



## 2005 Owner's Manual

Born Free Motorcoach  
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# TABLE OF CONTENTS

Born Free Motorcoach Warranty .....	3
Ford Warranty .....	4
Vendor Warranty and Service Telephone Numbers .....	5-7
RV Vehicle Specifications and Capacities .....	8
Born Free Motorcoach Introduction .....	9
Tire Inflation and Vehicle Loading .....	10
Driving Tips .....	10
Travel Tips .....	11
Pre-Departure Check List .....	12
Trailer Towing .....	12-13
Routine Operation .....	13
Diesel Operating Tips .....	13

## I. Suspension

A. Air Lifts .....	13-14
II. Fiberglass Skin	
A. Looking Like New .....	14
B. General Maintenance .....	14-15
C. Chalking .....	15
D. Fading .....	15

## III. Coach

A. Interior .....	15
1. Seat Belts .....	15-16
2. Smoke Alarm .....	16
3. Cabinets and Doors .....	16
4. Beds .....	16
a. 42"x76" Sofa Bed .....	16
b. Dinette/Sofa Bed .....	16
c. Cabover Bunk Bed .....	16
5. Interior Maintenance .....	17
6. CO Detector .....	17
7. Emergency Exits .....	17
8. Roof Vents .....	17
9. Roof Air Conditioner .....	17
a. Operating Instructions .....	17
b. Controls .....	17
c. Cooling Operation .....	17-18
d. Heating Operation .....	18
e. Maintenance .....	18
f. Warranty Service .....	18
10. Range Hood/Monitor Panel .....	18
a. Range Hood .....	18
b. Fan and Light .....	18
c. Monitor Panel .....	18
d. Maintenance .....	18
11. Microwave Oven .....	18
12. TV - VCR - VCP .....	18
13. L.P. Detector .....	19
B. Exterior	
1. Doors and Locks .....	19

2. Rack and Ladder .....	19
3. Roof-Mounted Storage Compartment .....	19
4. Generator Storage Compartment .....	19
5. Battery Storage Compartment .....	19
6. Sewer Hose Compartment .....	19
7. Gas Fill Door .....	19
8. Power Cord Hatch .....	20
9. Exterior Light .....	20
10. Exterior 110-Volt Outlet .....	20
11. Potable and City Water Fills .....	20
12. Furnace Outlet .....	20
13. TV Antenna .....	20
14. Entry Light and Grab Handle .....	20

## IV. Electrical System

A. 12-Volt Automotive System .....	20-21
B. Auxiliary Coach 12-Volt System .....	21-22
C. Care of Batteries .....	22
D. Switches and 12-Volt Fusing .....	22
E. 110-Volt System .....	22
1. 110-Volt Utility Supply .....	22
2. Converter Control Center .....	22-23
F. Ground Fault Circuit Breaker .....	23
G. Auxiliary Generator .....	23-24
a. Generator Operation .....	24
b. Break-in Procedure .....	24-25
c. Maintenance .....	25
I. Troubleshooting .....	26
II. Maintenance Schedule .....	27-28
Electrical-Schematics .....	29-54

## V. LP Gas System

A. LP Tank .....	55
B. LP Gas Detector .....	55
C. Maintenance .....	55-56
D. Furnace .....	56
E. Water Heater .....	56-57
F. Refrigerator .....	57
G. Range and Oven .....	57-58
LP Schematic .....	59-71

## VI. Plumbing

A. Fresh Water System .....	72
B. Fresh Water Tank .....	72
C. City Water Connection .....	72
D. Toilet .....	72-73
E. Drain System .....	73
F. Holding Tank Evacuation .....	73
Plumbing Schematics .....	74-93
G. Parking in a campground with hookups .....	94

## VII. Seasonal Protection

A. Winterizing .....	94-95
B. De-Winterizing .....	95
C. Disinfection of Potable Water System .....	95-96
D. Miscellaneous Information .....	97-100

Dear Born Free Motorcoach Owner:

Congratulations – we are honored that you have decided to purchase a Born Free Motorcoach. Welcome to the Born Free Family!

This owner's manual has been prepared to help you understand all of Born Free's features. We suggest you read the manual thoroughly and place it in a convenient place in your coach (where you can refer to it if any questions should arise).

The manufacturers and suppliers of the truck chassis, as well as those of the accessories and appliances used in the Born Free, have also included literature and information about their products. Please review their material carefully – it may be very helpful.

You will also notice that the manufacturers have included warranty registration cards. In order to properly register your purchase for any warranty repairs, these cards must be filled out and mailed promptly.

At Born Free Motorcoach, we continually test and evaluate each motorcoach produced, looking for ways to improve our product. Our improvements, regardless of how large or small, are incorporated into Born Free Motorcoaches as they are produced. Consequently, this manual may or may not reflect all of our current features and improvements. This manual is intended to acquaint you with the proper service and repair of your Born Free and is to be used only as a guide. Should you need any assistance, please call our service department at 1-800-247-1835.

Thank you and happy traveling,

The Staff of Born Free Motorcoach

**NOTE:** *Because it is impractical to make frequent literature changes, specifications and equipment described in this manual must be subject to change without notice.*





# LIMITED WARRANTY



Owner \_\_\_\_\_ Serial # \_\_\_\_\_

Address \_\_\_\_\_ Date \_\_\_\_\_

Vehicle Identification: \_\_\_\_\_

## WARRANTY

Dodgen Industries, Inc. and Born Free Motorcoach, Inc. (collectively referred to as Dodgen) warrant Born Free motorcoaches against defects in materials or workmanship and warrant the exterior fiberglass of the coach against corrosion and hail penetration. This warranty applies only to the first retail purchaser of the Motorcoach.

## WARRANTY PERIOD

The warranty period for defects in materials or workmanship is 36 months or 36,000 miles, whichever occurs first. The warranty period for corrosion or hail penetration of the exterior fiberglass of the coach is 10 years. The warranty covers only those defects which become evident within the applicable warranty periods and where written notice is provided to Dodgen not later than 15 days after the expiration of such warranty period.

## WARRANTY BEGINS

This warranty begins on the date of first retail sale, or the date the motorcoach is first placed in service as a demonstrator or company motorcoach, whichever is earlier.

## WARRANTY COVERAGE

During said warranty periods, Dodgen will, at its option, repair or replace any part manufactured by it, which upon examination by Dodgen is found to be defective as to material or workmanship under normal use and service. To obtain service under this warranty, the motorcoach must be brought during normal business hours, upon discovery of a defect in material or workmanship, to Dodgen's factory in Humboldt, Iowa, or to such other service facility as Dodgen shall specify. All transportation cost under this warranty, including return to the factory, if necessary, are to be borne by the purchaser. This warranty does not include normal maintenance and service and does not apply to a motorcoach or any part thereof which has been subject to misuse, negligence, accident, overloading, improper maintenance, repair, modification or storage, so as in Dodgen's judgment to affect adversely its performance. Dodgen will, without charge for parts or labor, either repair or replace the defective part(s). The decision to repair or replace said part(s) is solely the prerogative of Dodgen. Parts for which replacements are made become the property of Dodgen. In all cases, a reasonable time must be allowed for warranty repairs to be completed after the motorcoach is received.

## ITEMS NOT COVERED BY THIS WARRANTY

This warranty does not apply to the chassis of the Motorcoach and all of the mechanical, electrical, hydraulic, heating and cooling and control systems supplied by the chassis manufacturer. These items are covered solely by the Ford Motor Company Limited Warranty. This warranty does not apply to components manufactured by third parties, including, but not limited to, tires, batteries, battery isolator, wheel liners, water heater, city water fill, furnace, antennas and satellite systems, water pump, generator, converter, air conditioner, furniture, curtains and cushions, refrigerator, fans, detectors, fire extinguishers, toilet, sinks, plumbing fixtures, stove, oven and power hood, LP tank, gauges and regulator, holding tanks, air lift system, television, VCR, radio and entertainment systems or any other optional equipment or equipment specified by the purchaser, including those components whose manufacturers are listed in the Owner's Manual. When furnished or attached, these items are covered solely by warranty, if any, of the manufacturer of such product, commonly known as pass-through warranty.

## OTHER LIMITATIONS

No warranty is provided as to:

- Items which are subject to wear and tear or deterioration due to normal usage such as upholstery, trim, surface scratches, surface finishes, glass, and similar items. Warranty coverage is specifically limited to defects in material or workmanship.
- Damage which results from negligence, improper operation of the motorcoach, improper repair, lack of or improper maintenance, environmental influences, flood, accident or fire damage.
- Failure to maintain the motorcoach properly in accordance with the

instructions in the Owner's Manual that results in the failure of any part of the motorcoach.

- Modification of the motorcoach or installation of any accessories or components attached to the motorcoach which alters the original engineering and/or operating specifications or which result in damage to the other original components, electrical interference, electrical short, radio static, water leaks and wind noise.

## GENERAL LIMITATIONS AND EXCLUSIONS

These warranties give you specific legal rights, and you may also have other rights which vary from state to state.

THE REMEDIES PROVIDED IN THIS LIMITED WARRANTY ARE THE SOLE REMEDIES PROVIDED BY Dodgen. Dodgen makes no other warranty of any kind whatever, express or implied and all implied warranties of merchantability and fitness for a particular purpose which exceed the express warranty are hereby disclaimed and excluded. Dodgen HEREBY EXCLUDES INCIDENTAL AND CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF TIME, INCONVENIENCE, OR LOSS OF USE OF THE MOTORCOACH, FOR ANY BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, APPLICABLE TO THIS PRODUCT. THE DURATION AND EXTENT OF ANY IMPLIED WARRANTIES (if any apply) INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, IS LIMITED TO THE DURATION AND EXTENT OF THE EXPRESS WARRANTIES HEREIN.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

In the event of a disagreement between you and Dodgen as to whether a defect is attributable to the parts manufactured by it, or covered by the warranty or corrected in a timely and prompt manner, the question and issue must be submitted to an impartial qualified arbitrator for decision before either party may pursue any legal remedy in the courts. The fees or charges made by such independent arbitrator shall be paid by the party against whom the arbitrator rules. In the event of any other dispute with or claim against Dodgen, purchaser agrees that jurisdiction and venue are exclusively and specifically limited to the Iowa District Court for Humboldt County in Dakota City, Iowa. No claim may be brought in any other court. By exercising rights under this Limited Warranty, the first retail owner and purchaser expressly agrees to this choice of forum. This limited warranty is a complete statement of Dodgen's undertaking and this limited warranty cannot be expanded, changed or modified except by written agreement signed by Dodgen after the date of purchase of the motorcoach. Dodgen reserves the right to make changes in design and changes or improvements upon its products without imposing any obligation upon itself to install the same upon any previously manufactured products.

## SUMMARY OF CERTAIN EXCLUDED LOSS OR EXPENSE

This warranty does not cover or apply to loss or expense:

- To any loss caused directly or indirectly by negligence, misuse or failure to perform recommended or required servicing and maintenance.
- To repairs and/or replacement not authorized by Dodgen.
- To liability for damage to property or injury to or death of any person arising out of the operation, maintenance or use of the described vehicle in this warranty whether or not related to the parts covered within.
- To loss caused by wear and tear.
- To any loss caused by collision or upset, breakage of glass, missiles, falling objects, fire, theft or larceny, explosion, earthquake, windstorm, hail, water, flood, malicious mischief or vandalism, riot or civil commotion, lightning, nuclear contamination, freezing, smoke, or from any other cause whatsoever except as provided in this warranty.
- For delays, however caused, or for the value of loss of use of the motorcoach.
- If the motorcoach identification number has been altered or cannot be read, if the odometer has been replaced or altered and the true mileage cannot be determined, if the motorcoach has been declared a total loss or sold for salvage purposes, or if the motorcoach has been used for commercial purposes.

I acknowledge that I have received an accurate copy of this warranty \_\_\_\_\_

(SIGNATURE)



# NOTICE

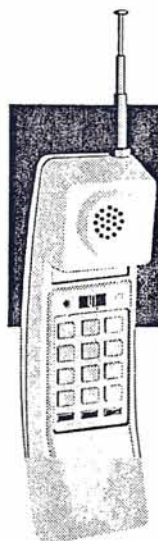
## *Warranty Information – Ford Econoline*

If you have a Ford warranty problem with your motorcoach, you must first take it to an authorized Ford dealer. This must be done for any warranty coverage from Ford. If the Ford dealer cannot fix your motorcoach, he/she can authorize you to have it fixed at another service center. You must receive this authorization in writing.

Failure to comply with the above procedure will void your warranty coverage from Ford.

For “on-the-road” emergency service, call 1-800-444-3311 (24-hour service).

*Born Free Motorcoach*



# Vendor Warranty and Service Phone Numbers

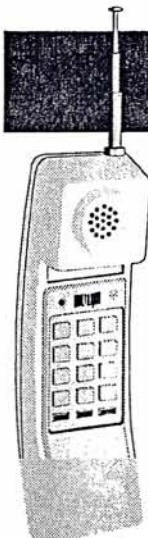
NAME OF COMPANY	WARRANTY PHONE #
A&E Awning .....	(800) 544-4881
Air Lift Company .....	(800) 248-0892
Atwood Water Heater and Cooktop .....	(815) 877-5700
Service Department .....	(800) 825-4328
Carefree of Colorado .....	(303) 464-3324 or (800) 621-2617
CCI Controls - LP gas detector .....	(800) 521-5228
Cobra C.B. ....	(773) 889-3087
Costar C/O Detector .....	(800) 432-5599
Delta Power Plus Booster Amplifier .....	(616) 965-2371 or (888) 367-6978
Dicor Versa Liner .....	(574) 264-2699
Duo-Therm/Dometic (heat strip and roof mount AC) .....	(800) 544-4881
Fan-Tastic Vent .....	(800) 521-0298 or (810) 395-4045
Firestone Air Bags .....	(800) 888-0650
Flexsteel .....	(563) 556-7730
Ford Roadside Assistance .....	(800) 444-3311
Ford Service Locator .....	(800) 444-3311
Ford Motorhome Warranty .....	(800) 343-5338
Generac .....	(800) 333-1322
Hehr International Windows (old) Kansas-Single .....	(316) 283-6100
(new) Michigan-Thermo .....	(989) 845-3061



## Phone Numbers Continued



NAME OF COMPANY	WARRANTY PHONE #
HWH Leveling Jacks .....	(800) 321-3494 or (563) 724-3396
Interstate Battery .....	(800) 272-6548
Kidde Safety - Smoke Detector .....	(800) 880-6788
Kwikkee Step .....	(800) 736-9961
Magic Chef .....	(800) 688-1120
Magnavox Television .....	(813) 278-4242
Manchester LP Tank .....	(800) 877-8265
Marinco 25' Power Cords .....	(707) 226-9600 or (800) 767-8541
Marshall Brass LP Regulator .....	(616) 781-3901
Mirage Wood Floor .....	(800) 463-1303
Moen Sink and Faucets .....	(501) 268-3521
Norcold Refrigerators .....	(800) 543-1219
Onan Generator and Remote Start .....	(800) 888-6626
Packmaster Storage Pods .....	(303) 469-3324
Panasonic Microwave .....	(574) 295-2441 or (800-443-6486
Parallax Power Components (Converter) .....	(800) 443-4859
Philips Doors .....	(574) 296-0163 or (800) 859-8550
Plumb-Pex (water lines) .....	(574) 266-5558
Rigid Hitch .....	(800) 624-7630
RV & Sea (sleeping bags) .....	(949) 830-1292



## Phone Numbers Continued

NAME OF COMPANY	WARRANTY PHONE #
Sealand Toilet .....	(800) 321-9886
Shurflo Water Pump .....	(800) 762-8094 or (800) 854-3218 (Corp.)
Specialty Shade .....	(574) 262-5190
Suburban Furnace .....	(423) 775-2131
Surepower Multi Battery Isolater .....	(800) 845-6269
Thetford Toilet .....	(800) 521-3032
Thin Lite (fluorescent lights) .....	(805) 987-5021
Toshiba TV .....	(800) 631-3811
Travasak .....	(800) 631-2000
Tri-Mark Door Latches .....	(800) 431-8616
Velvac Mirrors .....	(414) 786-0700 or (800) 783-8871
Ventline Bath Fans .....	(574) 848-4491
Walter Kidde Fire Extinguisher .....	(800) 654-9677
Westinghouse Ground Fault Circuit Breaker .....	(412) 244-2000
Window Maxx .....	(800) 780-9893
Winegard .....	(319) 754-0600
Xantex Inverter .....	(604) 420-1585
Xantex .....	(206) 872-7225 or (800) 446-6180





## Motorcoach Specifications

	"Built for Two"	24' Models	26' Models
Bumper to bumper overall length	22'5"	24'10"	26'7"
Front of front bumper to rear of cab	88-1/2"	88-1/2"	88-1/2"
Height at top of front vent	118"	118"	118"
Rear roof height	110"	110"	110"
Height with roof air	118"	118"	118"
Body Width	95-1/2"	95-1/2"	95-1/2"
Rear bumper depth	12"	12"	12"
Interior height	76"	76"	76"
Maximum cabover height	84"	84"	84"
Chassis wheelbase	158"	158"	176"
Approximate base weight** (lbs.)	9,202	10,725	11,150
Gross Vehicle Weight Rating	11,500	14,050	14,050
All specifications are subject to change and are approximations only.			
**UVW base weight is less options, passengers, cargo, LPG and water.			

