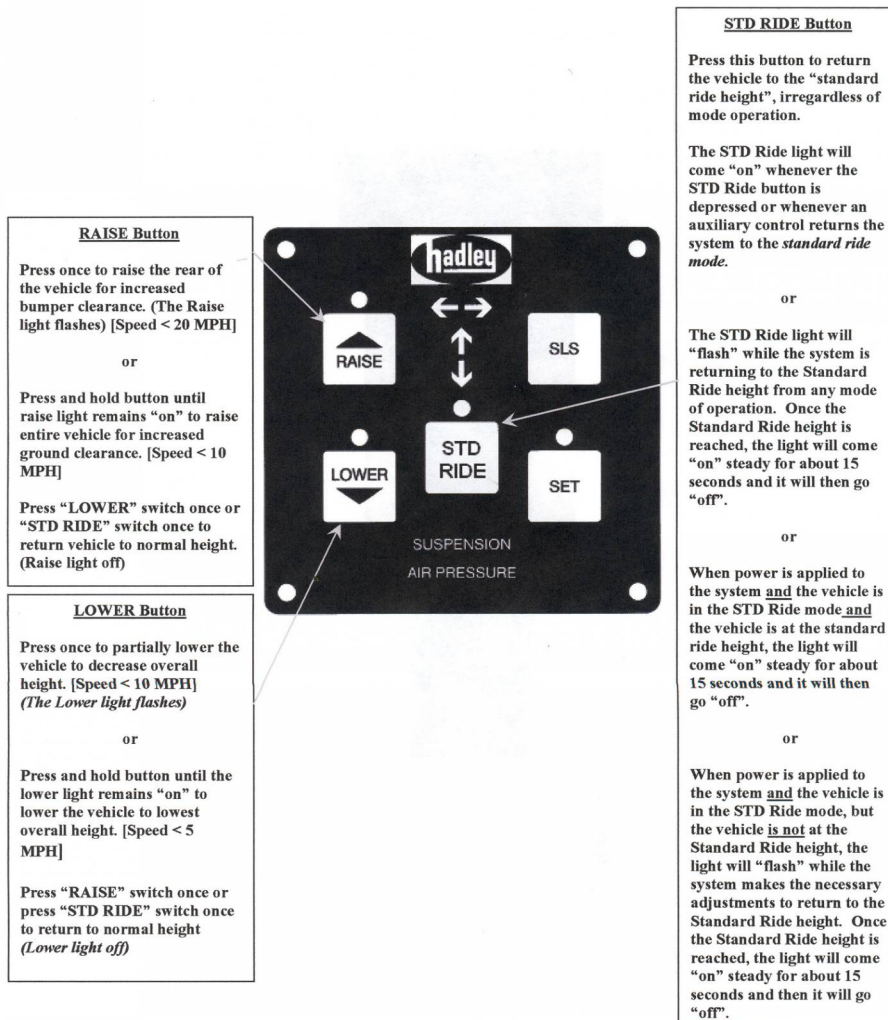
Once you have determined your location is suitable for self leveling, press the “SET” button once to begin the process. The “SET” light will flash during the leveling process, and illuminate solid when the process is complete.



## IMPORTANT

When preparing for travel after using any leveling system, be certain the suspension has completely returned to normal inflation and ride height before moving the unit. The "STD RIDE" light will flash while the suspension is inflating, and will illuminate solid when the suspension has completed the inflation process.

The Hadley Air Leveling systems can also be used to raise and lower the unit for clearance purposes. The procedures are as follows:





## “Hydraulic” Leveling



### CAUTION

Do not lift the wheels off the ground when leveling. The unit can roll forward or backward when tires are lifted off the ground. If the “Excess Slope” light is on, the system is sensing that the site is too sloped to allow the leveling jacks to bring the unit to a comfortable state of level. Great care must be taken when trying to level in a sloped site to make sure a tire (or tires) is not lifted off the ground. Also, the leveling jacks and support system should be cycled once a month or whenever the vehicle is used to keep the system in operating condition.



### IMPORTANT

It is important to allow the HWH leveling system to run the complete cycle and turn itself off when operating in the “store” mode. The system will completely retract the jacks and turn itself off. If the system is turned off prior to the automatic shut off, there is the potential that the jacks have not fully retracted. Also, be sure to visually inspect the jacks prior to departure to insure that they have fully retracted and the underside of your unit is ready for travel.

The hydraulic portion of the leveling system uses four hydraulic jacks to level the unit. Because the weight of the unit is on the jacks, and they are in physical contact with the ground, the unit is much more stable and does not rock or move when walking inside it. Additionally, the hydraulic system has a greater range of leveling, allowing it to provide greater leveling capability should you encounter camp sites with substantial slope.

1. Make sure the motorhome is securely parked, and the parking brake is set.
2. Once you are certain the leveling area beneath the unit is clear of obstructions, turn the ignition key to the “ACC” position and press the “LEVEL” button. The light will come on and the automatic hydraulic leveling cycle will begin. The system will dump the air out of the air bags and deploy the jacks to level the unit.
3. To retract the jacks, start the engine and press the “STORE” button. Allow the system to completely raise the jacks and turn itself off.

## Security System

Your King Aire may be equipped with a security system. When armed, the system protects the entry door, the front generator area, and the basement compartments. There is also an impact sensor under-dash that will feel an impact in the front cab area. There are (2) motion sensors, one in the kitchen, and one in the bedroom. Consult your manual for all features of the valet switch. To arm the system, press the button w/ the lock symbol on it. You will hear one siren chirp, and the entry door will lock (if equipped). To disarm the system, press the button w/ the un-lock symbol. You should hear two siren chirps. If you hear more than two, your system was set off in your absence. The system also includes a pager that alerts you up to 2 miles away if the alarm is engaged. You can also remote page via the pager buttons on the dash.

## Keyless Entry

The following procedure assigns an authority and access code. The 5-digit access code is assigned to position one. The same 5-digit code is assigned to the authority and access codes. If the attempt to assign new codes fails, previous authority and access codes remain active.

1. Plug the LED into C6 and push the button into C7 on the receiver.
2. Turn the ignition on (12v at yellow wire C1) and disarm alarm.
3. Press and release the programming button 3 times. Wait 3 seconds. The keypad will beep for 5 seconds.



4. Enter a 5-digit code. (double chirps after each button press). The keypad chirps 3 times after the 5-digit entry.
5. Re-enter new code for confirmation. The keypad will chirp four times after successful confirmation. A long beep indicates failure to change codes.
6. Confirm the new access code.

The user is given 2 minutes to complete this procedure. If it isn't completed in time, or any error is made, the system will exit learn mode and a long chirp will sound to indicate the error.

**IMPORTANT:** Authority and access codes should not be the same. If someone figures out an access code and discovers it to be an authority code as well, they can create their own access code and gain entrance to your vehicle.

The following can be used to document the authority code:

DIGIT 1	DIGIT 2	DIGIT 3	DIGIT 4	DIGIT 5

### Assign new access codes

With a valid authority code, an access code can be programmed with the following instructions:

1. Press the (3) button for 5 seconds, the keypad will beep. The backlighting of the keypad will flash indicating the learn mode.
2. Enter the 5-digit authority code. Keypad will provide a long beep that will stop after you have defined an access number.
3. Press and release the button that corresponds to the access number. For example, press (1/2) (1) button for access #1 and press (3/4) (2) button for access #2. During this activity you are defining 1 of 5 (4) access numbers. A subsequent code will be assigned to this access #. The keypad will provide confirmation beep after this single button press.
4. Enter your new 5-digit access code. The keypad will provide confirmation beeps.
5. Re-enter new access code. The keypad will provide confirmation beeps.

Repeat process to assign additional access codes.

**Note:** Up to 5 (4) different access codes can be assigned at one time. As additional access codes are defined, pre-existing access codes are overwritten. For example, if a new access code is assigned for access #3 code is no longer available.



### IMPORTANT

Authority and access codes should NOT be the same. If someone figures out an access code, and discovers it to be the authority code as well, they can create their own access code and gain entrance to your vehicle.







## Chapter 4

# CABINETS, FURNITURE & INTERIOR FEATURES

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## CABINETS

### WARNING

Prior to driving your vehicle, be sure you have properly secured all interior items for travel. Examples would be (but not limited to):

- 1) **Furniture (tables, chairs, etc.)**
- 2) **Personal Belongings (plates, glasses, cooking utensils, pots, books, etc.)**
- 3) **Accessories (slide out pantries, cabinet doors, optional slide out island, sink covers, etc.)**

It is very important to be certain the interior of your unit is safe for travel by making sure all loose items are stored safely and securely. It is also important to be sure the items stored in your cabinets are secure to minimize the possibility of them shifting in the event of an emergency maneuver, such as sudden braking or turning. Always use caution when opening a cabinet door or drawer after traveling as the contents may have shifted in transit.

The cabinetry in your RV is constructed on-site at the Newmar production facility. Oak hardwood raised panel doors are standard throughout the unit. Brass or nickel door and drawer handles give the interior an added touch of elegance. The standard cabinets in your unit are finished in oak vinyl veneer. Your unit may be equipped with the optional hardwood cabinetry in a variety of finishes. Your cabinetry was designed with function and convenience in mind, and was built to exacting standards by modern craftsmen.

Storage is an important factor to all RV owners. Keeping this in mind, the cabinetry is structured to provide as much storage as possible. Your unit may include features such as adjustable pull out pantry boxes in the kitchen or the silverware drawer may have a molded silverware divider tray for added storage. In the bedroom, the bed platform lifts to provide an additional, convenient storage area. A strap is provided to help raise the bed. Once the bed platform is lifted, it is held open by pressurized struts to allow hands-free access.

A countertop with a color coordinated edge is installed in the kitchen. To clean, wipe with a damp cloth and for “dried on” spots or rings, wipe with a damp cloth and a mild liquid soap. Strong chemicals and solvents may damage the surface and should be wiped up immediately, then rinse the surface with water.

Avoid cutting directly on the countertop surface, avoid excessive heat, and keep harmful chemicals away to avoid countertop surface damage.

On most floor plans, the “drawer” directly in front of the kitchen and lavatory sink does not pull out, but rather flips down. This provides a storage tray for dish cloths, scouring pads, washcloths, etc.

Metal drawer guides are installed on the drawers in your unit. These guides provide smooth opening and closing of the drawers. To open a drawer, lift up slightly and pull open. The drawer guide mechanism is designed to prevent the drawers from unintended opening while traveling.

All of the cabinetry can be easily cleaned with any commercial furniture cleaner or polish. As with any wood product, do not saturate these cabinets with water or any other liquid. Be sure to wipe up spills as they occur to avoid staining.





### Pull Out Kitchen Extension / Island (optional)

Your unit may be equipped with an optional pull out Kitchen Extension, or Kitchen Island. The “extension” is incorporated directly into the kitchen cabinetry, and glides out on drawer guides to provide additional counter space when needed. If your unit is equipped with the optional pull out “island”, the complete cabinet will pull completely free of the kitchen cabinetry and can be moved throughout the unit on the attached casters.



### WARNING

The optional pull out kitchen extension / island **MUST** be secured back into its stored position in the kitchen cabinetry **PRIOR** to travel. The “island” will roll back over a stop, and the front casters have locks to inhibit their movement. The “extension” features a locking mechanism activated by a lever accessed by opening the top drawer. Failure to lock the island / extension into place in transit can cause damage to the cabinetry and interior of your unit, and under certain circumstances, injury or death.

The bathroom may feature a pull out step / storage bin in the bottom of the lavatory cabinet. This convenient step allows younger children better access to the sink and mirror. The hinged top provides a platform on which they can stand, while still allowing for storage underneath.



## FURNITURE

### Kitchen / Dinette Area

A standard feature in the kitchen area is the hidden leaf dinette table. This table allows you to add more room to your table top when desired. Two fixed chairs and two folding chairs accompany this table. The chair seats are designed with a coordinating upholstery fabric to match your décor.

Depending on the floorplan of your unit, a built-in “booth” style dinette may be an option.

### Living Room Furniture

Covered in coordinating fabrics and accented with pillows, the sofa will fold flat to provide additional sleeping space. To fold the sofa out to the sleeping position, lift and pull on the front of the sofa seat cushion. The seat cushions will swing out and the seat back will slide down to form the sleeping surface.



Depending on the floorplan and options, a variety of living room furniture is available in the King Aire. Options may include a free standing leather/vinyl recliner, a leather/vinyl push back recliner with an ottoman, a leather/vinyl swivel rocker recliner, or a leather/vinyl “L”-lounge.

