BORN FREE.

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Dear Born Free Owner,

We are extremely happy that you have decided to purchase a new Born Free Motorcoach. We are confident you will have many years of enjoyable use with your new motorcoach.

This owner's manual has been prepared to help you enjoy using your Born Free to its fullest by understanding all of its features. We suggest you read the manual thoroughly and carry 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. We recommend that you review this material carefully as it can be very helpful. Also, the manufacturers have included warranty registration cards that need to be filled out and mailed promptly (10-15 days) in order to properly register your purchase for warranty repairs.

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

Thank you and happy motoring!
The Born Free Motorcoach Staff

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

DODGEN

LIMITED WARRANTY

FOR BORN FREE MOTORCOACHES

BORN FREE.

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 to 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 be may 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 waranty _____ (SIGNATURE)

N O T I C E

Warranty Information
Ford Econoline

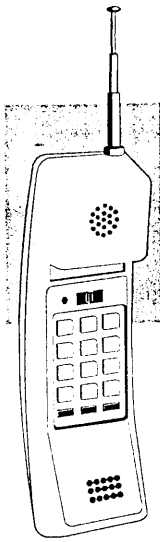
If you have a Ford warranty problem with your unit, you must take it to an authorized Ford dealer first.

This must be done for any warranty coverage from Ford. If the Ford dealer can not fix your unit, he 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.

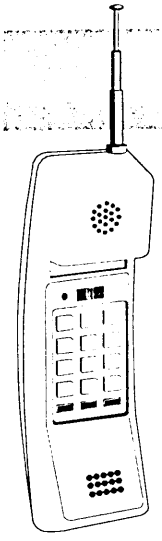
For "on-the-road" emergency service call 1-800-444-3311 for 24-hour-a-day service.

Born Free Motorcoach, Inc.



Vendor Warranty and Service Phone Numbers

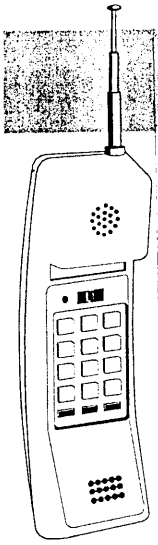
NAME OF COMPANY	WARRANTY PHONE #
A&E Awning	(800) 544-4881
Air Lift Company (Air Rides, 1993 and newer)	(800) 248-0892
American Sensor - Smoke Alarm	(800) 387-4219
Atwood Water Heater and Cooktop (1994 and newer)	(815) 877-5700
Barker TV Booster	(616) 965-2371 or (888) 367-6978
Best Plastics Storage Pods	(616) 641-5811
Cobra C.B.	(773) 889-3087
Costar C/O Detector	(800) 432-5599
Delta Power Plus Booster Amplifier (same as Barker and Delta TV antenna)	(616) 965-2371
Dicon Smoke Alarm	(708) 850-7255
Dicor Versa Liner	(219) 264-2699
Duo-Therm/Dometic (heat strip and roof mount AC)	(800) 544-4881
E.D.I. (now United Shade)	(219) 262-0954
Fan-Tastic Vent	(800) 521-0298 or (810) 395-4045
Flexsteel	(319) 556-7730
Ford Roadside Assistance	(800) 444-3311
Ford Service Locator	(800) 444-3311
Ford Motorhome Warranty	(800) 343-5338



Phone Numbers Continued

NAME OF COMPANY	WARRANTY PHONE #
Heart Interface Inverter	(206) 872-7225 or (800) 446-6180
Hehr International Windows (old) Kansas-Single	(316) 283-6100
(new) Michigan-Thermo	(517) 845-3061
Hellwig (overload springs)	(209) 734-7451
HWH Leveling Leg System	(319) 724-3396 or (800) 321-3494
Interstate Battery	(800) 272-6548
Kidde Safty - Smoke Detector	(800) 880-6788
Kwikee Step	(800) 736-9961
Magic Chef	(800) 688-1120
Magnatek Converter	(219) 356-7102
Magnavox Television	(813) 278-4242
Manchester LP Tank	(800) 877-8265
Marinco 30' Power Cords	(707) 226-9600
Marshall Brass LP Regulator	(616) 781-3901
Maxon CB	(319) 664-3768
Michelin Tire	(800) 847-3435
Moen Sink	(501) 268-3521
Norcold Refrigerators	(800) 543-1219
Onan Generator and Remote Start	(800) 888-6626
Packmaster Storage Pods	(303) 469-3324
Panasonic Microwave	(219) 295-2441 or (800-443-6486
Panasonic TV	(800) 447-4700

Phone Numbers Continued



NAME OF COMPANY	WARRANTY PHONE #
Philips Doors	(219) 296-0163
RCA TV	(800) 336-1900
RC Industries (fire extinguishers)	(201) 937-5400
Rigid Hitch	(800) 624-7630
RV & Sea (sleeping bags)	(714) 830-1292
Sharp	(800) 798-8012
Shurflo Water Pump	(800) 762-8094 or (800) 854-3218 (Corp.)
Specialty Shade	(219) 262-5190 Parallel Awning 1-888-262-5190
Statpower Converter	(604) 420-1585
Suburban Furnace	(423) 775-2131
Surepower Multi Battery Isolater	(800) 845-6269
Ten Tek Gas Alarm	(708) 850-7255
Thetford Toilet	(800) 521-3032
Thin Lite (fluorescent lights)	(805) 987-5021
Todd Converter	(219) 293-8633
Tri-Mark Door Latches	(800) 431-8616
Uniden CB	(317) 842-2483
Vollrath Faucet	(219) 294-5611
Velvac Mirrors	(414) 786-0700 or (800) 783-8871
Ventline Bath Fans	(219) 848-4491
Walter Kidde Fire Extinguisher	(800) 654-9677
Wedgewood Oven Cooktop	(615) 643-4556
Wesco 25' Power Cords	(715) 659-5331
Westinghouse Ground Fault Circuit Breaker	(412) 244-2000
White-Rodgers Thermostat	(615) 775-2131

Born Free Recreational Vehicle

SPECIFICATIONS

(Standard Nosecone Models Only)

	21' BFT	21' Rear Bath	21' Rear Door	22' Rear Door	23' Rear Kitchen	24' RB 24' RSB	26' RB 26' RSB
Bumper to Bumper	21' 9-3/8"	22' 6-5/8"	21' 11-5/8"	22' 9-5/8"	23' 5-5/8"	24' 9-1/4"	26' 6-5/8"
Overall Length	(261-3/8")	(270-5/8"	(263-5/8")	(273-5/8")	(281-5/8")	(297-1/4")	(318-5/8")
Front of Bumper to Rear of Cab	88-1/2"	88-1/2"	88-1/2"	88-1/2"	88-1/2"	88-1/2"	88-1/2"
Cut Floor Length	160-7/8"	171-3/8"	164-3/8"	174-3/8"	182-3/8"	198"	219-3/8"
High Point of Vehicle with Roof A/C	112"	120"	120"	120"	120"	120"	120"
Rear of Roof Height	101"	109"	109"	109"	109"	109"	109"
High Point of Vehicle with Roof Pod	N/A	124"	124"	124"	124"	124"	124"
Body Width	95-1/2"	95-1/2"	95-1/2"	95-1/2"	95-1/2"	95-1/2"	95-1/2"
Body Width with Awning	95-1/2"	98-1/2"	98-1/2"	98-1/2"	98-1/2"	98-1/2"	98-1/2"
Width Across Mirrors Extended in Driving Position	112-1/2"	112-1/2"	112-1/2"	112-1/2"	112-1/2"	112-1/2"	112-1/2"
Width Across Mirrors with Mirrors Folded	84-1/2"	84-1/2"	84-1/2"	84-1/2"	84-1/2"	84-1/2"	84-1/2"
Rear Bumper Depth	10"	12"	12"	12"	12"	12"	12"
Interior Floor Width	82-3/4"	88-3/4"	88-3/4"	88-3/4"	88-3/4"	88-3/4"	88-3/4"
Interior Height	75" rear 72" fwd.	76-1/2"	76-1/2"	76-1/2"	76-1/2"	76-1/2"	76-1/2"
Chassis Wheelbase	138"	158"	158"	158"	158"	158"	176"
Approximate UVW Base Weight **(lbs.)	8,500	9,366	9,022	9,450	10,029	9,915 RB 10,307 RSB	10,912 RB 10,926 RSB

**UVW base weight is less options, passengers, cargo, LPG and water.

All specifications are subject to change and are approximations only

Born Free Recreational Vehicle

SPECIFICATIONS

(Cabover Models Only)

	21' Rear Bath	21' Rear Door	22' Rear Door	23' Rear Kitchen	24' RB 24' RSB	26' RB 26' RSB
Bumper to Bumper	22' 6-5/8"	21' 11-5/8"	22' 9-5/8"	23' 5-5/8"	24' 9-1/4"	26' 6-5/8"
Overall Length	(270-5/8"	(263-5/8")	(273-5/8")	(281-5/8")	(297-1/4")	(318-5/8")
Front of Bumper to Rear of Cab	88-1/2"	88-1/2"	88-1/2"	88-1/2"	88-1/2"	88-1/2"
Cut Floor Length	171-3/8"	164-3/8"	174-3/8"	182-3/8"	198"	219-3/8"
High Point of Vehicle with Roof A/C	121"	121"	121"	121"	121"	121"
Rear of Roof Height	110"	110"	110"	110"	110"	110"
High Point of Vehicle with Roof Pod	124-1/2"	124-1/2"	124-1/2"	124-1/2"	124-1/2"	124-1/2"
Body Width	95-1/2"	95-1/2"	95-1/2"	95-1/2"	95-1/2"	95-1/2"
Body Width with Awning	98-1/2"	98-1/2"	98-1/2"	98-1/2"	98-1/2"	98-1/2"
Width Across Mirrors Extended in Driving Position	112-1/2"	112-1/2"	112-1/2"	112-1/2"	112-1/2"	112-1/2"
Width Across Mirrors with Mirrors Folded	84-1/2"	84-1/2"	84-1/2"	84-1/2"	84-1/2"	84-1/2"
Rear Bumper Depth	12"	12"	12"	12"	12"	12"
Interior Floor Width	88-3/4"	88-3/4"	88-3/4"	88-3/4"	88-3/4"	88-3/4"
Interior Height	76-1/2"	76-1/2"	76-1/2"	76-1/2"	76-1/2"	76-1/2"
Chassis Wheelbase	158"	158"	158"	158"	158"	176"
Approximate UVW Base Weight **(lbs.)	9,566	9,445	9,650	10,204	10,115 RB 10,432 RSB	11,087 RB 11,101 RSB

**UVW base weight is less options, passengers, cargo, LPG and water.

All specifications are subject to change and are approximations only

Tank Capacities

Tank Type \ Model	21' BFT	21'Rear Door/BFT	21' Rear Bath	22' Rear Door	23' Rear Kitchen	24' Rear Bath	24' Rear Side Bed	26' Rear Bath	26' Rear Side Bed
Fuel**	37 gal.	37 gal.	37 gal.	37 gal.	37 gal.	37 gal.**	37 gal.**	37 gal.**	37 gal.**
Usable LPG @80%	19.2 gal.	23.2 gal.	19.2 gal.	23.2 gal.	23.2 gal.	23.2 gal.	23.2 gal.	23.2 gal.	23.2 gal.
Fresh Water	32 gal.	35 gal.	35 gal.	35 gal.	29 gal.	35 gal.	29 gal.	33 gal.	33 gal.
Gray Water	19 gal.	29 gal.	29 gal.	29 gal.	29 gal.	21 gal.	29 gal.	21 gal.	29 gal.
Black Water	19 gal.	24 gal.	24 gal.	24 gal.	24 gal.	29 gal.	21 gal.	29 gal.	21 gal.
Water Heater	6 gal.	6 gal.	6 gal.	6 gal.	6 gal.	6 gal.	6 gal.	6 gal.	6 gal.

** Ford Super Duty Chassis has 55 gallon fuel tank.
All specifications are subject to change and are approximations only.

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	L P G
CO Detector	Furnace
Smoke Alarm	Water Heater
	2 Burner Cooktop
	Refrigerator

D C COACH BATTERY	A C GENERATOR or POWER CORD
Refrigerator	Power Convertor
Fantastic Roof Vent	Refrigerator
Furnace	Outlets
Water Heater	Roof Air Conditioner
Water Pump	Microwave
LP Gas Leak Detector	
Monitor Panel	
Fluorescent Lights	
T.V. Antenna Amplifier Booster	
Reading Lights	
Bath Vent	

The Ford chassis has one battery. The coach has two batteries for the D C 12-volt system. To charge the Ford chassis battery, driving the unit will charge it from the alternator. To charge the coach batteries there are three options:

1. Driving 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 new Born Free Motorcoach.

Quite often we find that 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 trucks. We advise you to routinely check these pressures to prevent unwarranted wear.

Recommended Pressures

	Front Tires	Rear Tires	Air Bags
RVs	60 PSI	65 PSI	55 PSI
Showmobiles	55 PSI	60 PSI	55 PSI
Vet Units	55 PSI	65 PSI	55 PSI

Driving Tips

Your new 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; but it will take a bit longer to achieve the maximum driving speed. 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 coach 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. Here are some suggestions for increasing fuel economy:

1. Change oil and filter according to manufacturer's 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 new Born Free.

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 weight 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's also a good idea if everyone using the coach knows where the extinguisher is located and how to use it in case of an emer-

gency.

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 center line of the highway. Check your mirrors frequently to prevent crowding the center line.
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 shower head. 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 along are:
    a. Flashlight
    b. First aid kit
    c. Emergency flares
    d. Tool box with tools
    e. Plastic bucket
    f. Tow chain or rope
    g. Wheel blocks for leveling, or extra jacks
    h. Water hose
    i. 100-150 foot electrical cord with at least 50 amp rating
    j. Fire extinguisher
    k. Hydraulic jack and lug wrench

Check list for pre-departure inspection

As a safety precaution get in the habit of: ONCE AROUND BEFORE IN - walk completely around your coach 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 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.
- ❑ All cords and hoses unhooked and stored away.
- ❑ ONCE AROUND BEFORE IN.

Trailer Towing

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

1. The towing hitch on the Born Free is NOT class rated.
2. The Gross Combination Weight (GCW) must not exceed the Gross Vehicle Weight Rating (GVWR) unless the trailer vehicle is equipped with adequate brakes.
3. Trailers weighing in excess of 1000 pounds require trailer brakes. Trailer brakes are also required whenever Gross Combination Weight (GCW) exceeds the Gross Vehicle Weight (GVW) of the motorcoach.

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

Do not restrict radiator air flow 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 Trailering 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

As a guide we would suggest that the following guidelines be followed when operating your new Born Free:

1. Change engine oil and filter at 3000 mile intervals. See 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 a year using a good carnauba-based paste wax.
5. Check caulking twice a year and replace if needed. Dow Chemical 999 A 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 manufacturer's 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.

I. 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 air lifts 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 lbs. of load for every pound of inflation. For example: 50 PSI of inflation will support a load of 2000 lbs. per set. For the best ride use only enough air pressure to level the vehicle when viewed from the side.

NOTE: 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.

For service and warranty information see your manual pertaining to Air Lift Company.

B. Hellwig Helper Springs

Hellwig Helper Springs are added to some Born Free Motorcoaches to help stabilize the unit for better handling. The Hellwig springs are simply a helper spring that is bolted to the factory rear leaf springs.

II. 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 unit, the fiberglass finish may become dull, 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, which is the outer colored surface; and the structural reinforcement, which 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. How much 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 a 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 washings 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 hand applied, or applied 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.

NOTE: 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 of 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 lighter, (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.

III. 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 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 also 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 is equipped with solid oak 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 hinges 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 back rest 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 coach 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 pitch 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 R.V. dealer.

7. **Emergency Exits** – Three entry doors are designated as exits to your Born Free. The rear window on most 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 110-volt power supplied either by shoreline or generator-produced 110-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 the temperature range from 65° on the coldest side to 90° on the warmest side. The compressor ON/OFF is controlled by the thermostat setting in the cooling mode.

   c. **Cooling Operation** -

      1. Select the fan speed that best satisfies your needs:
         HI COOL: Selected when maximum cooling and dehumidification are required.
         MED COOL: Selected when normal or average cooling is required.
         LO COOL: Selected when room is at desired comfort level and needs to be maintained. Normally, this speed is used for night time 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.
      2. 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.
      NOTE: The electric heater will not replace a furnace for heating your RV in cold weather. The intent is to remove the chill on cool days or mornings.

   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 shore-line 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 is equipped with a 12-volt range hood, vented to the outside. RVIA regulations prohibit venting to the outside on rear kitchen model coaches. These units have a 2-stage filtration system built into the range hood. It also has a built-in monitor panel to accurately read the holding tanks, water tank, and battery 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. Also, a light can 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, and the charge condition of the auxiliary battery.
    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 instructions 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 pitch 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 pitch 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 R.V. dealer for repairs.

B. Exterior

1. **Doors and Locks** - Born Free Motorcoaches are equipped with the following locks and keys.

	Identification	Replacement
a.	Chassis door and ignition	See chassis dealer
b.	Coach entrance door lock	Send number of lock to Born Free
c.	Coach entrance dead bolt lock	Send number of lock to Born Free
d.	Compartment door locks	One key fits all - order from Born Free

2. **Rack and Ladder** - Exterior roof mount rack and ladder is offered as an option 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 battery is mounted on a sliding tray and can be slid out for servicing the auxiliary battery. This compartment is not weathertight to allow fumes and gasses to escape.
6. **Sewer Hose Compartment** - We have provided you with a storage compartment to house your sewer hose. This storage is located in the bumper.
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 50-foot power cord is stored in the hatch.
9. **Exterior Light** - We have installed a light in the area of the waste tank pump valve to aid you in evacuating the waste tanks at night.
10. **110-Volt Exterior Outlet** - A 110-volt weath-

erproof outlet is available on your coach to run any 110-volt accessories you may have. This outlet is controlled by a ground-fault 110-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 furnace is operating, this vent may become hot and you should take precautions to not 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 some models we also install a stepwell light, which is also switched on the wall.

IV. ELECTRICAL SYSTEMS

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

1. 12-volt automatic electrical system
2. 12-volt motorcoach auxiliary battery
3. 110-volt external power supply
4. 110-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 an auxiliary battery mounted on a slide-out tray beneath the coach floor. It operates the following:

1. Interior lights
2. Interior roof fans
3. Recirculating toilet
4. Range exhaust fan
5. Furnace fan and ignitor
6. Water pump
7. Monitor panel
8. Auxiliary generator starter
9. Safety detector
10. LP leak detector
11. Igniters for refrigerator and water heater

The auxiliary battery is 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 110-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 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 step-well by 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 as 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 to back on positions.

E. 110-volt System

The 110-volt system operates from a shore-line 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 un-grounded plug adapter, as an electrical short may occur and cause serious electrical damage or personal injury.
2. **Converter Control Center** - Battery Charger - When plugged into 110-volt shoreline, 110-volt current enters the motorcoach from the 30-amp cord directly into the converter control center. The converter converts the 110-volt power into 12-volt DC current, along with supplying 110-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 110-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 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 groundfault 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. 110-volt Auxiliary Generator

The auxiliary generator in your motorcoach allows you to use 110-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 start.