Model	"Built for Two"	24' Rear Bath	26' Rear Bath	26' Rear Side Bed
<b>Tank Type</b>				
Fuel**	37 gal.	55 gal.	55 gal.	55 gal.
Usable LPG @80%	23.2 gal.	23.2 gal.	23.2 gal.	23.2 gal.
Fresh Water	25 gal.	29 gal.	35 gal.	35 gal.
Gray Water	29 gal.	21 gal.	21 gal.	35 gal.
Black Water	13 gal.	35 gal.	35 gal.	21 gal.
Water Heater	6 gal.	6 gal.	6 gal.	6 gal.

# *Born Free Motorcoach Introduction*

**D C – Direct Current** is the power in the coach 12-volt batteries.

**A C – Alternating Current** is the power produced by the generator or supplied by the power cord.

**L P G – Liquid Petroleum Gas** is a form of energy for LPG appliances.

**9 V – 9 Volt Battery** is a small rectangle shaped battery.

## **9 Volt Battery**

CO Detector  
Smoke Alarm

## **L P G**

Furnace  
Water Heater  
2 Burner Cooktop  
Refrigerator

## **D C Coach Battery**

Refrigerator  
Fantastic Roof Vent  
Furnace  
Water Heater  
Water Pump  
LP Gas Leak Detector  
Monitor Panel  
Fluorescent Lights  
TV Antenna Amplifier Booster  
Reading Lights  
Bath Vent  
12V Outlets

## **A C Generator or Power Cord**

Power Converter  
Refrigerator  
110V Outlets  
Roof Air Conditioner  
Microwave

The Ford chassis has one battery, diesel has 2. The coach has two batteries for the D C 12-volt system. Driving your motorcoach will charge the Ford chassis battery (from the alternator). To charge the coach batteries, there are three options:

- (1) Driving the motorcoach (the vehicle will charge the coach battery from the alternator). This is the best source of charge.
- (2) Plugging in the power cord (will charge the coach battery from the power converter).
- (3) Operating the generator (will charge the coach battery from the power converter).



## Tire Inflation and Vehicle Loading

We have developed a guideline for tire and air suspension pressure that we would encourage you to follow so that you maintain the high level of satisfaction with your Born Free Motorcoach.

Quite often, we find customers who report poor tire wear, handling, or excessive road vibration are driving with either the tires or air suspension system over-inflated. Many times, service technicians over-inflate tires and air suspensions to a level equal to larger vehicles. While we do not recommend under-inflation, good judgment can be left to customer discretion to use adequate tire inflation to carry the load, while being careful not to under-inflate and cause excess heat buildup in the tire. We advise you to routinely check these pressures to prevent unwarranted wear.

## Driving Tips

Your Born Free Motorcoach will drive very much like your "family car." The biggest difference in handling will come from an increase in weight, width, height, and length. All of these differences will become second nature to you in just a few miles of driving. You will be able to drive your Born Free at interstate speeds, just like your car; it will take a bit longer to achieve the maximum driving speed, however. The vehicle will slow down more when climbing an incline because of the added weight. When maneuvering a pass, allow yourself more time and room for overtaking and cutting back. Your Born Free is also wider and consideration should be taken when maneuvering in a tight place.

When maneuvering in a tight place, it is best if you have your co-pilot get out and walk with the motorcoach as it moves. Station that person at the left rear of the coach where you can observe their signals.

As you become more familiar with your Born Free, you will become more aware of the additional weight, length, and width. However, height will have to be a constant thought when you approach low hanging branches or low building canopies. Allow 11 feet in most cases with a roof-mounted air conditioner for proper clearance.

The experienced traveler learns to "walk his rig" at every stop; it takes but a minute to make a trip all the way around looking at the complete unit. Be sure that all caps are in place, access doors secure, and tires are well inflated. Be sure to check the rear inside duals either by kicking them or hit them with a tire iron. An un-inflated tire will move on the rim causing heat build-up or possibly even a fire. "Once around before in" is a good practice.

The fuel efficiency of your Born Free depends on several factors: the load it's carrying, the size and weight of the body, driving habits and general condition and maintenance of the vehicle. Adding a trailer to your motorcoach will place an additional load on the engine and will reduce fuel economy. There are some suggestions for increasing fuel economy:

- (1) Change oil and filter according to manufacturers recommendations.
- (2) Manually shift the automatic transmission when appropriate.
- (3) Inspect air and fuel filters frequently when encountering excessive dust, bugs and debris.
- (4) Keep cargo to a minimum.
- (5) Make sure tires and air bags are properly inflated.
- (6) Restrict dash air conditioner use when possible.

## Travel Tips

Here are some traveling tips to keep in mind when you're on the road with your Born Free Motorcoach.

- (1) Remember to "think high and wide." Save the top and sides of your motorcoach.
- (2) Keep an eye on service station attendants. They may accidentally fill your water tanks with gas or vice-versa. They may also get the wrong type of fuel in your unit.
- (3) Use manned tollgates – usually you will be charged one class more than a car. Some states may or may not require you to stop at weigh stations.
- (4) Check the oil every time you stop for fuel.
- (5) Check wheel lug nuts before you start each trip.
- (6) Do not leave food or odor causing materials in your vehicle for extensive periods of time.
- (7) Inspect your fire extinguisher for proper charge once a month. It is also a good idea if everyone using the coach knows where the extinguisher is located and how to use it in case of an emergency.
- (8) Conduct a tour of your vehicle before departure to be sure that all compartment doors are closed and locked, cabinet doors closed, and the refrigerator doors are secured.
- (9) First time motorcoach owners may have a tendency to crowd the centerline of the highway. Check your mirrors frequently to prevent crowding the centerline.
- (10) When fogging appears on windows, there is an excessive amount of humidity inside the vehicle. In extreme cold conditions, the humidity can turn to frost or ice. To alleviate the excess moisture problem, open a roof vent slightly or open a window. Operating power vents will also help.
- (11) Taste the water before filling your fresh water tank.
- (12) Conserve water when taking a shower by taking "sea showers." Wet down and soap from water saved in lavatory, then use the on/off button on the showerhead. Turn the water on and rinse.
- (13) Dump sewage only at approved dumping stations.
- (14) During peak camping season, phone ahead for a camping spot.
- (15) You will find that sleeping bags save work. They take less space than blankets and are usually warmer.
- (16) Some states will not allow you to pass through highway tunnels with LP gas on board your vehicle. If your route includes a tunnel, check with authorities before venturing out.
- (17) Emergency items you should have are:
  - a. Flashlight
  - b. First Aid Kit
  - c. Emergency Flares
  - d. Tool Box
  - e. Plastic Bucket
  - f. Tow Chain/Rope
  - g. Wheel Blocks (for leveling)/Extra Jacks
  - h. Water Hose
  - i. 100-150 Foot Electrical Cord – 50 Amp Rating Minimum
  - j. Fire Extinguisher
  - k. Hydraulic Jack and Lug Wrench



## Check List for Pre-Departure Inspection

As a safety precaution, get into the habit of, "once around before in" – walk completely around your motorcoach before departure. It could save leaving with a power cord or hose still connected.

- Inspect springs, shocks, and steering mechanism.
- Test auxiliary battery for charge and condition – clean battery posts if necessary.
- Check all running lights, turn signals, and panel lights.
- Test horn.
- Examine tires for wear and test for proper inflation.
- Check fluid levels – radiator, brake fluid, and washer fluid.
- Check windshield wiper condition.
- Doors and windows closed.
- Roof vents closed.
- Compartment doors closed and locked
- "ONCE AROUND BEFORE IN"

## Trailer Towing

Whenever a motorcoach is used for towing, the following limitations must be followed:

- The towing hitch on the Born Free is a Class 3 Rated Hitch.
- The Gross Combination Weight (GCW) must not exceed the Gross Vehicle Weight Rating (GVWR).
- Trailers weighing in excess of 1000 pounds require trailer brakes.

Gross Combination Weight (GCW) equals the total weight of fully equipped motorcoach and trailer with cargo, driver, passengers, fluids, etc.

Do not restrict radiator airflow by mounting front-mount spare tire, trail bikes, etc. to the front of the motorcoach.

An auxiliary transmission cooler must be installed if you are going to tow any vehicle. The additional heat created by towing will cause fluids to overheat resulting in transmission failure.

**CAUTION:** Installation of a frame-type equalization hitch on a motorcoach is not recommended.

## Additional Trailer Tips

- (1) Make extra wide turns to compensate the wider turning radius of the trailer.
- (2) When backing up, move trailer to the left by turning the front wheels of the motorcoach to the right. To turn the trailer to the right, do the opposite.
- (3) Place wheel blocks (chocks) under the trailer wheels before setting brakes and transmission of

- the tow vehicle. The blocks will absorb the stress and secure the trailer.
- (4) Frequently check operation of trailer brakes and trailer lights.
  - (5) Decrease trailer load substantially for high altitude driving.

## Routine Operation

We suggest the following guidelines be used when operating your Born Free Motorcoach:

- (1) Change engine oil and filter at 3000 mile intervals. Please refer to the Ford owners manual for oil specifications.
- (2) Rotate tires at 5000-7500 miles and again at 10,000-15,000 miles.
- (3) Wash regularly with mild soap – do not use abrasive cleaners.
- (4) Wax the motorcoach twice each year using a good carnauba-based paste wax.
- (5) Check caulking twice each year and replace if needed. Dow Chemical 999A silicone caulking is recommended.
- (6) Align the front end at approximately 2500-4000 miles. Contact a truck alignment shop. If the motorcoach pulls to one side, immediate alignment is necessary. Failure to take immediate action can result in severe tire wear and create a very hazardous driving condition.
- (7) Service the auxiliary generator per manufacturers guidelines.

## Diesel Owners – Operating Tips

Some special precautions need to be taken when dealing with diesel engines. Because it is not uncommon for diesel fuel to become contaminated with water, a water drain separator is located along with a bleeder valve on the bottom of the fuel filter. A warning light on the dash will indicate that there is a problem with water in the fuel. If the warning light comes on, you should contact a Ford dealer to have the problem remedied.

When the outside temperature drops to 20 degrees, an anti-gel additive can be added to the fuel to prevent gelling. If the temperature remains below 20 degrees, #1 diesel fuel should be used. In cold climates, the 110-volt engine block heater should be used to assist in starting the engine.

Remember to allow the “wait to start” light to go out before engaging the starter. Do not crank for more than 15 seconds at a time; wait 30 seconds before the second try.

## Suspension

### A. Air Lifts

Some Born Free Motorcoaches are equipped with an “Air Lift” system. The system enables you to compensate for any additional loads you may be carrying in the coach, offset trailer towing



tongue weight or simply to aid you in making minor leveling adjustments to increase gas appliance efficiency.

Proper inflation of the airlifts can result in the smoothest ride possible by reducing the choppy ride sometimes caused by truck tires and springs.

The system is made up of two air bags mounted to the rear axle and inflated by separate fill valves located by the driver's side wheel well. To operate, simply add air to each of the fill valves to achieve the proper leveling of the coach. Minimum air pressure is 10 PSI and maximum is 90 PSI. A general rule is that the air springs will support approximately 40 pounds of load for every pound of inflation. For example, 50 PSI of inflation will support a load of 2000 pounds per set. For the best ride, use only enough air pressure to level the vehicle when viewed from the side.

**N O T E:**     *Too much air pressure will cause a stiffer ride, while too little pressure will cause the vehicle to bottom out. Never inflate the bellows above 90 PSI.*

## Fiberglass Skin

### A. Looking Like New

At Born Free Motorcoach, we constantly test and evaluate the latest in new fiberglass materials to offer you, the owner, the finest and the most long lasting products available. Even though we are constantly striving to use the best possible products in the construction of your motorcoach, the fiberglass finish may become full, faded, or chalk without proper care. The following is a brief explanation of what happens to dull or fade the fiberglass finish and what can be done to restore the finish.

Fiberglass consists of two basic polyester products – gel coat and the structural reinforcement. Gel coat is the outer colored surface, and the structural reinforcement is a blend of polyester laminating resin mixed with strands of glass to create a structure that is strong, weather resistant, and long-wearing.

Man made and natural materials, when placed in the elements, slowly deteriorate. The material is exposed to the sun, water, wind, dust, and chemicals in the air; the amount of wear and tear depends on how you treat the product and maintain it. An automobile's exterior surface quickly deteriorates if you do not wash and wax the painted surface. Although the gel coated surface is approximately ten times thicker than the paint surface on your automobile, it reacts similarly when exposed to the elements.

### B. General Maintenance

- (1) Wash monthly, or, more frequently if needed. Wash with a mild soap, such as dishwashing soap; avoid using strong alkaline cleaners and abrasives.

- (2) Wax the unit once or twice each year using a paste wax containing a high percentage of carnauba. As a rule, only the hard paste waxes contain large amounts of carnauba. Liquid or soft waxes usually contain a large amount of silicone and solvents. The silicone is usually washed away after a few washing with a detergent.

### C. Chalking

Chalk is the outer surface of the gel coat being broken down into an extremely fine powder. The chalk that develops is strictly on the surface. This problem is caused by overexposure to the sun's ultraviolet rays, chemicals in the air, or improper care of the gel coat surface. To alleviate the chalk, wash the unit and try a paste wax to restore the luster. If this is not effective, apply a fine rubbing compound, either by hand or with a power buffer. Follow this procedure with a good paste wax. If this method is still ineffective, a light sanding using 600 grit or finer grit wet or dry sandpaper can be used followed by fine rubbing compound and a coat of wax.

*N O T E: If a power buffer is used, use low RPM with light pressure. Keep the buffer moving at all times to prevent heat build-up, which may result in a burn spot or softening of the gel coat surface.*

### D. Fading

Fading means that the color has changed. Fading is caused by (1) chalking, which makes the color lights, (2) pigments in the gel coat have actually changed color due to a chemical reaction with chemicals or pollution in the air, or (3) the gel coat is bleached or stained by something. Stains may derive from dirt, dust, road tar, plant sap, rust, or materials from caulking or sealing compounds.

To determine how to remove a stain, pre-test the stain in an inconspicuous area first, using mild detergent. A mild abrasive cleaner may be used if necessary. The abrasive cleaner may leave the finish dull and may need to be buffed to restore the luster. Always apply a coat of wax to the repair area when completed.

To remove a non-soluble stain, you may try removal using acetone, paint thinner, or alcohol. Prevent prolonged contact with the surface for fear of deterioration of the gel coat surface.

Scratches may be touched up using touch-up paint purchased from your Ford dealer. The fiberglass gel coat is the same color as the Ford chassis. For larger repairs, you may contact Born Free Customer Service and we will send you the desired amount of gel coat material. We would be happy to assist you with any and all repairs you may require.

## COACH

### A. Interior

#### 1. Seat Belts

For seat belt requirements, refer to RVIA and FMVSS (Federal Motor Vehicle Safety



Standards). Most states, by law, are requiring the use of seat belts. In addition, Born Free Motorcoach recommends the use of seat belts on all passengers while the vehicle is in motion.

According to Federal Regulations on recreational vehicles, an automatic restraint diagonal shoulder belt on the right front passenger seat is not approved and therefore cannot be used to secure a child safety seat. The safety of young passengers is not only your responsibility, but it's the law.

## 2. Smoke Alarm

A smoke alarm is provided as protection in case of a fire. The alarm operates on a 9-volt battery. We suggest that you change the battery once a year for your protection.