The driver and passenger seats in the King Aire are covered in leather, and feature six-way power position adjustment, lumbar support, and a passenger footrest. The base moves the chairs forward and backward, as well as up, down, and forward and reverse tilt. The seats also have a three point seat belt and swivel and recline features. When the unit is not in motion, they can be swiveled to face the living room of the unit.

To turn the chairs, first extend the slide out room. Tilt the steering wheel up and toward the dash. Reposition the seat to provide enough clearance for the steering wheel. Once this is done, the chairs will swivel without interference. The power lumbar control switch is located on the left-hand side in front of the power base controls. Pushing the switch forward will inflate the support while pushing back will deflate it.

## Bedroom Area

A “king size” bed is standard in your King Aire. A decor coordinating quilted bedspread with a reverse sham and accent pillow(s) may be included as part of this unit’s standard bedroom package. For best results, it is recommended that the bedspread be DRY CLEANED ONLY.

Your unit may be equipped with an air mattress. This mattress is inflated and deflated by way of the remote controls. There is a remote control for each side of the bed, and the two sides can be adjusted independently. Push the “up” arrow button to inflate that side of the bed, and the “down” arrow button to deflate it. The digital screen provides a number you can reference when adjusting the firmness level for your personal comfort.



## INTERIOR FEATURES

### Light & Accessory Switching

Your King Aire features touch panel light and accessory switching. Located throughout the unit, these panels are used to turn lights on and off, as well as to operate power shades / window treatments. Simply touch the panel on the “switch” to operate the light or accessory you desire.

Some lights may have dimming features, allowing you to adjust the interior lighting for mood or comfort. For your convenience, lights have been added in the closets and wardrobes.



## IMPORTANT

In the event of a lighting system failure, there is an “Emergency Lighting” switch, normally located in bathroom, that will restore partial lighting until the system can be inspected and repaired.



## Bedsread

A decor matching duvet with coordinating pillow shams and an accent pillows are part of the standard package for this unit. The recommended cleaning instructions for this spread are DRY CLEANED ONLY. The materials that make up the spread may have been treated, and dry cleaning will preserve this treatment.

## Flooring

The floor covering throughout the living room and bedroom of the unit is nylon tufted cut loop carpeting. In the Owner's Information Package you will find literature supplied by the carpet manufacturer. This information will be helpful in maintaining and extending the life of the carpet. Please refer to this information for the carpet or hard surface flooring care and cleaning instructions. Simple vacuuming is all that is necessary to remove loose dirt and debris for everyday cleaning. Mop occasionally, using a minimal amount of water. Abrasive cleansers and scouring pads can scratch and damage the surface also.

## Ceiling

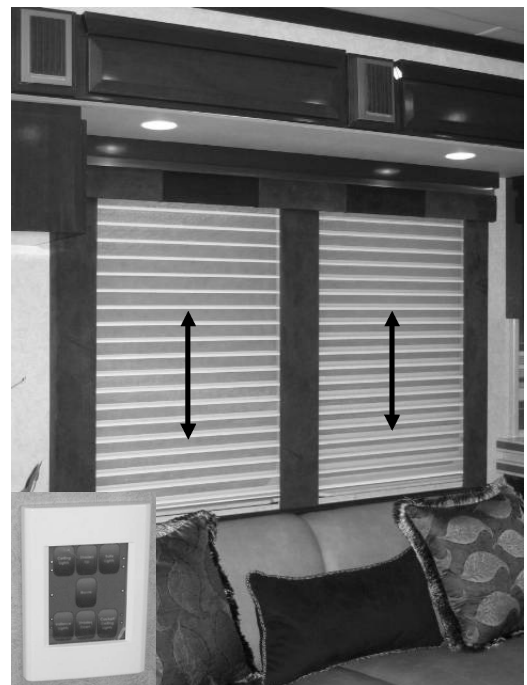
The ceiling in this unit is covered with a padded vinyl headliner, with decorative inlaid matching vinyl panels. It is cleaned by wiping gently with a soft cloth and a mild detergent. **DO NOT** saturate the material, and wipe it dry when finished cleaning with a soft, dry cloth.

## Safe

Located under the bed base is a built in fire resistant "safe box / file cabinet". This is accessed by raising the bed base / mattress platform. The key for the lock is included with your unit at the time of delivery.

## Window Treatment

The window treatments throughout this unit, except in the kitchen, are pleated window shades and lambrequins. These shades are power operated via the touch buttons located throughout the unit. They are designed to provide a degree of privacy while still allowing some light to pass through. **Do be aware that under certain light conditions, shadows and silhouettes can be cast on them and visible from the exterior of the unit.** If any curtains are installed in this unit, cleaning instructions are DRY CLEAN ONLY. Water-based products are not recommended for cleaning fabrics. Water-based products may cause excessive shrinkage or fading.





# Chapter 5

## SLIDE OUT FEATURES

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## SLIDE OUT FEATURES



### WARNING

**Read the following slide out room instructions before activating the switch.**

Do not allow children to operate the slide-out.

Do not allow any person to place their arms, legs, body or head between any pinch point of the lock arms, slide-out fascia, interior walls, exterior walls, objects, or floor as serious injury or death could result.

Any adjustments, or repairs, must be made only by “NEWMAR” qualified personnel.

Always check the interior and exterior of the coach for objects, or persons, that are in the path of the slide-out when extending or retracting the room.

Always check the roof to be sure any objects, or debris, are removed before retracting the room.



### CAUTION

It is recommended that the leveling jacks be extended and the unit level before operating the slide out. Note: The slide outs can be operated without utilizing the leveling system, but it is recommended to have the unit as level as possible.

It is also recommended (though not mandatory) that the unit be connected to shore power or have the generator running while extending or retracting the slide outs.

Your unit is equipped with at least one power slide out room. It is important that you read and understand **ALL** directions, both in this Owner’s Guide, and on **ALL** the labels affixed inside your unit **PRIOR** to operating your slide out room(s).

Your unit will contain labels with very specific operating and safety information. There are a number of precautions that **MUST** be observed every time the rooms will either be extended or retracted. For your personal safety, and to prevent potential damage to the slide out mechanism and room, it is paramount that these directions be followed completely. Slide out operation has changed for all RV’s after 2006, and it is important that you understand the operation procedure completely and observe all safety precautions to insure safe, proper operation.

All Slide Out labels contain the following warning:

### WARNING

**Do not allow children to operate the slide-out.**

**Do not allow any person to place their arms, legs, body or head between any pinch point of the lock arms, slide-out fascia, interior walls, exterior walls, objects, or floor as serious injury or death could result.**

**Any adjustments, or repairs, must be made only by “NEWMAR” qualified personnel.**

**Always check the interior and exterior of the coach for objects, or persons, that are in the path of the slide-out when extending or retracting the room.**

**Always check the roof to be sure any objects, or debris, are removed before retracting the room.**

## General Instructions



### IMPORTANT

The slide out room should be inspected for alignment every six (6) months. If alignment is necessary, have the room adjusted.





## IMPORTANT

**The slide out rooms travel can be stopped at any time by releasing the slide out switch.** If the slide out room stops before reaching the full “OUT” or “IN” position, the slide out controller may need adjustment. To adjust the slide out controller, turn the adjustment screw clockwise to increase the power and counter-clockwise to decrease the power. Move the adjustment screw in small increments. Try moving the slide out room again. Use caution. There is a potential for component or structural damage if the screw is adjusted too high. This screw does not adjust the slide out room speed. It sets the amount of power required to move the room against the mechanical stops. Newmar recommends adjustments of this nature be performed by trained service technicians.

## Operating the Slide Out Room

Your unit is equipped with Power Locking Arms for the slide out rooms. Designed specifically for this application, these mechanisms automatically “lock” the slide out rooms to the sidewalls of the RV when the room is fully retracted, securing the room in place and providing a positive seal against the exterior wall. The operation of the locking mechanism is totally automatic, and begins when you press the button to extend or retract the slide out room.



## WARNING

Before extending the slide out, make certain that there is a minimum of five (5) feet of clear space on the slide out side of the unit. Prior to extending the room, be sure the slide out locking arms are unlocking. Make sure there are no obstructions either inside or outside the unit that may interfere with the slide out extension. Extensive damage to the exterior of the unit can occur if the room hits anything inside (i.e. cabinet doors, chairs, etc.) or outside the unit (i.e. trees, poles, posts, bushes, etc.).

To extend the room, press and hold the slide out button. The voice modulator will activate and say, “Your lock arms are unlocking. Please be certain all seats, chairs, and other obstacles are clear of the slide out area”. The power lock arms will retract into their housings, and the room will begin to extend approximately 10 seconds after the voice begins. It will continue to run until it reaches the end of its travel, or until you release the slide out switch.

To retract the room, press the slide out button as described above, holding it for the duration of room travel. The room will retract, and at the end of its travel the slide out motor will stop, and the Power Locking Arms will deploy, securing the room to the sidewall of the unit. Please note that you must hold the slide out button down during this entire cycle.

The power locks require a minimum of 9 volts DC to operate. In the event of a loss of power, or if the voltage dips below the minimum requirements, the locks will not extend or retract automatically. For proper operation of the room and locks, battery voltage must be maintained above the minimum requirements. Also please note that there is a safety “lock out” system incorporated in the slide out electronics that prevents the room from operating when the ignition key is “on”. The automatic locking arms require no maintenance, and should be serviced as necessary only by a qualified technician.





## MANUAL EXTENSION AND RETRACTION

The slide out room may be manually retracted. Before attempting to manually extend or retract a slide out room please contact your servicing dealer or call Newmar Customer Support at 1-800-731-8300.



### IMPORTANT

It is important to clean the slide out rollers under the floor regularly as dirt may adhere to the rubber coating on these rollers and cause damage to hard surface flooring. Such damage is not covered under warranty. These rollers may leave indentations in carpeting, linoleum and other flooring. This condition is normal and does not warrant flooring replacement.



### IMPORTANT

The TRANS-TORQUE bushing must be re-tightened to re-couple the slide out gear motor before moving the coach. This will hold the slide out room in place. The correct torque on the 1-1/2" TRANS-TORQUE bushing is 110 foot pounds maximum. The correct torque on the 1-1/2" TRANS-TORQUE bushing of the K-900 motor (center shaft motor) is 135 foot pounds maximum. Slide outs with either the center or end mounted motors can be moved by pushing the room the full length of its travel in either direction. This method will require the assistance of at least two people.







## Chapter 6

# EXTERIOR FEATURES

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## EXTERIOR FEATURES

### Hitch

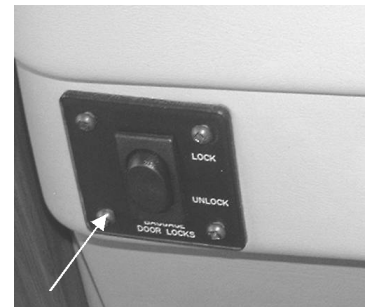
Installed on your King Aire is a class five, 15,000 pound car towing hitch, with a 1500 lb maximum tongue weight. This is installed for towing passenger cars to be used when the vehicle is parked. The wire connector installed with this hitch is a standard seven-pin connector.

### Exterior Sides

The sidewalls and end caps of your unit are constructed of smooth fiberglass, which features an automotive style “Clear-Coat / Color Coat” painted finish. Clean the exterior with a mild cleanser and warm water. Use only soft cloths. Using stiff bristle brushes may cause scratches in the painted fiberglass surface. Please note Newmar is not responsible for weathering/oxidation of painted surfaces. For detailed cleaning and maintenance information please refer to Chapter 10 of this guide, and the paint manufacturer’s information that is provided in the Literature Bag that came with your unit.

### Basement Storage Compartments

Storage compartments are located on the exterior sides of your unit. These compartments provide additional space for your belongings while you are traveling. They are lighted for ease of use day or night, and feature power operated locks for an added measure of security. There is a central locking button located on the passenger side armrest that will lock and unlock all the basement doors simultaneously. They can also be unlocked from the outside via the keyless entry system by the entrance door.



### Exterior Entertainment Center

For your convenience and pleasure, an Exterior Entertainment Center is an available option on the King Aire. This entertainment center features an LCD flat screen television mounted on a pivoting bracket for ease of viewing, and an AM/FM/CD stereo and speakers to provide outside music when desired.

The LCD television is mounted on a swivel bracket that allows you to swing the TV out and away from the basement compartment, and to swivel it to allow for better viewing angles. To release the television from its retainers, grasp the sides of the TV firmly and pull it directly toward you. It will release and swing freely to the desired viewing position. To store the TV for travel, swing it back into the opening, taking care to align the retaining brackets on the back of the TV with the catches mounted on the bracket wall. Press the television firmly into place until the catches have snapped into place and the TV is flush in the opening.