The propane generator runs on liquid LP-gas drawn from the bottom of the LP supply tank. This is 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 [illegible] simultaneously [illegible] operate your generator and a [illegible] that could draw air co[illegible] into the vehicle.**
2. **Do [illegible] open [illegible] or [illegible]-powered vents in the vicinity of the generator location.**
3. **[illegible] the vehicle, [illegible] parking, so that [illegible] with [illegible] fumes away from you. N[illegible] the [illegible] of other vehicles parked [illegible].**
4. **Do [illegible] the motorcoach so that th[illegible] exhausted off vegetation, snow, [illegible] vehicles, or any**

other object that can deflect the exhaust under or into the vehicle.

a. **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 mounted on the generator, and one 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 hour-meter to tell you how many hours the generator has run.

1. Push the "start" switch to start 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 generator, switch off all electrical appliances and allow generator to cool for three to five minutes. Then push "off" switch.

b. **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.

c. **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.
    1. Do not steam clean or power spray while the generator is running.
    2. 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 generator set repair service.

Problem	Probable Cause	Solution
FAILS TO CRANK	**1.** Low battery. **2.** Bad battery connection. **3.** Blown fuse.	**1.** Check battery electrolyte level. **2.** Clean and tighten all battery and cable connections. **3.** Replace fuse on control box. See specifications for proper fuse rating.
CRANKS SLOWLY	**1.** Low battery. **2.** Bad battery connection. **3.** Oil is too heavy. **4.** Load connected.	**1.** See "Fails to Crank", #1. **2.** See "Fails to Crank", #2. **3.** Replace with lighter oil. **4.** Remove load.
CRANKS BUT WON'T START	**1.** Fuel below genset pick-up level in tank. **2.** Fuel supply shutoff valve closed. **3.** Carbon deposits on spark plugs.	**1.** Add fuel. **2.** Properly open fuel supply valve. **3.** Remove spark plugs and clean.
EXHAUSTING BLACK SMOKE	**1.** Rich fuel mixture. **2.** Dirty air filter. **3.** Excess oil.	**1.** Turn main fuel adjustment in 1/8 turn increments of adjustment (shown in Figure 3.) **2.** Replace air filter. **3.** Drain excess oil level.
UNIT RUNS THEN STOPS	**1.** Out of fuel. **2.** Low oil level. **3.** Excess oil.	**1.** Refuel tank. **2.** Add oil if necessary. **3.** Drain excess oil level.
UNIT RUNS BUT SURGES	**1.** Worn breaker points. **2.** Loose or worn spark plug leads. **3.** Ignition coil, wiring, or control components defective.	**1.** Clean or replace breaker points. **2.** Check security of spark plug leads at spark plugs and ignition coil. Replace leads if worn. **3.** Contact authorized service representative.

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 coach 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

	After each cycle of indicated hours				
Service these items	**8**	**50**	**150**	**200**	**300**
General inspection	x [1]				
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 [2.7]		
Change air filter			x [2]		
Clean fuel filter			x [3]		
Replace spark plugs			x [4.9]		
Check breaker points			x [5]		
Replace breaker points				x [4.9]	
Clean cooling fins				x [6]	
Clean carburetor and combustion chamber with Onan "4C" Cleaner			x		
Clean generator set			x		
Inspect and clean engine					x [6]
Adjust carburetor	as required [6]				
Check generator brushes	as required [6]				
Exercise generator set	as required [8]				

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 (i.e., 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 stored.

ELECTRICAL CIRCUIT
21' REAR DOOR WET BATH

DODGEN INDUSTRIES INC
HIWAY 169N HUMBOLDT, IA 50548

30 FT
120V/60 HZ SHORELINE 30 AMP
10/3 TYPE STW-A UL LISTED

120V/60 HZ
10 GA AWG
TEW 600V
105C WIRE
FOR OPTIONAL
GEN SET
(CSA E100130)

15 AMP INLINE FUSE
FOR MONITOR PANEL

30 AMP
TRANSFER
RELAY

B & W CONVERTER

MAGNATEK MODEL
6345CQVKBA
45 AMP WITH
3 AMP BATTERY
CHARGING CIRCUIT
UL LISTING 514N
CSA LISTING LR-26446
MAGNATEK, KOKOMO, IN.

120/60 AC

1-2-3-4-5

120 VOLT BREAKERS

12 VDC

12 VOLT FUSES

1-2-3-4-5-6-7-8-9

20 AMP MAX FUSE
SIZE PER CIRCUIT

12 VDC POSITIVE
LEAD FOR BATTERY
LINE

TO **AUXILLIARY**
BATTERY 8 GA
RED TEW WIRE

TO CHASSIS **FRAME**
8 GA WHITE **TEW WIRE**

NEGATIVE
TERMINAL

120V CIRCUITS

1. 30 AMP MAIN BREAKER
2. 20 AMP BREAKER: 12VDC CONVERTER & REFRIGERATOR OUTLET
3. 20 AMP GFI BREAKER: OUTSIDE OUTLET, CABOVER OUTLET, SINK SIDE OUTLET, [illegible] OUTLET (OPTIONAL ENTERTAINMENT CENTER OUTLET)
4. 20 AMP BREAKER: MICROWAVE OUTLET
5. 20 AMP BREAKER: ROOF AIR CONDITIONER

AL[illegible]E 12-2
TY[illegible]M-B WITH
G[illegible] 600 VOLT
UL-[illegible]

12 VDC CIRCUITS

1. 15 AMP: REFRIGERATOR
2. 10 AMP: WATER PUMP CIRCUIT
3. 15 AMP: PASSENGER SIDE LIGHTS (2 FLUORESCENTS AND OUTSIDE ENTRY LIGHT, HANDLE LIGHT, 3 RADING LIGHTS)
4. 15 AMP: DRIVER'S SIDE LIGHTS (4 FLUORESCENTS AND 3 READING LIGHTS)
5. 15 AMP: WATER HEATER,BATH LIGHT, BATH FAN
6. 3 AMP: LPG ALARM
7. 15 AMP: TV BOOSTER CIRCUIT(PLUS OPTIONAL DC OUTLET & 2 LIGHTS WITH ENTERTAINMENT CENTER PACKAGE)
8. 15 AMP: FANTASTIK 3 SPEED ROOF FAN
9. 15 AMP: FURNACE

WHITE/BLACK 1[illegible]
RED 12 GA[illegible]
BROWN 12 GA[illegible]
BLUE 12 GAUGE
ORANGE 12 GA[illegible]
ORANGE/BLACK [illegible]
YELLOW 12 GA[illegible]
PURPLE 12 GA[illegible]
YELLOW/BLACK [illegible]

ALL WIRE [illegible]
105 DE[illegible]
[illegible] VOLT
[illegible] 130

CONVERTER CACULATIONS
BORN FREE 21' REAR DOOR WET BATH

TOTAL 12V ITEMS AVAILABLE ON CONVERTER CIRCUITS

2 PC OAK BED READING LIGHT	2.88	
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	CACULATION FORMULA:
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	1ST 20 AMPS @ 100% = 20.0 AMPS
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	2nd 20 AMPS @ 50% = 10.0 AMPS
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	OVER 40 AMPS @ 25% = 4.42 AMPS
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	TOTAL =34.42 AMPS
1PC SHURFLO WATER PUMP	4.0	
1PC B&W CONVERTER BATTERY CHARGE FUNCTION	3.0	CONVERTER IS A 45 AMP
1PC BATHROOM BATH FAN	1.8	MAGNATEK MODEL 6345CQVVKBA
1PC BATHROOM LIGHT	1 .04	
1PC ATWOOD WATER HEATER G6A-7E	1.0	
1PC SUBURBAN FURNACE SF-30F	6.5	
1PC DOMETIC REFRIGERATOR & LIGHT MODEL RM2607	1.2	
1PC TEN TEK LPG ALARM	0.2	
1PC 12 VOLT JACK FOR TV/VCP	3.33	(TV/VCP OPTIONAL)
1PC ANTENNA BOOSTER	0.1	(ANTENNA OTIONAL)
1PC JENSEN ENTRY LIGHT	1.04	
1PC BORN FREE LIGHTED ENTRY HANDLE	0.58	
1PC EXTERIOR LIGHT ON DRIVER'S SIDE	1.04	
1PC FANTASTIK VENT MODEL 1000R3 SPEED	3.00	
1PC DC OUTLET	3.33	(OPTIONAL)
2PC READING LIGHTS	2.88	(OPTIONAL)
4PC READING LIGHT	5.76	
	57.68 AMPS	TOTAL

21' REAR DOOR WET BATH

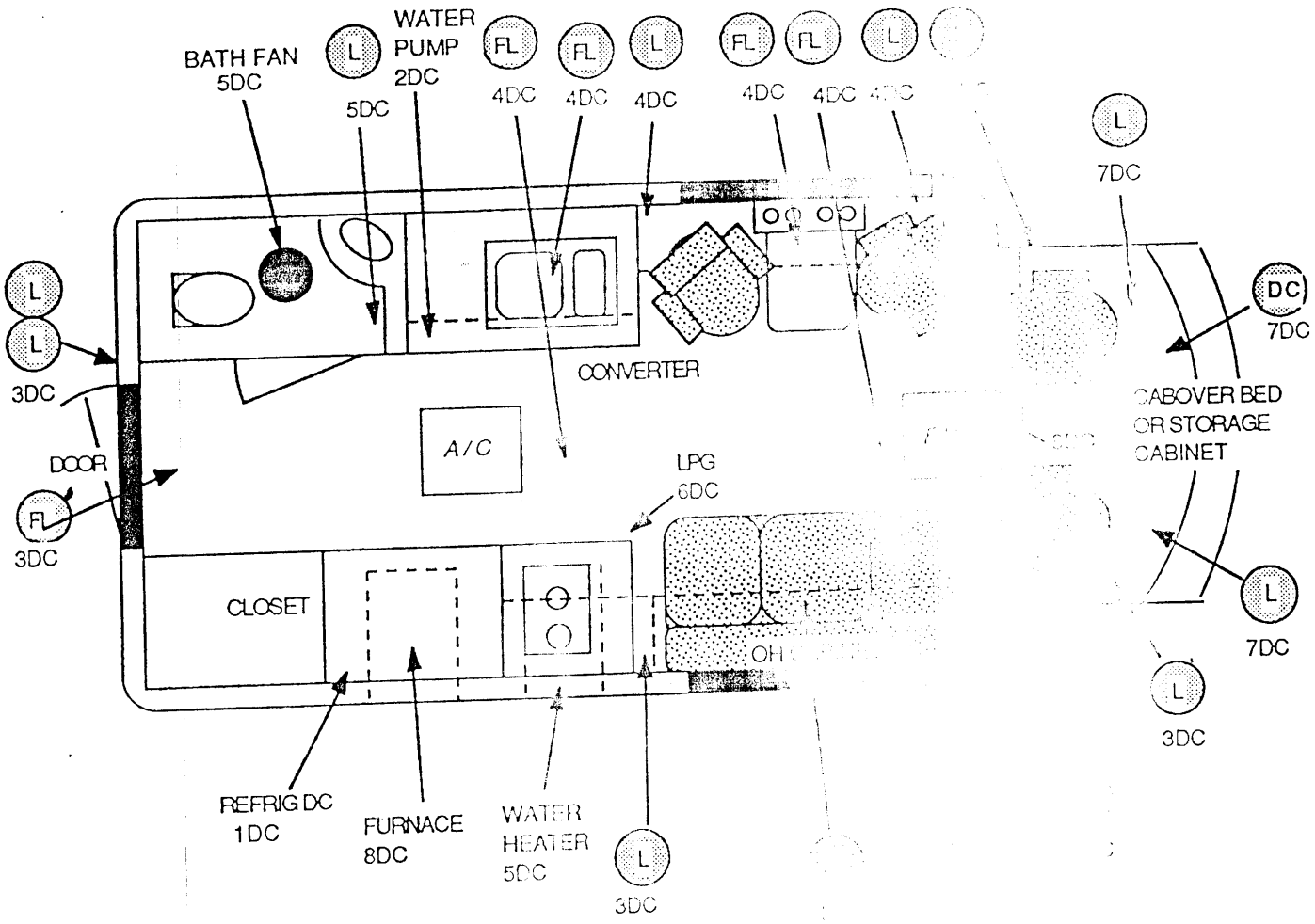
LIGHTING AND OUTLETS
(12 volt system)

FL IS 12VDC FLUORESCENT LIGHTING

L IS 12VDC INCANDESCENT LIGHTING.

DC IS 12VDC OUTLET.

LPG IS LPG LEAK DETECTOR



THE LETTER AND NUMBER BELOW EACH SYMBOL INDICATES THE ITEM IS ON IN THE CONVERTER.

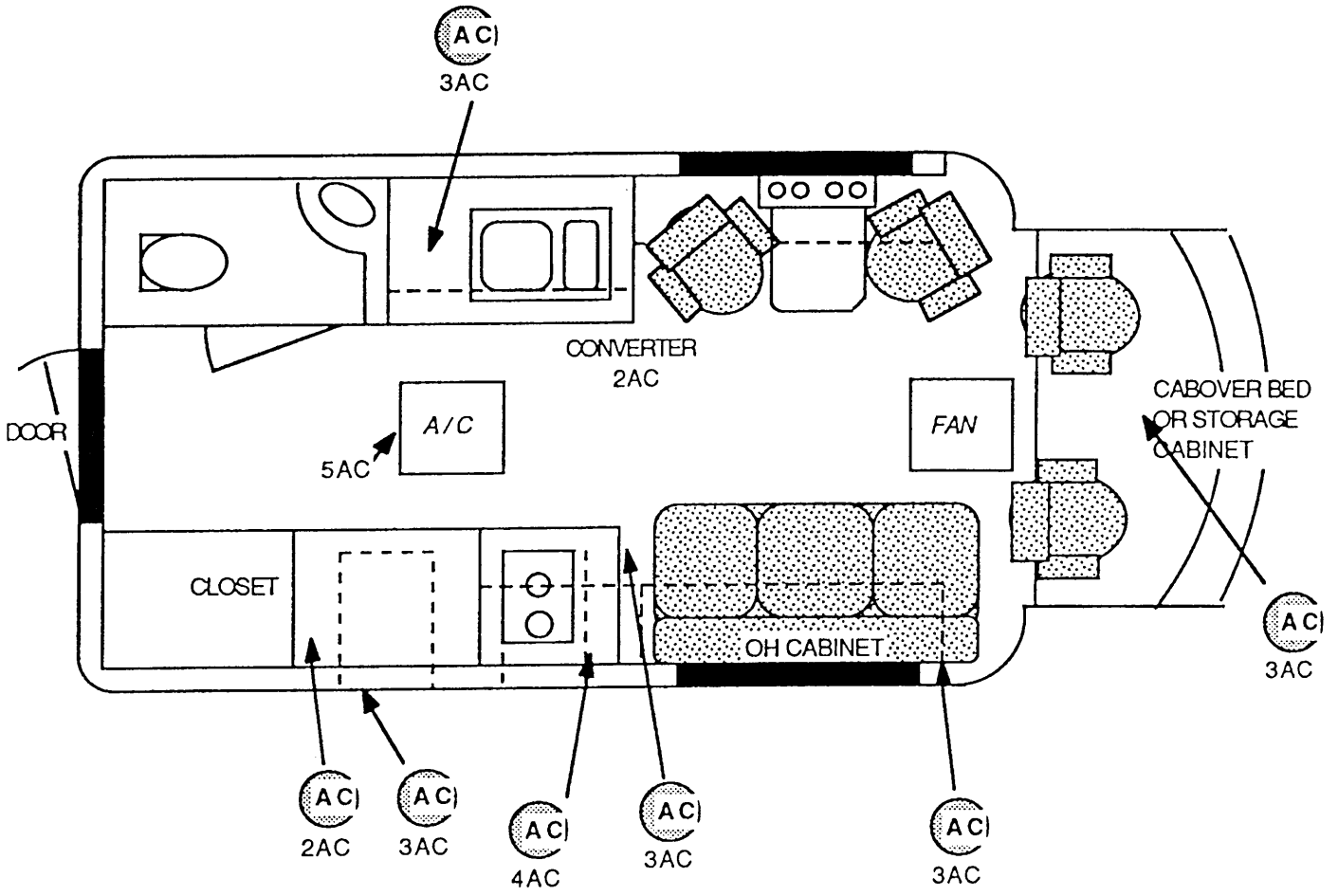
BORN FREE

21' REAR DOOR WET BATH

LIGHTING AND OUTLETS

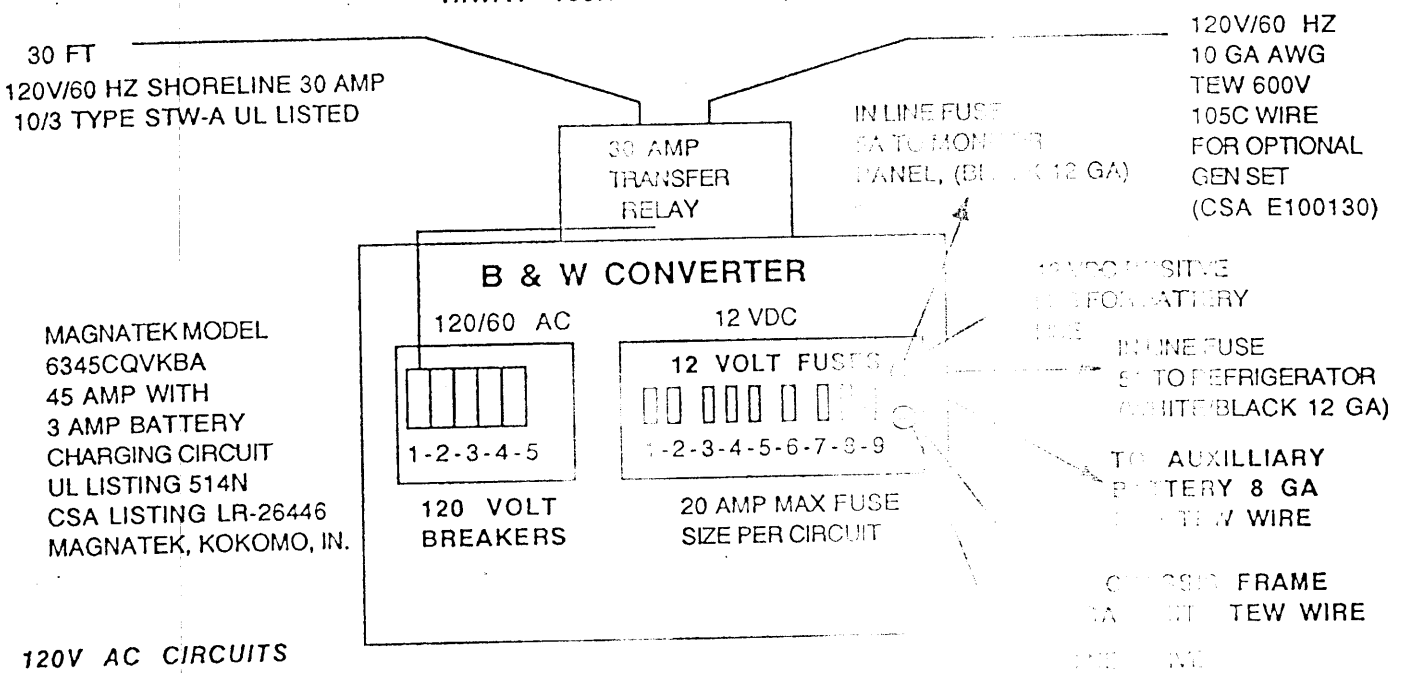
(110 volt system)

AC IS 120V AC OUTLET/RECEPTACLE.