**LIMITATION ON LIABILITY** – Remedy under this warranty is limited to repair or replacement of the detector only. We will not be liable for loss or damage due directly or indirectly to occurrences which the detector is designed to detect.

Some states do not allow the exclusion or limitation of incidental or consequential damages; so the above limitations or exclusions may not apply to you. The warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

## 3. Cabinets and Doors

Your Born Free Motorcoach is equipped with solid oak/cherry cabinet doors. It is not uncommon for the doors to become misaligned during travel. Because of normal movement of the coach and cabinet loading, the doors on some cabinets may become misaligned. Normally, a simple adjustment of the door striker or hinge is all that is required.

## 4. Beds

Several types of beds are used in the Born Free Motorcoaches. They are designed for maximum comfort in seating and sleeping.

- a. **42" x 76" Sofa Bed** – The sofa quickly converts from a sofa to a 42" x 76" bed by lifting up and pulling out of the seat cushion. The bed then can be made up for a comfortable night's sleep. To return it to a sofa, simply lift the front and push in.
- b. **Dinette/Sofa Bed** – The dinette sofa combines sleeping accommodations with dining style seating. After lowering the table, move the cushions into place using one of the backrest cushions to form a comfortable bed. Open storage is found under each seat base.
- c. **Cabover Bed** – This uniquely shaped mattress fits the contour of our cabover bed area. By "flipping over" the center cushion, you are ready to climb the bed ladder to the cabover bedroom. Privacy curtains separate this area from the rest of the motorcoach and the outside. The mattress measures 66" x 82" x 4" thick.

5. Interior Maintenance

Curtains, shades, and upholstery . . . vacuum the upholstery, curtains and shades as regularly as the carpet. Do not wash the curtains, but rather, have them dry cleaned. Carpet spot remover may be used to remove stains and soiled spots from furniture and carpet.

6. Carbon Monoxide Detector

The C/ O Detector is designed to pick up high levels of carbon monoxide in your coach. The green light indicates the device is running. If the red light is on and the alarm is emitting a high pitched sound, this indicates that an abnormal amount of carbon monoxide is in the air. Also, hair spray or any type of can aerosol will set the alarm off. If the alarm does go off, check to ensure you have not sprayed anything in the direction of the alarm. Periodically check the alarm for operation by pressing in the test button. Hold the button down until the alarm goes off. It will stop after a short period of time. If the alarm fails to test properly, have the unit checked at an RV dealer.

7. Emergency Exits

Three entry doors are designated as exits to your Born Free Motorcoach. The rear window on some recreational vehicles is also designated as an emergency exit. Familiarize all occupants with these exits in case of an emergency.

8. Roof Vents

To provide adequate ventilation inside your coach, crank out roof vents are installed in the ceiling. This vent fan is a 3-speed exhaust fan that will do an excellent job of exhausting.

Do not travel with the roof vents in the wide-open position. Also, while using the roof mounted air conditioner, be sure roof vents are closed to get maximum efficiency from the air conditioner.

9. Roof Air Conditioner

As an accessory, we install a 13,500 BTU Duo-Therm roof mounted air conditioner.

- a. **Operating Instructions** – The roof mounted air conditioner operates on 120-volt power supplied either by shoreline or generator produced 120-volt current.
- b. **Controls** – The selector switch is the left hand knob. It has eight positions and controls fan speeds, heating mode and cooling mode. The thermostat is located on the right side and controls and temperature range from 65 degrees on the coldest side to 90 degrees on the warmest side. The compressor On/Off is controlled by the thermostat setting in the cooling mode.
- c. **Cooling Operation** – Select the fan speed that best satisfies your needs:
  1. **High Cool** – Selected when maximum cooling and dehumidification are required.
  2. **Medium Cool** – Selected when normal or average cooling is required.
  3. **Low Cool** – Selected when room is at desired comfort level and needs to be maintained. Normally, this speed is used for nighttime operation.



*NOTE: The blower runs continuously to circulate air and maintain an even temperature. The compressor will cycle on as cooling is required to maintain the selected temperature level.*

Set the thermostat at the desired temperature.

- d. **Heating Operation** – Turn the selector switch to OPT HEAT. The fan and heater will run continuously on low speed.
- e. **Maintenance** – Periodically remove the filter / grille assemblies located in the air box and clean. Remove the assemblies by placing fingers on the long portion of latches and with an over-and-downward pressure, unlatch the catches. After assemblies are removed, wash the filter / grille assemblies with soap and warm water. Let the assemblies dry and then reinstall.
- f. **Warranty Service** – In case of failure to operate, check power source first to make sure shoreline is carrying proper amount of current, check generator to see if it is producing power, or check the breaker at the power converter to see if it is tripped. Refer to the Duo-Therm Air Conditioner manual for warranty and service information.

#### 10. Range Hood/Monitor Panel

- a. **Range Hood** – Your Born Free Motorcoach is equipped with a 12-volt range hood. It has a built-in monitor panel to accurately read the holding tanks, water tank, battery level and L.P. level. The panel also has a water pump switch, hood light, and fan switch built in.
- b. **Fan and Light** – A simple push of the fan button will activate the exhaust fan. A light can also be activated by pushing the light switch. The third switch on the frontal panel is for the water pump. This switch may be left on while camping and the pump will automatically cycle when needed. We advise that you turn the water pump switch off when traveling.
- c. **Monitor Panel** – By pushing the “monitor” switch, the panel will light up, indicating the fluid levels in the black water holding tank, the gray water holding tank, the fresh water holding tank, the charge condition of the auxiliary battery and amount of L.P.
- d. **Maintenance** – The range vent may be cleaned with soap and water. Periodically remove the aluminum filter and wash in soap and water. Allow to dry and reinstall. For warranty service, see your Jensen warranty manual.

#### 11. Microwave Oven

Born Free offers an option on some vehicles – a microwave oven. Because we offer a variety of brands, we advise you to consult the manufacturer's owner's manual for proper operating instructions and warranty service.

#### 12. TV / VCR / VCP

Again, Born Free offers as an option a variety of brands and we advise you to consult the manufacturer's owner's manual for proper operating instruction and warranty service.

### 13. L P Detector

The L P Detector is designed to pick up any high amounts of L P in your coach. Proper operation is indicated by the green light on the alarm. If an abnormal amount of L P is in your coach, the red light will come on and a high pitched sound will occur. Also on the alarm is a low voltage indicator. If your house batteries are low, the yellow light will come on and a high pitched sound will occur. Simply start the vehicle and the yellow light will go off. If the light and sound alarm stay on, you may have a problem with the house batteries. As is with all electrical components, if the part fails, have it checked at an RV dealer for repairs.

## B. Exterior

1. Doors and Locks – Born Free Motorcoaches are equipped with the following locks and keys: Chassis door and ignition, coach entrance door lock, coach entrance dead bolt lock, and compartment door locks. For replacement see chassis dealer or send number of lock to Born Free Motorcoach.

2. Rack and Ladder

Exterior roof mount rack and ladder is offered to provide access to the roof area for storage purposes. Care should be taken when using the ladder in icy or rainy conditions. Do not exceed 100 pounds per square foot, or 1,000 pounds total weight of storage on roof.

3. Roof Mounted Storage Compartment

This weatherproof storage pod is a very useful accessory for storing large items, like suitcases, sleeping bags, etc. Do not exceed 10 pounds per square foot, or 100 pounds total weight of storage in the compartment.

4. Generator Storage Compartment

The generator storage compartment is located under the floor on the driver's side of the vehicle. If an auxiliary generator is not installed in this area, it can be used as an outside storage compartment.

5. Battery Storage Compartment

The auxiliary battery storage compartment is located on the lower driver's side. The batteries are mounted on a sliding tray and can be slid out for servicing the auxiliary batteries. This compartment is not weather-tight, to allow fumes and gasses to escape.

6. Sewer Hose Compartment

We have provided you with a storage compartment to house your sewer hose.

7. Gas Fill Door

Access to your fuel tank fill is obtained through this area. Pay particular attention to the warning labels affixed to the door. Diesel owners need to pay particular attention when filling the fuel tank that the service station attendant uses diesel fuel rather than gasoline.



8. Power Cord Hatch

Your 30-foot power cord is stored in the bumper.

9. Exterior Light

We have installed a light in the area of the waste tank dump valve to aid you in evacuating the waste tanks at night.

10. 120-Volt Exterior Outlet

A 120-volt weatherproof outlet is available on your coach to run any 120-volt accessories you may have. This outlet is controlled by a ground-fault 120-volt breaker to prevent electrical shock caused by wet conditions. Use only grounded plugs and do not exceed the amperage limit of the breaker.

11. Potable and City Water Fills

One door, located on the driver's side, access the potable water and city water fills.

12. Furnace Outlet

The exterior furnace outlet is a combination intake and exhaust system for the furnace. When the furnace is operating, this vent may become hot and you should take precautions not to touch it or store flammables near it.

13. Roof Mounted TV Antenna

Models with TV's have an antenna mounted on the roof, with access to the inside of the coach for positioning the antenna. A simple turn of the inside knob will position the antenna to your desired location.

14. Entry Door Light and Grab Handle

The exterior porch light and the lighted grab handle are switched inside the entry door on the wall. On all models, we install a stepwell light, which is also switched on the wall.

## Electrical Systems

Your Born Free Motorcoach is equipped with one or more electrical sources for electrical power for your coach:

- (1) 12-volt automotive electrical system
- (2) 12-volt motorcoach auxiliary battery
- (3) 120-volt external power supply
- (4) 120-volt auxiliary generator (optional)

### A. Automotive 12-volt System

The chassis battery is located under the chassis hood on the driver's side and operates the

following:

- (1) Headlamps
- (2) Turn Indicators
- (3) Console Panel Lamps
- (4) Windshield Wipers
- (5) Speed Control
- (6) Starter Motor
- (7) Backup Lights
- (8) Exterior Clearance Lights
- (9) Tail Lights, Indicator Lights, and Stop Lights
- (10) Cigarette Lighter (Dash Mount)
- (11) Auto Air Conditioner
- (12) Radio and Stereo

All of the above accessories are fused at the chassis fuse box. See your chassis owner's manual for proper replacement.

**NOTE:** *Never install a larger rated fuse as a replacement. Severe wire damage or possible fire may result.*

## **B. Auxiliary Coach 12-Volt System**

The coach is equipped with auxiliary batteries mounted on a slide-out tray beneath the coach floor. They operate the following:

- (1) Interior Lights
- (2) Interior Roof Fans
- (3) Range Exhaust Fan
- (4) Furnace Fan and Igniter
- (5) Water Pump
- (6) Monitor Panel
- (7) Auxiliary Generator Starter
- (8) Safety Detector
- (9) LP Leak Detector
- (10) Igniters for Refrigerator and Water Heater
- (11) 12V Outlets

The auxiliary batteries are separated from the truck battery anytime the chassis ignition is switched off by a battery isolator mounted near the auxiliary battery. The isolator separates the two systems so that the chassis battery won't run down during auxiliary use. When the chassis engine is running, the isolator allows the auxiliary battery to be charged by the alternator. The auxiliary battery can also be charged through the power converter when the vehicle is plugged into 120-volt shoreline power, or, when the auxiliary generator is running. However, the rate of charge is a great deal less and will take a longer time to recharge.



1998 and newer vehicles with diesel engines have two chassis batteries. Diesel engines require more cranking amperage and thus the two batteries. One battery is under the hood and the other is mounted to the frame on the passenger side of the coach.

### C. Care of Batteries

Check battery water level before every trip, and at least once a week during heavy use. The terminals on the battery must be kept clean and free from corrosion. If the motorcoach is stored for the winter, turn the battery disconnect (located in the stepwell by the driver's door) to the "off" position. Even when idle, batteries will discharge due to chemical action, and should be charged periodically. Do not connect the battery to a charger and leave for the winter; the danger of overcharging is too great.

### D. Switches and 12-Volt Fusing

All 12-volt powered equipment is fused inside the power converter control center. Each fuse is labeled on the control center door. DO NOT install a larger replacement fuse, as each circuit is rated for the size of fuse installed.

A switch panel, mounted inside the door on some models, has control switches with a built in circuit breaker to accommodate any overload situation. If a switch circuit becomes overloaded, the switch circuit breaker will trip and must be re-set. Re-setting the breaker involves switching the tripped switch from off positions back to on positions.

### E. 110-Volt System

The 110-volt system operates from a shoreline utility service, or an auxiliary generator source.

The following equipment operates entirely off of 110-volt power:

- (1) Roof Air Conditioner / Heater
- (2) Refrigerator (except when operating on LP Gas)
- (3) Electric Appliances
- (4) Electrical Outlets
- (5) Microwave
- (6) TV/VCR/Etc.

#### 1. 110-Volt Utility Supply

A 30-foot U L approved 30-amp heavy-duty cable is provided for the connection to a utility supply. Also, a 15-amp adapter is provided to adapt to a standard three-prong outlet.

**WARNING:** *Never use an ungrounded plug adapter; an electrical short may occur and cause serious electrical damage or personal injury.*

#### 2. Converter Control Center – Battery Charger

When plugged into 120-volt shoreline, 120-volt current enters the motorcoach from the 30-

amp cord directly into the converter control center. The converter converts the 120-volt power into 12-volt DC current, along with supplying 120-volt power to wall outlets and all appliances requiring AC current. The converter also contains a battery charger that will charge the auxiliary battery at a rate of three amps per hour. The three-amp charger is not intended to charge the auxiliary battery rapidly. The chassis alternator is intended to be the primary source of charge. When plugged into shoreline power, no DC power is removed from the auxiliary battery.

All cord electrical circuits are switched and fused inside the converter control center. Dropping the front panel of the converter will expose the circuit breakers that control the 120-volt power in the motorcoach and the automotive type snap-in fuses that control the 12-volt circuits. The circuit breakers are a manual reset type similar to those used in your home. If a short occurs, the breaker will trip and will have to be manually reset. The automotive fuses must be replaced using the same amperage rated fuse replacements. We recommend that you carry a supply of spare replacement fuses, in the various sizes required, along with you. Inside the converter face panel, you will find that we have identified each circuit for you.

In the event that a circuit breaker trips or a fuse blows, reset the breaker or replace the fuse. If this happens again, we suggest that you locate the circuit and unplug the offending appliance before resetting the breaker or replacing another fuse. The cause may be in the appliance itself. Again, never replace a blown fuse or circuit breaker with a larger rated fuse or breaker.

#### **F. Ground Fault Circuit Breaker**

For your protection and safety, we have installed a Ground Fault Circuit Breaker (GFCB) to protect the outlets in your Born Free Motorcoach that are located in areas that are possibly wet. Bathroom and outside outlets are protected with this device and will sense and trip the "GFCB." We advise you to test the "GFCB" once a month to be sure the breaker is functioning properly. To test the device, simply push the "TEST" button. An electrical test will thoroughly test all ground fault features. The breaker handle will audibly move to center trip position indicating ground fault protection. Reset the breaker by moving the handle to "OFF" and then "ON." If the test fails to trip the breaker, you should have the breaker replaced.

#### **G. 120-Volt Auxiliary Generator**

The auxiliary generator in your motorcoach allows you to use 120-volt appliances when utility power is not available. The generator operates on unleaded gasoline from the fuel tank of your motorcoach or from LP Gas from the LP storage tank. We advise you to maintain at least one-fourth of a tank of gasoline and at least 15% full for the propane version to adequately supply fuel for the generator.

*NOTE: If your fuel tank is not at least one-fourth full, the generator will not run!*

The propane generator runs on liquid LP Gas, drawn from the bottom of the LP supply tank, unlike your LP appliances, which operate on LP Gas vapor.



**WARNING:** *The exhaust from the generator contains carbon monoxide (CO). This gas is colorless, odorless, tasteless, lighter than air, and poisonous. The exhaust system of your auxiliary generator has been installed with your safety in mind, however, certain precautions must be taken to protect you from conditions beyond the control of the manufacturer:*

- (1) Do not simultaneously operate your generator and a ventilator that could draw air containing exhaust gases into the vehicle.
- (2) Do not open windows or non-powered vents in the vicinity of the generator location.
- (3) Position the vehicle, when parking, so that the wind will carry exhaust fumes away from you. Note the position of other vehicles parked near you.
- (4) Do not position the motorcoach so that the generator exhaust is deflected off vegetation, snow, building, vehicles, or any other object that can deflect the exhaust under or into the vehicle.