The external stereo can be used to listen to AM and FM broadcasts, and to play CD’s. It has the same functions and features as your in-dash stereo.

The LCD TV in the exterior entertainment center can be played through the exterior stereo. Press the “source” button on the stereo until the audio program from the TV is heard.



## Security Lights

Standard on this unit are exterior security lights. One is installed on each side of the coach. These lights help to light the side of the unit for added protection and convenience. The lights are activated by rocker switches located in the front overhead cabinet, labeled “Security Lights”.

## Electric Steps

This unit may be equipped with electric double entrance door steps. If so, the switch to operate these steps may be located in an overhead cabinet above the entrance door. When the power switch for the steps is in the on position, simply open the door and the steps will open. Detailed operation for the electrical entrance door steps is as follows:

1. Turn the step power switch on.
2. Close the door. The step should retract and lock into the closed position.
3. Open the door. The step should extend and lock into the open position.
4. Turn the step power switch off. The step should remain in the extended position when the door is closed.
5. With the step extended, turn the step power switch off and close the entrance door. Turn the vehicle ignition on. The ignition override system will go into effect, and the step will automatically retract.

### WARNING

If the door is opened and closed without allowing the step to fully extend and lock in the 'OPEN' position, the step will retract and lock in the 'CLOSED' position. When the door is reopened, the step will not extend. The power switch must be turned on for the step to extend. This feature is only operative the first time that door is opened after the vehicle ignition is turned off. When the ignition is on, the step will always activate with the door movement, regardless of the step power switch position.

### CAUTION

If the vehicle is driven with the step in the extended position, there is the possibility of causing major damage to both the step and the vehicle.

6. Turn the vehicle ignition off and open the door. The step will extend and lock in the open position.

## Mirrors

This vehicle is equipped with side mounted two-part exterior rear view mirrors. The top portion of the mirror is flat, providing conventional reflected views down the sides of the RV, while the bottom portion is convex to provide an expanded view, helping to eliminate blind spots. Make sure the seat is positioned for proper vehicle control, and then adjust the mirrors for maximum rear visibility prior to driving.

These mirrors are adjusted by using the mirror control panel located on the driver's side arm rest area forward of the cup holder. Select the mirror to be adjusted by rocking the switch to either “L” or “R” of that mirror, then using the arrow buttons on the panel to move the mirror up, down, in or out. Please note that only the upper, flat portion of the mirror can be moved remotely by these switches.





The convex lower portion is adjustable manually. These mirrors also contain heating elements to defog or de-ice the mirror glass during cold weather operation. The ON/OFF switch for this feature is located by the adjustment control.



## IMPORTANT

Objects viewed in convex mirrors appear smaller and farther away than they actually are.

## Rear Vision System

Your King Aire is equipped with a “Rear Vision” package that allows you to access and view the exterior (and interior) of your unit through a number of video cameras located in and around your coach.

The cameras are accessed through the left hand touch screen Sony monitor in the dash.

The primary camera view is from the rear of the unit. A camera mounted on the rear cap of your motorhome faces down and back to help you when backing the unit, when observing traffic in transit, or when checking on a vehicle you are towing behind your unit. This camera comes on automatically any time your RV transmission is in reverse. It can also be manually selected using the “Camera Select” button on the dash switch panel below the monitor.



There are five additional cameras in this “Rear Vision” system. As with the rear vision camera, all of these cameras can be manually selected using the “Camera Select” switch on the dash below the monitor.

- 1) The exterior side view mirrors feature small cameras that provide a view down the side of your unit facing backward. The “Rear Vision” system will automatically switch to the appropriate camera (left or right) any time the turn signals are used.
- 2) There are also two side view cameras mounted high on the sidewalls just forward of the bedroom slide outs. These cameras look down and slightly forward.
- 3) There is a camera located in the front overhead cabinet facing rearward, showing the living room and kitchen area.

## Video Surveillance System

Located in the bedroom, the Video Surveillance System uses a color monitor connected to the cameras in the Rear Vision System.

The left switch on the panel turns the system on, and the right switch allows you to toggle through the cameras that are a part of this system, allowing you to view a variety of areas in and around your unit.

## Windows

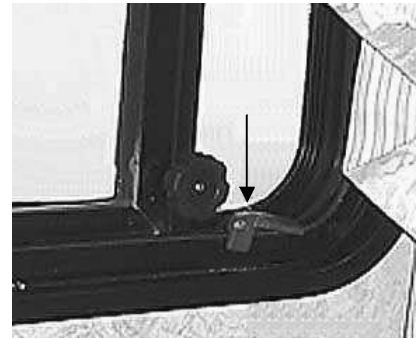
The windows installed in this unit are radius style double pane with tinted safety glass. These windows are also referred to as jalousie windows. They open with the simple turn of a crank. A power window is available on the driver's side as an option.





Sun shades may be standard on the driver and passenger side windows.

In the bedroom of the unit, one window will be marked “EXIT.” This window is an emergency escape, or egress, window. To open in case of an emergency, lift the red handles at the bottom of the window and push out. The entire window will swing out of the frame to allow easier egress through the larger opening.



## Vents

A 12 volt vent may be installed in the kitchen. This vent is equipped with a rain sensor on the roof hood. Anytime the vent is open and it senses rain, it will automatically close. The vent is controlled by the wall switch.

Do not leave the fan in active mode while the unit is in storage or unattended for long periods of time. High winds or other unusual conditions or obstructions may prevent the vent from closing resulting in leakage, which could cause serious damage.

The vent installed in the bathroom is also powered by 12 volt electricity. This vent is identical to the one installed in the kitchen, and provides positive power ventilation to quickly clear the air in the bathroom area of your King Aire.

For improved lighting and headroom, a skylight is installed in the bathroom over the shower. The opening provides additional light during daylight hours, and the glass is tinted to provide privacy and reduce glare.

## Doors

The front entrance door is equipped with a dead bolt lock for added security and a power flush stepwell cover. When the door is opened fully, the “posi-lock” feature will automatically hold the door in the full open position. To close the door from the full open position, push past the resistance the locking feature offers and the door will close. For your safety and convenience a lighted, acrylic assist handle has been installed at the entrance door of the unit.

## AWNINGS



### IMPORTANT

It is important prior to extending your awnings that you inspect the areas beside and around your unit where the awning will extend to insure proper clearance.



### IMPORTANT

The power awnings on your King Aire all operate on 110 volt AC current. The unit must be plugged into shore power or have the generator running to deploy or retract your awnings.

## Side Awnings

Power side patio awnings are standard on your King Aire. Extension and retraction is controlled by a switches located in the front overhead cabinet. To operate, follow these instructions:



## Extending and Retracting

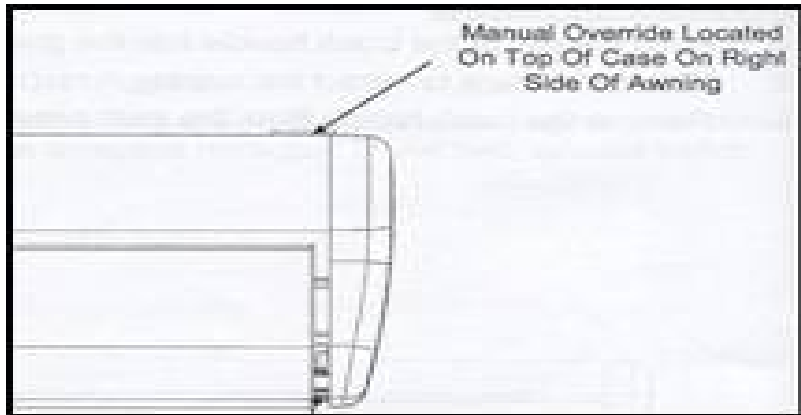
Turn the power “ON” to the awning. Press the “Extend” button on the awning switch panel; the awning will fully extend. To retract the awning, press the “Retract” button on the panel. Be sure to allow the awning to fully extend or retract when operating it. The mechanism is designed for best support at full extension, and fastens securely in place for travel when fully retracted.



## Manual Retraction

In the event that electricity is not available in your unit, the power awning can be retracted manually.

On top of the awning (at the back of the front awning, and the front of the rear awning) there is a “Manual Override” that you can employ to retract the awning (see illustration). The retraction port is always on the motor end of the awning.



### IMPORTANT

If you have a wind sensor mounted in this location, you will need to remove the Phillips head screw attaching the wind sensor, and set the wind sensor aside.

1. Remove the Phillips head screw that is screwed into the well nut that is assisting in holding on the end cap.
2. Grasp rubber well nut that the Phillips head screw is screwed into. Pull the well nut out of the hole.
3. Take the provided 7mm Allen wrench and put it into a 3/8” battery operated drill.
4. Place the Allen wrench down in the hole where the well nut was removed. Insert the Allen wrench into the Allen Head screw that is down inside the case (note: you will have to do this by feel as you cannot see the Allen Head screw once the wrench is inserted into the hole).
5. To close the awning, operate the drill in the “forward” direction. To open the awning, operate it in the reverse direction.

### IMPORTANT

The “wind sensor” for the power awnings is designed to retract the awnings should sustained winds over 22 mph be detected. Note that it is not designed to retract the awnings for wind gusts. It is recommended that you monitor your awnings in gusty wind or heavy rain situations. You should also retract them if you are going to be away from your unit for an extended period when there is the possibility for wind or rain storms to minimize the possibility of damage.

## “Oasis” Entry Door Awning

The “Oasis” entry door awning is a power operated awning. To extend the awning, press the “Extend” button on the switch plate. To retract it, press the “Retract” button. Please note that both buttons must be held down as the awning travels in or out. It will not extend or retract automatically.



## Window Awnings

Also standard on your unit are the matching window awnings. They are operated as all the power awnings on your unit are. Use the appropriate switches to extend or retract the awnings as desired, and **always check for clearance** on the exterior of the unit to be certain nothing will interfere with their deployment.



## Chapter 7

# ELECTRICAL FEATURES

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## GENERAL INFORMATION

There are two electrical systems in your coach. They are the 12 volt DC system and the 110 volt AC system. Most standard appliances require 110 volt electricity while the majority of the lighting and some accessories used in recreation vehicles are powered by 12 volt electricity. The power for the 12 volt system is supplied by the coach batteries, which are charged by the charge circuit in the inverter, or the engine alternator while in transit. The power for the 110 volt systems is supplied by the power cord when the unit is connected to an outside power source or by the generator. The inverter can also supply 110 volt power. It will transform 12 volt “DC” (Direct Current) electricity from the batteries into 110 volt AC (“Alternating Current”) power for basic appliances and accessories.



### CAUTION

Failure to turn off the 120 volt appliances when starting or stopping the generator or plugging in or unplugging the unit from shore power may damage the transfer switch and/or electrical appliances.



### WARNING

#### **Use of “Adapter” cords with the RV shore power cord.**

Your King Aire was manufactured with a 50 amp electrical breaker box and electrical system. The shore power cord has 4 prongs and is designed for use with 50 amp service. To provide the correct amperage into the RV, and to assure the operation is as designed, it is important that they be plugged into the correct type of receptacle.

**NEWMAR CORPORATION DOES NOT RECOMMEND USE OF “ADAPTER”, “CHEATER”, OR “DOG BONE” STYLE CONNECTORS THAT WILL MODIFY THE EXISTING SHORE POWER CORD TO A DIFFERENT STYLE OF OUTLET. USE OF THIS TYPE OF ADAPTER WILL GREATLY REDUCE THE AMOUNT OF AVAILABLE CURRENT IN THE UNIT, AS WELL AS CREATE THE POTENTIAL FOR ELECTRICAL FAILURE AND / OR FIRE. NEWMAR CORPORATION CANNOT ASSUME LIABILITY FOR FAILURES OCCURRING TO THE RV, ITS ELECTRICAL SYSTEM, OR ANY OF ITS COMPONENTS FROM THE USE OF ANY ELECTRICAL ADAPTER.**

## 110 VOLT AC SYSTEM

The 110 volt AC system in your unit is designed to provide safe power for operating AC powered appliances and accessories in your unit. It is wired as a 50 amp, single phase system. Incoming power is supplied to your unit from one of three sources:

### **Shore Power Cord**

The “shore power” cord supplies electricity to the coach via the connection at the campground post.

### **Generator**

The generator supplies AC current to your coach when running. Your generator is hard wired into the “Automatic Transfer Switch”, which routes power into the breaker box and beyond to the accessories it powers.