THE LETTER AND NUMBER BELOW EACH SYMBOL INDICATE WHICH CIRCUIT THE ITEM IS ON IN THE CONVERTER.

ELECTRICAL CIRCUITS
23' BFT REAR KITCHEN
DODGEN INDUSTRIES INC
HIWAY 169N HUMBOLDT, IA 50548



120V AC CIRCUITS

1. 30 AMP MAIN BREAKER
2. 20 AMP BREAKER: REFRIGERATOR OUTLET AND 12VDC CONVERTER
3. 20 AMP GFI BREAKER: OVERCAB OUTLET, OUTSIDE OUTLET, TV OUTLET,
4. 20 AMP BREAKER: MICROWAVE OUTLET
5. 20 AMP BREAKER: ROOF AIR CONDITIONER

12V DC CIRCUITS

1. 10 AMP: WATER PUMP CIRCUIT
2. 15 AMP: PASSENGER SIDE LIGHTS
   (2 FLOURESCENTS AND 3 READING LIGHTS)
3. 15 AMP: DRIVER'S SIDE LIGHTS
   (3 FLOURESCENTS AND 5 READING LIGHTS)
4. 15 AMP: WATER HEATER/BATH LIGHT/BATH FAN/
   KITCHEN FLOURESCENT LIGHT
5. 3 AMP: LPG ALARM/CO ALARM
6. EMPTY SPACE
7. 10 AMP: TV BOOSTER CIRCUIT
8. 10 AMP: FANTASTIC 3 SPEED ROOF FAN
9. 15 AMP: FURNACE

NOTE: POWER STEP FUSES ARE LOCATED UNDER THE CHASSIS

CONVERTER CACULATIONS
23' BFT REAR KITCHEN

TOTAL 12V ITEMS AVAILABLE ON CONVERTER CIRCUITS

4 PC OAK BED READING LIGHT (4 X 1.44A)	5.76
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC SHURFLO WATER PUMP	4.0
1PC B&W CONVERTER BATTERY CHARGE FUNCTION	3.0
1PC BATHROOM BATH FAN	1.8
1PC BATHROOM LIGHT	1 .04
1PC SUBURBAN WATER HEATER VDSI-6-3	1.0
1PC SUBURBAN FURNACE SF-30F	6.5
1PC NORCOLD MODEL 962 REFRIGERATOR & LIGHT	1.2
1PC LPG ALARM/CO ALARM (.094A + .072A)	0.17
1PC 12 VOLT JACK FOR TV/VCP	3.33 (TV/VCP OPTIONAL)
1PC ANTENNA BOOSTER	0.1 (ANTENNA OTIONAL)
1PC JENSEN ENTRY LIGHT	1.04
1PC BORN FREE LIGHTED ENTRY HANDLE	0.58
1PC EXTERIOR LIGHT ON DRIVER'S SIDE	1.04
1PC FANTASTIK VENT MODEL 1000R3 SPEED	3.00
1PC DC OUTLET	3.33
4PC READING LIGHTS (4 X 1.44A)	5.76

57.65 AMPS TOTAL

CACULATION FORMULA:

FIRST 20 AMPS @ 100% = 20.0 AMPS

2nd 20 AMPS @ 50% = 10.0 AMPS

OVER 40 AMPS @ 25% = 4.41 AMPS

TOTAL =34.41 AMPS

CONVERTER IS A 45 AMP
MAGNATEK MODEL 6345CQVVKBA

23' BFT REAR KITCHEN

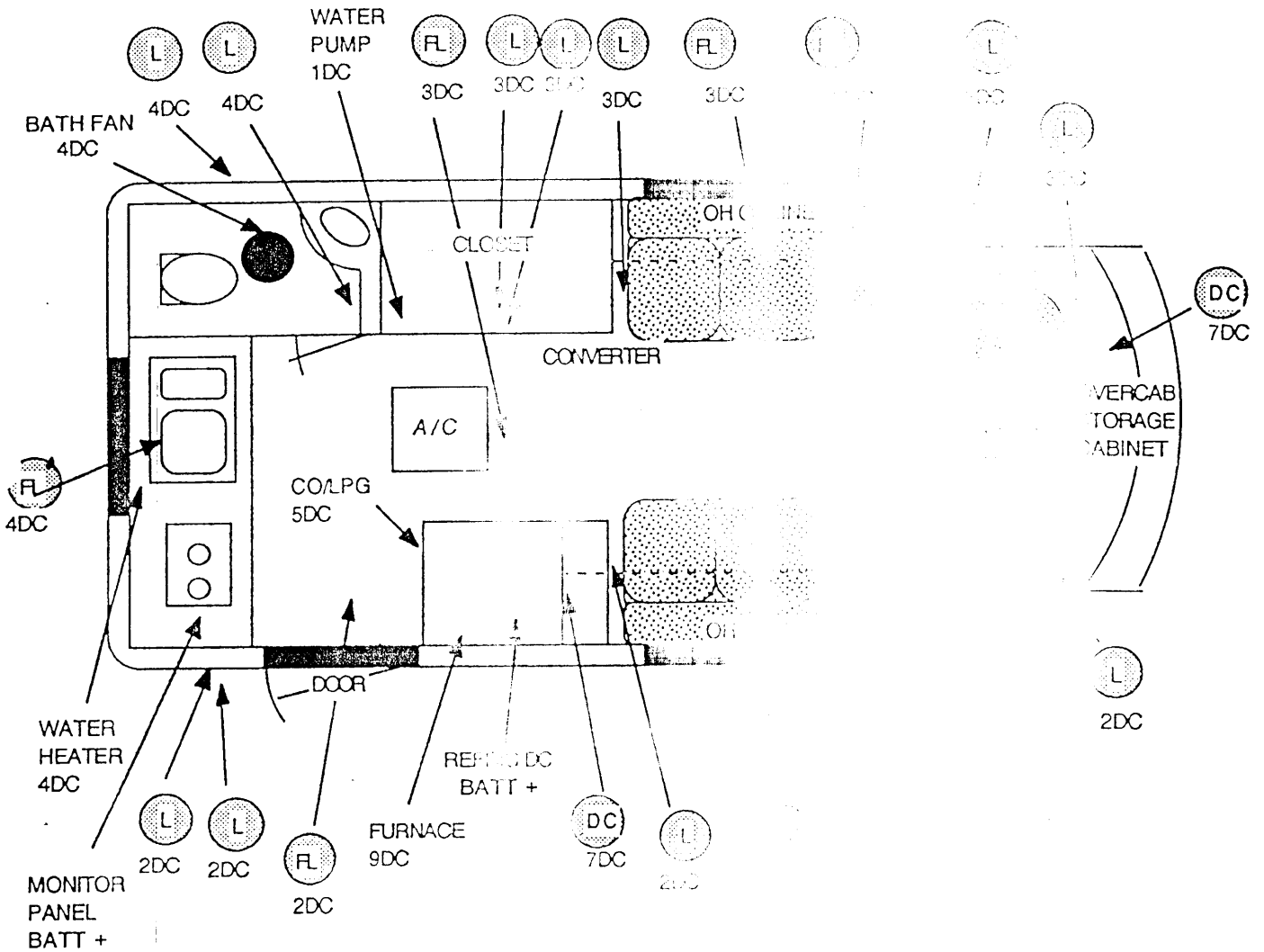
LIGHTING AND OUTLETS
(12 volt system)

FL IS 12VDC FLOURESCENT LIGHTING.

L IS 12VDC INCANDESCENT LIGHTING.

DC IS 12VDC [illegible]

CO/LPG IS 12VDC [illegible] LEAK DETECTORS



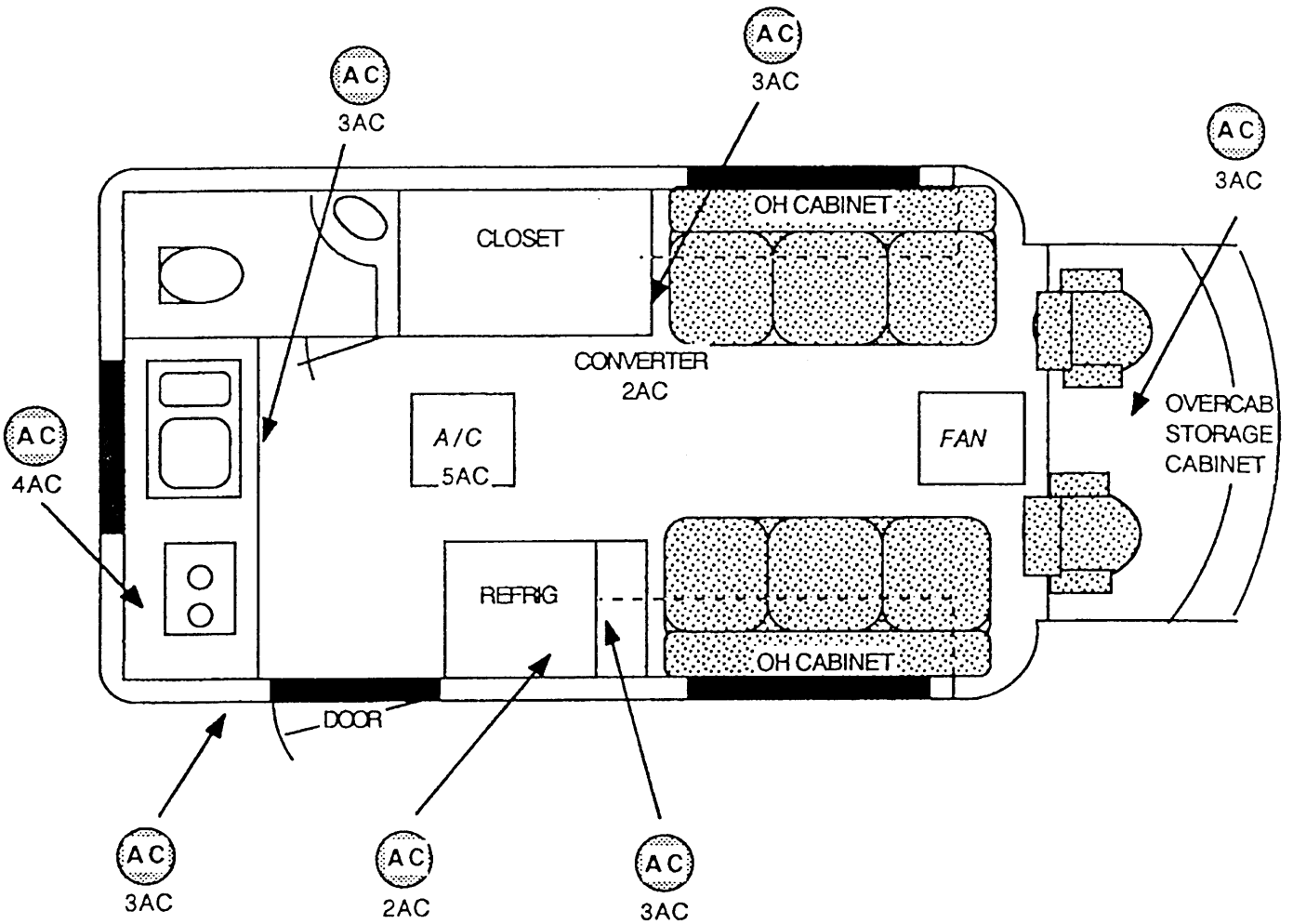
THE LETTER AND NUMBER BELOW EACH SYMBOL [illegible] ITEM IS ON IN THE CONVERTER.

23' BFT REAR KITCHEN

LIGHTING AND OUTLETS

(110 volt system)

AC IS 120V AC OUTLET/RECEPTACLE



THE LETTER AND NUMBER BELOW EACH SYMBOL INDICATE WHICH CIRCUIT THE ITEM IS ON IN THE CONVERTER.

ELECTRICAL CIRCUI
24' REAR BATH

DODGEN INDUSTRIES INC
HIWAY 169N HUMBOLDT, IA 505

30 FT
120V/60 HZ SHORELINE 30 AMP
10/3 TYPE STW-A UL LISTED

120V/60 HZ
10 GA AWG
TEW 600V
105C WIRE
FOR OPTIONAL
VENT WITH
(CSA E100130)

30 AMP
TRANSFER
RELAY

B & W CONVERTER

MAGNATEK MODEL
6345CQVKBA
45 AMP WITH
3 AMP BATTERY
CHARGING CIRCUIT
UL LISTING 514N
CSA LISTING LR-26446
MAGNATEK, KOKOMO, IN.

120/60 AC

1-2-3-4-5

120 VOLT
BREAKERS

12 VDC

12 VOLT FUSES

1-2-3-4-5-6-7-8-9

20 AMP MAX FUSE
SIZE PER CIRCUIT

AUXILLIARY
TTERY 8 GA
TEW WIRE
IS FRAME
TE TEW WIRE

NTER OPTION)

120V CIRCUITS

1. 30 AMP MAIN BREAKER
2. 20 AMP BREAKER: REFRIGERATOR OUTLET AND 12VDC CONVERTER
3. 20 AMP GFI BREAKER: BATH OUTLET, OUTSIDE OUTLET, TV OUTLET,
   CABOVER OUTLET, (OPTIONAL OUTLET MAYBE ADDED TO THIS CIRCUIT
4. 20 AMP BREAKER: MICROWAVE OUTLET
5. 20 AMP BREAKER: ROOF AIR CONDITIONER

12 VDC CIRCUITS

1. 15 AMP: REFRIGERATOR
2. 10 AMP: WATER PUMP CIRCUIT
3. 15 AMP: PASSENGER SIDE LIGHTS
   (3 FLUORESCENTS 3 READING,& 1 CLOSET LIGHT)
4. 15 AMP: DRIVER'S SIDE LIGHTS
   (3 FLUORESCENTS AND 3 READING LIGHTS)
5. 15 AMP: WATER HEATER/BATHROOM LIGHT/BATH FAN
6. 3 AMP: LPG ALARM
7. 15 AMP: TV BOOSTER CIRCUIT (OPTIONAL 2 LIGHTS
   DC OUTLET WITH ENT.CE
8. 15 AMP: FANTASTIK 3 SPEED ROOF FAN
9. 15 AMP: FURNACE

WHI
RE
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105

CONVERTER CACULATIONS
BORN FREE 24' REAR BATH

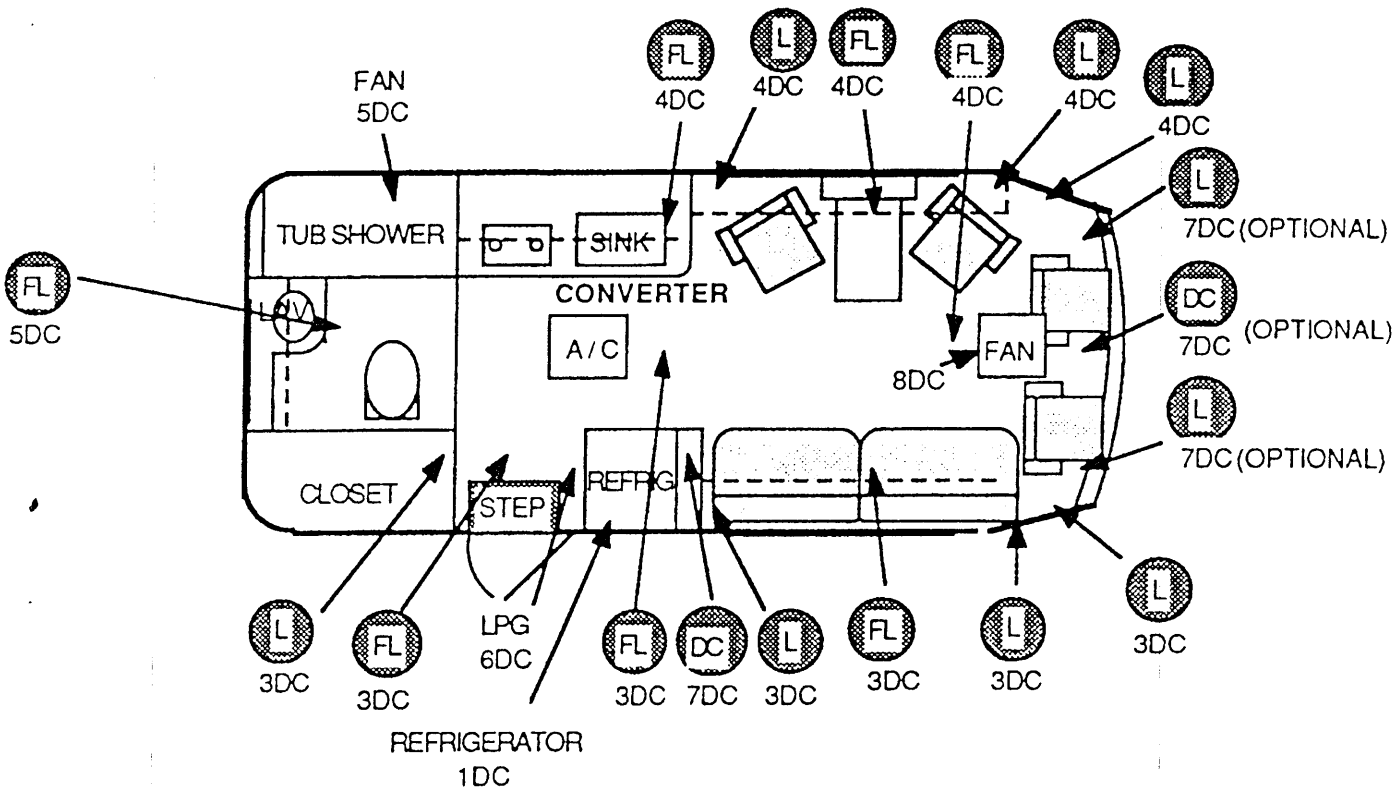
TOTAL 12V ITEMS AVAILABLE ON CONVERTER CIRCUITS

2 PC OAK BED READING LIGHT	2.88	
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	CACULATION FORMULA:
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	FIRST 20 AMPS @ 100% = 20.0 AMPS
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	2nd 20 AMPS @ 50% = 10.0 AMPS
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	OVER 40 AMPS @ 25% = 5.19 AMPS
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	TOTAL =35.19 AMPS
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5	
4 PC READING LIGHTS	5.76	
1PC SINGLE BULB CLOSET LIGHT	1.44	CONVERTER IS A 45 AMP MAGNATEK MODEL 6345CQVVKBA
1PC SHURFLO WATER PUMP	4.0	
1PC B&W CONVERTER BATTERY CHARGE FUNCTION	3.0	
1PC BATHROOM BATH FAN	1.8	
1PC ATWOOD WATER HEATER G6A-7E	1.0	
1PC SUBURBAN FURNACE SF-30F	6.5	
1PC DOMETIC REFRIGERATOR & LIGHT MODEL RM2607	1.2	
1PC TEN TEK LPG ALARM	0.2	
1PC 12 VOLT JACK FOR TV/VCP	3.33	(TV/VCP OPTIONAL)
1PC ANTENNA BOOSTER	0.1	(ANTENNA OTIONAL)
1PC FLOOR ENTRY LIGHT	0.19	
1PC JENSEN ENTRY LIGHT	1.04	
1PC BORN FREE LIGHTED ENTRY HANDLE	0.58	
1PC EXTERIOR LIGHT ON DRIVER'S SIDE	1.04	
1PC FANTASTIK VENT MODEL 1000R3 3 SPEED	3.00	
1PC DC OUTLET	3.33	(OPTIONAL)
2PC READING LIGHTS	2.88	(OPTIONAL)
	60.77 AMPS	TOTAL