## Generator Operation

### Before starting the generator:

- (1) Open access panel on generator and visually inspect exhaust system. Look for loose or damaged components and fasteners.
- (2) Check the engine oil level. (Do not overfill.)
- (3) Make sure that you have an adequate supply of fuel.
- (4) Switch off all electrical appliances.

### Starting and Stopping:

The generator has two start / stop switches. One is mounted on the generator, and the other is located inside the coach, mounted to a cabinet face. The inside switch panel also has an indicator light that tells you when the generator is running and an hourmeter to tell you how many hours the generator has run.

- (1) Push the "Start" switch to start the generator. Release the switch when the generator starts. A light will come on at the switch when the generator is running.
- (2) Allow the generator to warm up before switching on any appliances.
- (3) Switch on electrical appliances.
- (4) To stop the generator, switch off all electrical appliances and allow the generator to cool for three to five minutes. Then push the "Off" switch.

### Break-In Procedure:

After initial start up, plug in enough appliances to equal half the generator's capacity (check the model and capacity in your owner's manual). Run the generator with this load for two hours. Operate the

generator for another two hours with a three quarter's load.

Change the crank case oil after 50 hours and every 150 hours after that.

### **Maintenance:**

- (1) Because the generator is air cooled, it is essential that the cooling fins be kept clean and nothing is allowed to obstruct air flow to and from the generator.
- (2) Keep the governor linkage clean and well lubricated. (Refer to the owner's manual for proper procedure.)
- (3) It's a good practice to "exercise" the generator in times when there is infrequent use of the motorcoach. Running the generator at one-half capacity approximately every four weeks for about two hours will rid the generator of damaging moisture condensation. Failure to follow this procedure could result in generator engine damage.
- (4) The generator should be cleaned every six months, or, sooner if severe road contamination or dusty conditions are encountered.
  - a. Do not steam clean or power spray while the generator is running
  - b. Provide cover or protection so that spray is not directed into the generator air cleaner, control box, fuel solenoid, or electrical connectors. Do not use solvents.



# GENERATOR TROUBLESHOOTING GUIDE

The following is a simplified troubleshooting guide. If these recommendations fail to resolve the problem, contact your service organization or a generator set repair service.

Problem	Probable Cause	Solution
Fails To Crank	<ol style="list-style-type: none"> <li>1. Low battery</li> <li>2. Bad battery connection</li> <li>3. Blown fuse</li> </ol>	<p>Check battery electrolyte level</p> <p>Clean and tighten all battery and cable connections</p> <p>Replace fuse on control box. See specifications for proper fuse rating.</p>
Cranks Slowly	<ol style="list-style-type: none"> <li>1. Low battery</li> <li>2. Bad battery connection</li> <li>3. Oil is too heavy</li> <li>4. Load connected</li> </ol>	<p>See "Fails to Crank", #1</p> <p>See "Fails to Crank", #2</p> <p>Replace with lighter oil</p> <p>Remove load</p>
Cranks But Won't Start	<ol style="list-style-type: none"> <li>1. Fuel below genset pick up</li> <li>2. Fuel supply shut off valve closed</li> <li>3. Carbon deposits on spark plugs</li> </ol>	<p>Add fuel</p> <p>Fully open fuel supply valve</p> <p>Remove spark plugs and clean</p>
Exhausting Black Smoke	<ol style="list-style-type: none"> <li>1. Rich fuel mixture</li> <li>2. Dirty air filter</li> <li>3. Excess oil</li> </ol>	<p>Turn main fuel adjustment in 1/8 turn</p> <p>Replace air filter</p> <p>Reduce engine oil level</p>
Unit Runs Then Stops	<ol style="list-style-type: none"> <li>1. Out of fuel</li> <li>2. Low oil level</li> <li>3. Excess oil</li> </ol>	<p>Refill fuel tank</p> <p>Add oil if necessary</p> <p>Reduce engine oil level</p>
Unit Runs But Surges	<ol style="list-style-type: none"> <li>1. Worn breaker points</li> <li>2. Loose or worn spark plug leads</li> <li>3. Ignition coil, wiring, or control components defective</li> </ol>	<p>Adjust or replace breaker points</p> <p>Check security of spark plug leads at spark plugs and ignition coil – replace leads if worn.</p> <p>Contact service representative</p>

## WARNING!!

*A hot generator set can cause severe burns. Always allow the generator set to cool before performing any maintenance or service.*

## Maintenance Schedule

Establish and adhere to a definite schedule for maintenance and service. If the generator set is subjected to extreme operating conditions, you should reduce the intervals accordingly.

Consult your dealer if the generator set will be subjected to any extreme operating conditions and determine a suitable maintenance schedule. Keep an accurate log of all service and maintenance performed for warranty support.

Perform all the maintenance at the time period indicated or after the number of operating hours indicated, whichever comes first. Use the schedule to determine the maintenance required, and then refer to the sections that follow for the correct procedures.

If you have the under-floor mount generator set and it must be lowered for any maintenance procedure (that is, you cannot service it in its normal position) take your motorcoach to an authorized generator service center.

**WARNING:** *Accidental starting of the generator set during maintenance procedures can cause severe personal injury or death. Disconnect both generator set starting battery cables before performing maintenance; disconnect negative (-) cable first.*



# PERIODIC MAINTENANCE SCHEDULE

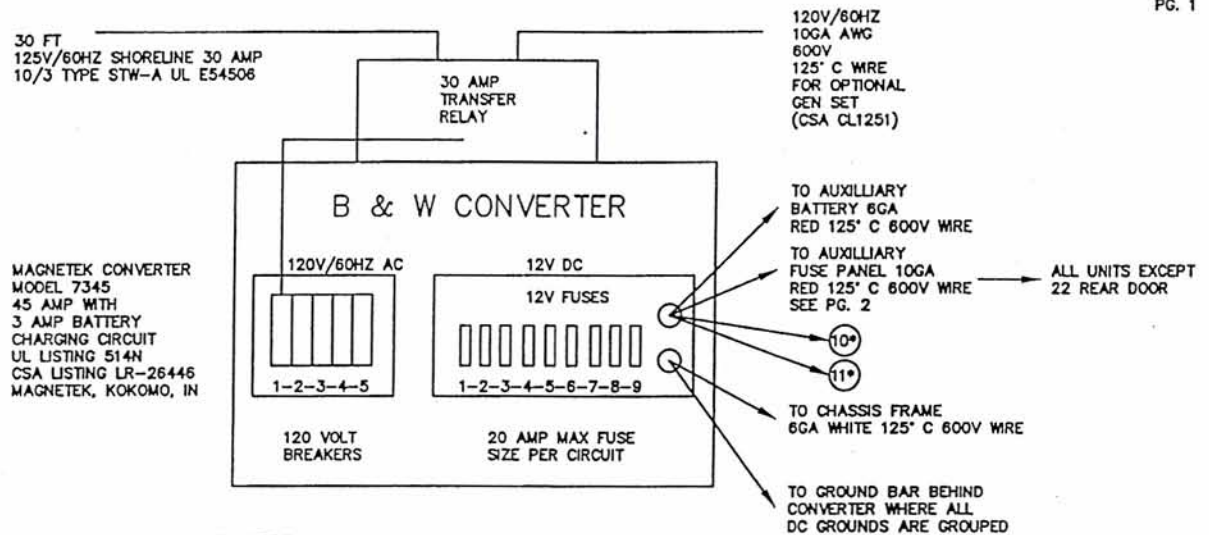
SERVICE THESE ITEMS	AFTER EACH CYCLE OF INDICATED HOURS				
	8	50	150	200	300
General inspection	X <sup>1</sup>				
Check oil level	X				
Check battery electrolyte level		X			
Clean out spark arrester		X			
Clean and lubricate governor linkage		X			
Change crankcase oil and oil filter			X <sup>2,7</sup>		
Change air filter			X <sup>2</sup>		
Clean fuel filter			X <sup>3</sup>		
Replace spark plugs			X <sup>4,9</sup>		
Check breaker points			X <sup>5</sup>		
Replace breaker points				X <sup>4,9</sup>	
Clean cooling fins				X <sup>6</sup>	
Clean carburetor and combustion chamber with Onan "4C" Cleaner			X		
Clean generator set			X		
Inspect and clean engine					X <sup>6</sup>
Adjust carburetor			AS REQUIRED <sup>6</sup>		
Check generator brushes			AS REQUIRED <sup>6</sup>		
Exercise generator set			AS REQUIRED <sup>8</sup>		

- 1 - With set running, visually and audibly check exhaust system for leaks.
- 2 - Every 150 operating hours or once a year, whichever is first. Perform more often in extremely dusty conditions ie - check monthly, and change if dirty
- 3 - Equipped on BGEL and NHEL models - customer option for BGE and NHE models
- 4 - Or replace annually, or prior to storage, whichever is first
- 5 - Replace if necessary
- 6 - Have your service center perform
- 7 - First oil change during first year or 50 hours of operation, whichever is first
- 8 - During periods of non-use, exercise for 2 hours every 4 weeks
- 9 - Refer to Out-Of-Service Protection if unit is to be stores.

# ELECTRICAL CIRCUITS FOR ALL STANDARD BORN FREE RV MODELS

CGK 12/20/00  
REVISION B

**BF-1**  
PG. 1



## 120VAC CIRCUITS

1. 30A MAIN BREAKER
2. 20A MAIN BREAKER: 12VDC CONVERTER & REFRIGERATOR OUTLET
3. 20A GFI BREAKER: OUTSIDE OUTLET & INSIDE OUTLETS
4. 20A BREAKER: MICROWAVE OUTLET
5. 20A BREAKER: ROOF AIR CONDITIONER

ALL WIRE IS 12-2  
TYPE NM-B WITH  
GROUND 600 VOLT  
UL-E18679

## 12VDC CIRCUITS

1. 10A: WATER PUMP
2. 15A: PASSENGER SIDE LIGHTS
3. 15A: DRIVER SIDE LIGHTS
4. 15A: WATER HEATER, BATH LIGHT, BATH FAN
5. 5A: MONITOR PANEL
6. 5A: REFRIGERATOR
7. 10A: TV BOOSTER (15A ENT. CENTER FOR 22RD - SEE PG. 2)
8. 10A: FANTASTIC ROOF FAN
9. 15A: FURNACE
- 10\*. 3A: LPG ALARM (INLINE FUSE)(22RD ONLY)
- 11\*. 10A: ADJUSTABLE TWIN BEDS (INLINE FUSE)(22RD ONLY)

## WIRE COLOR/GAUGE

- RED 12GA
- BROWN 12GA
- BLUE 12GA
- ORANGE 12GA
- BLACK 12GA & 16GA
- WHITE & BLACK 12GA
- YELLOW 12GA (10GA FOR 22RD)
- PURPLE 12GA
- YELLOW & BLACK 12GA
- ORANGE & BLACK 12GA
- RED 12GA

ALL WIRE IS 600 VOLT 125° C TYPE 3173 CROSS LINKED POLYETHYLENE CSA CL1251

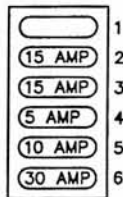


# ELECTRICAL CIRCUITS FOR ALL STANDARD BORN FREE RV MODELS

CGK 12/20/00  
REVISION B

**BF-1**  
PG. 2

## AUXILLIARY FUSE PANEL (ALL UNITS EXCEPT 22 REAR DOOR)

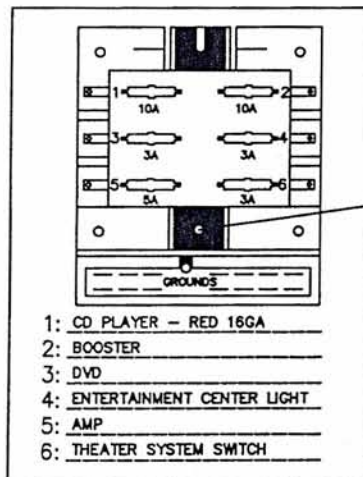


### 12VDC CIRCUITS

### WIRE COLOR/GAUGE

- |                                 |                   |
|---------------------------------|-------------------|
| 1. SPARE POSITION               |                   |
| 2. 15A: ELEC. AWNING (OPTIONAL) | PURPLE 10GA       |
| 3. 15A: 12V A/C (OPTIONAL)      | GRAY 16GA         |
| 4. 5A: LP DETECTOR              | ORANGE/BLACK 16GA |
| 5. 10A: 12V OUTLET              | BLACK/WHITE 16GA  |
| 6. 30A: INVERTER                | YELLOW 10GA       |

## 22RD ENTERTAINMENT CENTER FUSE PANEL



### 12VDC CIRCUITS

### WIRE COLOR/GAUGE

- |                              |             |
|------------------------------|-------------|
| 1. 10A: STEREO/CD PLAYER     | RED 16GA    |
| 2. 10A: TV BOOSTER           | RED 16GA    |
| 3. 3A: DVD PLAYER            | RED 16GA    |
| 4. 3A: ENT. CENTER LIGHT     | YELLOW 16GA |
| 5. 5A: AMPLIFIER             | RED 16GA    |
| 6. 3A: THEATER SYSTEM SWITCH | YELLOW 16GA |

ALL WIRE IS 600 VOLT 125° C TYPE 3173 CROSS LINKED POLYETHYLENE CSA CL1251

NAPA ST36  
12V SOLENOID  
CONTINUOUS DUTY  
200A, 4 TERMINAL  
INSULATED COIL

2GA RED TO  
50A RELAY

16GA WHITE GROUND  
TO TRUCK FRAME

2GA RED FROM  
80A BATTERY RELAY

16GA  
GREEN

16GA GRAY

BAT

AUX

6A  
RELAY

JENSEN  
ROCKER  
SWITCH

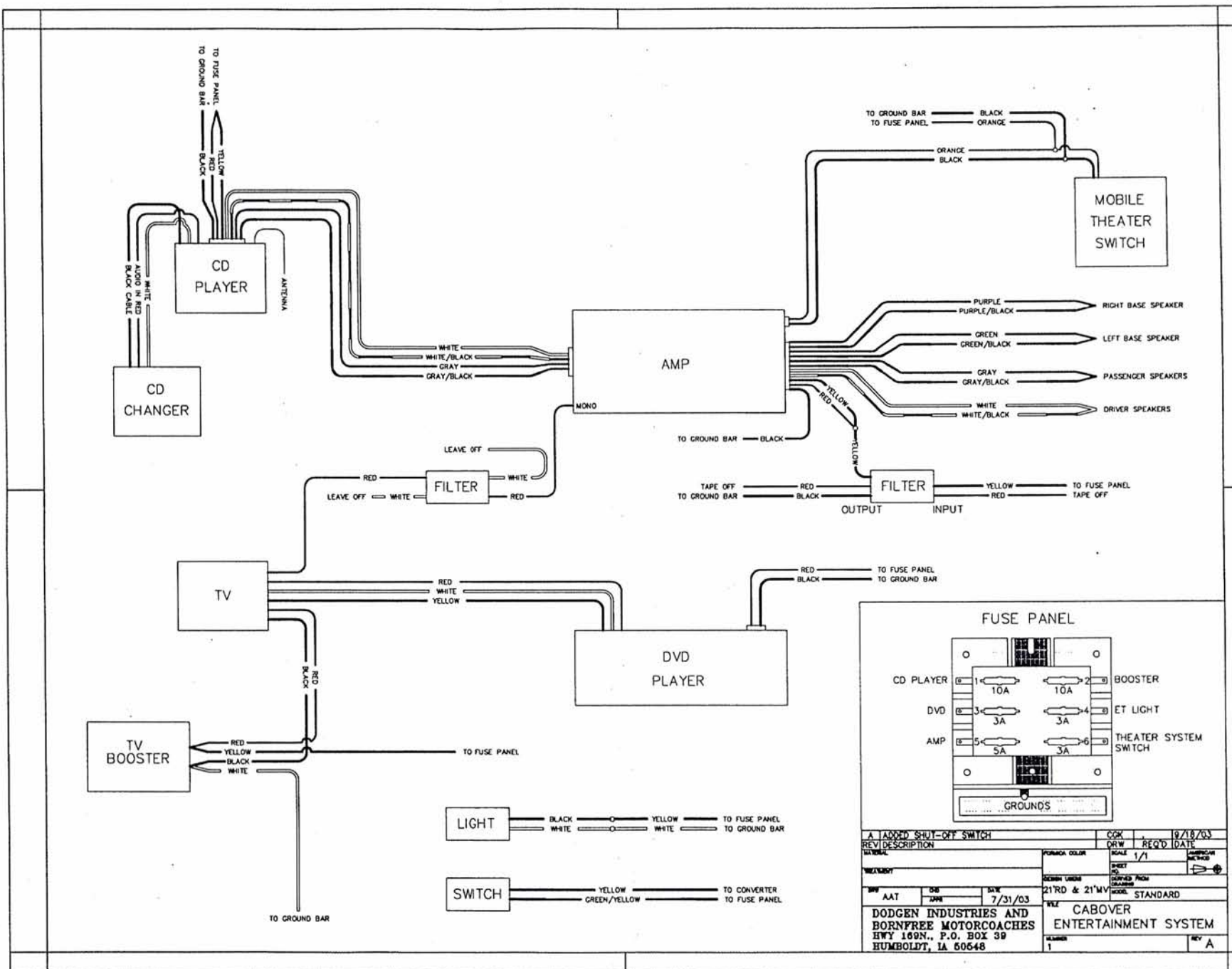
ON

OFF

16GA  
GRAY

DATE		FORMICA COLOR		SCALE 1/1	AMERICAN METHOD
MECHANIC		DESIGNER		SHEET	
BY CGK	DATE 12/4/03	22 RD		DESIGNED FROM	
DODGEN INDUSTRIES AND BORNFREE MOTORCOACHES HWY 169N., P.O. BOX 39 HUMBOLDT, IA 50548		FILE		STANDARD	
		BATTERY DISCONNECT SYSTEM		REV	
		1/4			