### **Inverter**

The inverter is designed to invert DC power from the house batteries into AC to operate the applicable appliances and accessories. The inverter also has a charge circuit that will recharge the house batteries when AC is present from the shore power cord or generator.



## Incoming AC Power

The incoming power from the generator or shore power cord is routed to the main breaker panel. The source is selected by way of an “Automatic Transfer Switch”. When 110 VAC is present on the incoming legs, the Automatic Transfer Switch will select that as the power source, and will switch automatically to it.



### IMPORTANT

If power is supplied to the system by both the Genset and shore power cord, the automatic transfer switch will select the generator input by default. By prioritizing the generator circuit, power will always be available as long as the generator will run, regardless whether there is access to shore power. If the unit is plugged into a shore power outlet at a campground, and the generator is started, the automatic transfer switch will default to the generator circuit.

To connect the unit to 110 volt shore power, first make sure all of the breakers are in the off position. This is done to avoid a power surge. Unwind the power cord from the electrical compartment. The standard electrical service in this unit is 50 amps with a flexible cord. Check to make sure the pins in the outlet are oriented correctly, that they match the power cable, and that they are in good condition. If there is a circuit breaker switch at the plug, it should be turned OFF before making the connection. Insert the plug completely into the outlet and turn the circuit breaker on. Close and lock the electrical compartment door to keep the contents clean, dry, and secure. Close the cover on the power box, if equipped, to avoid an unintended disconnection and to keep contents clean. Switch the main breaker to the ON position. The 120 volt system will energize all 110 volt circuits and outlets when the main breaker is turned on.



### IMPORTANT

It is important to inspect the shore power cord before and after each use. If the cord or plug shows any signs of damage, either from abrasion or heat, or if the pins are loose, or the insulation is damaged or pulled back at all, it should be inspected by a qualified technician for potential replacement. NEVER use a shore power cord that has exposed wires or signs of heat damage (melting insulation or cover, misaligned pins, etc.).

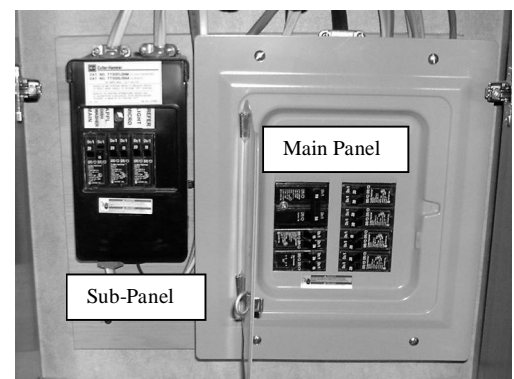
## 110 VAC Breaker Boxes

### Main Breaker Box

The 110 volt and 12 volt breaker boxes are generally located in the bathroom cabinetry. Circuit breakers and fuses are installed to protect the electrical system from overloading. Do not attempt to change the circuitry or add appliances yourself. Please consult an authorized Newmar Service Center.

### Inverter “Sub-panel” Breaker Box

The circuits that the inverter supplies power to are independently protected in a smaller “sub” panel located adjacent to the main breaker box. This panel is powered by the inverter. When the unit is plugged into shore power or the generator is running, the current passes through the inverter to supply power to these circuits. When there is no external AC power source, the inverter powers these circuits with the house batteries. Note that every appliance and accessory in your unit is not on the Inverter “Sub” Breaker box. Only those appliances in the Inverter “Sub” Box will be powered by the inverter.





## Generator

The generator in your unit is located between the front frame rails, and is mounted on a hydraulic cradle that will extend or retract the generator at the touch of a button. It is wired into the “Automatic Transfer Switch”, and will power all the 110 volt AC circuits in your King Aire. The generator can be started from the dash switch, or remotely started at the generator itself, or automatically started and stopped by the “Auto Genset Start” system.

Located on the generator remote start panel (at the generator) are two main breakers for the two output legs of the generator wiring. Please note that on start up, there is a momentary delay in the “Automatic Transfer Switch” engaging to pass the electricity on from the Genset.

The generator in your new King Aire runs on the same diesel fuel as your main engine. The diesel fuel is drawn through a separate supply tube that is positioned in the tank in a manner that will not allow the generator to draw fuel and run if the fuel drops below  $\frac{1}{4}$  tank.

Please refer to the generator manufacturer’s operating guide for specific information on maintaining your new Genset. Regular oil changes and other maintenance performed at the prescribed intervals will greatly extend the life of your generator.

## Inverter

Your King Aire is equipped with a 2800 Watt “Pure Sine Wave” inverter. An inverter changes DC power from the house batteries into AC current to operate most of your appliances. When 110 VAC is present from the generator or shore power, internal switching in the inverter passes the electricity through to the appliances it controls, and turns on a charge circuit to recharge the batteries. The inverter is controlled by the remote panel located in the front overhead cabinet.

The ME inverter / charger has two modes of operation: “Inverter” mode (providing power to the appliances from the house batteries), and “AC” mode (running from shore power or if your Genset is running). When your inverter is in the “AC” mode, it passes power directly to your appliances, as well as recharges the batteries using a three stage battery charger (“Bulk”, “Absorption”, and “Float”). This approach to battery charging provides rapid and complete charging cycles without placing undue stress on the batteries. Inverter operation is completely automatic.

The Inverter and Auto Gen-Start System are controlled through the Touch Screen Multiplex System described in Chapter 3. The Touch Screen system is designed to emulate the controls provided by the Inverter manufacturer, and perform essentially the same functions as the remote control panel they describe in their literature.



## IMPORTANT

Inverters draw power from the “house” batteries to provide current to most of the appliances and accessories in your unit without having to plug into shore power or run your generator. Because they use DC power from the batteries to do that, energy consumption from those batteries is high, and increases significantly as more appliances are added to the load. To extend battery life, minimize the number of appliances operating at any given time. All AC operated appliances have a label attached to tell how much power they consume. Be sure to allow sufficient time for recovery / recharging between battery use cycles.

## Information provided on Multiplex Touch Screen

Refer to Chapter 3 for information regarding operating the inverter via the Multiplex Touch Screen System.



## **Inverter Modes of Operation**

### **Inverter Mode**

Whenever the AC power from the shore power cord or the generator is no longer sensed, the inverter automatically switches to battery power, with no interruption to your appliances.

### **A/C Shore Power Mode**

Whenever incoming “AC shore power” is sensed, the inverter automatically transfers to the shore power line with only minimal interruption to your appliances.

### **Bulk Charge Mode**

When the inverter is running on nominal AC input (shore power / Genset), it charges the batteries. During bulk charging, the inverter supplies the maximum amount of current possible to the batteries. As the battery voltage rises to a set value (typically around 14.1VDC for GEL, 14.3 VDC for AGM, and 14.6 VDC for liquid lead acid), the charger will then switch to the next charging mode.

### **Absorption Charge Mode**

As the inverter continues to run on nominal AC input (shore power / Genset), and the batteries have been successfully “bulk” charged, the inverter will enter the second stage of charging. The inverter’s green LED will flash once every second (fast flash) to indicate absorption charging for 1 – 3 hours, depending on the battery bank selected (see separate ME “Remote” manual for selection information). The charger then switches to its final mode.

### **Float Charge Mode**

The batteries are held at the “float charge” voltage (13.6 VDC GEL, 13.1 VDC for AGM, and 13.4 VDC for liquid lead acid) as long as AC is present at the inverter’s input. Float charging reduces battery gassing, minimizes watering requirements (for flooded batteries) and makes sure the batteries are maintained at optimum capacity.

### **Battery Saver Mode**

This mode is designed to keep batteries fully charged over long periods (storage) without drying them out. When the charger is in the “float” mode for over 4 hours with no DC loads running, the charger will turn off. If the battery voltage dips below 12.5 VDC, the charger will automatically initiate the “Float” charge mode to return them to full charge.

## **Inverter Fault / Alarm Conditions**

### **Fault / Alarm Conditions**

The inverter monitors the incoming AC power (shore power / Genset), the batteries, and itself. Whenever a condition occurs that is outside the normal operating parameters, the inverter will take the necessary steps to protect your appliances, batteries, and itself from damage.

### **Low Battery**

Whenever the battery voltage reaches a low level (programmable from 9.0 VDC to 11.0 VDC), the inverter will initiate “Low Battery Cut Off” (LBCO), which automatically shuts the inverter down, along with all connected loads, to protect the batteries from over discharge damage.

### **High Battery**

As the inverter is charging, it constantly monitors the batteries. In the event the battery voltage approaches too high a level, it automatically turns off the battery charger to prevent damage to the batteries. The shut off threshold is approximately 15.5 VDC.





## IMPORTANT

High battery voltage may be caused by excessive voltage from the alternator, solar panels, or another external charge source. Be sure to correct the cause of the overcharging condition to prevent damage to the batteries and electronic equipment in your King Aire. The inverter must be manually restarted after this fault.

### Overload

During inverter and AC shore power / Genset operation, the inverter monitors both AC and DC circuits. In the event of a short circuit, or an overload condition, the inverter will shut down.

### Over Temperature

During inverter operation, if the inverter becomes overheated, it will shut down to protect itself from damage.

### Inverter Switch

This is used to switch the inverter function on or off. The screen will indicate “Inverter On” and “Inverter Off” status.

### AGS System

The AGS system (Auto Generator Start) is designed to, when activated, start and operate the Genset in your King Aire under certain circumstances, and within certain programmable parameters. Using data you input, it can be set to start and run the air conditioners when interior temperatures get too high, or start the Genset to run when battery voltage dips below a certain level. The primary programming for this system is performed with the Multiplex Touch Screen system. For detailed operating instructions refer to the Multiplex information in Chapter 3.



## WARNING

Set the AGS to “AutoGenSt OFF” before performing any service work to the generator or coach electrical systems. Damage, injury, and death may result from unexpected or inadvertent starting of the generator.



## IMPORTANT

It is recommended that the “AutoGenSt OFF” system be left off while your unit is stored for extended periods, or if you will be away from the unit for extend periods. This setting is also recommended any time the coach is plugged into shore power.

## 12 VOLT DC SYSTEM

### General Information

There are two separate 12 volt DC electrical systems on your King Aire; one for the “chassis” portion, and the other for the “house” portion.

The “chassis” electrical system uses DC voltage to operate chassis related electrical accessories and lights, such as the headlamps, dash instrumentation, engine starting and management circuitry, and so on. This system includes a set of chassis batteries, and is charged in transit by the alternator. The chassis batteries have a disconnect switch located in the rear engine compartment.



The “house” electrical system uses DC voltage to operate all the house related DC lights and accessories, such as the interior lighting, ceiling vents and fans, slide outs, the water pump, and so on. The house electrical system also supplies the power (through the house batteries) for the inverter to operate. When 110 AC current is present, the inverter has a charge circuit that engages to charge the house batteries.

Though separate in operation, the two DC electrical systems are tied together through a battery isolator circuit. This circuitry is designed to keep the systems separated under most operating circumstances, but still allows them to be tied together under certain conditions. This is accomplished through a component called the Bi-Directional Isolator Relay Delay (BIRD). This component allows the two separate battery systems to be tied together for charging purposes or for “boosting” purposes if one set of batteries is low.

In transit, the alternator on the engine is the power source for charging batteries. The function of the “BIRD” allows the chassis batteries to be recharged off of the power coming from the alternator. Once the chassis batteries have been recharged (approximately 13.3 VDC), the “BIRD” will turn on circuitry that will then allow the house batteries to be charged in transit by the alternator. This allows both sets of batteries to charge while the coach is in transit.

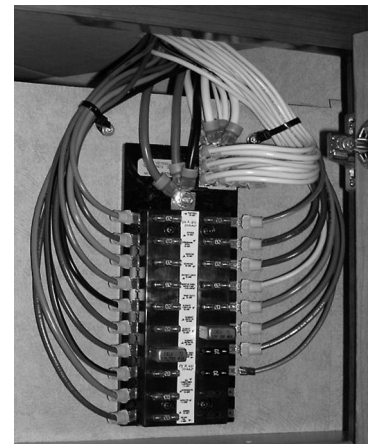
When the RV is parked (with the engine off), and is connected to 110 VAC power (either generator or shore power), the “charge circuitry” in the inverter will engage, and will charge the house batteries. Once the house batteries have reached full charge (approximately 13.3 VDC), the “BIRD” will again engage circuitry that connects the two sets of batteries together, allowing the charge circuit in the inverter to charge the chassis batteries as well. This “Bi-Directional” operation works to keep both sets of batteries charged to capacity, regardless of whether it is in transit, or parked with incoming AC current.