BORN FREE

24' REAR BATH

(12 volt system)



FL IS FLOURESCENT 12VDC LIGHTING

L IS INCANDESCENT 12VDC LIGHTING

DC IS 12VDC OUTLETS

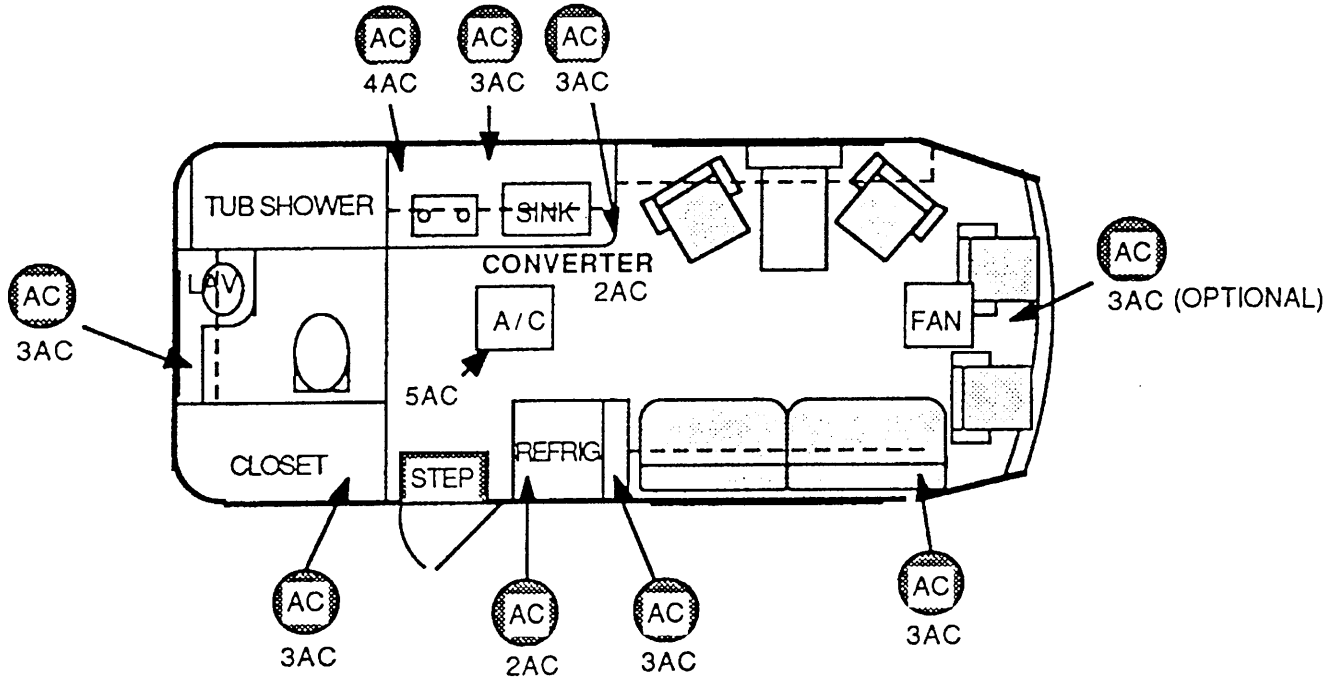
LPG IS LPG LEAK DETECTOR

THE NUMBER AND THE TWO LETTERS BELOW EACH SYMBOL REPRESENT THE CIRCUIT IN THE CONVERTER THAT THE ITEM IS ON.

BORN FREE

24' REAR BATH

(110 volt system)

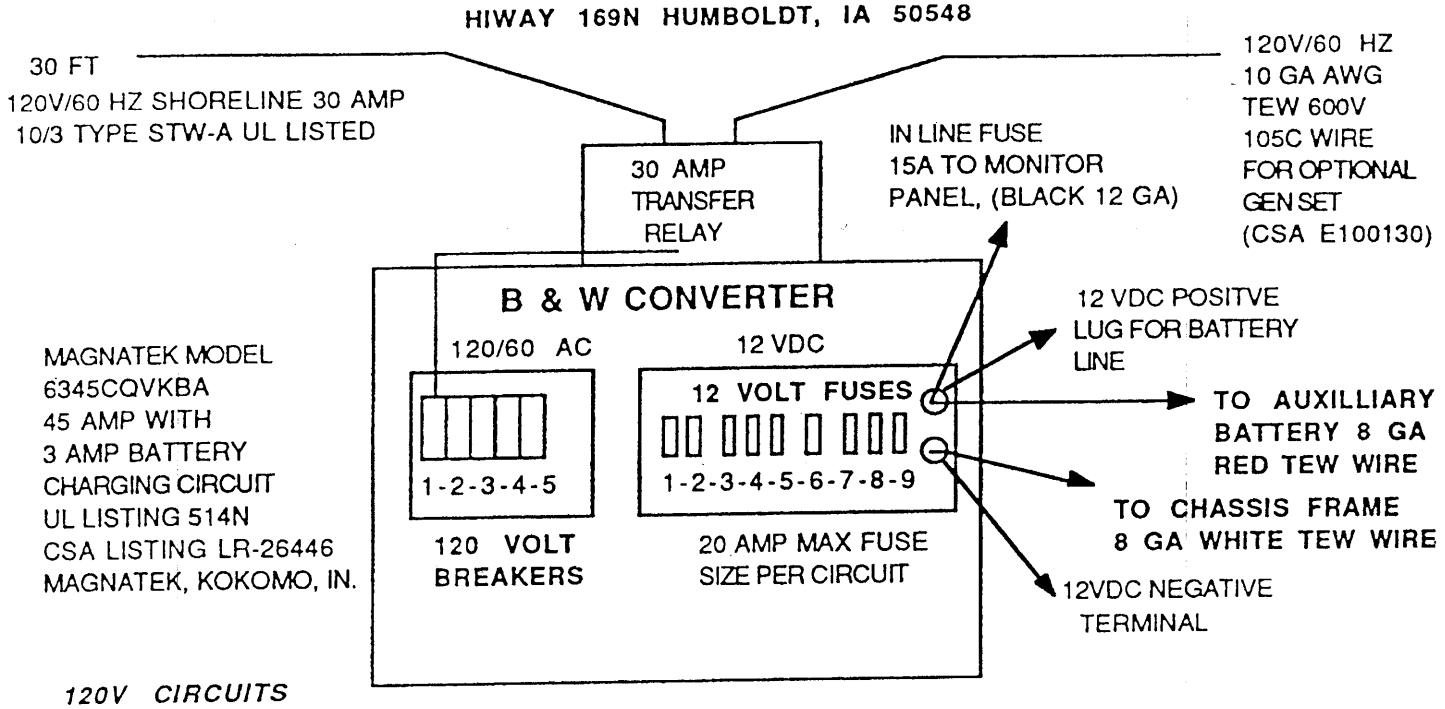


AC IS 120/60HZ OUTLETS

THE NUMBER AND THE TWO LETTERS BELOW EACH SYMBOL REPRESENT THE CIRCUIT IN THE CONVERTER THAT THE ITEM IS ON.

ELECTRICAL CIRCUITS
26' REAR SIDE BED

DODGEN INDUSTRIES INC
HIWAY 169N HUMBOLDT, IA 50548



120V CIRCUITS

1. 30 AMP MAIN BREAKER
2. 20 AMP BREAKER: REFRIGERATOR OUTLET AND 12VDC CONVERTER
3. 20 AMP GFI BREAKER: BATH OUTLET, OUTSIDE OUTLET, TV OUTLET, KITCHEN OUTLETS (2), BUNK BED OUTLET OPTIONAL C/O OUTLET & TABLE OUTLET
4. 20 AMP BREAKER: MICROWAVE OUTLET
5. 20 AMP BREAKER: ROOF AIR CONDITIONER

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

12 VDC CIRCUITS

1.	15 AMP: REFRIGERATOR	WHITE/BLACK 12 GAUGE WIRE
2.	10 AMP: WATER PUMP CIRCUIT	RED 12 GAUGE WIRE
3.	15 AMP: PASSENGER SIDE LIGHTS (3 FLOURESCENTS AND 5 READING LIGHTS)	BLACK 12 GAUGE WIRE
4.	15 AMP: DRIVER'S SIDE LIGHTS (4 FLOURESCENTS AND 3 READING LIGHT STOVE HOOD)	BLUE 12 GAUGE WIRE
5.	15 AMP: WATER HEATER/VANITY LIGHT/BATH FAN/ BATHROOM FLOURESCENT LIGHT	ORANGE 12 GAUGE WIRE
6.	3 AMP: LPG ALARM	ORANGE/BLACK 12 GAUGE WIRE
7.	15 AMP: TV BOOSTER CIRCUIT & OPTIONAL ENTERTAINMENT LIGHTS (2)	YELLOW 12 GAUGE WIRE
8.	15 AMP: FANTASTIK 3 SPEED ROOF FAN	PURPLE 12 GAUGE WIRE
9.	15 AMP: FURNACE	YELLOW/BLACK 12 GAUGE WIRE

ALL WIRE IS 12 AWG 600 VOLT 105 DEGREE C TEW CSA E100130

CONVERTER CACULATIONS
BORN FREE 26' REAR SIDE BED

TOTAL 12V ITEMS AVAILABLE ON CONVERTER CIRCUITS

2 PC OAK BED READING LIGHT	2.88
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC THINLITE FLOURESCENT LIGHT 30 WATT	2.5
1PC SHURFLO WATER PUMP	4.0
1PC B&W CONVERTER BATTERY CHARGE FUNCTION	3.0
1PC JENSEN 3 BULB DECORATIVE LIGHT	4.32
1PC BATHROOM BATH FAN	1.8
2PC OAK READING LIGHT (BEDROOM)	2.88
4PC OAK READING LIGHT (LOUNGE AREA)	5.76
1PC SUBURBAN FURNACE NT-30K	1.0
1PC ATWOOD WATER HEATER G6A-7E	1.0
1PC DOMETIC REFRIGERATOR LIGHT	1.25
1PC TEN TEK LPG ALARM	0.2
1PC 12 VOLT JACK FOR TV/VCP	3.33 (TV/VCP OPTIONAL)
1PC ANTENNA BOOSTER	0.1 (ANTENNA OTIONAL)
1PC FLOOR ENTRY LIGHT	0.19 (OPTIONAL 2.88 ENTERTAINMENT LIGHTS)
1PC JENSEN ENTRY LIGHT	1.04
1PC BORN FREE LIGHTED ENTRY HANDLE	0.58
1PC EXTERIOR LIGHT ON DRIVER'S SIDE	1.04 (OPTIONAL)
1PC FANTASTIK VENT MODEL 1000R3 3 SPEED	3.00
	62.75 AMPS TOTAL

CACULATION FORMULA:

FIRST 20 AMPS @ 100% = 20.0 AMPS

2nd 20 AMPS @ 50% = 10.0 AMPS

OVER 40 AMPS @ 25% = 5.69 AMPS

TOTAL =35.69 AMPS

CONVERTER IS A 45 AMP
MAGNATEK MODEL 6345CQVVKBA

BORN FREE

26' REAR SIDE BED
(12 volt system)

FL IS FLUORESCENT 12VDC LIGHTING FIXTURES

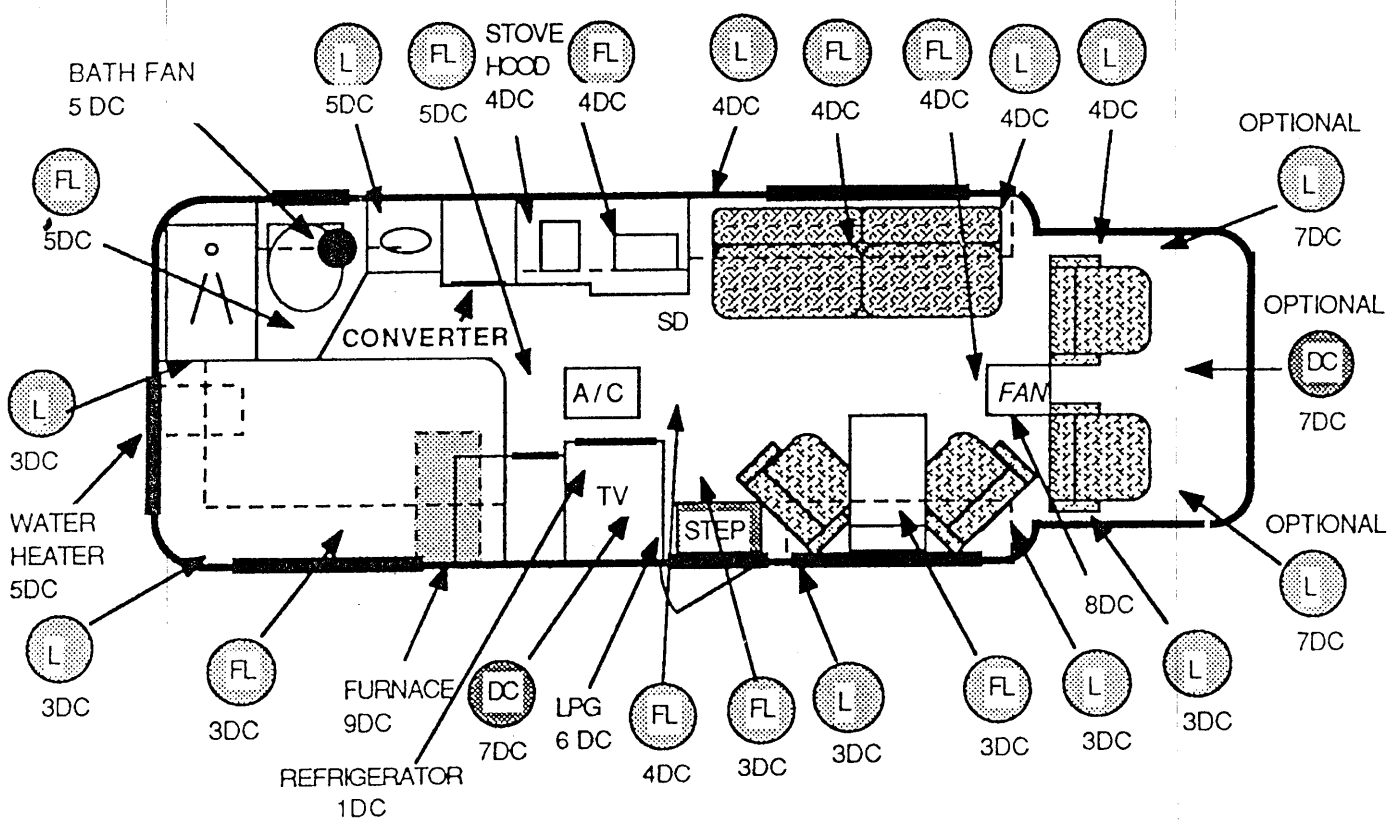
L IS INCANDESCENT 12VDC LIGHTING FIXTURE

DC IS 12VDC OUTLET

SD IS SMOKE DETECTOR

LPG IS LP LEAK ALARM

THE NUMBER AND 2 LETTERS BELOW EACH SYMBOL REPRESENT THE CIRCUIT IN THE CONVERTER THAT THE ITEM IS ON.



BORN FREE

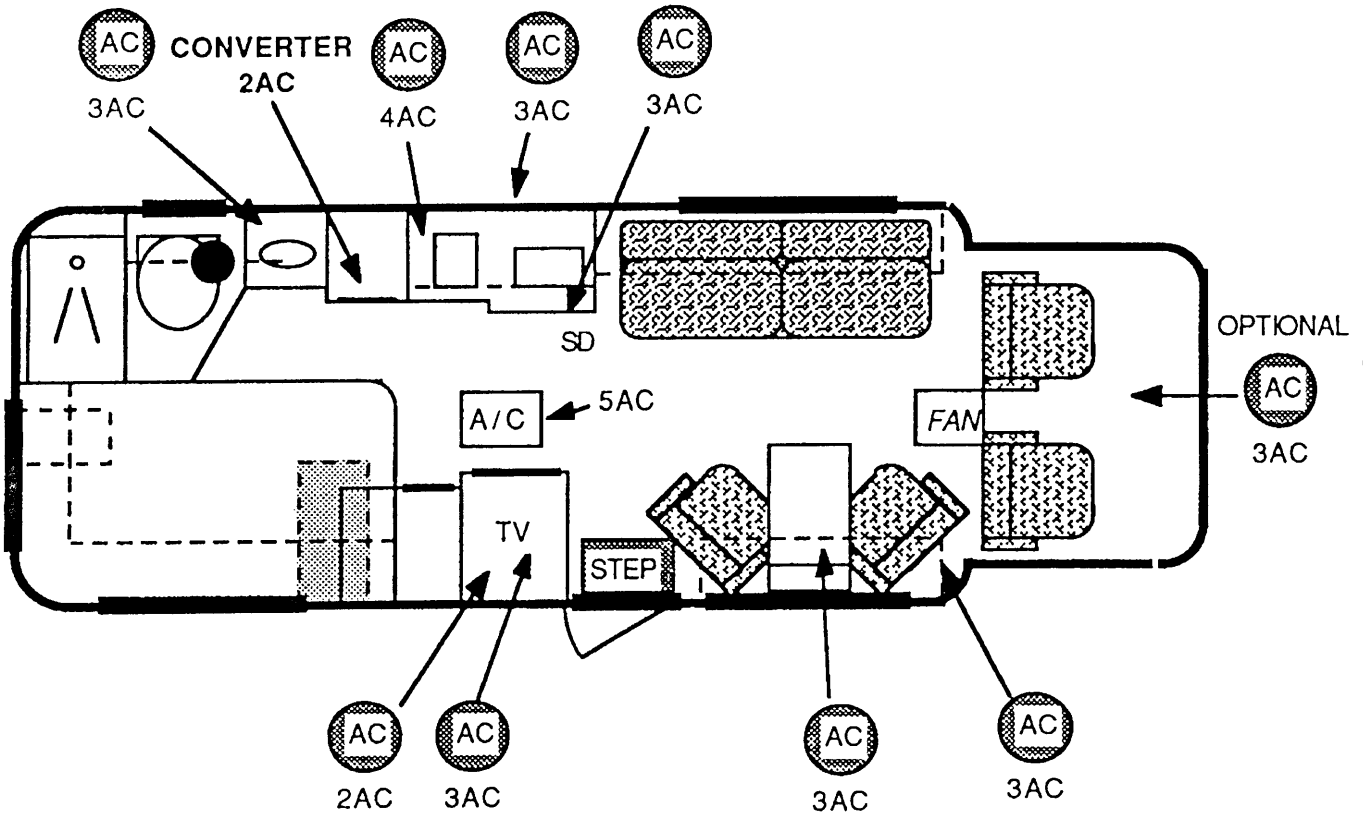
26' REAR SIDE BED

(110 volt system)

AC IS 120V / 60HZ OUTLET

SD IS SMOKE DETECTOR

THE NUMBER AND 2 LETTERS BELOW EACH SYMBOL REPRESENT THE CIRCUIT IN THE CONVERTER THAT THE ITEM IS ON.