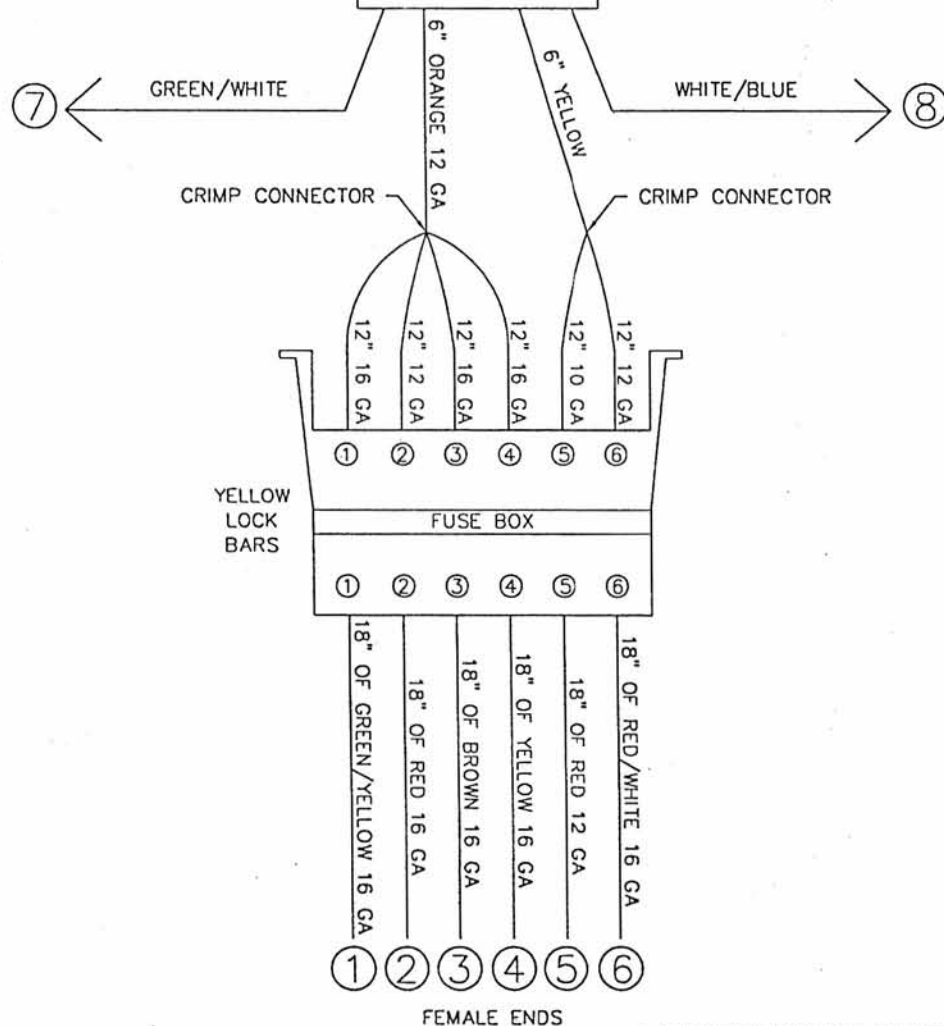




NO F7UB 14 A411

BA 7J E498P

FORD UNDER  
DASH PLUG



- ① IGNITION FEED FOR MIRRORS  
10 AMP FUSE / 16 GA GREEN/YELLOW  
.250" FEMALE SLIDE ON CONNECTOR
- ② IGNITION FEED FOR LUMBAR & HEAT IN CAB SEATS  
15 AMP FUSE / 16 GA RED  
.250" FEMALE SLIDE ON CONNECTOR
- ③ IGNITION FEED FOR SATELLITE DISH OPTION  
3 AMP FUSE / 16 GA BROWN  
.250" FEMALE SLIDE ON CONNECTOR
- ④ IGNITION FEED FOR POWERTAP FOR BACKUP CAMERA AND/OR ELECTRIC STEP: FUSE BASED ON CONNECTED OPTIONS / 16 GA YELLOW  
.250" FEMALE SLIDE ON CONNECTOR  
EACH DEVICE HAS ITS OWN IN LINE FUSE
- ⑤ BATTERY FEED FOR POWER STEP OPTION  
20 AMP FUSE / 12 GA RED  
.250" FEMALE SLIDE ON CONNECTOR
- ⑥ BATTERY FEED FOR CB RADIO  
3 AMP FUSE / 16 GA RED/WHITE  
.250" FEMALE SLIDE ON CONNECTOR
- ⑦ FORD SUPPLIED LEAD FOR LEFT TURN SIGNAL  
.250" FEMALE SLIDE ON CONNECTOR
- ⑧ FORD SUPPLIED LEAD FOR RIGHT TURN SIGNAL  
.250" FEMALE SLIDE ON CONNECTOR

\* FUSE BOX LOCATED UNDER FORD DASH

DATE		FORMER COLOR		SCALE	1/1
TREATMENT		DESIGN CODE		SHEET	1
DATE	BY	DATE	BY	DESIGNED BY	ALL
AAT	11/29/00	STANDARD	MODEL	OPTION FUSE BOX	
DODGEN INDUSTRIES AND BORNFREE MOTORCOACHES HWY 169N., P.O. BOX 39 HUMBOLDT, IA 50548				NUMBER	2
				REV	



22RD-1

**CONVERTER CALCULATIONS FOR 22' REAR DOOR**

MAGNETEK MODEL 7345 45 AMP CONVERTER

<u>12V ITEMS AVAILABLE ON CIRCUITS</u>	<u>RATINGS</u>	<u>AMPS</u>
SCANDVIK BRASS READING LIGHT	4 X 1.2A	4.80
THIN-LITE 30 WATT FLUORESCENT LIGHT	6 X 2.5A	15.00
PROGRESSIVE DYNAMICS SINGLE BULB LIGHT	1.44A	1.44
SHURFLO WHISPER KING WATER PUMP	5.5A	5.50
CONVERTER BATTERY CHARGE FUNCTION	3.0A	3.00
VENTLINE BATHROOM FAN	1.5A	1.50
ATWOOD G6A-8E WATER HEATER	1.0A	1.00
SUBURBAN SF-30F FURNACE	6.5A	6.50
NORCOLD N641 REFRIGERATOR	1.2A	1.20
CCI LPG ALARM	0.1A	0.10
BRAUND 12V TV OUTLET W/BOOSTER	3.43A	3.43
KWIKEE ELECTRIC STEP WITH LIGHT	6.0A	6.00
BARGMAN EXTERIOR LIGHT	2 X 0.94A	1.88
TRUSTY "BORN FREE" LIGHTED ENTRY HANDLE	0.42A	0.42
FAN-TASTIC FAN 3 SPEED MODEL 6000RBTA	3.0A	3.00
12V DC OUTLET (OPTIONAL)	3.33A	3.33
JENSEN STOVE HOOD & MONITOR PANEL	4.6A	4.60
RIVER PARK MOBILE THEATER SYSTEM TV, STEREO, CD, DVD	13.3A	13.30
ITC SHOWER LIGHT	2 X .833A	1.67

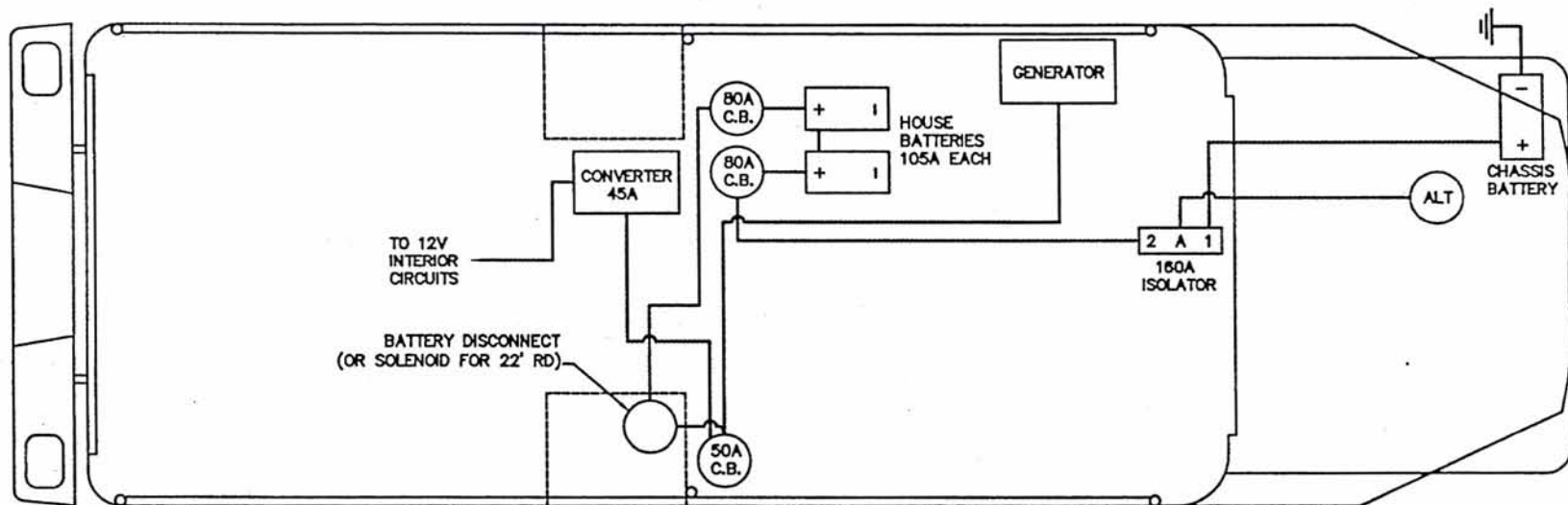
**TOTAL AMPS**

77.67

**CONVERTER CALCULATION FORMULA**

1ST 20A @ 100% =	20.00
2ND 20A @ 50% =	10.00
OVER 40A @ 25% =	9.42
<b>TOTAL =</b>	<b>39.42</b>

# ELECTRICAL SCHEMATIC 12 V / DC FEED SYSTEM



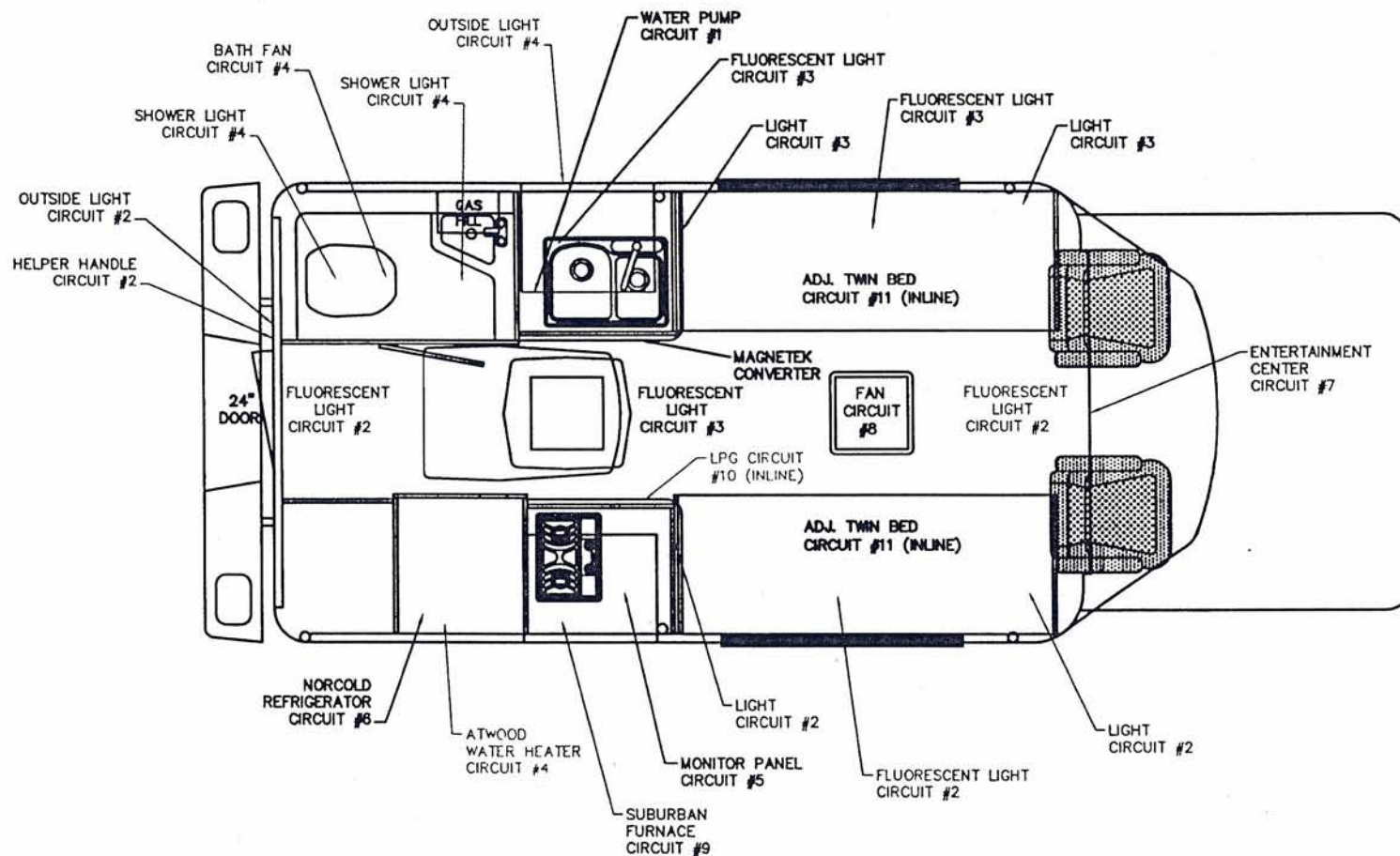
BF-2 REV B

FIRM: DOODEN INDUSTRIES
BORN FREE MOTORCOACH
ELECTRICAL SCHEMATIC
DATE: 12/4/03
REV 12/12/03

IT IS HEREBY UNDERSTOOD THAT DOODEN INDUSTRIES OWNS ALL COPYRIGHTS AND RIGHTS OF REPRODUCTION TO THE DRAWINGS AND DESIGNS OF THE VEHICLE COMPONENTS AND THAT THE PURCHASER ACQUIRES NO RIGHTS OF DESIGN WHATSOEVER. NO RIGHTS OF REPRODUCTION ARE VESTED IN THE PURCHASER IN THE DESIGN OF THE VEHICLE.