## 12 volt DC Circuit Protection

### House Circuits

The “house” fuse panel is located in a cabinet in the bathroom. This panel contains fuses for most of the Newmar installed 12 volt DC accessories, including interior lighting, vents and fans, and so on. The fuse panel uses conventional “spade” type automotive DC fuses. Fuse amperage is labeled on the end of the fuse for easy viewing and replacement.

The “dash” fuse panel is located in the left front exterior compartment. This panel contains relays and fuses that protect Newmar installed dash accessories, including dash lights, blower fan, auxiliary accessory ports, and more. This panel uses standard “spade” type automotive fuses. The relays on this circuit board are not replaceable; they are permanently mounted to the circuit board and should be inspected only by a qualified technician prior to having any work done to them.



### IMPORTANT

NEVER replace a fuse with a higher amp capacity fuse than was originally installed. This compromises the circuit protection by allowing more amperage to flow through than the circuit was designed for, and could lead to failure of the component being operated, overheating of the wiring, or fire. Always use the same amperage fuse when replacement is necessary.



## Solar Panel

Your unit is equipped with a solar panel on the roof. This panel is part of the “Chassis Battery” circuitry; when it is charging, the charge goes to the chassis batteries.

## Chassis Circuit Protection

The chassis 12 volt DC circuit protection is located in two primary areas on your King Aire. First, the front electrical panel, with fuses and relays, is located in the LF basement compartment, along with the Newmar dash fuse panel. This panel consists of fuses and relays that control engine start up and operating functions. It is recommended that these circuits be serviced **ONLY** by a trained Spartan chassis technician.

The first basement compartment aft of the right rear tires houses the chassis diagnostic center. This service area contains diagnostic ports, relays, and circuit protection for the engine and transmission. This compartment should be serviced **ONLY** by a trained Spartan chassis technician.

## Batteries



Charging batteries give off gasses as the fluids inside “boil”. Because of this, it is critical to check the battery fluid levels regularly, particularly after extended periods of heavy use. Be sure to top off any battery that is showing signs of depleted fluid levels.

As previously mentioned, your King Aire has two different sets of batteries. One set of batteries operates the Newmar installed “house” lights and accessories, and the other set starts the engine and operates the “chassis” electrical systems. Though similar in function, they are distinctly different battery types and arrangements. Replacement batteries should be the same as was replaced. Any time one battery in a set of batteries is to be replaced, it is important to have all the batteries in the system tested to assure all are okay. If one defective battery is replaced, while leaving another weak or defective battery, lowered performance, or ultimately damaging the new or good batteries can be the result.

## Solar Panel

Your King Aire is equipped with a roof mounted solar panel to aid in charging the chassis batteries. Located on the right side dash panel adjacent to the 12 volt power outlets dash is a charge indicator light. This LED light will glow when the solar panel is charging. It is not uncommon for it to not glow; the built in regulator will only allow the panel to charge when voltage dips below a pre-set level.

## House Batteries

The standard battery arrangement in the King Aire is a set of four (4) BCI “group size” GC-2 6 volt DC batteries, delivering a 450 amp hour reserve. If your King Aire is the “all electric” model, there will be eight (8) of the same batteries, significantly increasing the available reserve. Douglas batteries for operation of the chassis electrical systems. The King Aire comes with two (2) “group size” 37 - 12 VDC batteries with 960 cranking amps.

## The All Electric King Aire

If your King Aire is equipped with the “All Electric” option, it is designed to operate solely on electricity, and will have no Propane gas tank or Propane fired appliances. Additional changes will include a larger bank of batteries (as previously mentioned), an electric range, and an electric refrigerator.

Note that because this unit does not have Propane, the refrigerator needs 110 AC current all the time to operate. Because of that, the refrigerator circuit is on the inverter. This is **ONLY** the case in the “all electric” King Aire. In



all other King Aire models (depending on what refrigerator is optioned in), where Propane gas is available, the refrigerators operate on Propane gas as well as electricity, so the need for inverter power to the refrigerator is not necessary.



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# FRESH WATER SYSTEM

## IMPORTANT

Ease of operation was the key element in the design of the water compartment and plumbing in your unit. It is very important that you read and understand all the operating instructions for the plumbing system prior to using your unit. Failure to connect and operate the system correctly can result in damage that is not covered by the Newmar limited warranty.

## IMPORTANT

The fresh water system in your King Aire is designed to operate at a maximum of 60 PSI. Water pressure levels above that can damage the fresh water plumbing in your unit. If your travels take you to a destination where water pressure is above 60 psi, you must install a pressure regulator to reduce the incoming pressure, or fill the fresh water tank and use the internal water pump to supply water to your unit.

### **Kitchen Sink**

The kitchen sink installed in your unit is a double-bowl design equipped with two sink covers to provide additional counter space when not in use. Cleaning care consists of washing with mild detergents and a soft cloth. Avoid using “S.O.S.” type cleaning pads because they may scratch the surface. The faucet in the kitchen is a single-handle faucet with a pullout spout.

### **Bath Sink, Shower & Accessories**

Use care when cleaning the bathroom sinks to prevent scratching the surface. The bathroom accessories include two towel bars and a tissue holder. The faucet in the bathroom consists of a metal body with a brass finish. The shower installed is a combination fiberglass tub/shower with a glass shower door. The white tub faucet with shower head, hose and bracket coordinate with the sink faucet. An optional assist handle may be installed in the tub/shower.

### **Multiplex Touch Screen Monitor Panel**

The Multiplex Touch Screen Monitor Panel allows you to check the approximate levels in the fresh, gray, and black water holding tanks, as well as Propane gas level (on units with the “All Electric” option, the monitor panel will not have a Propane gas reading).

There is an additional Touch Screen Monitor Panel located in the basement water compartment. This additional screen is designed just to give readings for all the holding tanks in the unit. No other functions (inverter, Genset, HVAC, etc.) controlled by the main Multiplex Touch Screen are accessible by the auxiliary Multiplex Touch Screen Monitor Panels.

### **Water Pump Operation**

Your King Aire has a fully self contained fresh water system with a fresh water storage tank, and a “demand” style 12 volt DC electric water pump. This pump is designed to build pressure in the fresh water plumbing in your coach, operating only when there is a demand for water on the system. When any water pump switch is turned on, the water pump will come and build pressure in the system, and will shut off as soon as the system is correctly pressurized. When a faucet is opened, the pump will turn on and operate as necessary to maintain the preset pressure in the system.



## Water Pump

The water pump is self-priming and totally automatic, operating on demand whenever water is required. The water pump is used to pressurize the fresh water system when the unit is not connected to city water. The switches to this pump may be located in the bathroom, on the monitor panel, and in the water works compartment. To start the pump, follow these instructions:

1. Fill or partially fill the fresh water supply tank.
2. Open the kitchen and bathroom faucets.
3. Turn the water pump switch on and allow the water to fill the water line and the hot water heater.
4. Close each faucet after it delivers a steady stream of water (close the cold water first). Leave the hot water faucets on until they also deliver a steady stream of water. This will ensure that the water heater is filled with water.
5. The water pump should stop running once all faucets are closed.
6. The pump is now ready for automatic operation. The pump will run when a faucet is opened and stop when a faucet is closed.
7. Never allow the pump to run for long periods of time without water in the supply tank. Pump damage or blown fuses may result.

All of the water should be drained from the fresh water system when the unit is not in use for more than one week. For more detailed information regarding the water pump, refer to the water pump manufacturer's brochure in your Owner's Information Package.

## Exterior Water Compartment

The heart of the plumbing in your King Aire is the exterior water compartment. All plumbing functions can be controlled from this location. Additionally, the connection points for city water, sewer rinse, and holding tank draining are all located in this compartment.

For your convenience, several items have been placed in this compartment to help keep you and your plumbing compartment clean. Located in this compartment are a towel holder, a liquid soap dispenser, an exterior shower with flex hose, and an exterior water spigot where a conventional "garden" style hose can be connected.





## City Water Connection / Hose Reel

The city water connection is made with the white hose on the red reel in the left side of the water compartment. In conjunction with the “Fresh Water Fill Valve”, this water source is used for pressurizing the plumbing in your unit, and filling the fresh water demand tank. The reel contains 35’ of water hose.

The hose reel deploys manually by simply pulling the hose outward from the compartment. Once the desired length of hose has been reached, a tug on the hose will lock the reel in place. Spring tension on the hose reel provides power for retraction; pulling against the hose reel will release the latching mechanism and allow the hose to retract.

### CAUTION

**DO NOT** release the fresh water hose during the retraction process. Spring tension on the hose reel can cause the hose to retract very quickly, and can cause physical harm or injury to you and damage to your coach.

## Fresh Water Valve Operation

The rotating “Fresh Water Valve”, located in the center of the water compartment is used to pressurize the fresh water system in your unit, as well as to fill the fresh water demand tank. When the unit is connected to city water, the “Fresh Water Valve” is used to pressurize the fresh water plumbing in your unit, or fill the fresh water tank, or both. The panel is clearly labeled; simply rotate the “Fresh Water Valve” to the appropriate position to perform the desired function. You can monitor the fresh water tank via the small “Multiplex” display unit located in the basement water compartment.



## Domestic Hot Water

The hot water in your unit is heated by the Oasis hydronic heating system. Turning the 110 heating element on will usually provide sufficient hot water for most household chores. To operate an appliance that uses hot water, or to assure plenty of hot water for showering, turn on the Oasis boiler or heating elements using the E-Plex Touch Screen controls located in the front overhead cabinet. Both heat sources (boiler and heating elements) can be used at the same time if desired for maximum water heating capability.

## Water Filtration System

Your King Aire was manufactured with a fresh water filtration system. This system uses extruded carbon filter cartridges to remove sediment and certain impurities from the incoming water supply. The filter assembly is located in the basement water compartment.

To replace the filter cartridge, turn off the water supply to the RV (at the city water connection). Unscrew the filter canister by rotating it clockwise. Replacement filter cartridges are available through your Authorized Newmar Dealer; have them order part number 03738.

Insert the new filter cartridge, positioning it so the opening in the bottom of the filter seats on the molded ring at the bottom of the canister. Reattach the canister to the filter housing by rotating the canister in a counter clockwise





direction. When replacing the filter, make certain the rubber “O-Ring” seal is properly positioned in its groove in the cartridge housing. An improperly seated or missing seal will cause leakage around the perimeter of the filter housing. Use caution not to over tighten the canister when attaching it back to the housing.

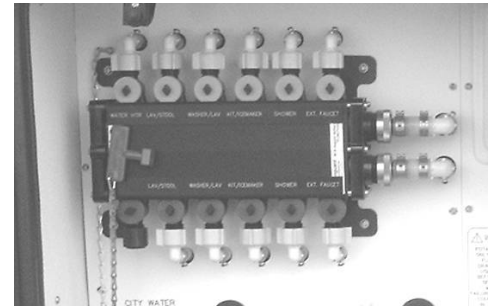
## IMPORTANT

DO NOT ALLOW WATER TO FREEZE IN THE WATER FILTER CANISTER. Freezing will crack and permanently damage the filter housing and associated plumbing. ALWAYS REMOVE THE FILTER CARTRIDGE PRIOR TO WINTERIZATION.

### Water Distribution Manifold

Located in the upper left hand corner of the exterior water compartment is the water distribution manifold. The primary hot and cold water lines for the unit fed to this distribution center, and through a series of valves, supply water to the multiple plumbing systems in the unit.

In addition to offering greater organization and more balanced flow to the fresh water system in your unit, this distribution manifold offers the flexibility to allow you to shut off sections of the system while still using others. The blue knobs at the top are cold water supply valves; the red ones at the bottom are hot water supply valves. A tool is supplied with which you can open and close the valves as or if necessary.



## WASTE WATER SYSTEM

### General Information

The waste drainage system was designed to provide adequate and safe storage and/or disposal of waste materials. All of the materials used in the making of this system are tested by a nationally recognized testing laboratory. The drainage system uses plastic piping and fittings connected to the sinks, toilet, and holding tanks. This provides for their drainage to an outside termination. The unit should be reasonably level for best operation of the system. There are two separate waste systems. The gray water system is for waste water from the sinks and shower. The black water system is generally for sewage waste from the stool. Each tank has its own control valve, and both tanks drain through the sewer drain hose.