V. LP GAS SYSTEMS

LP Gas Systems - Your coach uses liquid-petroleum (LP) gas as a fuel for all the appliances which require heat, such as the water heater, furnace, range, oven, and absorption-type refrigerator. LP gas is economical and effective for these purposes; when proper precautions are taken, it is a safe form of energy.

A. LP Tank

LP gas is stored in a cylindrical-shaped welded steel tank mounted to the underside of the floor of your Born Free Coach and vented freely to the atmosphere so that in case of a leak the gas will not be discharged into the interior of the coach where it might be ignited by a pilot flare and cause an explosion.

All LP-gas systems have a pressure regulator mounted in the vicinity of the tank outlet.

When any appliance is not being used, the gas shut-off valve controlling that appliance should be placed in the "off" position. When the motorhome is to be stored for any period of time, the main shutoff valve at the tank should be closed.

LP GAS DETECTOR - A standard feature in all Born Free Motorcoaches is the LP-gas detector. It is designed to quickly detect leakage in any LP-gas piping and appliance system. The device does not prevent leaks. A beeper will sound if there is a leak. We encourage you to test the device before and after a trip is undertaken.

Checking for Leaks - The LP-gas system should be checked for leaks at frequent intervals. An oily substance having a pungent odor is mixed with LP-gas so that if there is a leak, you will be able to smell it.

The best method of finding a leak is to use a soap solution made from ordinary dishwashing detergent and water. This solution can be applied with a small paint brush to gas lines and connections. Bubbles will appear at any place where gas is leaking out of the system. Most leaks occur at fittings and can be corrected usually by tightening the fitting. Where tightening fails to stop the leak, the fitting must be replaced.

WARNING - No flammable material should ever be used to check for leaks in an LP-gas system.

Occasionally water may find its way into an LP-gas system and if this water freezes, the operation of the system may fail. The addition of anhydrous methanol to the LP-gas system will usually eliminate this problem. The anhydrous methanol absorbs the water and it then passes out of the system as the gas is used. If possible, find a service station that adds methanol to their propane during the winter months.

Most of the gas appliances in your Born Free Motorcoach have electronic pilot lights which will engage to light the fuel upon demand. These appliances all have a device built-in that will shut the flow of gas off to the burner if the burner is not ignited.

B. Maintenance of LP-Gas Systems

LP-gas systems normally operate for periods of time with a minimum of maintenance. However, a few tips on maintenance will be useful. One of the worst enemies of LP-gas systems is the spider. Spiders are attracted to tunnels and holes. They frequently spin webs across and through the orifices of gas-fired appliances. These webs restrict the air flow and produce a weak yellow flame which typically deposits carbon. If a yellow flame is detected, all parts of the burner should be wiped clean and orifices should be blown clear with compressed air.

If spider webs are not present and the flame is still too yellow and filled with carbon, the air adjustment of the burner should be adjusted until a blue flame is maximized.

C. Furnace

The furnace in your Born Free is an LP-gas burning model which will distribute heat throughout the coach. It is controlled by a wall thermostat. The furnace is equipped with electronic ignition. To start the furnace simply position the thermostat to the desired temperature, making sure the LP-gas valve is open at the tank. When not in use remember to position the wall thermostat to the "off" position.

Furnace Main Burner Cleaning - We recommend that you inspect the main burner periodically to assure that the furnace burner is functioning at maximum efficiency. If the flame has become yellow, you should remove the burner and clean it with a wire brush and blow it clean with compressed air. Reinstall the burner and ensure that the burner is burning with a hard blue flame, with well defined burner ports. Refer to the furnace manual for proper removal of the burner assembly. It is not recommended that the furnace be used when the vehicle is in motion.

D. Water Heater

Before you can light the water heater, it must be filled with water. With the water pump switch on, open a hot water faucet to fill. The water pump will push water into the water heater tank, and the air displaced will escape from the open hot water faucet. A steady flow of water from the open hot water faucet will indicate the tank is full and the faucet may be shut off. The best time to fill the water heater is when you are filling the fresh water tank. You will take six gallons of water from your supply tank and your supply tank will not be full.

Lighting the Water Heater -

1. Turn on the gas supply at the LP-gas tank.
2. Push the water heater ignition switch in the coach to the "on" position. Listen for a click-

ing sound. This indicates that the heater is trying to light. You will hear the burner when it lights. If it fails to light, shut the switch off and repeat the procedure until it lights. Water temperature is factory adjusted and cannot be changed. The water heater will cycle on and off to maintain the proper temperature.

Maintenance - Turn the LP-gas valve "off" before draining. Open the drain valve and open the lever on the pressure relief valve on the outside of the heater. The pilot height can be increased or decreased by removing the protective shield around the pilot light and adjusting the small screw controlling the gas to the pilot light. Air adjustment for the burner can be adjusted by moving the air sleeve to increase or decrease air. Yellowish, smoky flame will indicate that the burner needs more air. If adjustment does not reduce yellow flame, the problem is likely due to an obstruction in the pipe. This is a favorite place for spiders to spin a web, impeding air to the burner. Simply clear the obstruction from the tube and repeat the lighting procedure.

E. Refrigerator

Your Born Free Motorcoach is equipped with an LP-gas and 110-volt AC refrigerator. The refrigerator should be started a few hours before leaving on any trip or outing. Pre-chill all food and beverages in your house refrigerator before placing in the coach refrigerator. This will hasten the time that it takes to get the refrigerator cool, and will not raise the temperature by placing too great a load on it suddenly. An inexpensive refrigerator thermometer can be purchased at most hardware stores and will prove very valuable in monitoring the temperature of the refrigerator.

The refrigerator must be level to operate efficiently as the gases and fluids within the cooling unit depend on gravity for circulation. While traveling down the highway, regular movement of the coach allows the gases and fluids to circulate properly. We advise you to carry a few short pieces of 2x4 or 2x6 lumber to elevate the coach to attain proper leveling.

Defrosting - The freezer compartment may be defrosted in the following manner:

1. Turn the refrigrator "off."
2. Allow the frost to melt. Inserting the ice trays filled with hot water will hasten this process.
3. Do not attempt to chip the frost away from any part of the cooling unit. Damage to the cooling unit may result.
4. Clean the entire refrigerator with a mild detergent and water, dry with a soft towel, and allow the unit to air dry before re-starting the refrigerator.
5. We advise you to follow this cleaning procedure following any trip.

Refrigerator Troubleshooting

Pilot flame blow-out is not unusual when subjected to strong gusty winds from other vehicles. Do not obstruct the outside vent by covering it or placing any kind of material inside the vent door. For proper operation, air must be drawn in through the side vent, allowed to pass over the cooling unit, and then drawn upward through the roof vent. Any blockage of this "chimney action" will impair the operation of the refrigerator.

For maintenance and warranty work, refer to the manufacturer's manual.

F. Range and Oven

To operate simply turn on the LP-gas at the tank. Turn on the gas control to the desired burner and light the burner with a match or igniter.

WARNING - The range is not a substitute for your furnace and should never be used to heat the coach.

Maintenance and Adjustments

If you are using an LP-gas range for the first time, you will notice flame height is appreciably lower than the natural gas range in your home. LP-gas contains more BTU per unit than natural gas and a lower flame will cook as quickly and contain as much heat as the larger natural gas flame.

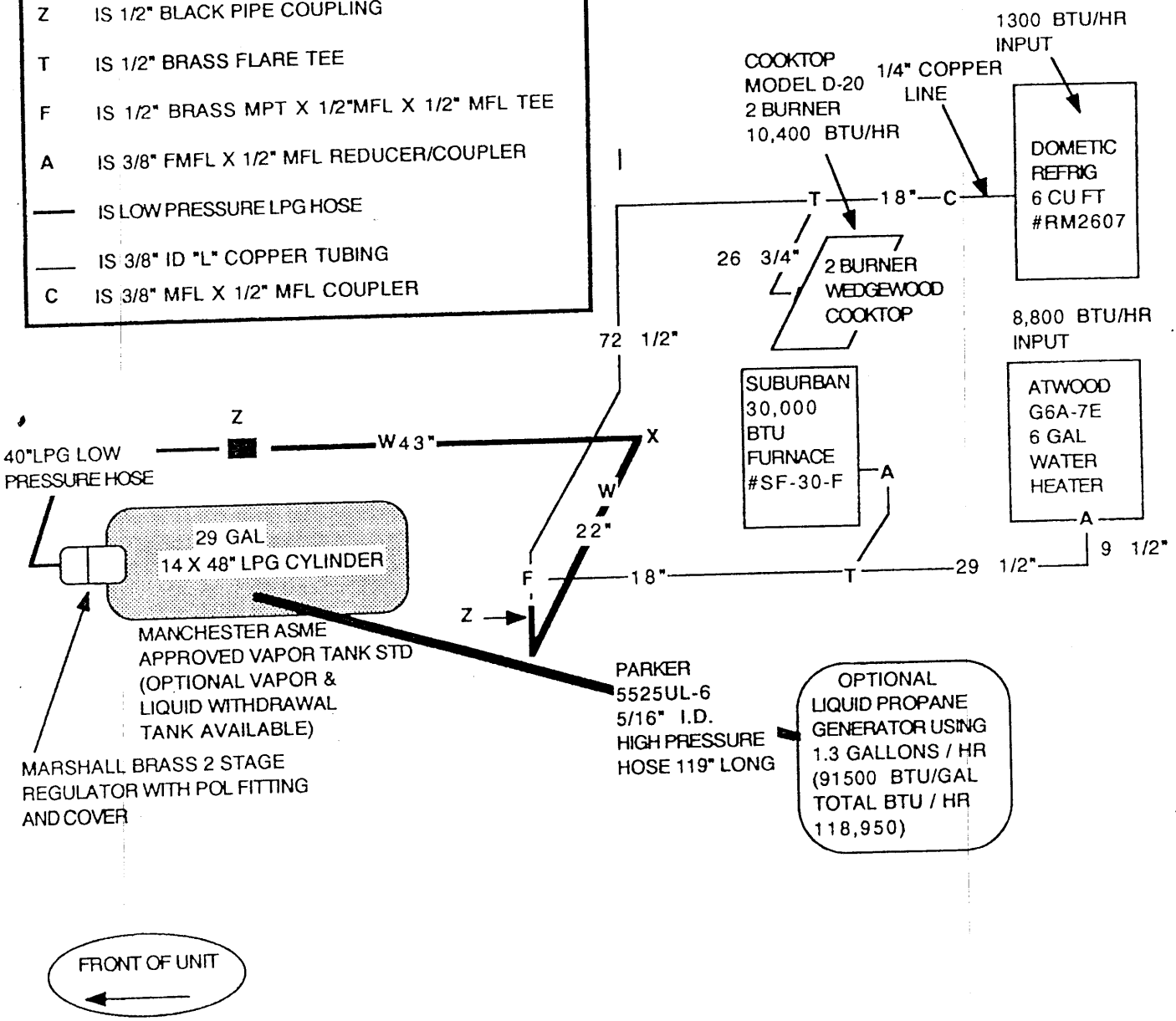
The flame should always be a blue color without any yellow tips. If yellow starts to form on the tips, it will smoke or soot the bottoms of your cookware. This condition can be remedied by adjusting the sleeve shutter to each individual burner to allow for the proper air mixture.

Refer to your range manual for warranty service and any other adjustments required.

21' REAR DOOR WET BATH

LPG SYSTEM

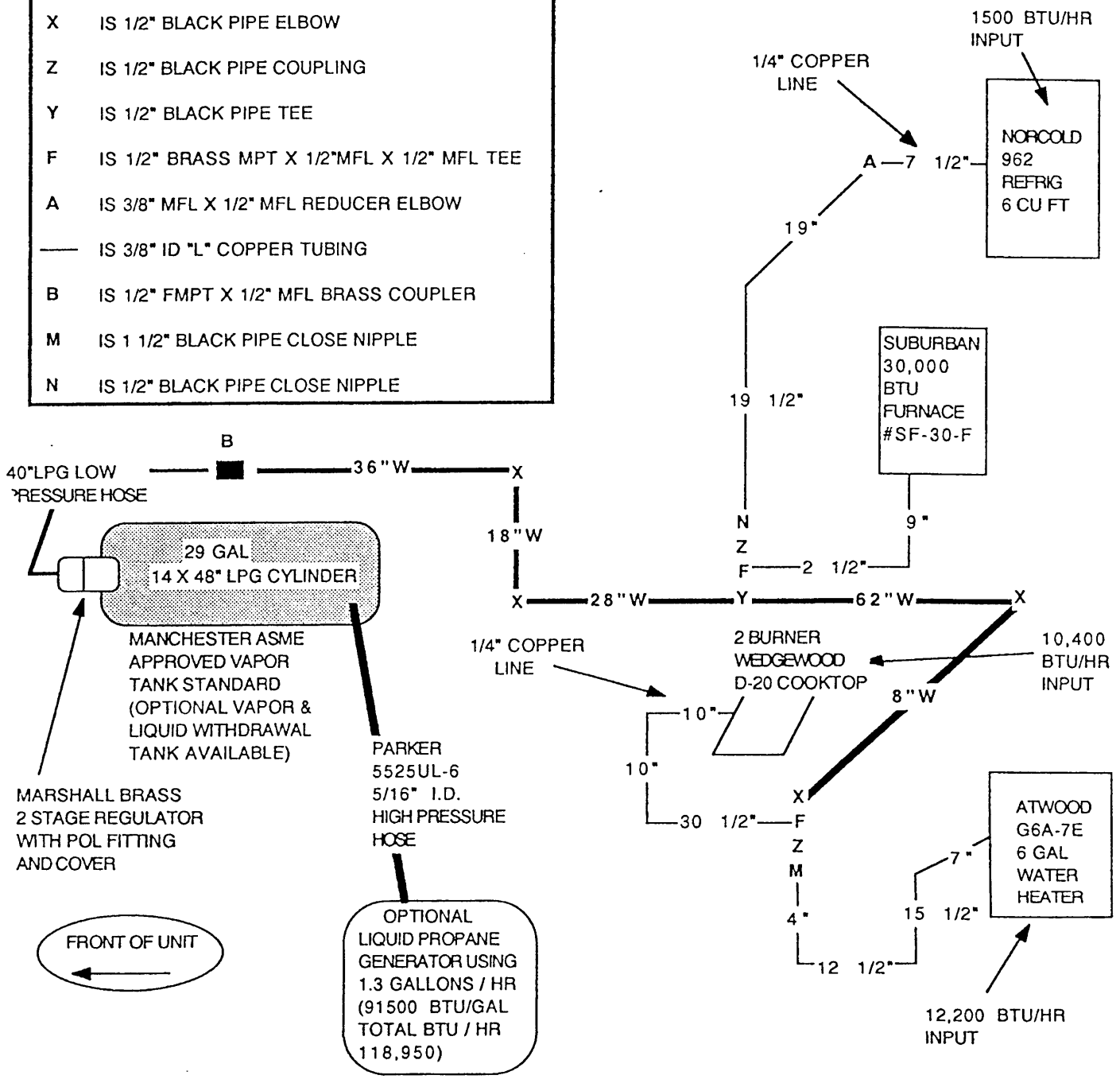
W	IS 1/2" SCHEDULE 40 BLACK PIPE.
X	IS 1/2" BLACK PIPE ELBOW
Z	IS 1/2" BLACK PIPE COUPLING
T	IS 1/2" BRASS FLARE TEE
F	IS 1/2" BRASS MPT X 1/2"MFL X 1/2" MFL TEE
A	IS 3/8" FMFL X 1/2" MFL REDUCER/COUPLER
——	IS LOW PRESSURE LPG HOSE
——	IS 3/8" ID "L" COPPER TUBING
C	IS 3/8" MFL X 1/2" MFL COUPLER



LPG SYSTEM

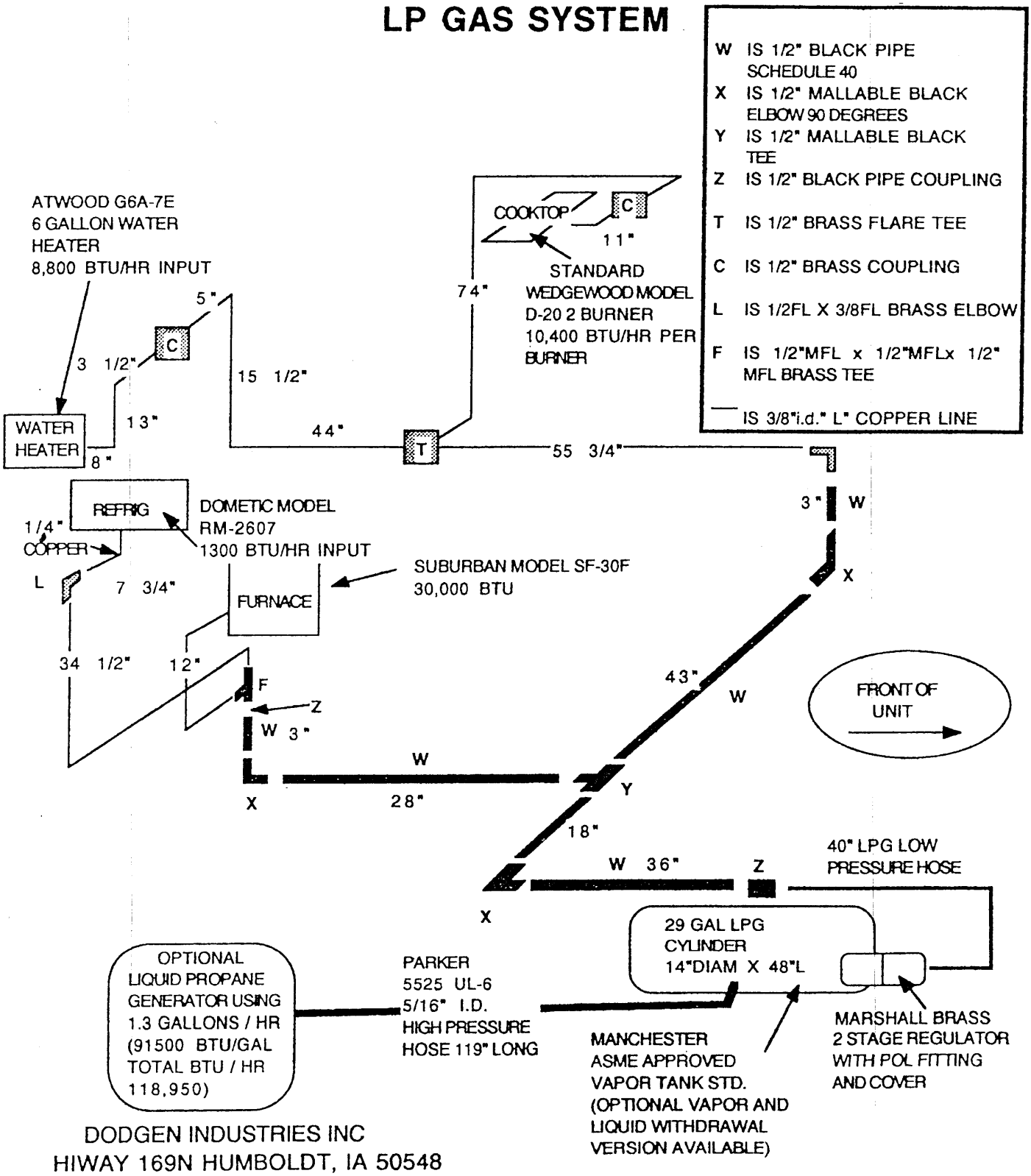
23' BFT REAR KITCHEN

W	IS 1/2" SCHEDULE 40 BLACK PIPE.
X	IS 1/2" BLACK PIPE ELBOW
Z	IS 1/2" BLACK PIPE COUPLING
Y	IS 1/2" BLACK PIPE TEE
F	IS 1/2" BRASS MPT X 1/2"MFL X 1/2" MFL TEE
A	IS 3/8" MFL X 1/2" MFL REDUCER ELBOW
——	IS 3/8" ID "L" COPPER TUBING
B	IS 1/2" FMPT X 1/2" MFL BRASS COUPLER
M	IS 1 1/2" BLACK PIPE CLOSE NIPPLE
N	IS 1/2" BLACK PIPE CLOSE NIPPLE