## 22' REAR DOOR 12 V / DC HOUSE BATTERY CIRCUITS



REFERENCE BF-1 FOR  
CIRCUIT NUMBERS AND DETAILS

ALL WIRE IS 600 VOLT 125° C TYPE 3173  
CROSS LINKED POLYETHYLENE CSA CL1251

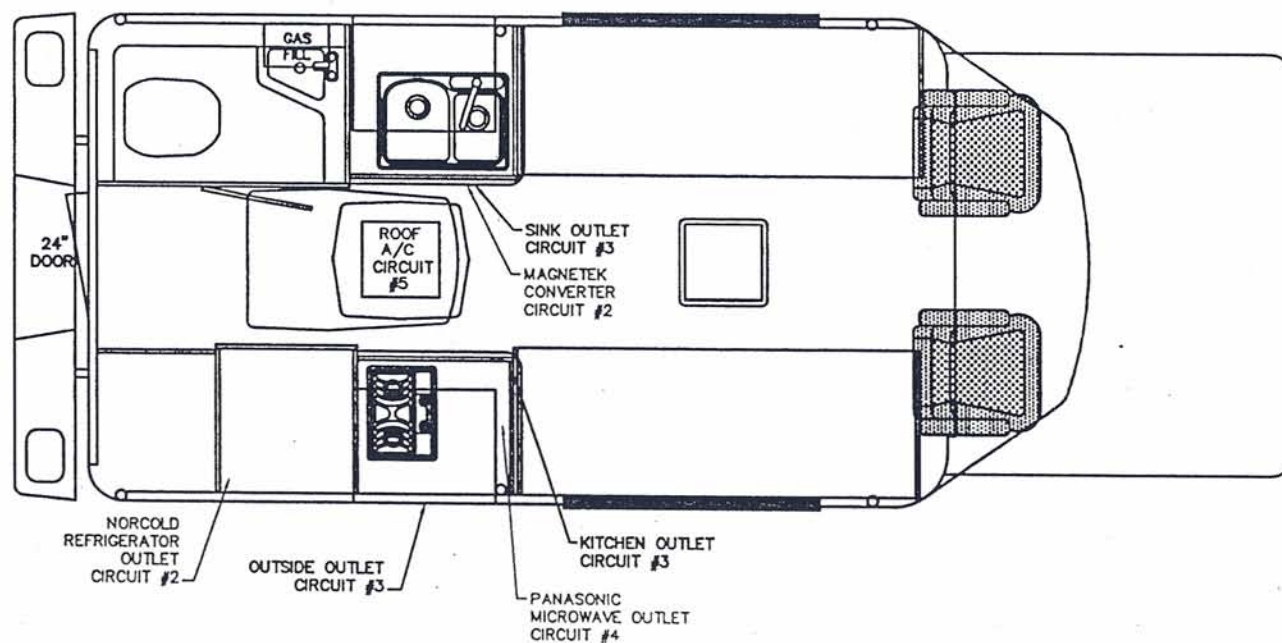
ALL 12V ITEMS ARE LISTED MATERIALS APPROVED FOR  
USE IN RECREATIONAL VEHICLES UNDER ANSI A119.2

IT IS HEREBY UNDERSTOOD THAT DODGEN INDUSTRIES  
OWNS ALL COPYRIGHTS AND RIGHTS OF REPRODUCTION  
TO THE DRAWINGS AND DESIGNS OF THE VEHICLE  
COMPONENT, AND THAT THE PURCHASER ACQUIRES NO  
RIGHTS OF DESIGN WHATSOEVER. NO RIGHTS OF  
REPRODUCTION ARE VESTED IN THE PURCHASER IN THE  
DESIGN OF THE VEHICLE.

### 22RD-2

FIRM: DODGEN INDUSTRIES  
BORN FREE MOTORCOACH  
12V DC HOUSE BATTERY CIRCUITS  
DATE: 11/21/03  
REV 4/10/04

# 22' REAR DOOR 120 V / 60 HZ AC



REFERENCE BF-1 FOR  
CIRCUIT NUMBERS AND DETAILS

ALL WIRE IS 12-2 TYPE NM-B WITH  
GROUND 600 VOLT UL-E18679

ALL OUTLETS ARE WIRECON TYPE WDR

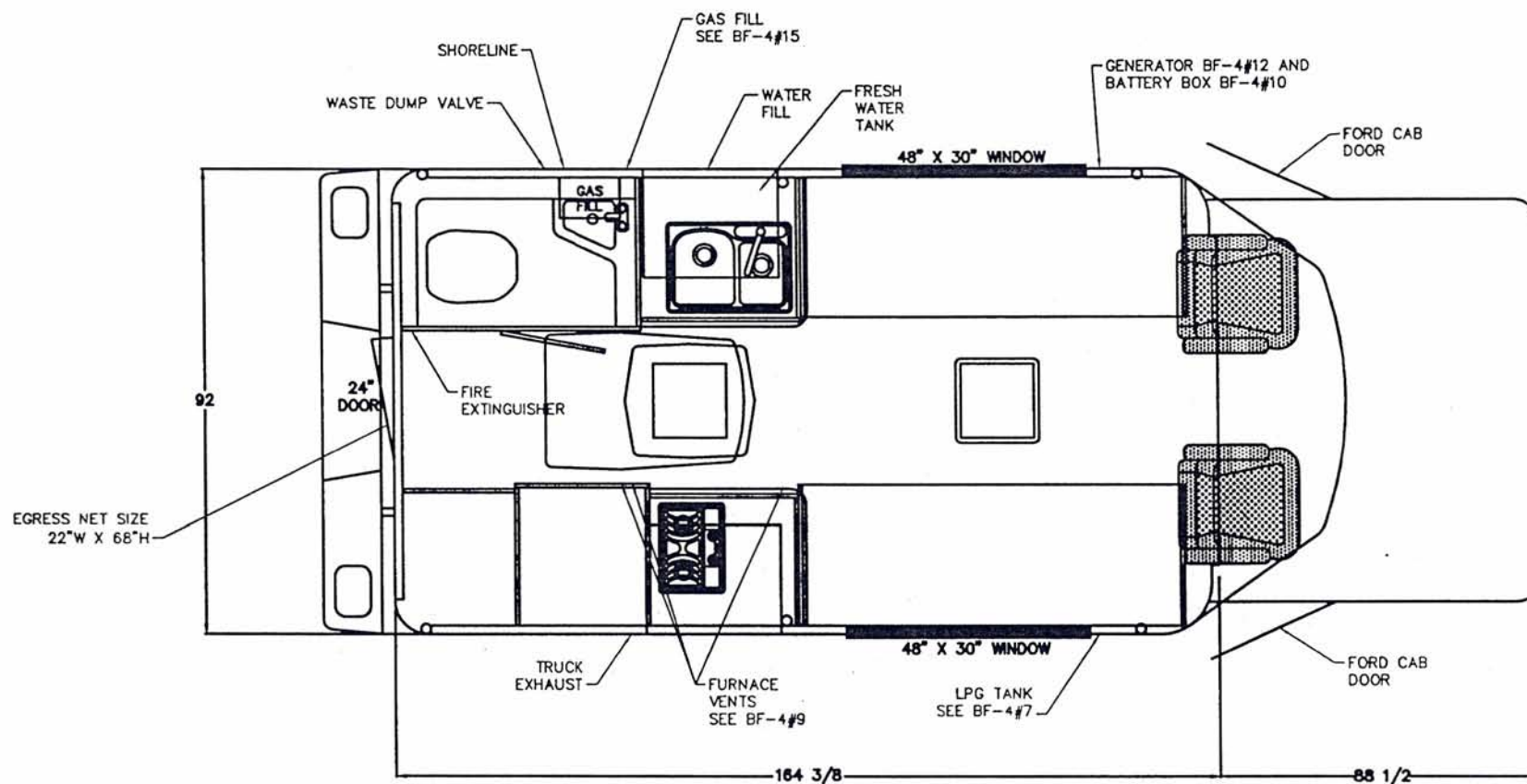
ALL 120V ITEMS ARE LISTED MATERIALS APPROVED FOR  
USE IN RECREATIONAL VEHICLES UNDER ANSI A119.2

**22RD-3**

FIRM: DODGEN INDUSTRIES
BORN FREE MOTORCOACH
120 VOLT 60 HZ AC
DATE: 11/21/03
ONE 6/16/03

IT IS HEREBY UNDERSTOOD THAT DODGEN INDUSTRIES  
OWNS ALL COPYRIGHTS AND RIGHTS OF REPRODUCTION  
TO THE DRAWING AND DESIGN OF THE VEHICLE  
COMPONENT, AND THAT THE PURCHASER ACQUIRES NO  
RIGHTS OF DESIGN WHATSOEVER. NO RIGHTS OF  
REPRODUCTION ARE VESTED IN THE PURCHASER IN THE  
DESIGN OF THE VEHICLE.

## 22' REAR DOOR MODEL OVERVIEW



### 22RD-4

FIRM: DODGEN INDUSTRIES

BORN FREE MOTORCOACH

MODEL OVERVIEW

DATE: 11/21/03

SEE 6/16/00

IT IS HEREBY UNDERSTOOD THAT DODGEN INDUSTRIES OWNS ALL COPYRIGHTS AND RIGHTS OF REPRODUCTION TO THE DRAWINGS AND DESIGN OF THE VEHICLE COMPONENT, AND THAT THE PURCHASER ACQUIRES NO RIGHTS OF DESIGN WHATSOEVER, NO RIGHTS OF REPRODUCTION ARE VESTED IN THE PURCHASER IN THE DESIGN OF THE VEHICLE.



24RB-1

**CONVERTER CALCULATIONS FOR 24' REAR BATH**

MAGNETEK MODEL 7345 45 AMP CONVERTER

<u>12V ITEMS AVAILABLE ON CIRCUITS</u>	<u>RATINGS</u>	<u>AMPS</u>
LITECO OAK READING LIGHT	6 X .69A	4.14
THIN-LITE 30 WATT FLUORESCENT LIGHT	7 X 2.5A	17.50
PROGRESSIVE DYNAMICS SINGLE BULB LIGHT	3 X 1.44A	4.32
SHURFLO WHISPER KING WATER PUMP	5.5A	5.50
CONVERTER BATTERY CHARGE FUNCTION	3.0A	3.00
VENTLINE BATHROOM FAN	1.5A	1.50
ATWOOD G6A-8E WATER HEATER	1.0A	1.00
SUBURBAN SF-30F FURNACE	6.5A	6.50
NORCOLD N641 REFRIGERATOR	1.2A	1.20
CCI LPG ALARM	0.1A	0.10
BRAUND 12V TV OUTLET W/BOOSTER	2 X 3.43A	6.86
ITC STEPWELL LIGHT	0.42A	0.42
BARGMAN EXTERIOR LIGHT	2 X 0.94A	1.88
TRUSTY "BORN FREE" LIGHTED ENTRY HANDLE	0.42A	0.42
FAN-TASTIC FAN 3 SPEED MODEL 6000RBTA	3.0A	3.00
12V DC OUTLET (OPTIONAL)	3.33A	3.33
JENSEN STOVE HOOD & MONITOR PANEL	4.6A	4.60
ITC SHOWER LIGHT	2 X .833A	1.67

**TOTAL AMPS**

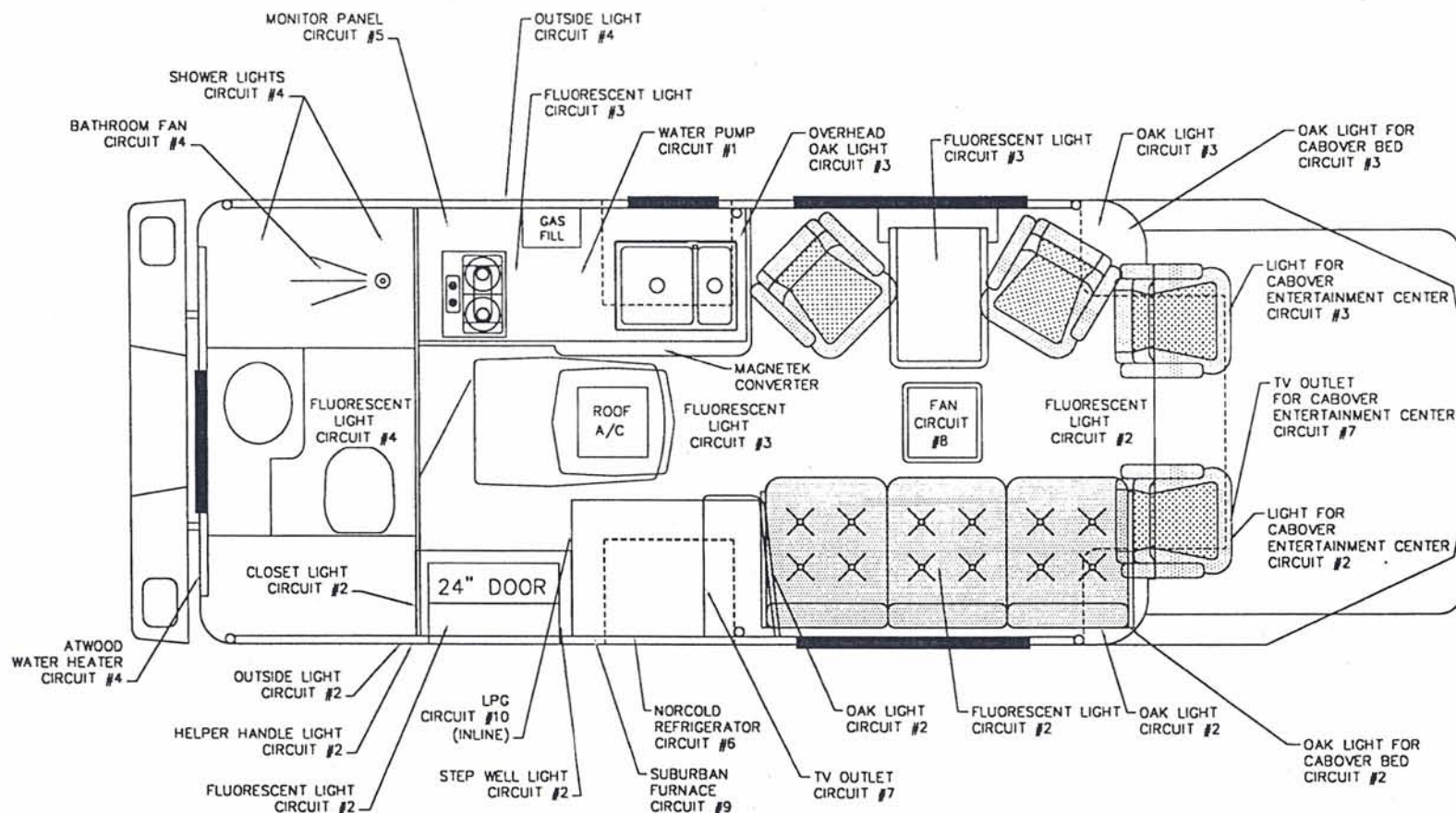
66.94

**CONVERTER CALCULATION FORMULA**

1ST 20A @ 100% =	20.00
2ND 20A @ 50% =	10.00
OVER 40A @ 25% =	6.74

TOTAL =	36.74
---------	-------

# 24' REAR BATH 12 V / DC HOUSE BATTERY CIRCUITS



REFERENCE BF-1 FOR  
CIRCUIT NUMBERS AND DETAILS

ALL WIRE IS 600 VOLT 125' C TYPE 3173  
CROSS LINKED POLYETHYLENE CSA CL1251

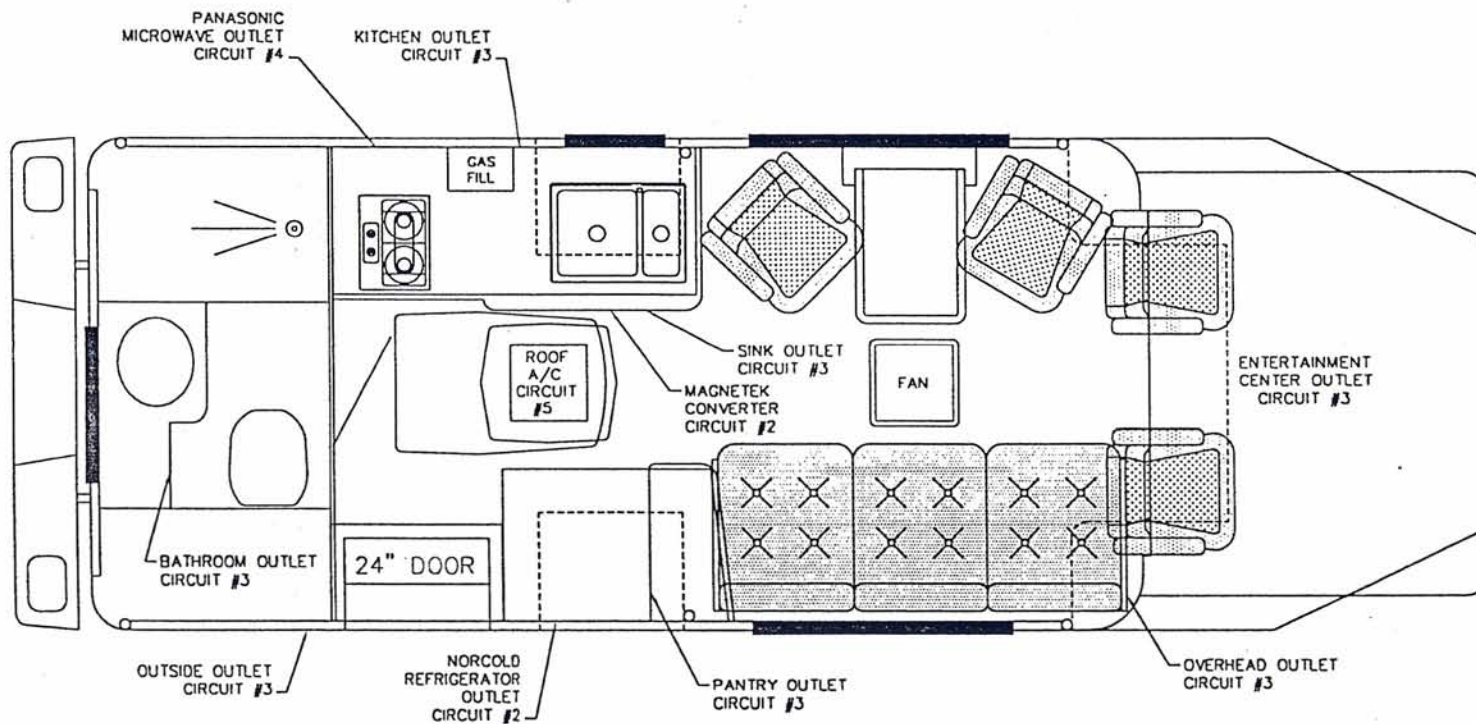
ALL 12V ITEMS ARE LISTED MATERIALS APPROVED FOR  
USE IN RECREATIONAL VEHICLES UNDER ANSI A119.2