### Toilet

The standard toilet in your unit is a china stool. The toilet operates with water from either the fresh water tank with the water pump on or the city water supply. Before using the stool, add water to the bottom of the tank. Refer to the “BLACK WATER TANK” instructions in this chapter. The stool flushes waste directly into the black water holding tank. The stool uses high velocity water injection to produce a swirl effect in the bowl. The greatest problem that causes stool solids to build up in the holding tank is lack of liquids. When using your stool, it is wise to fill the stool 3/4 full of water. This will help to wash the solids away from directly below the stool and to ensure complete dumping of the holding tank. To add water to the stool bowl, press the button for “power fill” until the desired water level is reached. To flush the stool, push down on the lever until the water swirls. A small amount of water should remain in the bowl.



The stool should be cleaned regularly for maximum sanitation and operational efficiency. Clean the toilet bowl with a mild bathroom cleaner. Do not use chlorine or caustic chemicals, such as laundry bleach or drain opening types, as they will damage the seals in the toilet and dump valves.

Refer to the toilet manufacturer's owner's manual in your Owner's Package for complete instructions and a troubleshooting guide.

## **P-Traps**

Each of the sink drains, the shower drain, and the washing machine drain (if equipped) has a water trap (P-Trap) to prevent holding tank odors from entering the coach. These traps must have water in them in order to trap the odors. While traveling, the water may splash out of the sink and shower drains. While stored, the water may evaporate allowing an odor to enter the coach. If this occurs, run water from the faucet into the drain, allowing water to fill the trap.

## **Black Water Holding Tank**

The black water, or sewage, holding tank is located directly beneath the toilet. Before using the stool, you will need to treat the tank with water that is mixed with an odor controlling chemical. These chemicals are readily available at any RV supply store. Be careful not to spill the chemical on your hands, clothing, or the carpet because it may cause a permanent stain. Add water to the toilet, and add chemical to mix with the toilet water. Continue running water into the toilet and down through the tank until at least one inch of solution is directly under the toilet. Discontinue adding water; the waste tank is now ready for use.



## **CAUTION**

Use only approved RV odor controlling chemicals in the holding tanks. Products containing ammonia and petroleum will damage the ABS plastic holding tanks and seals.

## **Gray Water Holding Tank**

The gray water holding tank is located in the underbelly of the unit. It is primarily used for the drainage from the kitchen and bath sinks and the shower.

## **Waste Water Disposal**

Both of the holding tanks terminate in a valve arrangement that permits draining each tank separately or together. It is recommended to drain the black water tank before the gray water tank. This will allow the water from the gray tank to wash the black water residue from the drain lines and hose. The valves that open to release the water are called gate valves. The blade that closed the opening in the sewer drain pipes is connected to the T-handle to release the contents of the tank(s) when pulled. The sewer line must be securely capped during self-containment use to prevent leakage of waste material onto the ground or pavement. Do not pull the holding tank gate valve open when the protective cap is installed on the pipe. Always drain the tank into an acceptable sewer inlet or dump station.

The holding tanks should only be drained when they are at least 3/4 full. Doing this will provide sufficient water to allow the complete flushing of waste materials in the drain lines and hose. If the tanks are not 3/4 full, add enough water to allow for sufficient flushing.



## WARNING

Holding tanks are an enclosed sewer system and must be drained into an approved dump station. Both black and gray water holding tanks must be drained and rinsed thoroughly on a regular basis in order to prevent the accumulation of harmful or toxic materials. Whenever possible, drain the holding tanks prior to traveling. The carrying capacity of your unit will be reduced if water is left in the black or gray tanks.

To empty the waste water tanks, connect the adapter to the drain hose. Use the adapter supplied with your unit. If the adapter is lost or broken, one can be purchased from any RV supply store. Once you have placed the adapter on the drain hose, it can remain there for the life of the hose. One end of the hose threads up through the hole in the bottom of the service compartment, and the other end of the hose feeds into the sewer at the dump station. Unscrew the cap off the drain. Connect the hose with the adapter in place to the drain fitting. Open the gate valve all the way by pulling on the T-handle. The tank will start to drain as soon as the T-handle is pulled. After you have drained the black water tank, immediately drain the gray water tank. Doing this helps to flush the black water from the sewage hose.

When both of the tanks are empty, flush them with a fresh water rinse before you close the valves. The gray tanks are easily flushed by pouring a couple of gallons of water into a sink drain. The drain outlet is engineered for quick release of the drain hose adapter. Always close the gate valves and secure the end cap to prevent leakage while in transit. After draining the black water tank, it is recommended to add a few gallons of water and a holding tank deodorant (such as Thetford Aqua-Kem) to help control the odor and break down the solids. Follow the instructions given on the holding tank deodorant package.

When using dump stations for draining the holding tanks, please keep other travelers in mind by practicing good housekeeping. Leave the dump stations in good order. Above all, do not pollute.

### Camping with Sewer Hook-Up

When camping at parks with sewer hook-up, it is important to keep the black water holding tank gate valve closed at all times, except when dumping. The gray tank can be kept open while hooked to a sewer connection but again, the black water tank must be kept closed. This is done so that an ample supply of liquid remains in the tank to provide a smooth flow through the gate and drain valve when dumping. Sufficient liquid in the tank causes a swirling action that should take any accumulated solid wastes with it. Accumulation of solid wastes in the black water tank can be avoided by keeping the gate valve closed when connected to the sewer hook-up. If the valve is left open, solid wastes may accumulate in the tank. This may eventually result in costly repairs.

## CAUTION

The gray tank valve must be in the open position when operating the optional washing machine.

### Sewage Tank Rinse

To aid in maintenance and cleaning, the sewage tank on your King Aire is equipped with a “Sewage Tank Rinse”. This system uses a specially designed spray head permanently located in the sewage tank that cleans the inside of the tank when a water supply is connected.





## IMPORTANT

Always drain the sewage tank PRIOR to rinsing. NEVER rinse a sewage tank that is full. The sewage drain MUST be open while rinsing the sewage tank, and the drain hose MUST be positioned to drain into an approved sewage dump station. Failure to open the valve will cause the sewage tank to fill with water, and can cause damage to your plumbing and interior.

The Sewage Tank Rinse should have its own dedicated water supply hose. **NEVER** use a hose that will be used for drinking or other uses. Attach the hose to the external water supply, then to the Sewage Tank Rinse connection. Attach the sewer drain hose to the outlet, and place the open end in an approved sewer “Dump Station”. Open the sewer drain gate valve. Turn on the external water supply to rinse the tank. Allow the water to rinse the tank for a minimum of 3 – 5 minutes to insure it is clean.

## Winterization

It is critical to winterize the plumbing in your unit any time it is going to be either stored in temperatures below freezing, or used only on a limited basis in cold weather. Winterization is simply the removal of all of the water from the plumbing system. It also includes adding potable antifreeze to at least portions of the systems (P-Traps) to help prevent freeze damage.

Located in the lower right hand corner of the basement water compartment is a label identifying the steps used to winterize the fresh water system in your King Aire. The label reads as follows:

Drain Fresh Water Tank and Hose Reel  
Close “Low Point” Hot and Cold Water Valves  
Close Top “A” Valve on This Panel  
Open Valve “B” Below It  
Insert Hose into Container of Potable Antifreeze  
Turn On Water Pump  
Open All Faucets  
Flush Toilet  
Open All Drains



## WARNING

**USE ONLY POTABLE “RV” ANTIFREEZE IN THE FRESH WATER SYSTEM OF YOUR KING AIRE. AUTOMOTIVE ANTIFREEZE CONTAINS ETHYL GLYCOL, WHICH CAN BE HARMFUL OR FATAL IF INGESTED.**

This basic procedure allows you to drain as much of the water out of the system as possible, then adds safe antifreeze to the lines, faucets, p-traps, and tanks. It is important to remember to open all the fresh water drain valves (for the hot and cold water lines, the hose reel, and the fresh water tank) prior to pumping potable antifreeze through the system. Always remember to turn the water pump off when winterization is complete.

The following is the detailed procedure for winterizing your King Aire:

1. Remove Filters and bypass the water lines on them (under cabinetry inside unit and in basement water compartment).
2. Open all “Fresh Water” related drains (hot and cold low points and fresh water tank). Drain as much water as possible; close all drain valves.
3. Set “Fill Valve” to “City Water / Auto Tank Fill” position (pointing up).



4. Attach compressed air fitting to “City Water Hose” (Reel). Set air pressure to 40 psi. Apply 40 psi air pressure to this setting for at least 30 seconds. (This forces water out of any lines and pockets that may not get antifreeze in a later step).
5. Go to exterior refrigerator service panel, and access the water valve / solenoid. Remove supply line and flex line to ice maker. Drain both lines until no more water comes out. The air pressure in the lines will force the existing water in this line out. Reattach water lines and close water supply valve to the refrigerator.
6. Switch “Fill Valve” to the “Manual Fill” position (to force any water out of the additional lines and valves between the tank and water pump). Apply 40 psi of air pressure to this valve position for at least 30 seconds.
7. Turn off air pressure and remove air hose from “City Water” connection. Switch “Fill Valve” to “City Supply / Manual Override” for the rest of the winterization procedure.
8. In the exterior Water Compartment. Engage “Winterization” valves by closing the top “A” valve, and opening the “B” valve below it. Put the end of the clear “winterization” hose in a container of RV “Potable” Antifreeze. Turn on the water pump.

**NOTE: APPROXIMATELY 5 – 7 GALLONS OF POTABLE RV ANTIFREEZE ARE REQUIRED TO WINTERIZE A KING AIRE.**

9. Start with the farthest faucet from the water compartment (usually the kitchen sink faucet). Open every valve (don’t forget drinking water dispensers and both hot and cold sides of the faucet) and run until RV antifreeze flows freely from each. Close that faucet and move to the next faucet until all have been winterized. **DO NOT** forget the interior and exterior showers, and the toilet.
10. Winterize appliances as necessary:
  - A. Winterize the dish washer (if so equipped) by running the appliance through a partial “rinse” cycle. Potable antifreeze will run into the wash drawer (where the dishes are), allowing antifreeze to the fill and drain areas of the appliance. It is important to run the entire rinse cycle so that the fill valves and drain valves and lines receive antifreeze. Note that this appliance only has a single “hot” water connection.
  - B. Winterize the Washer / Dryer (“separates” or single unit) by running a complete rinse cycle in both hot and cold settings. Once the washer has drained the antifreeze, turn the appliance off, lift the lid, and add approximately one gallon of RV antifreeze to the wash tub.
  - C. The ice maker was winterized during the initial steps of the procedure.

## Sanitizing

To assure complete disinfecting of your fresh water system, it is recommended that the following procedure be followed on a new system, on one that has not been used for a length of time, or one that may have become contaminated. This procedure is also recommended before & after long periods of storage, such as over the winter months:

1. Drain the fresh water tank by opening the drain valves. There is one valve per water tank. All of the faucets should be in the closed or off position.
2. Prepare a chlorine solution using one gallon of water and 1/4 cup of chlorine bleach (5% sodium hypochlorite solution). Prepare enough of the chlorine solution to administer one gallon of solution for every 15 gallons of tank capacity. For sanitizing this unit, prepare 4 - 1/2 gallons of the chlorine solution. This mixture puts a 50 PPM (parts per million) residual chlorine concentration in the water system that will act as a quick kill dosage for harmful bacteria, viruses and slime forming organisms. Concentrations higher than 50 PPM may damage the water lines and/or tank.
3. Once the fresh water tank is empty, close the drain valves on the water tank.
4. Remove the “whole house” filter element from the housing in the water compartment, and fill the housing with the chlorine solution. Re-attached the housing and pump the solution into the tank. Repeat this process



until the correct amount of solution is in the tank. Turn the tank fill valve from city water to tank fill. Turn on the water pump until all of the solution is pumped into the fresh water tank.

5. Turn off the water pump. Close the valve to the solution. Open the valve from the tank to the water pump. Fill the water tank with the city water tank fill (or by using the same method as was used to put the sanitizing solution into the tank). Remove the water filter (from the drink dispenser faucet, if installed) and install the by-pass pipe to allow the sanitizing solution access to the faucet. Open each faucet in turn including the kitchen faucet, bath faucet, inside and outside shower, turning on both the hot and cold, and flushing the stool until all of the air has been purged from the pipes and the water runs freely. The entire system will then be filled with the sanitizing solution.
6. Allow the 50 PPM disinfecting solution to stand in the system at least four hours.
7. Drain the system and flush with fresh water. The water system needs to be flushed with clean water repeatedly, if necessary, until there is no chlorine taste or smell left in the system. To remove any excessive chlorine taste or odor that might remain, prepare a solution of one quart vinegar to five gallons of water. Allow this solution to agitate in the tank by vehicle motion. Drain the solution and refill the tank with clean water.