24' REAR BATH

LP GAS SYSTEM

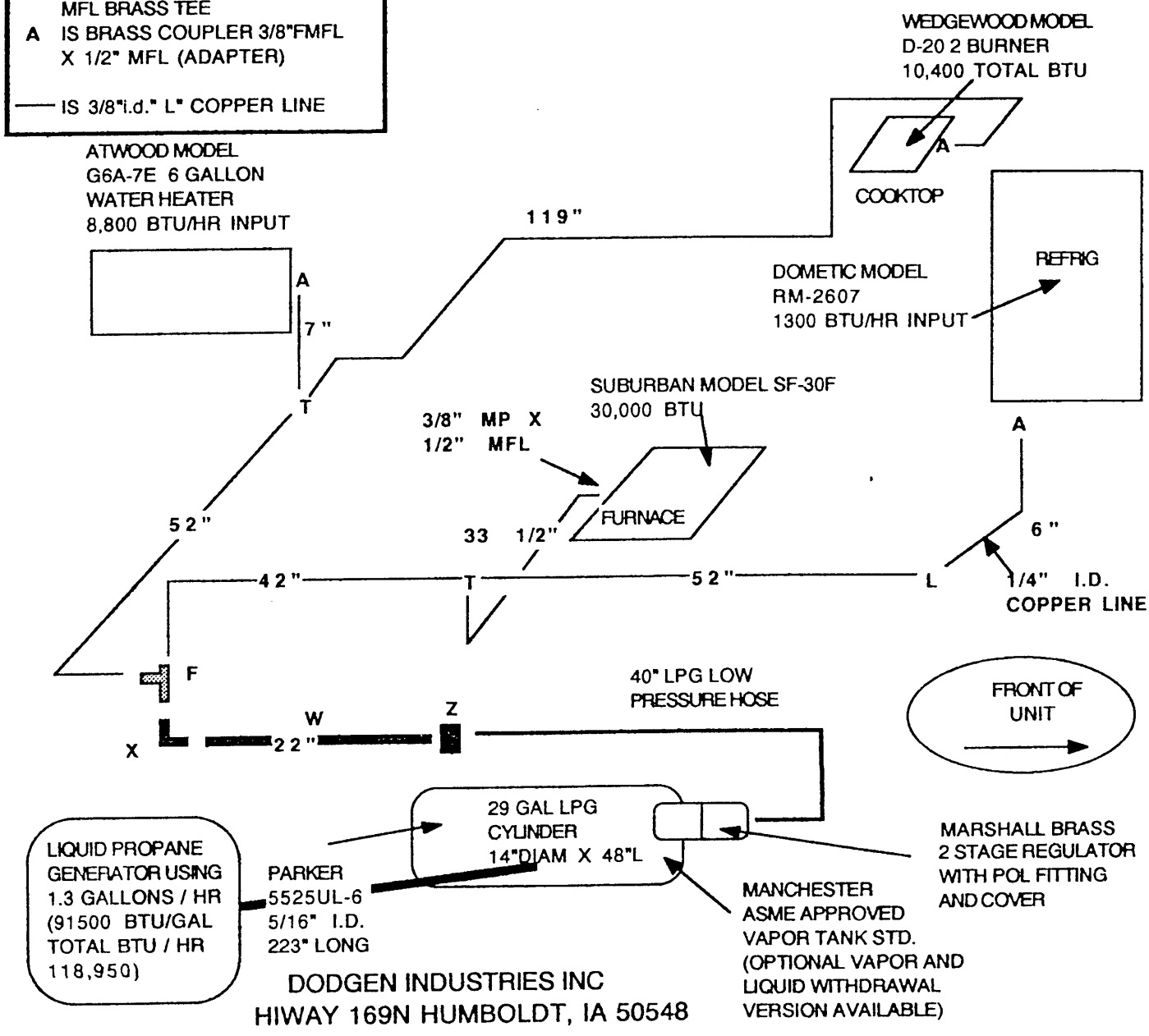


DODGEN INDUSTRIES INC
HIWAY 169N HUMBOLDT, IA 50548

26' REAR SIDE BED

LP GAS SYSTEM

W IS 1/2" BLACK PIPE SCHEDULE 40
X IS 1/2" MALLABLE BLACK ELBOW 90 DEGREES
Z IS 1/2" BLACK PIPE COUPLING
T IS 1/2" BRASS FLARE TEE
L IS 1/2" BRASS ELBOW
F IS 1/2"MPT x 1/2"MFL x 1/2" MFL BRASS TEE
A IS BRASS COUPLER 3/8"FMFL X 1/2" MFL (ADAPTER)
—— IS 3/8"i.d." L" COPPER LINE



DODGEN INDUSTRIES INC
HIWAY 169N HUMBOLDT, IA 50548

VI. PLUMBING

A. Fresh Water System

Fresh water can be supplied from two sources: a water tank located inside the motorcoach, or from a campground water source connected to the water intake through a garden hose.

The fresh water tank system is equipped with a demand pump that controls water pressure by use of a switch built into the pump. When a faucet is opened, pressure in the line drops, causing the pump to start. When the faucet is closed, pressure builds up quickly and the pressure switch shuts off the pump. The manual switch, located on the range vent, is used to cut off the electrical power to the demand pump. The pump operates on 12-volt power.

NOTE - It is good practice to turn off the pump switch when leaving the coach for a period of time and when retiring for the night. If the pump cycles on and off occasionally, shut the pump off and check the system for leaks.

B. Fresh Water Tank

The fresh water tank filler is located outside the coach on the driver's side. Using a garden hose, allow the water to run into the tank at a moderately slow speed. This will allow the air to escape and the tank will fill much easier. After the tank is full, allow the air to purge for about 3-4 minutes. You may be able to get several more gallons in the tank. Reminder - Remember to fill the water heater when filling the fresh water tank. See the instructions for doing so listed under "Water Heater."

C. City Water Connection

When parked in a campground which has hookup facilities for "city water," a connection has been provided on the outside of the coach. To use, connect a water hose to this fitting and turn off the demand pump. The city water pressure will provide adequate movement. The city water connection will by-pass the fresh water system and will not fill the fresh water tank.

NOTE - Some water systems have very high water pressure, so to guard against damage to pressure-limiting components, do not run faucets wide open.

D. Toilet

To operate step on the small (right) pedal and hold until a desired amount of water, above the normal refill level, enters the bowl. Step on the large pedal to flush. Release both pedals slowly. On some models an optional hand sprayer is included. To use simply depress the thumb lever while stepping on the flush pedal.

Maintenance - To clean the toilet use a non-abrasive cleaner. Do not use highly concentrated or acid content cleaners, or abrasive powders. These may damage the seals or plastic parts of the toilet.

***NOTE** - We highly recommend that you use an RV-type toilet paper. These types of paper breakdown and are easily discharged.*

E. Drain Systems

To provide complete self-containment and to comply with requirements of good sanitation practices, your Born Free is equipped with a dual tank drain system. The sanitary holding tank (black water tank) receives waste from the toilet. The second tank (gray water tank) collects waste water from the sinks and shower.

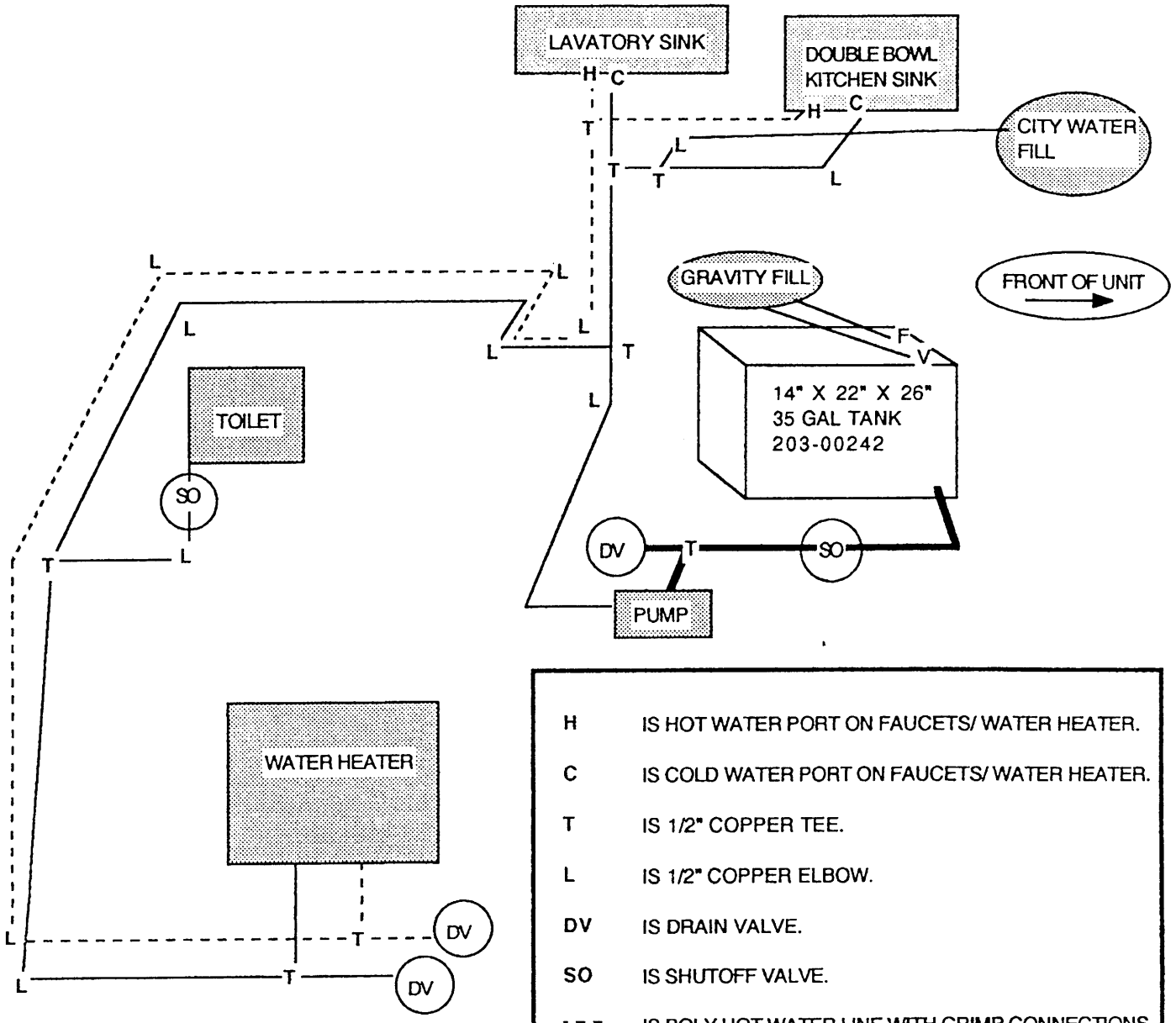
The two tanks share a common outlet for connecting the regular three-inch sewer hose for emptying, but each has its own slide valve so they can be evacuated separately. This connection, along with two slide valves, is located on the driver's side, near the center or at the rear of the coach.

F. Holding Tank Evacuation

The holding tank should be evacuated only at an authorized sanitary disposal station or sewer hookup at a campground. Position your Born Free at the sanitation station so the sewer connection is located near the drain opening. Remove the cap on the drain opening and install the sewer hose to the connection. Place the open end of the sewer hose in the disposal drain, and hold it in position during the entire evacuation process. Each tank should be drained separately, dumping the black water waste tank first. Avoid opening both valves at one time, avoiding the contents of either tank running into the other. Pull the slide valve handle all the way out so the contents will run out in a quick flushing manner. When the tank is empty, close the valve and run clear water through the toilet into the tank for rinsing. The best method of rinsing either tank is to close the slide valve and fill either tank through the toilet or one of the sinks with fresh water. Again, open the slide valve to allow the rinse water to evacuate. Close slide valve and re-engage retaining clips. Evacuate the gray water waste tank in the same manner. Disconnect the sewer hose, rinse, and replace the sewer hose in its carrier.

FRESH WATER SYSTEM

21' REAR DOOR WET BATH

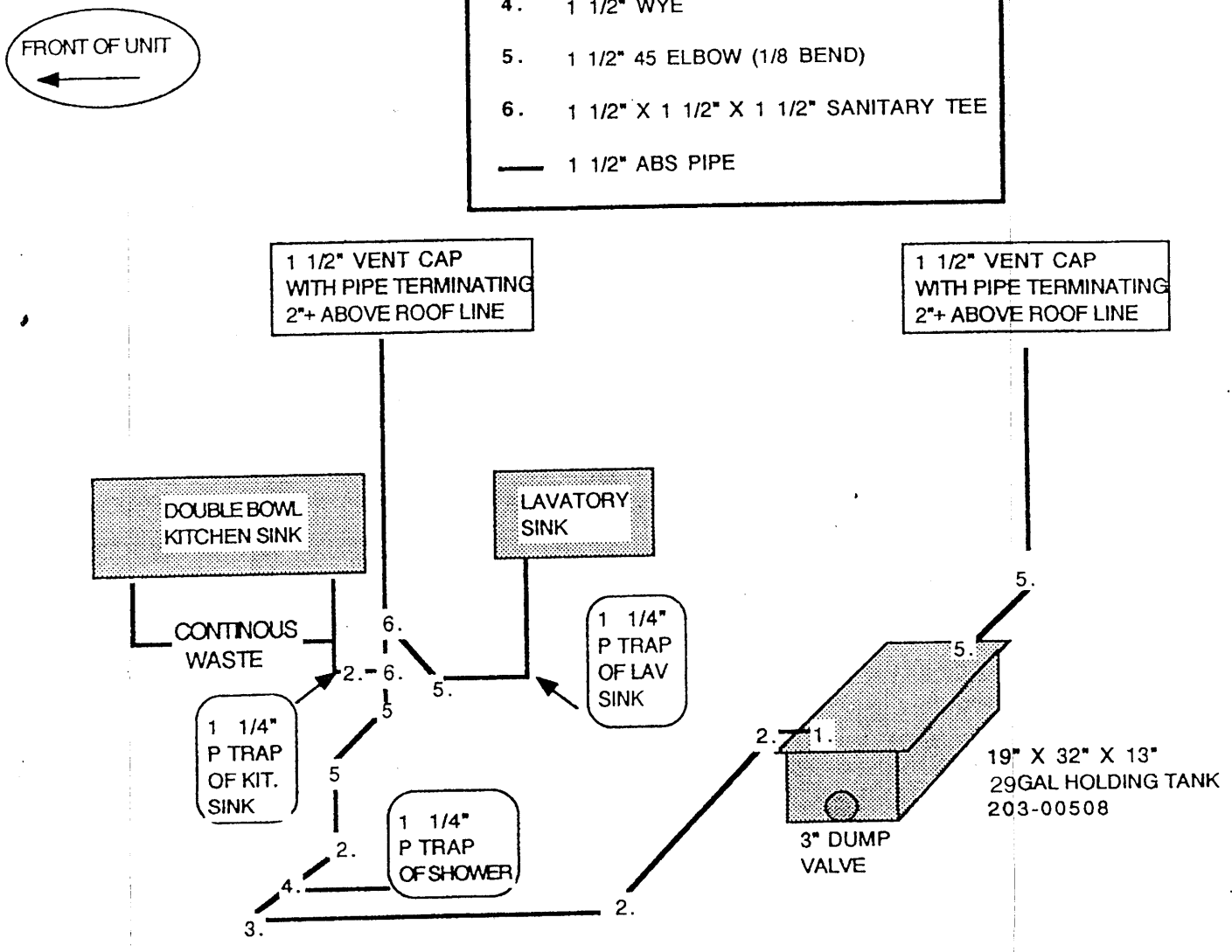


H	IS HOT WATER PORT ON FAUCETS/ WATER HEATER.
C	IS COLD WATER PORT ON FAUCETS/ WATER HEATER.
T	IS 1/2" COPPER TEE.
L	IS 1/2" COPPER ELBOW.
DV	IS DRAIN VALVE.
SO	IS SHUTOFF VALVE.
- - -	IS POLY HOT WATER LINE WITH CRIMP CONNECTIONS.
——	IS POLY COLD WATER LINE WITH CRIMP CONNECTIONS.
▬	IS 1/2" ID HOSE WITH HOSE CLAMPS.