IT IS HEREBY UNDERSTOOD THAT DODGEN INDUSTRIES  
OWNS ALL COPYRIGHTS AND RIGHTS OF REPRODUCTION  
TO THE DRAWINGS AND DESIGNS OF THE VEHICLE  
COMPONENT, AND THAT THE PURCHASER ACQUIRES NO  
RIGHTS OF DESIGN WHATSOEVER. NO RIGHTS OF  
REPRODUCTION ARE VESTED IN THE PURCHASER IN THE  
DESIGN OF THE VEHICLE.

**24RB-2**

A	ADDED SHOWER LIGHTS	AAT	22 MAR 01
REV	DESCRIPTION	DRW	DATE
FIRM: DODGEN INDUSTRIES			
BORN FREE MOTORCOACH			
12V DC HOUSE BATTERY CIRCUITS			
DATE: 12/20/00			
AAT 12/20/00 1/24/01			

## 24' REAR BATH 120 V / 60 HZ AC



REFERENCE BF-1 FOR  
CIRCUIT NUMBERS AND DETAILS

ALL WIRE IS 12-2 TYPE NM-B WITH  
GROUND 600 VOLT UL-E18679

ALL OUTLETS ARE WIRECON TYPE WDR

ALL 120V ITEMS ARE LISTED MATERIALS APPROVED FOR  
USE IN RECREATIONAL VEHICLES UNDER ANSI A119.2

### 24RB-3

FIRM: DOODEN INDUSTRIES

BORN FREE MOTORCOACH

120 VOLT 60 HZ AC

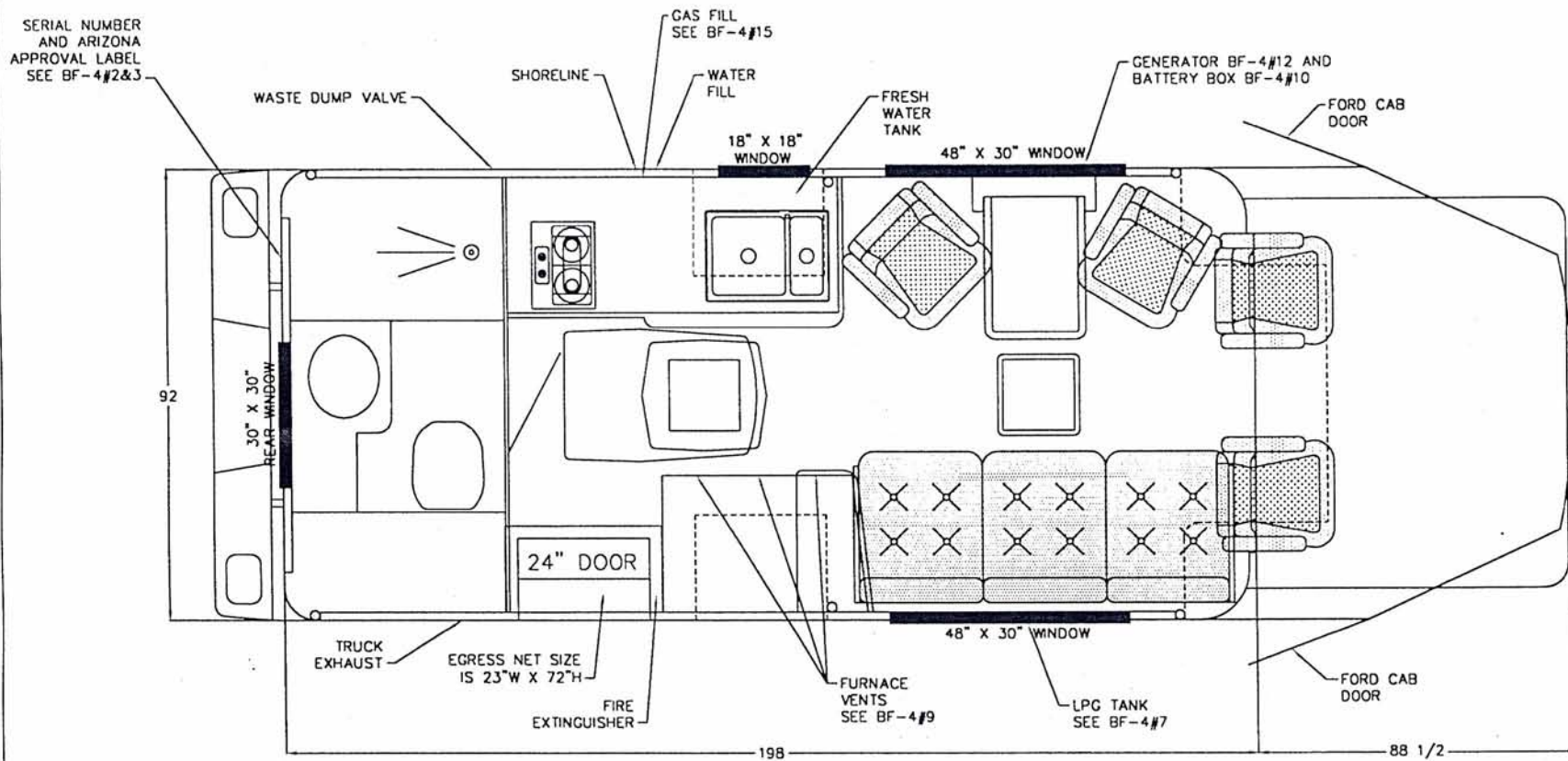
DATE: 12/20/00

AAT 12/20/00 1/24/01

IT IS HEREBY UNDERSTOOD THAT DOODEN INDUSTRIES  
OWNS ALL COPYRIGHTS AND RIGHTS OF REPRODUCTION  
TO THE DRAWINGS AND DESIGNS OF THE VEHICLE  
COMPONENT, AND THAT THE PURCHASER ACQUIRES NO  
RIGHTS OF DESIGN WHATSOEVER. NO RIGHTS OF  
REPRODUCTION ARE VESTED IN THE PURCHASER IN THE  
DESIGN OF THE VEHICLE.



## 24' REAR BATH MODEL OVERVIEW



### 24RB-4

IT IS HEREBY UNDERSTOOD THAT DODGEN INDUSTRIES OWNS ALL COPYRIGHTS AND RIGHTS OF REPRODUCTION TO THE DRAWINGS AND DESIGNS OF THE VEHICLE COMPONENT, AND THAT THE PURCHASER ACQUIRES NO RIGHTS OF DESIGN WHATSOEVER. NO RIGHTS OF REPRODUCTION ARE VESTED IN THE PURCHASER IN THE DESIGN OF THE VEHICLE.

FIRM: DODGEN INDUSTRIES
BORN FREE MOTORCOACH
MODEL OVERVIEW
DATE: 1/3/01
CON: 1/3/01, 1/24/01

**26RSB-1****CONVERTER CALCULATIONS FOR 26' REAR SIDE BED**

MAGNETEK MODEL 7345 45 AMP CONVERTER

<u>12V ITEMS AVAILABLE ON CIRCUITS</u>	<u>RATINGS</u>	<u>AMPS</u>
LITECO OAK READING LIGHT	8 X .69A	5.52
THIN-LITE 30 WATT FLUORESCENT LIGHT	9 X 2.5A	22.50
PROGRESSIVE DYNAMICS SINGLE BULB LIGHT	2 X 1.44A	2.88
SHURFLO WHISPER KING WATER PUMP	5.5A	5.50
CONVERTER BATTERY CHARGE FUNCTION	3.0A	3.00
VENTLINE BATHROOM FAN	1.5A	1.50
ATWOOD G6A-8E WATER HEATER	1.0A	1.00
SUBURBAN SF-30F FURNACE	6.5A	6.50
NORCOLD N641 REFRIGERATOR	1.2A	1.20
CCI LPG ALARM	0.1A	0.10
BRAUND 12V TV OUTLET W/BOOSTER	3 X 3.43A	10.29
ITC STEPWELL LIGHT	0.42A	0.42
BARGMAN EXTERIOR LIGHT	2 X 0.94A	1.88
TRUSTY "BORN FREE" LIGHTED ENTRY HANDLE	0.42A	0.42
FAN-TASTIC FAN 3 SPEED MODEL 6000RBTA	3.0A	3.00
12V DC OUTLET (OPTIONAL)	3.33A	3.33
JENSEN STOVE HOOD & MONITOR PANEL	4.6A	4.60
JRV 3 BULB VANITY LIGHT	3.0A	3.00

**TOTAL AMPS**

76.64

**CONVERTER CALCULATION FORMULA**

1ST 20A @ 100% =	20.00
2ND 20A @ 50% =	10.00
OVER 40A @ 25% =	9.16

TOTAL =	39.16
---------	-------



ALL 12V ITEMS ARE LISTED MATERIALS APPROVED FOR  
USE IN RECREATIONAL VEHICLES UNDER ANSI A119.2

IT IS HEREBY UNDERSTOOD THAT DOOGEN INDUSTRIES OWNS ALL COPYRIGHTS AND RIGHTS OF REPRODUCTION TO THE DRAWINGS AND DESIGNS OF THE VEHICLE COMPONENT, AND THAT THE PURCHASER ACQUIRES NO RIGHTS OF DESIGN WHATSOEVER, NO RIGHTS OF REPRODUCTION ARE VESTED IN THE PURCHASER IN THE DESIGN OF THE VEHICLE.