### IMPORTANT

Make sure the chlorine bleach solution is thoroughly and completely purged from the plumbing before using the fresh water system. Also, never use alternative cleansers; only potable materials may be used in your fresh water plumbing system.







## Chapter 9

# AUDIO, VIDEO & OTHER ELECTRONICS

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## AUDIO / VIDEO FEATURES

### IMPORTANT

Some of the components mentioned in this section are optional and may not have been installed in your unit.

This section is designed to give clear operating directions on the many entertainment and convenience electronic components in your new King Aire as Newmar has installed them. It does not, however, give detailed instructions pertaining to every option and feature of the components described herein. For complete operating directions for each component, please refer to the manufacturer's information located in the literature bags that were provided with your unit.

### The Harmony Universal Remote

To simplify operation of the various electronic components in your King Aire, we have employed the “Harmony” universal remote. This remote will operate the following components:

- i Pioneer Surround Sound Stereo Component
- i Pioneer DVD Player
- i Sony LCD Television(s)
- i Video Selector Box (for switching, NOT for power)
- i Exterior Entertainment Center TV

These components can all be controlled either individually, or through the use of “macros”, which can be used to operate a number of electronic accessories together as a package. For example, if you want to watch a DVD movie in a home theater “surround sound” mode, one touch of the macro button turns all the applicable components on and sets the system for operation in that mode.

#### Watch TV

To watch TV on the front or mid body TV's, press the **WATCH TV** button at the top of the remote.

#### Watch a DVD movie

- i To watch a DVD movie and use the TV to control your volume, press the **MORE ACTIVITIES** button at the top right of the remote. Use the **NEXT** button to navigate through the screens until you come upon the **WATCH A DVD** function. Press the button that corresponds with this activity. This will activate all components needed to watch a DVD.

#### Watch a DVD movie w/ Home Theater

- i Press the **WATCH A MOVIE** button at the top left of the remote. This will activate all components needed to watch a DVD movie while using the home theater receiver as your audio source.

#### Listen to CD

- i Press the **LISTEN TO MUSIC** button on the top of the remote. This will activate all components necessary to listen to your CD's.





## Listen to Radio

- i Press the MORE ACTIVITIES button at the top right of the remote. Use the NEXT button to navigate through the screens until you come upon the LISTEN TO RADIO function. Press the button that corresponds with this activity. This will activate all components needed to listen to a CD.

i

If you have any problems, or if something is not functioning correctly, please press the HELP button. This will walk you through the steps necessary to make your entertainment system function properly. For more information on operating this remote please refer to the owner's manual or go to [www.harmonyremote.com](http://www.harmonyremote.com)

## Video Selector / Switch Box

The Video Switch Box in your unit is used to control the video signal flow throughout the coach. It allows you the opportunity to view satellite, DVD, or on-air video programs on any or all of the televisions in your King Aire.

Operation of the Video Switch Box is automated through the Harmony Universal Remote. Video source selection is automatic when the remote calls for a particular system to operate. For example, when you want to watch a DVD in the living room of your unit, selecting "Watch a DVD" function on the remote will automatically choose the DVD player as the video source for the TV in the living room.



### IMPORTANT

The Harmony Universal Remote will control all of the functions of the Video selector Box except turning the power on or off.

Manual video source selection can also be accomplished by using the video source selection buttons on the face of the box.

## Sony LCD TV

Your new King Aire has been equipped with at least one Sony LCD television. It can be operated either independently, or as part of a system when using the Harmony remote. When operating the TV independently, it can be manipulated through either the controls on the TV, or with the Sony supplied remote control.

To operate the TV independently of the system, press the power button on the front, or use the remote to power the TV up. Once the TV has been turned on, use the input selector on the TV, and the video switch box to choose the desired programming.



### IMPORTANT

TV's in the front overhead cabinet will not operate when in transit. Federal regulations require these TV's be inoperative while the vehicle is in use, so the power supply to this TV is switched off automatically when the ignition is on.

The Sony LCD TV(s) in your unit are HD (High Definition) compatible, meaning they are capable of displaying the resolution and clarity of High Definition broadcasts and video sources. To play these programs in HD, you will need an HD Decoder (available through a number of electronics stores and video service providers). Additional wiring may be required for HD programming to be decoded and played.



## Bedroom TV

In the bedroom you will find an LCD TV. This TV offers HD (High Definition) compatible, meaning it is capable of displaying the resolution and clarity of High Definition broadcasts and video sources. To play these programs in HD, you will need an HD Decoder (available through a number of electronics stores and video service providers). Additional wiring may be required for HD programming to be decoded and played.

Please refer to the Manufacturer's Owner's Guide that accompanied your unit for detailed instructions on operating the many features and functions of your new TV.



## Pioneer Surround Sound Theater System

The Pioneer "Surround Sound" Home Theater has been incorporated into your King Aire to bring the movie experience "to life" by placing you in the middle of the action. Located throughout your unit are five speakers and a subwoofer to deliver the dynamic, crystal clear digital sound previously only available in theaters.

The Pioneer Surround Sound Receiver features a Progressive Scan DVD player for detailed imagery and advanced picture quality. This appliance can be operated manually, or as part of the "Harmony" remote control system.

## Exterior Entertainment Center

For your convenience and pleasure, an Exterior Entertainment Center is an available option on the King Aire. This entertainment center features an LCD flat screen television mounted on a pivoting bracket for ease of viewing, and an AM/FM/CD stereo and speakers to provide outside music when desired.

The LCD television is mounted on a swivel bracket that allows you to swing the TV out and away from the basement compartment, and to swivel it to allow for better viewing angles. To release the television from its retainers, grasp the sides of the TV firmly and pull it directly toward you. It will release and swing freely to the desired viewing position. To store the TV for travel, swing it back into the opening, taking care to align the retaining brackets on the back of the TV with the catches mounted on the bracket wall. Press the television firmly into place until the catches have engaged and the TV is flush in the opening.



## IMPORTANT

The electronics used in the Exterior Entertainment Center are not designed for use in wet weather. The TV should be stored securely in the "travel" position and the basement door closed during rain or other adverse weather conditions. Caution should also be exercised when washing the exterior of your King Aire to make sure high pressure water does not enter the compartment. Spraying high pressure water at the seal between the doors can cause leaks, and potentially damage the electronics housed in this compartment.



The external stereo can be used to listen to AM and FM broadcasts, and to play CD's. It has the same functions and features as your in-dash stereo.

The LCD TV in the exterior entertainment center can be played through the exterior stereo. Press the "source" button on the stereo until the audio program from the TV is heard. For detailed operating instructions, please see the stereo manufacturer's handbook located in the literature bag that came with your unit.

### Power Lift Antenna

Your unit is equipped with a Winegard television antenna that features a power lift mechanism to raise and lower the antenna mast. To operate the system, locate the switch panel in the passenger side front overhead cabinet.

When using the antenna, raise and lower it to full extension. Once the antenna is fully extended, it can be rotated to the position that provides optimum signal reception. In rural or fringe areas where reception may be poor or weak, the antenna head has a signal amplifier built in. To turn this amplifier on, use the "Antenna Booster" button on the video selector box.

### Bose Wave Radio

Mounted in the bedroom of your King Aire is a Bose "Wave" radio. It offers functions as an alarm clock and an AM/FM/CD stereo. The audio programming from the bedroom TV can also be heard through the "AUX" input of the Bose Wave Radio. The unit is controlled via a small remote control provided with your unit.



### KVH TracVision In-Motion Satellite System

#### IMPORTANT

When the unit has come to a stop, and remains motionless for one minute, the KVH TracVision system goes into a "Sleep" mode, turning off the conical scan and positioning motors. Unlike turning the power off, when the KVH TracVision is in the "Sleep" mode, it is still drawing power. It is important to turn the system off when the unit is parked for camping, unless the unit is equipped with HD (High Definition) satellite receivers. If so equipped, leave the power switch to the KVH TracVision System on while watching satellite TV.

Optional on King Aire is the KVH "TracVision" in motion satellite antenna. This system employs a state of the art actively stabilized antenna system. When you turn the TracVision system on and select a satellite to view the equipment will begin searching for the specified satellite. Once the satellite is acquired, the antenna gyro constantly monitors vehicle motion and position to keep the dish pointed at the satellite at all times.

If your unit is equipped with High Definition Satellite receivers, the KVH TracVision System should be left on while watching satellite TV.



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## EXTERIOR CARE



### IMPORTANT

Damage caused by improper or unapplied maintenance is not covered by your Newmar Limited Warranty.

### Washing

The exterior of your new recreational vehicle is made of aluminum and fiberglass. The “full paint” coverage is a BASF automotive exterior finish, painted in a “cover coat – clear coat” configuration. Frequent washings and thorough cleanings are required to prevent damage to the vehicle finish after exposure due to damaging salts, calcium chloride, road tar, tree sap, insects and other foreign material. Damage caused by exposure to these items is not covered by your warranty agreement. Never wash the vehicle in direct sunlight, while the vehicle is hot or with hot water. Build up of mud and dirt under the body can cause damaging rust on steel parts. Corrosive materials, such as those used for ice and snow removal and dust control, also accumulate on the underside of the vehicle. These materials should be removed by flushing the underbelly regularly with water, especially areas where mud and other foreign materials collect. The chance of corrosion can be minimized by frequent washings of the vehicle. When washing the vehicle, make certain that the undercarriage and the wheel wells are cleaned, as well as the exterior of the coach. Do not use strong soaps or detergents for washing the vehicle. Always use a mild soap in warm water, a commercially prepared product for automotive finishes or your local car wash. Be careful when using a pressure-type washer to avoid loosening any exterior decals or sealants, etc. After washing, carefully inspect the caulking around window frames and vents and any other joints that may have separated. Recaulking, if necessary, is relatively simple, and is considered routine maintenance, which is the responsibility of the owner.



### IMPORTANT

Never use a strong solvent, such as lacquer thinner or harsh abrasives, on any of the exterior painted surfaces.

### Waxing

The exterior finish will require a routine waxing. When water will not bead and roll off a freshly washed vehicle, a new coat of wax is needed. Wax not only improves the appearance of the vehicle, but it also protects the finish against oxidation and corrosive materials. The recommended type of wax is one that is compatible with painted or gel-coated fiberglass finishes, and contains a UV (ultra-violet) inhibitor. Buffing with a polishing compound will improve a dull or discolored finish. Review the BASF information provided with your unit for detailed paint care instructions.



### IMPORTANT

When using a polishing compound that does not contain a wax preservative, reapplying a coat of hard wax after polishing is recommended.

### Seals

The seals around doors, windows, vents, slide-out trim and external seams should be checked at least twice a year. In addition, the roof seams should be inspected twice a year for cracking or peeling. If deterioration is noted during a routine maintenance inspection, reseal the seams or seals with an approved sealant to prevent leaks. It is recommended that a Newmar Authorized Service Center perform these inspections, and reseal when necessary.



# Proper Sealants for Application

Proper Sealants for Application	
Plas-T-Cote.....	Metal or fiberglass roof
Surebond #SB-140.....	Rubber laminated to metal roof and all skylights.
Carlisle #502-LSW .....	Rubber roof over wood Base
Self Leveling Sealant	
Silicone Sealant .....	To cover butyl and other sealants; not to be used as the main sealant
Parbond.....	To seal across tops of windows, etc. on exterior where silicone is not used

## Fiberglass Roof

### WARNING

It is recommended that access, cleaning and maintenance be conducted by a qualified professional at your local dealership. Use caution if working on top of your vehicle. The wet roof surface is extremely slippery.

Your King Aire is equipped with a one piece fiberglass roof. Regular cleaning and maintenance is essential to insuring a long, trouble free life. Before cleaning, it is important that you inspect the sealants and gaskets used to seal components to the roof structure to be certain there is no leakage during the cleaning process. Any cracks or voids in the sealants and seals **MUST** be repaired prior to spraying the roof with water.

The surface of the fiberglass roof has a gelcoat finish that is very similar to the paint on the exterior of your unit. This provides a bright, durable finish that is easy to maintain. Around the perimeter of the roof is a textured area designed to provide better traction while walking on the roof. **Great care should be taken when walking on a roof that is wet, as the surface can be extremely slippery.**

It is also important to make sure the roof drain catch basin strainers are cleaned and kept free of debris. There are four (4) of them, and they are located at the front and rear ends of the roof gutters, on both the left and right sides.