GRAY WATER SYSTEM

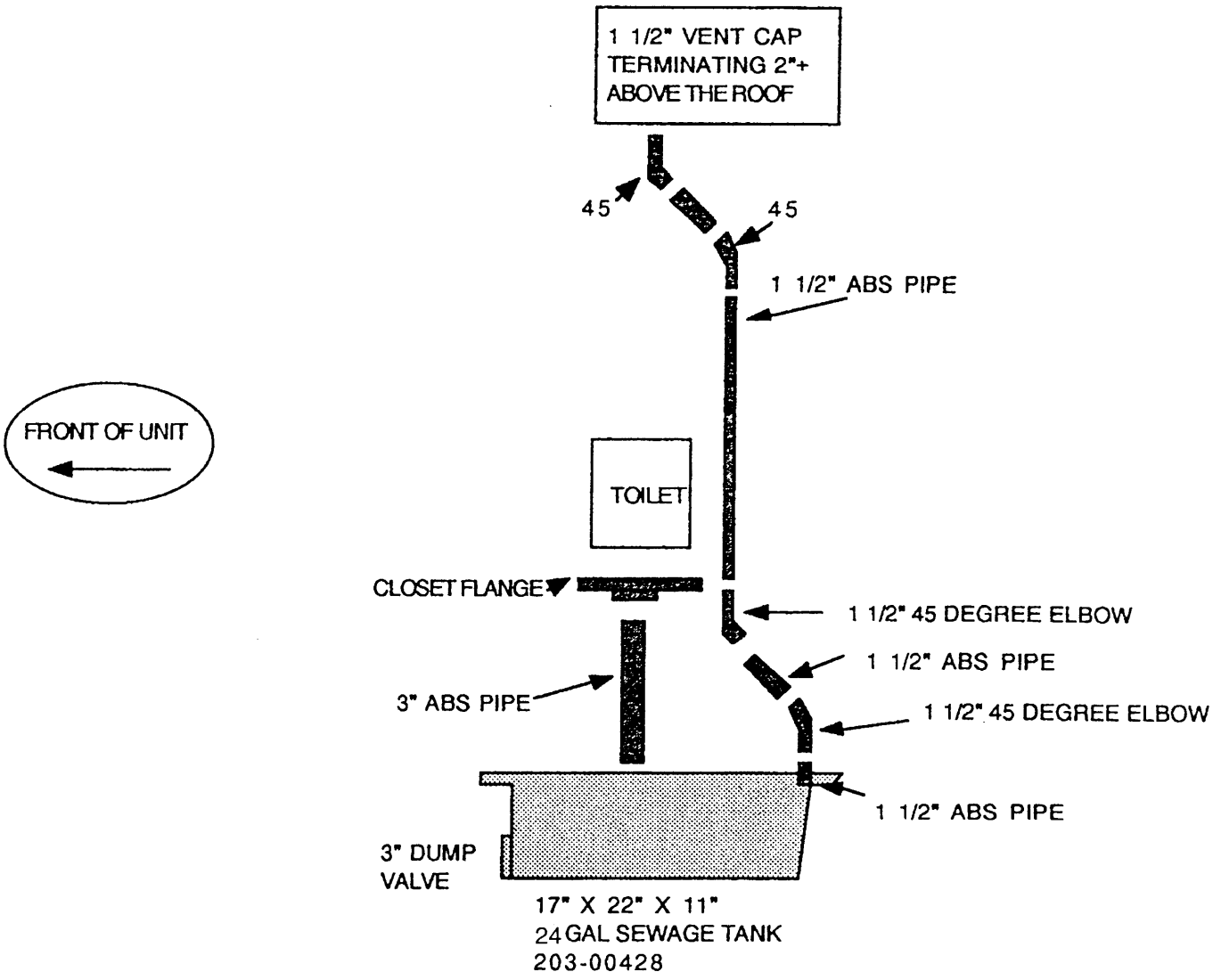
21' REAR DOOR WET BATH

1.	1 1/2" LONG TURN 90 ELBOW (1/4 BEND)
2.	1 1/2" LONG SWEEP 90 ELBOW (1/4 BEND)
3.	1 1/2" LTTY WITH ADAPTER & PLUG
4.	1 1/2" WYE
5.	1 1/2" 45 ELBOW (1/8 BEND)
6.	1 1/2" X 1 1/2" X 1 1/2" SANITARY TEE
——	1 1/2" ABS PIPE



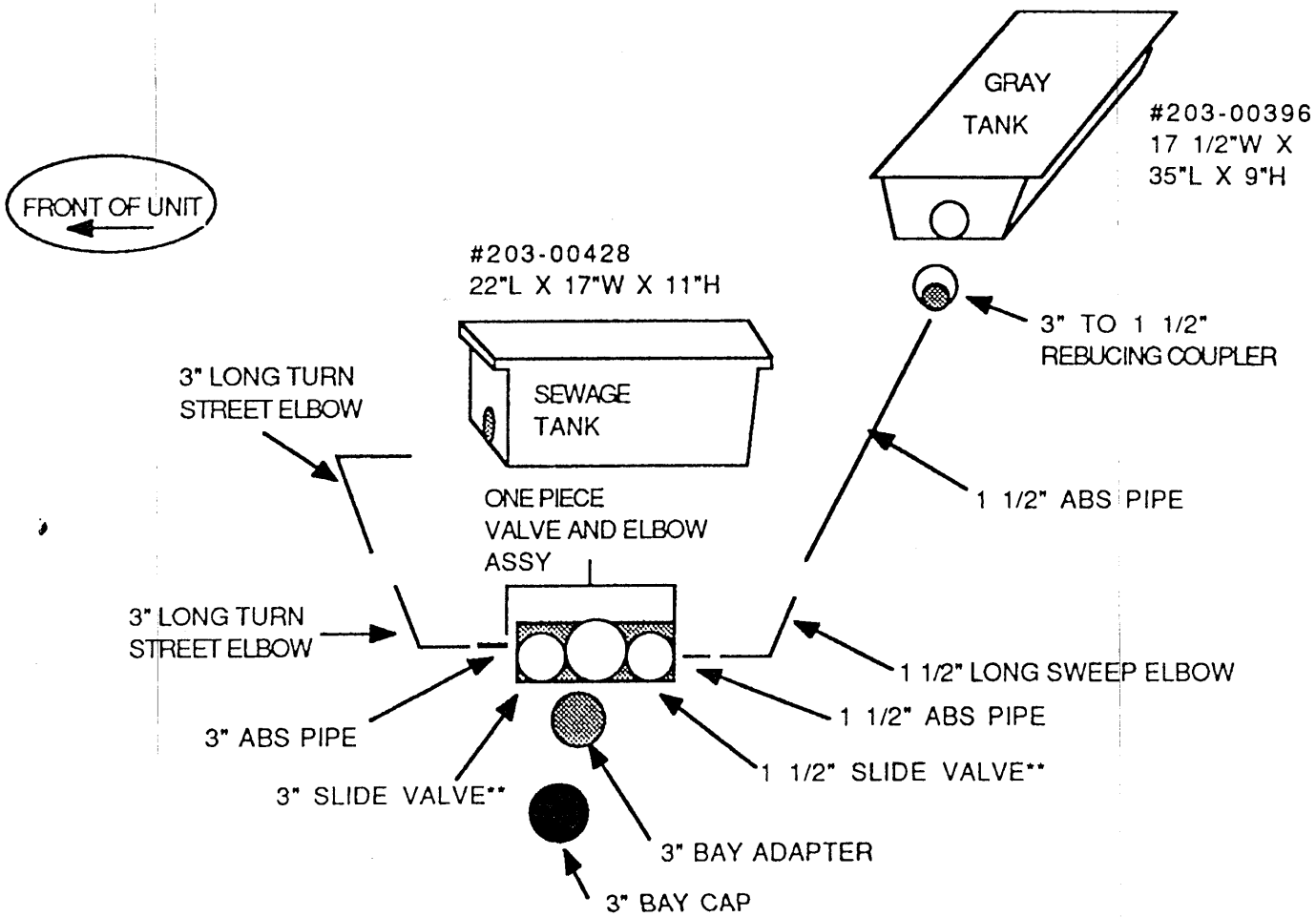
SEWAGE SYSTEM
(BLACK WATER)

21' REAR DOOR WET BATH



DUMP VALVE INTERCONNECTION BETWEEN GRAY AND SEWAGE TANKS

21' REAR DOOR WET BATH

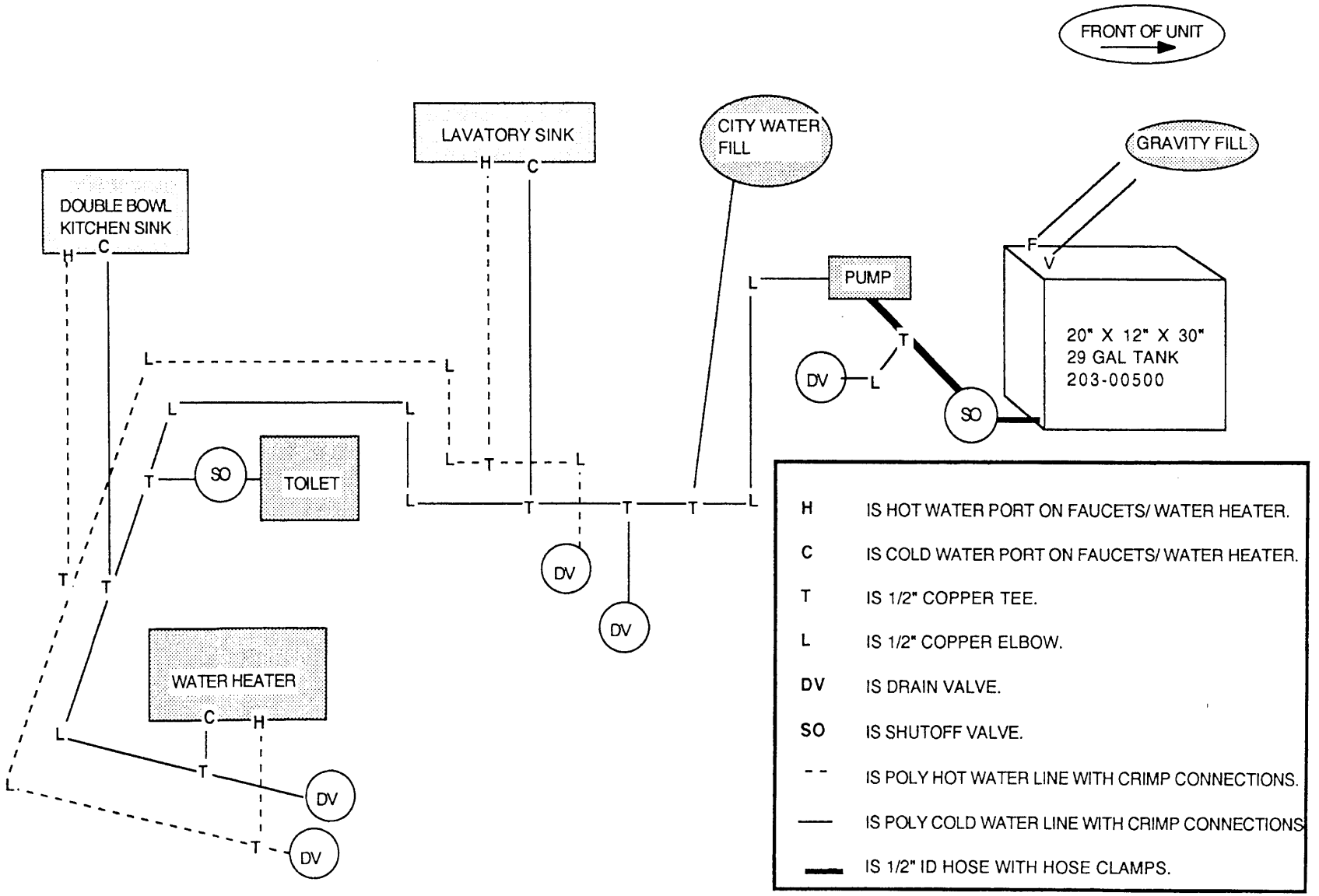


ALL OF THE ABOVE PIECES ARE ABS MATERIAL, AND JOINTS ARE BONDED WITH ABS CEMENT.
TANK # 203-00428 IS A POLY MATERIAL RATHER THAN ABS.

** The slide valves are a part of a one piece valve and elbow assy which incorporates a 3" long turn elbow with the 3" slide valve to the left of the elbow. The 1 1/2" slide valve is to the far right and comes into a 1 1/2" long turn elbow which is a side outlet of the 3" elbow. This is an approved part manufactured by Valterra Products.

FRESH WATER SYSTEM

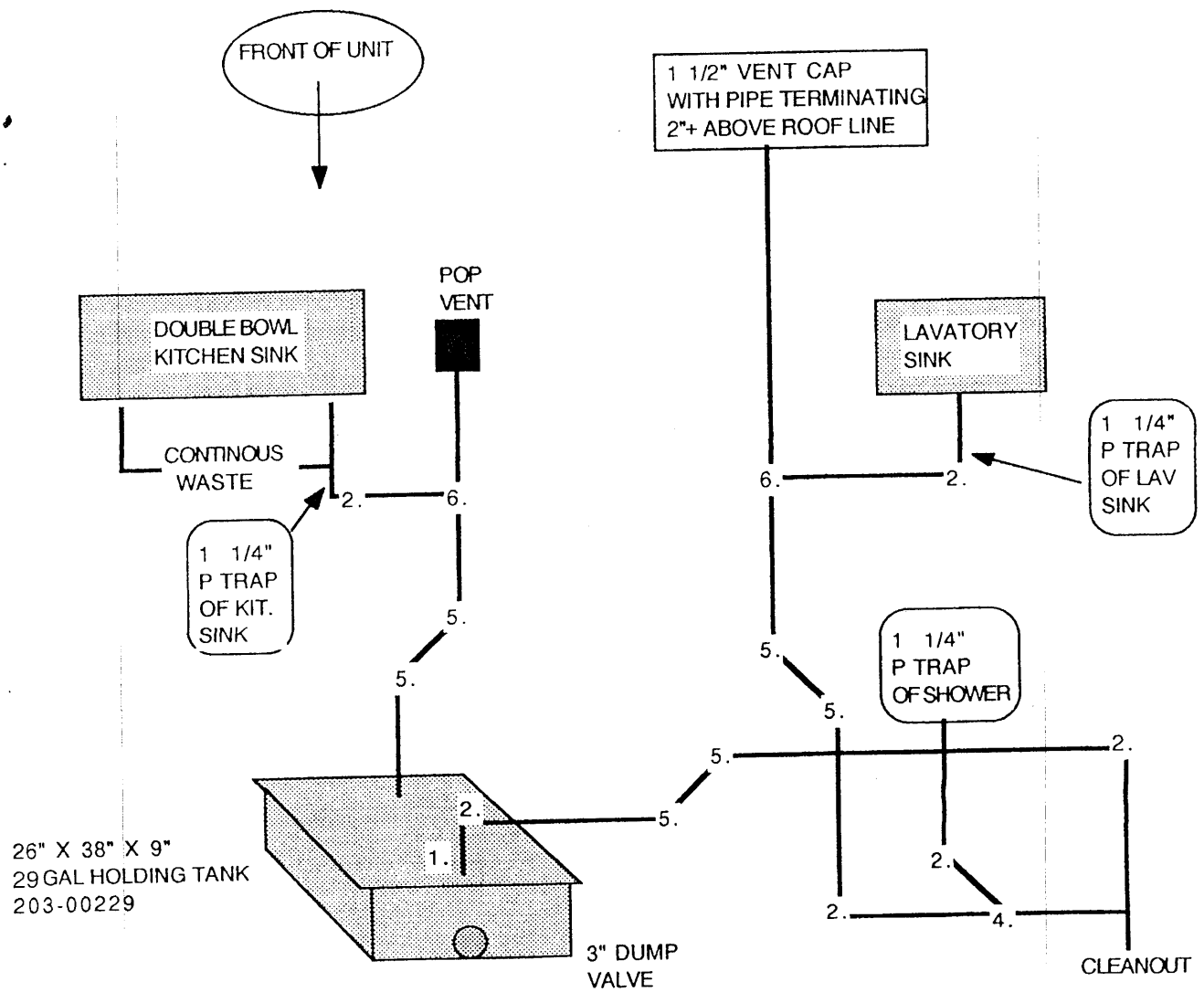
23' BFT REAR KITCHEN



GRAY WATER SYSTEM

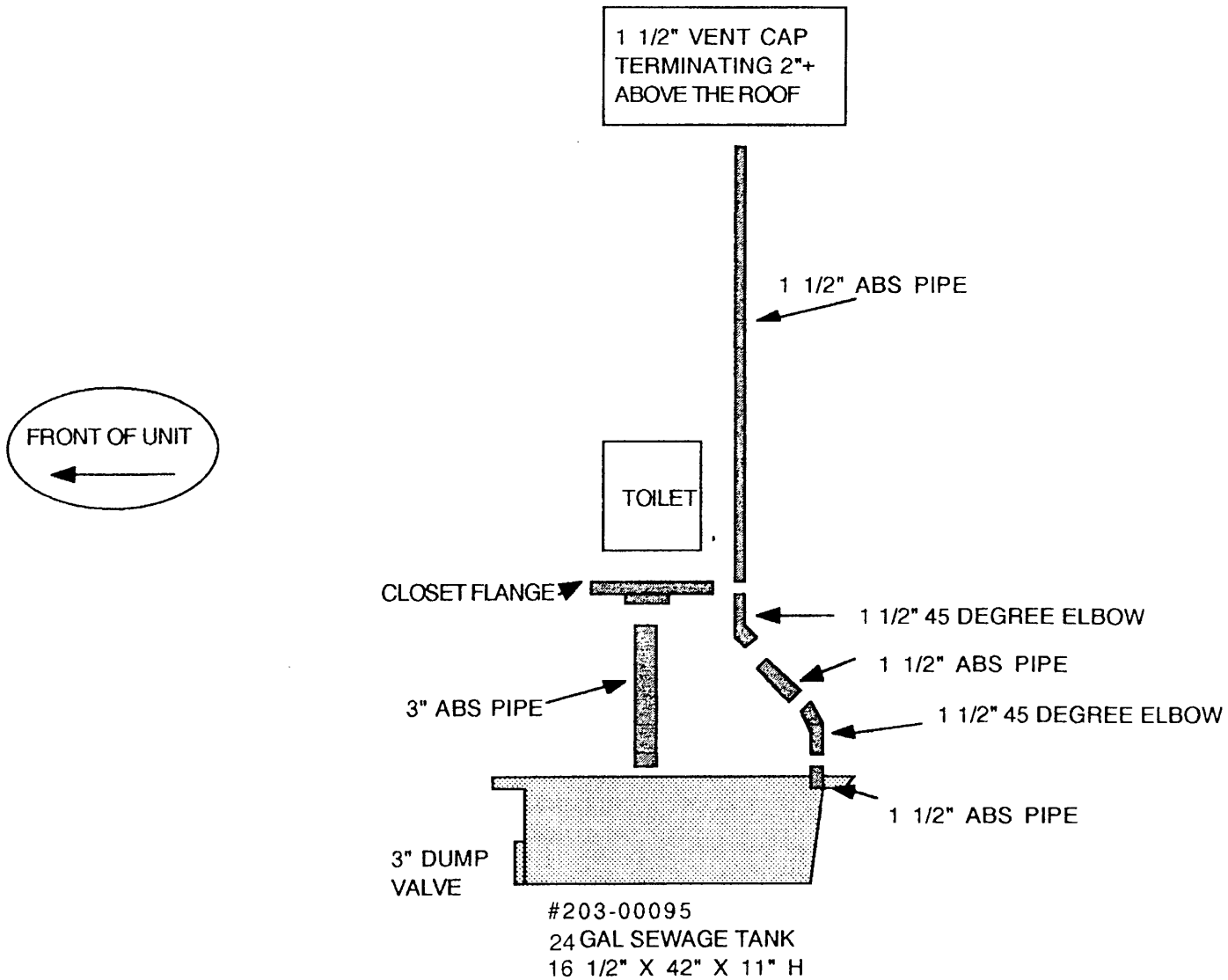
23' BFT REAR KITCHEN

1.	1 1/2" LONG TURN 90 ELBOW (1/4 BEND)
2.	1 1/2" LONG SWEEP 90 ELBOW (1/4 BEND)
3.	1 1/2" LTTY WITH ADAPTER & PLUG
4.	1 1/2" WYE
5.	1 1/2" 45 ELBOW (1/8 BEND)
6.	1 1/2" X 1 1/2" X 1 1/2" SANITARY TEE
——	1 1/2" ABS PIPE