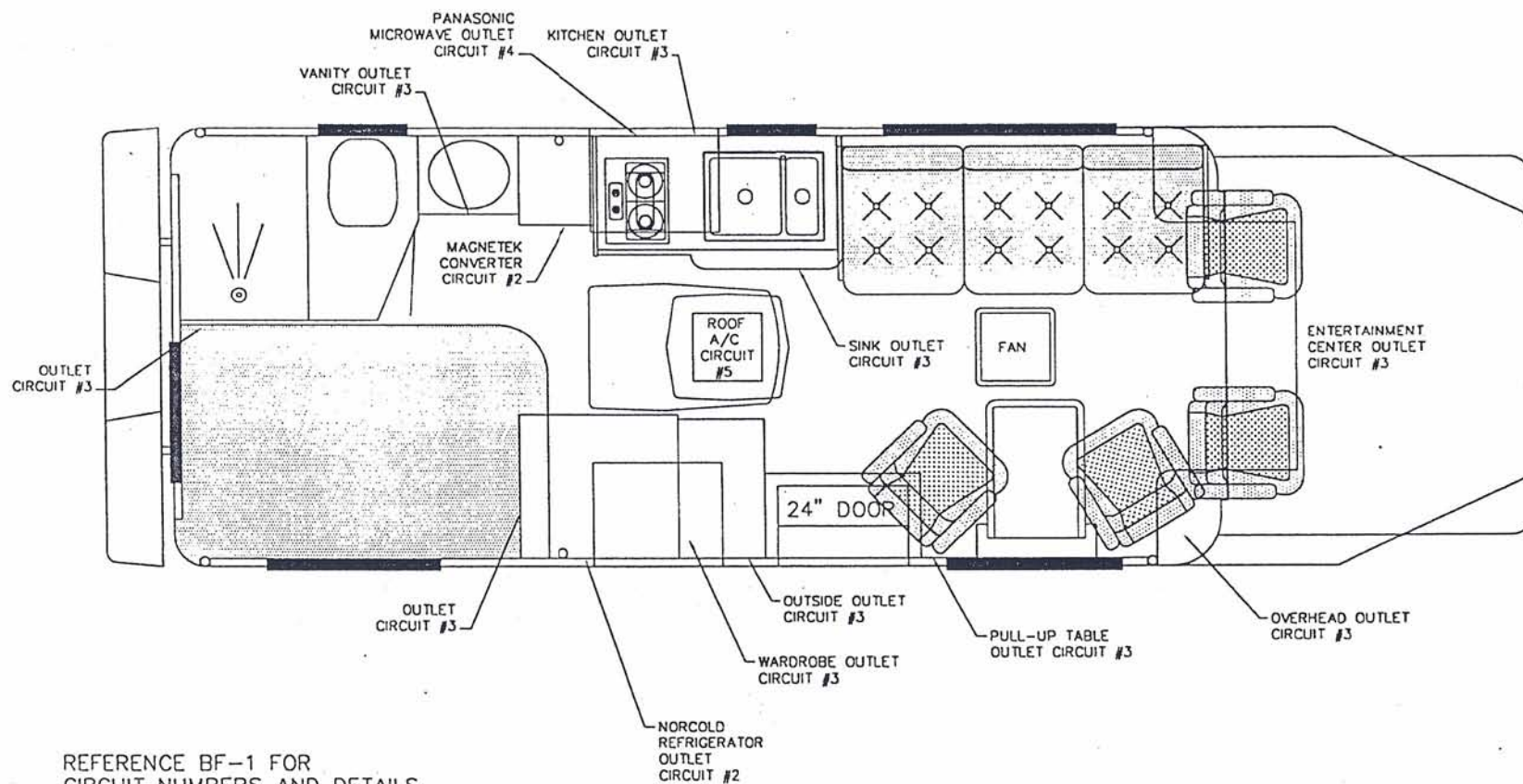
26RSB-2

FIRM: DOOGEN INDUSTRIES  
BORN FREE MOTORCOACH  
12V DC HOUSE BATTERY CIRCUITS  
DATE: 1/4/01

CDK 1/4/98 AAT 1/23/98



# 26' REAR SIDE BED 120 V / 60 HZ AC



REFERENCE BF-1 FOR  
CIRCUIT NUMBERS AND DETAILS

ALL WIRE IS 12-2 TYPE NM-B WITH  
GROUND 600 VOLT UL-E18679

ALL OUTLETS ARE WIRECON TYPE WDR

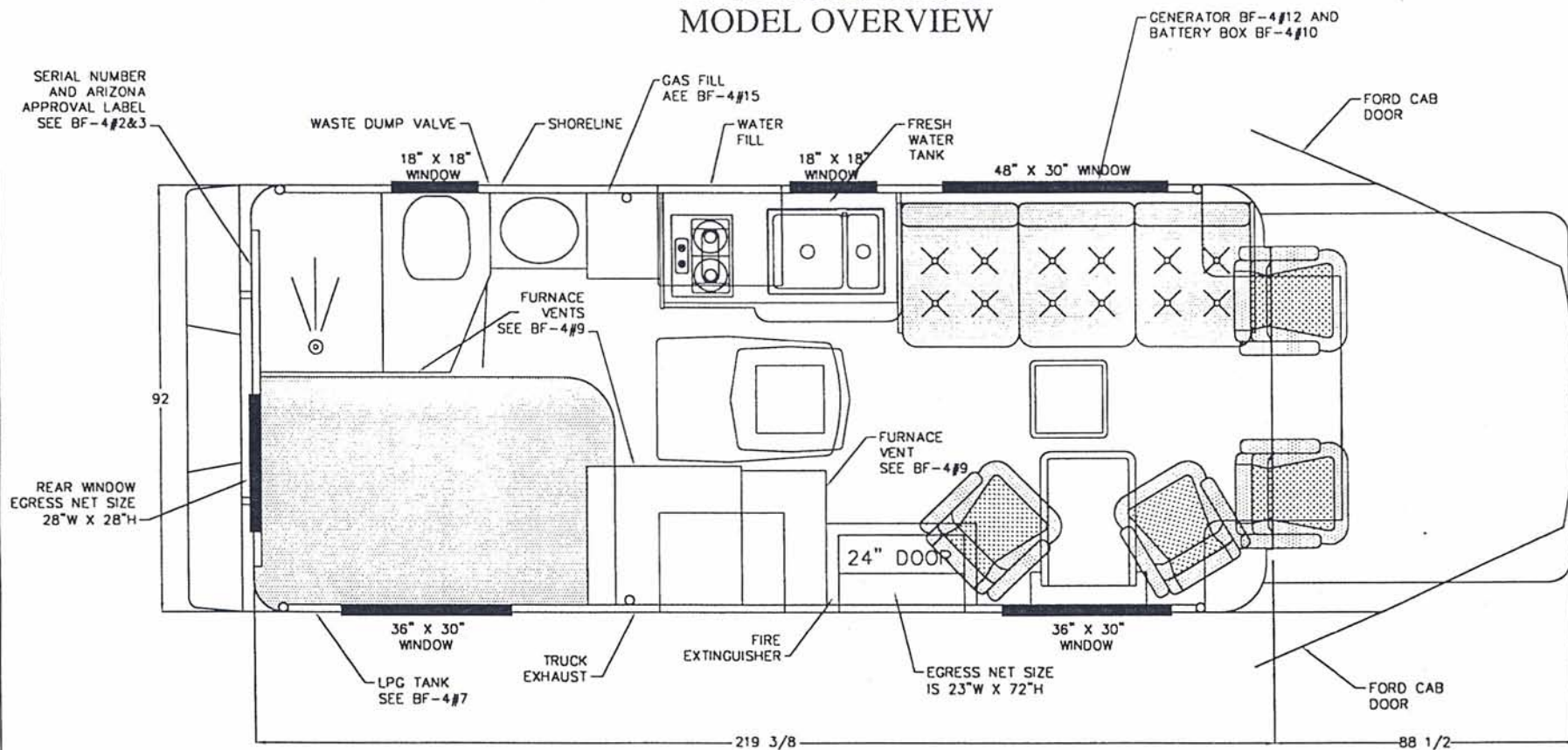
ALL 120V ITEMS ARE LISTED MATERIALS APPROVED FOR  
USE IN RECREATIONAL VEHICLES UNDER ANSI A119.2

26RSB-3

FIRM: DOOGEN INDUSTRIES
BORN FREE MOTORCOACH
120 VOLT 60 HZ AC
DATE: 1/4/01
REV 1/2/01, 1/26/01

IT IS HEREBY UNDERSTOOD THAT DOOGEN INDUSTRIES  
OWNS ALL COPYRIGHTS AND RIGHTS OF REPRODUCTION  
TO THE DRAWINGS AND DESIGNS OF THE VEHICLE  
COMPONENT, AND THAT THE PURCHASER ACQUIRES NO  
RIGHTS OF DESIGN WHATSOEVER. NO RIGHTS OF  
REPRODUCTION ARE VESTED IN THE PURCHASER IN THE  
DESIGN OF THE VEHICLE.

## 26' REAR SIDE BED MODEL OVERVIEW



### 26RSB-4

FIRM: DODGEN INDUSTRIES

BORN FREE MOTORCOACH

MODEL OVERVIEW

DATE: 1/4/01

CDR 1/4/01 AAT 1/25/01

IT IS HEREBY UNDERSTOOD THAT DODGEN INDUSTRIES OWNS ALL COPYRIGHTS AND RIGHTS OF REPRODUCTION TO THE DRAWINGS AND DESIGNS OF THE VEHICLE COMPONENT, AND THAT THE PURCHASER ACQUIRES NO RIGHTS OF DESIGN WHATSOEVER. NO RIGHTS OF REPRODUCTION ARE VESTED IN THE PURCHASER IN THE DESIGN OF THE VEHICLE.

**26RBF-1****CONVERTER CALCULATIONS FOR 26' REAR BATH FRONT SIDE DOOR**

MAGNETEK MODEL 7345 45 AMP CONVERTER

<u>12V ITEMS AVAILABLE ON CIRCUITS</u>	<u>RATINGS</u>	<u>AMPS</u>
LITECO OAK READING LIGHT	6 X .69A	4.14
THIN-LITE 30 WATT FLUORESCENT LIGHT	8 X 2.5A	20.00
PROGRESSIVE DYNAMICS SINGLE BULB LIGHT	5 X 1.44A	7.20
SHURFLO WHISPER KING WATER PUMP	5.5A	5.50
CONVERTER BATTERY CHARGE FUNCTION	3.0A	3.00
VENTLINE BATHROOM FAN	1.5A	1.50
ATWOOD G6A-8E WATER HEATER	1.0A	1.00
SUBURBAN SF-30F FURNACE	6.5A	6.50
NORCOLD N641 REFRIGERATOR	1.2A	1.20
CCI LPG ALARM	0.1A	0.10
BRAUND 12V TV OUTLET W/BOOSTER	2 X 3.43A	6.86
ITC STEPWELL LIGHT	0.42A	0.42
BARGMAN EXTERIOR LIGHT	2 X 0.94A	1.88
TRUSTY "BORN FREE" LIGHTED ENTRY HANDLE	0.42A	0.42
FAN-TASTIC FAN 3 SPEED MODEL 6000RBTA	3.0A	3.00
12V DC OUTLET (OPTIONAL)	3.33A	3.33
JENSEN STOVE HOOD & MONITOR PANEL	4.6A	4.60
ITC SHOWER LIGHT	2 X .833A	1.67

**TOTAL AMPS**

72.32

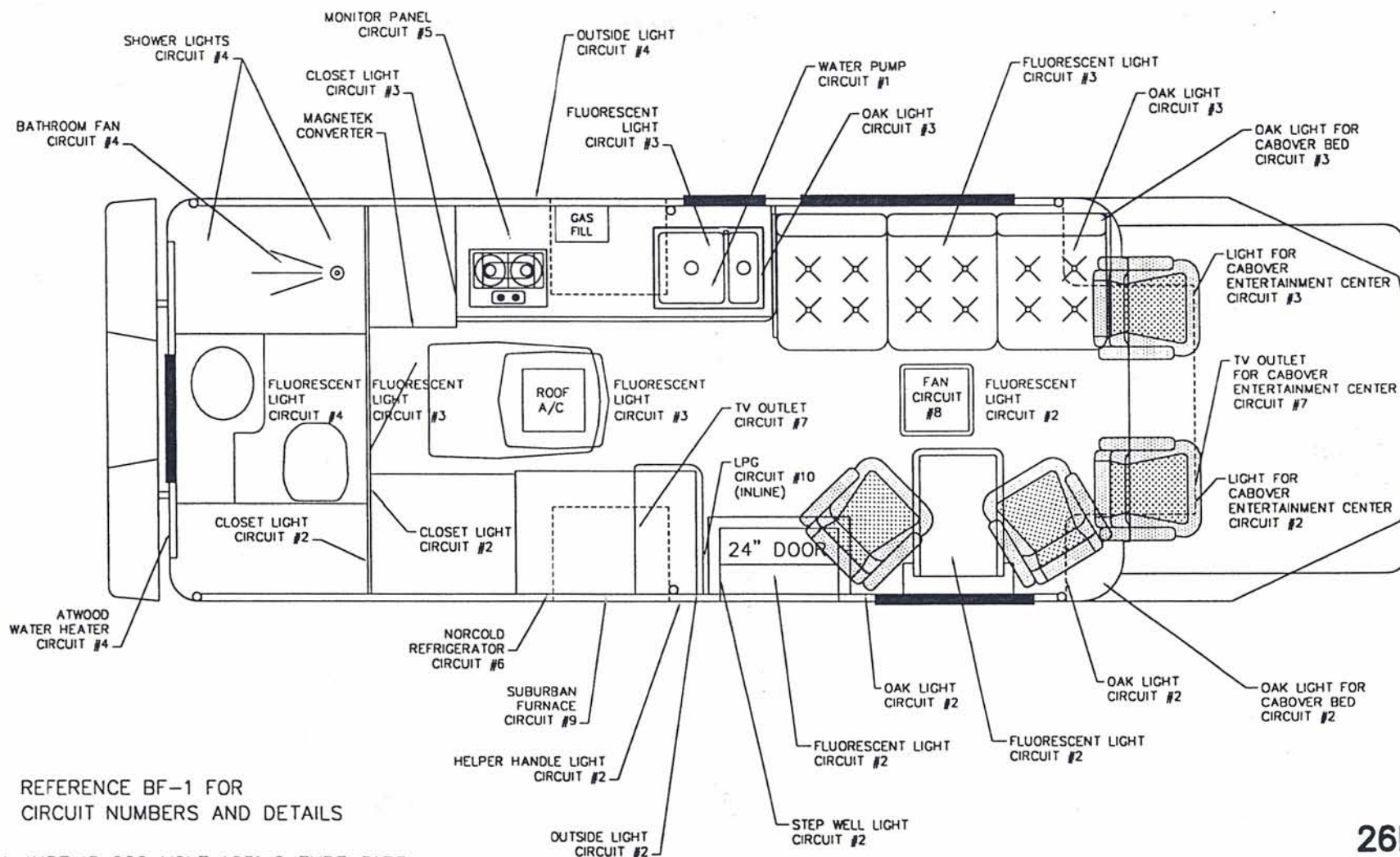
## CONVERTER CALCULATION FORMULA

1ST 20A @ 100% =	20.00
2ND 20A @ 50% =	10.00
OVER 40A @ 25% =	8.08

TOTAL = 38.08



# 26' REAR BATH (FRONT SIDE DOOR) 12 V / DC HOUSE BATTERY CIRCUITS



REFERENCE BF-1 FOR  
CIRCUIT NUMBERS AND DETAILS

ALL WIRE IS 600 VOLT 125' C TYPE 3173  
CROSS LINKED POLYETHYLENE CSA CL1251

ALL 12V ITEMS ARE LISTED MATERIALS APPROVED FOR  
USE IN RECREATIONAL VEHICLES UNDER ANSI A119.2

IT IS HEREBY UNDERSTOOD THAT DOOGEN INDUSTRIES  
OWNS ALL COPYRIGHTS AND RIGHTS OF REPRODUCTION  
TO THE DRAWINGS AND DESIGNS OF THE VEHICLE  
COMPONENT, AND THAT THE PURCHASER ACQUIRES NO  
RIGHTS OF DESIGN WHATSOEVER, NO RIGHTS OF  
REPRODUCTION ARE VESTED IN THE PURCHASER IN THE  
DESIGN OF THE VEHICLE.

**26RBF-2**

FIRM: DOOGEN INDUSTRIES

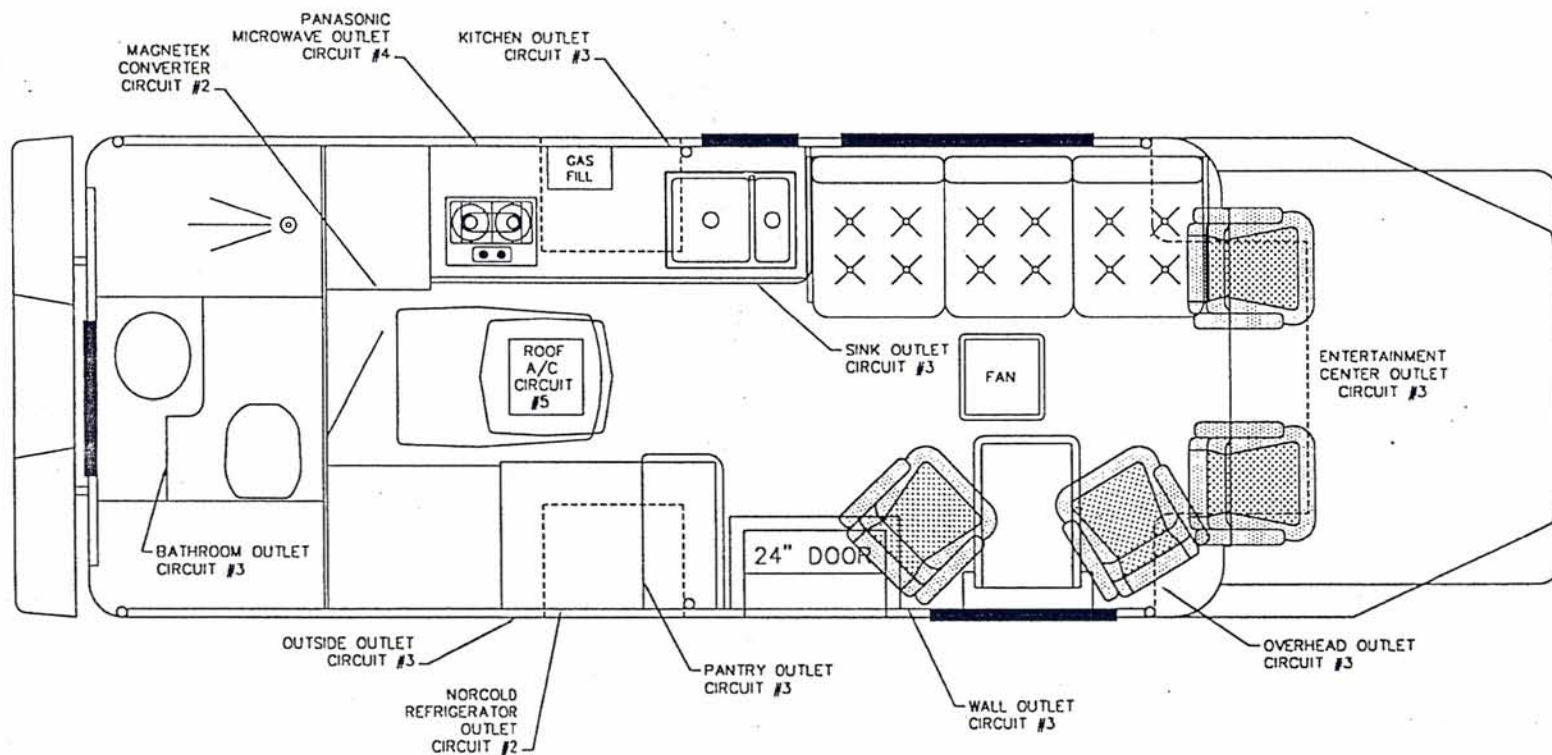
BORN FREE MOTORCOACH

12V DC HOUSE BATTERY CIRCUITS

DATE: 3/22/01

CODE 3/12/01

# 26' REAR BATH (FRONT SIDE DOOR) 120 V / 60 HZ AC



REFERENCE BF-1 FOR  
CIRCUIT NUMBERS AND DETAILS

ALL WIRE IS 12-2 TYPE NM-B WITH  
GROUND 600 VOLT UL-E18679

ALL OUTLETS ARE WIRECON TYPE WDR

ALL 120V ITEMS ARE LISTED MATERIALS APPROVED FOR  
USE IN RECREATIONAL VEHICLES UNDER ANSI A119.2

26RBF-3

FIRM: DOOGEN INDUSTRIES

BORN FREE MOTORCOACH

120 VOLT 60 HZ AC

DATE: 2/14/01

CON 2/14/01

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