Clean the roof with a mild detergent and soft brush, such as you would use to wash the exterior of your unit. Stubborn stains, like tree sap or bird droppings, may require additional scrubbing. Do not use harsh chemicals, or any caustic or acid based solutions for cleaning. Standard household cleaners diluted in water and applied with a soft bristle brush provide the best cleaning action. Rinse with clear water, taking care not to spray directly into roof vents, air conditioners, the refrigerator chimney, or any other roof mounted accessories.

## Battery Inspection & Care

Remember that when batteries are not used for an extended period of time, they may lose their charge. Periodic charging of the batteries during storage of the unit will increase the life of the battery. Check the external condition of the battery periodically. Look for cracks in the cover and case. Check the vent plugs and replace them if they are cracked or broken. Keep the battery clean. Accumulations of acid film and dirt may permit current flow between the terminals, which could drain the battery.

### WARNING

Remove rings, metal watch bands, and other metal jewelry before working around batteries. Use caution when using metal tools. If a tool contacts a battery terminal or metal connected to it, a short circuit could occur which could cause personal injury, explosion or fire.



## CAUTION

Disconnect the 120 volt electrical power cord and the negative terminal from the coach batteries before working on the electrical system.

Remember that when batteries are not used for an extended period of time, they may lose their charge. Periodic charging of the batteries during storage of the unit will increase the life of the battery. Check the external condition of the battery periodically. Look for cracks in the cover and case. Check the vent plugs and replace them if they are cracked or broken. Keep the battery clean. Accumulations of acid film and dirt may permit current flow between the terminals, which could drain the battery.

To clean, wash the batteries with a diluted solution of baking soda and water to neutralize any acid present. Rinse thoroughly with clean water. Foaming around the terminals or on top of the battery is a sign that acid is being neutralized. Avoid getting the baking soda solution in the battery. Secure all vent caps. Dry the battery cables and terminals to prevent corrosion. Do not use grease on the bare metal inside the cable terminals as it can act as an insulator, and electricity will not flow through it. A plastic ignition spray will protect the terminals after they have been cleaned.

## WARNING

Do not allow the battery fluid to contact your skin, eyes, fabric, or painted surfaces. The fluid could cause serious personal injury or property damage. Wear eye protection when working with any battery.

The batteries should be removed and stored in a warm place when not using your motorhome for an extended period of time. Mark the cables, positive and negative, for easy identification. Batteries are not to be stored on concrete floors. If the motorhome is to be stored for a long period of time, it is recommended that all of the batteries inside the unit be removed from clocks, radios, smoke alarms, etc. This will prevent unnecessary drain and corrosion of the batteries. The coach batteries are 6 volt RV/Marine deep cycle batteries. This type of battery consumes water and must be filled periodically. Please be sure to check the battery water level on a regular basis. Consult the owner's manual supplied by the battery manufacturer.

## Alloy Wheels

Your King Aire is equipped with Accuride Aluminum "Alloy" Wheels. Below is the manufacturer's recommended cleaning procedure:

1. Rinse the wheel with high pressure water to remove any debris, grit, or dirt particles. High pressure water is recommended.
2. Use a 100% cotton cloth dipped in a mild soap (dish soap or automotive auto wash soap) to help remove stuck on road dirt and grease.
3. Thoroughly rinse any remaining soap residue from the wheel.
4. Dry the wheel thoroughly with a 100% cotton cloth.



## IMPORTANT

To insure damage does not occur to your alloy wheels while cleaning, the following list must be adhered to:

- 1) DO NOT scrub the wheels before rinsing off loose particles with high pressure water; rubbing debris against the wheel surface will scratch it.
- 2) DO NOT use synthetic cleaning pads; synthetic cleaning pads can result in streaking on the surface of the wheel.
- 3) DO NOT use wire brushes to remove dirt or grime from the wheel surfaces.
- 4) DO NOT use strong detergents, strong solvents, acidic or alkaline cleaners to clean your alloy wheels. These solutions can attack the finish on the surface of the wheel, causing damage or dull spots in the finish.
- 5) DO NOT allow soap solutions to dry on the surface of the wheel; be sure to rinse and thoroughly dry them after cleaning.
- 6) DO NOT use polishes or waxes on an Accu-shield aluminum wheel. The finish will maintain it's bright, shiny surface for years to come without the need for special polishes.

## INTERIOR CARE

### WARNING

Urea-formaldehyde is used in the production of particle board, hardwood plywood, and most paneling. Urea-formaldehyde resin may release formaldehyde vapors into the air, which may cause headaches, and in some people, eye, nose and throat irritation. Formaldehyde may intensify some allergies or upper respiratory problems like asthma. Providing proper ventilation as needed by operating the power roof vents and opening windows should reduce the risk of such problems.

## IMPORTANT

The fading of upholstery, carpet and other interior fabrics is generally caused by excessive sunlight. The drapes, blinds or shades should be kept closed when the vehicle is parked for an extended period of time to minimize the fading. Normal deterioration of appearance items due to wear and/or exposure is not covered by the Newmar Limited Warranty.

### Carpet

A weekly routine of vacuuming the carpet and fabrics throughout the vehicle is recommended. Doing this will prevent an accumulation of dirt that can detract from the materials appearance, and shorten it's life. Remember to empty or replace vacuum bags before they become half full. In carpet areas that receive the most sunlight, close the curtains frequently to prevent fading. Act quickly when anything is spilled or dropped on the carpet.

Included in the Owner's Information Package is the carpet manufacturer's Carpet Care Guide. The Carpet Care Guide lists detailed information on cleaning soiled areas and removing stains from the carpet installed in the unit.

### Fabrics

The fabrics used in this motorhome for the bedspread, draperies, headboard and valances contain fire-retardant additives that may be damaged by use of improper cleaning products. Cleaning instructions for these items are DRY CLEAN ONLY. Water-based products are not recommended for cleaning the fabrics in your new unit. Most water-based household cleaning products are not formulated for use on these fabrics and may cause excessive shrinkage or fading. For best results, the fabrics in this unit should be cleaned by a professional carpet and upholstery cleaner.

Spills, spots or stains should be treated as soon as possible to avoid permanent damage. If a spill occurs, blot the fluid with a dry towel. Do not rub the spill. Rubbing may cause the liquid to "set" in the fabric. When attempting



to clean a spot or stain, always start from the outside and work inward to avoid spreading it further. Some stains or soils are extremely difficult or impossible to be removed completely. These should receive immediate, professional attention. Spills, spots, stains or soils are the responsibility of the owner, and are not covered by the Newmar Limited Warranty.

## WARNING

When cleaning the upholstery and fabric in the unit, do not use lacquer thinner, nail polish remover, laundry soaps or bleach. Never use carbon tetrachloride or gasoline for cleaning purposes. These items may cause damage to the materials being cleaned, and most are highly flammable.

### Walls & Ceiling

The wall and ceiling coverings should be cleaned periodically to maintain a new appearance. Use a non-abrasive cleaner with a soft cloth on the walls. Do not use solvents of any kind. Solvents may damage the surface.

### Dash

In order to keep the dash in like-new condition, follow these guidelines:

#### **Do—**

- Dust and clean the dash with a soft, damp cloth, or chamois, wiping the surface gently.
- Use a mild detergent and lukewarm water.
- Dry the surface, after washing and rinsing, by blotting with a damp cloth or chamois.

#### **Do Not—**

- Use harsh chemicals that may damage the dash.
- Use cloths containing grit or abrasive particles or kitchen scouring compounds to clean or dust the dash.
- Subject the dash to hard, direct blows.
- Use boiling water, strong solvents or other materials listed below to clean the dash, as they will soften the plastic.

### Woodwork

The wood cabinetry should be cared for with furniture polish to sustain the natural beauty and luster of the wood. This will also keep your cabinetry looking new, and prevent the wood from drying. Use of area rugs and floor mats by the entrance door is recommended to trap dirt. To clean the flooring, begin by vacuuming the floor to remove loose dust and dirt. Then, damp mop the floor using one gallon of clean, warm water with a non-abrasive, soap-free cleaner. The mop should be damp, not dripping. Do not use soap-based cleaners, scouring powders, steel wool, abrasive cleaners, wax or polish on the floor. To remove stubborn spots like shoe polish, oil, tar, markers, scuffs, etc., use a household solvent, acetone or nail polish remover, then wipe with a damp cloth. To remove chocolate, grease, juice or wine, use warm water and a non-abrasive cleaner. To remove candle wax or chewing gum, carefully scrape off when the material has hardened. For further tips, please see the manufacturer's information sheet in your Owner's Information Packet.

### Counter Tops

To properly care for the countertop in your new unit, always use a heat pad or trivet to protect the surface from hot objects that may mar or damage the surface. Also avoid cutting directly on the surface and avoid using harsh chemicals on the counter top. Wipe the counter top with a damp cloth to remove water spots. For most dirt and stains, wipe with a damp cloth and use soapy water or ammonia-based cleaners.



## Accessories

Your King Aire is equipped with either brass or brushed nickel light fixtures, bath accessories and faucets. They are cleaned by wiping with a soft, damp cloth. Washing with warm water will remove dry water spots. Do not use cleaners that contain harsh or abrasive chemicals. Alcohol or similar solvents should never be used.

## Detectors

The CO and Propane detectors (if equipped) are self-contained and DO NOT require any maintenance other than normal cleaning and dusting. The smoke detector installed in this coach is 9 volt battery operated. The battery needs to be tested periodically and replaced when necessary. When cleaning the case on any of the detectors, use a damp cloth or paper towel. Do not spray cleaners or wax directly into the case as it may cause false alarms.

## Condensation

### IMPORTANT

Since surface condensation within the coach cannot be controlled by the manufacturer, damage caused by condensation is not covered by your Newmar Limited Warranty.

Damage may occur to your unit if excessive condensation exists. Accumulation of condensation on surfaces within your unit occurs when warm, moist air contacts a cool surface. It is most evident on the inside of windows. This problem can be controlled by:

1. Slightly opening a window or roof vent to allow the moisture to escape from the unit.
2. A small dehumidifier is also very effective in removing moisture from the air.

### i IMPORTANT

- i Condensation levels are highest during times when a person is cooking or taking a shower in the unit, but these are not the only times condensation is present.
- i Condensation can migrate through ceiling panels and saturate the fiberglass insulation in your ceiling cavity. This condition often causes the occupants to believe the recreational vehicle has a roof leak. Walls and ceiling panels may also become wet when the moisture accumulates on these surfaces.
- i Newmar Corporation does not recommend the use of any catalytic heaters.

## ROUTINE MAINTENANCE

### IMPORTANT

Always follow the chassis maintenance guidelines found in the chassis manufacturer owner's manual.

All routine maintenance is the responsibility of the owner and is not covered by the Newmar Limited Warranty. Please note that damage caused by improper or unapplied maintenance is not covered by the Newmar Limited Warranty.

Items supplied by other manufacturers may require specific individual maintenance not listed herein. Please refer to the manufacturers' suggested maintenance guidelines in the Owner's Information Packet.

### IMPORTANT

Cosmetic adjustments and alignments must be performed within the first three (3) months from date of original purchase for warranty consideration. Thereafter, these items are considered routine maintenance.



## Monthly

- i Check battery water level.

## Every Three (3) Months

- i Clean range hood exhaust fan filter and blades.
- i Check gas lines for leaks with soap solution or leak detector.
- i Test smoke alarm, carbon monoxide detector and Propane gas detector.
- i Check operation of windows latches and hinges.
- i Clean the roof ducted air conditioner filter(s).
- i Clean and inspect all door and window seals; reseal where necessary.
- i Inspect and reseal around the tub and shower area where necessary.
- i Lubricate the exterior door hinges and latches with a graphite (silicone) lubricant.
- i Check, clean and tighten battery cables, and inspect batteries for proper fluid level.

## Every Six (6) Months

- i Inspect the slide out for proper seal. If realignment is necessary, please contact an Authorized Newmar Service Center.
- i Inspect the exterior rubber slide out seals and apply a UV inhibitor,
- i Rotate tires as recommended by the tire manufacturer.
- i Check all gas appliances for proper operation.
- i Have the Propane system inspected by a qualified technician.
- i Lubricate the moveable parts on the entrance step.

## Annually

- i Inspection of roof seams and joints should be performed by an Authorized Newmar Service Center. If resealing is necessary, it is the owner's responsibility and is not covered by the Newmar Limited Warranty.
- i Sanitize the fresh water system.
- i Wax and buff all gel-coat surfaces on the vehicle as described previously in this chapter.

## COLD WEATHER USE

Although great care has been taken to build a well-insulated unit, recreational vehicles are not intended for extended use in subfreezing weather without special precautions. When the temperature drops below freezing, the furnace must be turned on to keep the unit warm. Continued use in cold weather will require the unit to be winterized.