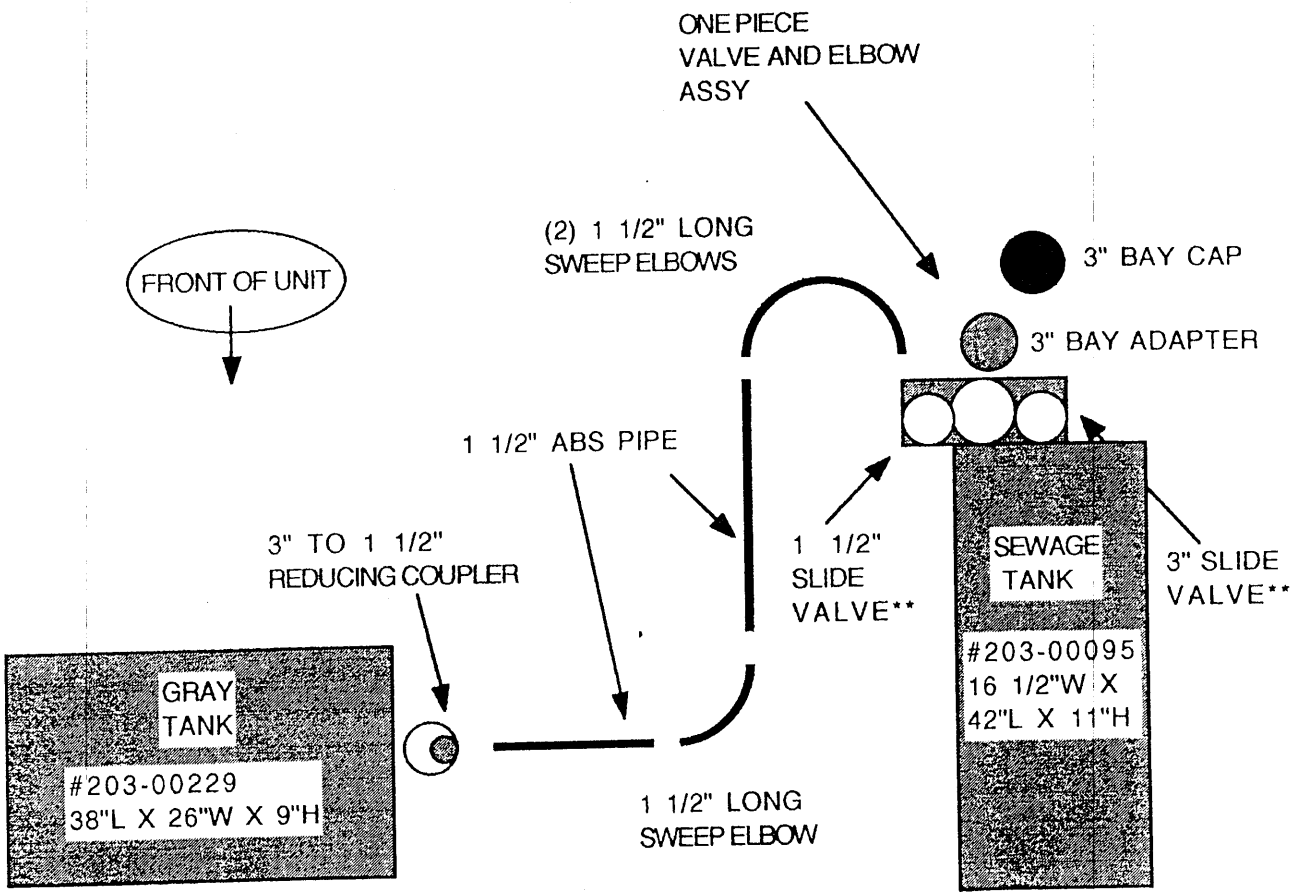
SEWAGE SYSTEM
(BLACK WATER)

23' BFT REAR KITCHEN



DUMP VALVE INTERCONNECTION BETWEEN GRAY AND SEWAGE TANKS

23' BFT REAR KITCHEN

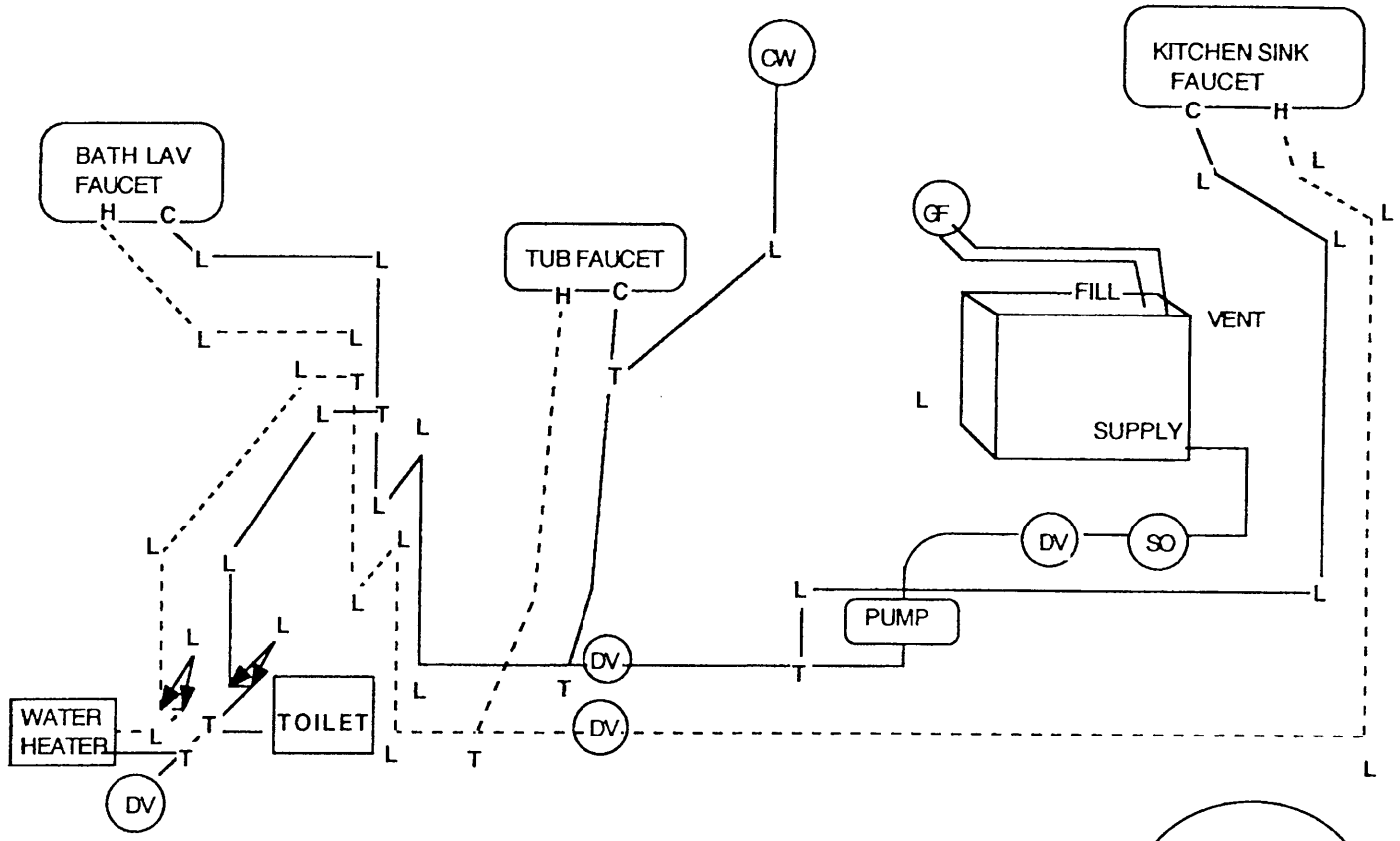


ALL OF THE ABOVE PIECES ARE ABS MATERIAL, AND JOINTS ARE BONDED WITH ABS CEMENT.

** The slide valves are a part of a one piece valve and elbow assy which incorporates a 3" long turn elbow with the 3" slide valve to the left of the elbow. The 1 1/2" slide valve is to the far right and comes into a 1 1/2" long turn elbow which is a side outlet of the 3" elbow. This is an approved part manufactured by Valterra Products.

24' REAR BATH

FRESH WATER SUPPLY SYSTEM



——— IS COLD WATER POLY LINE

- - - DV IS HOT WATER POLY LINE

DV IS DRAIN VALVE

SO IS SHUTOFF VALVE

CW IS CITY WATER FILL

GF IS GRAVITY WATER FILL

H IS HOT PORT ON FAUCET

C IS COLD PORT ON FAUCET

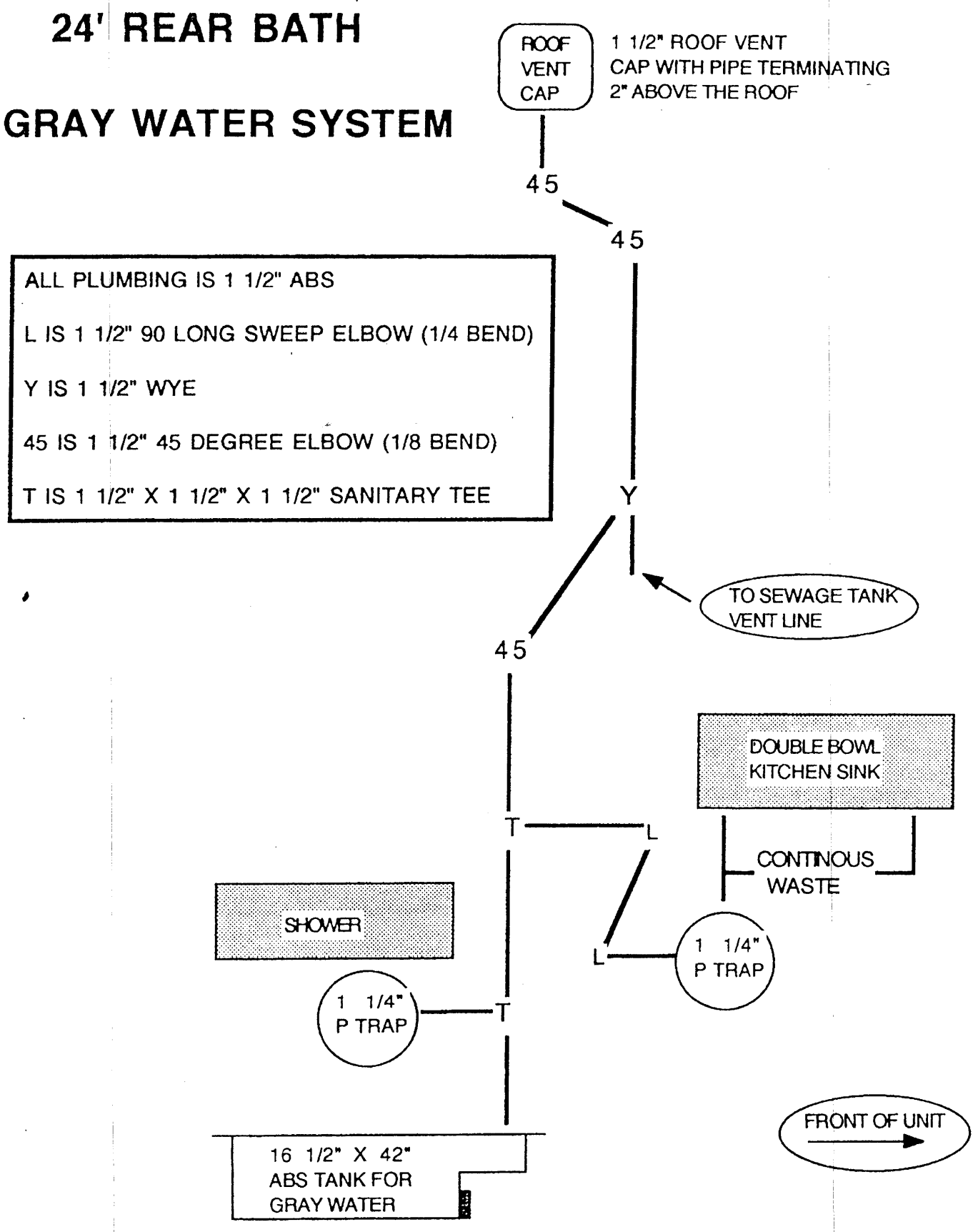
L IS COPPER ELBOW/ 90 DEGREE TURN

T IS COPPER TEE

THE TANK IS A POLY 14"Wx26"Lx22"H TANK
#203-00242
THE PUMP IS A SHURFLO MODEL 2088-403-144
2.8 GPM 12VDC
THE WATER HEATER IS AN ATWOOD MODEL #G6A-7E
6 GALLON

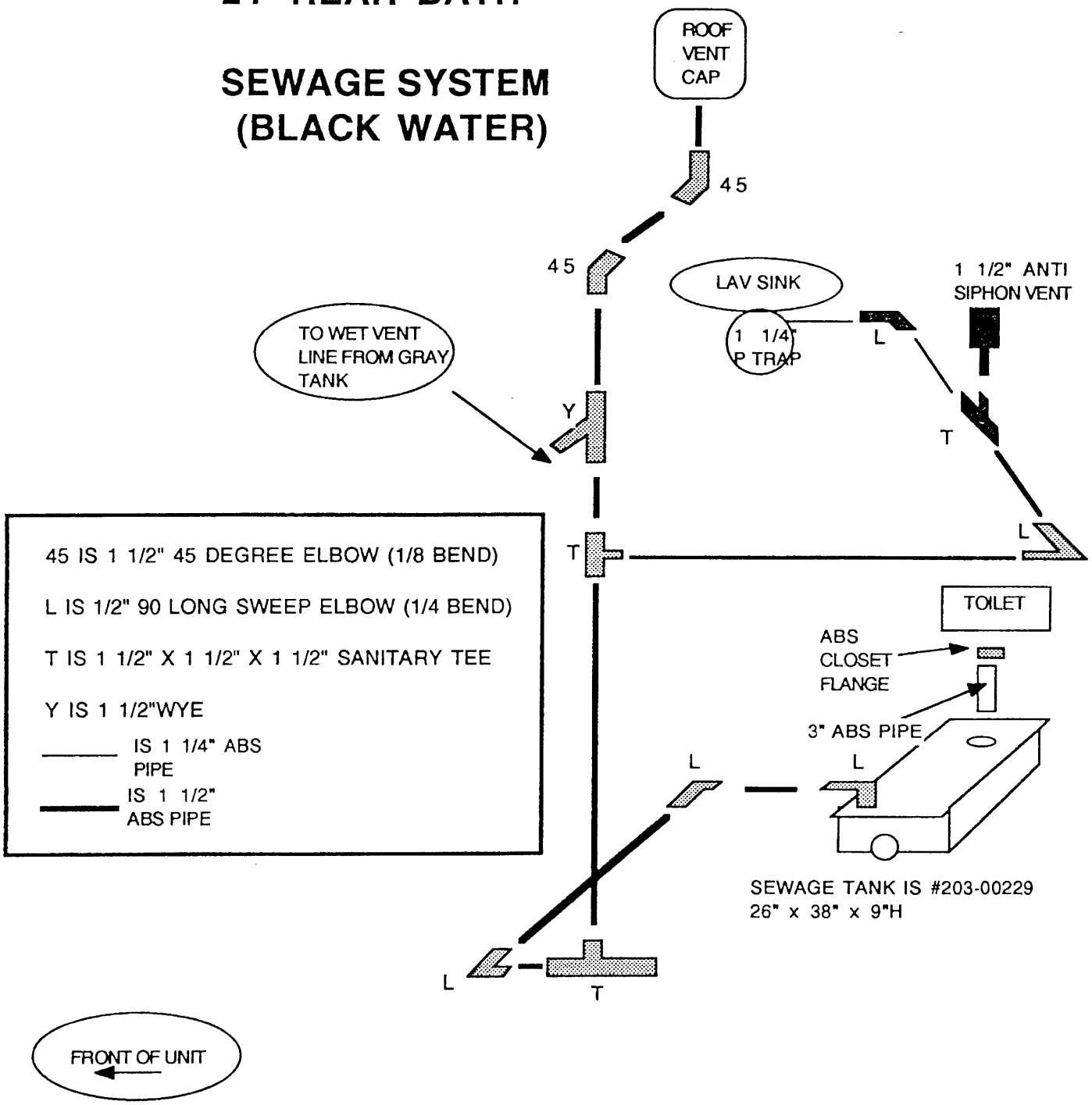
24' REAR BATH

GRAY WATER SYSTEM



24' REAR BATH

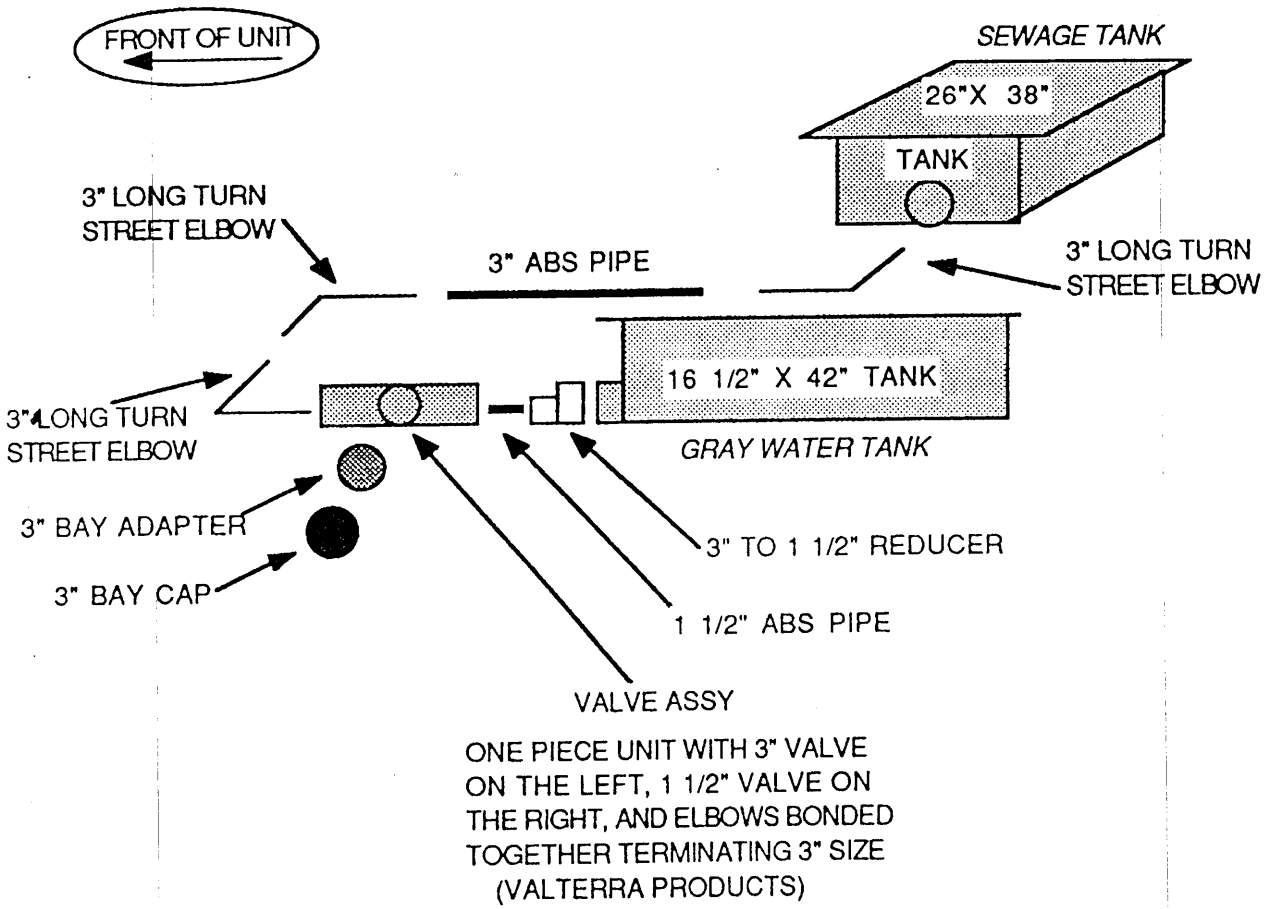
SEWAGE SYSTEM (BLACK WATER)



24' REAR BATH

DUMP ASSEMBLY

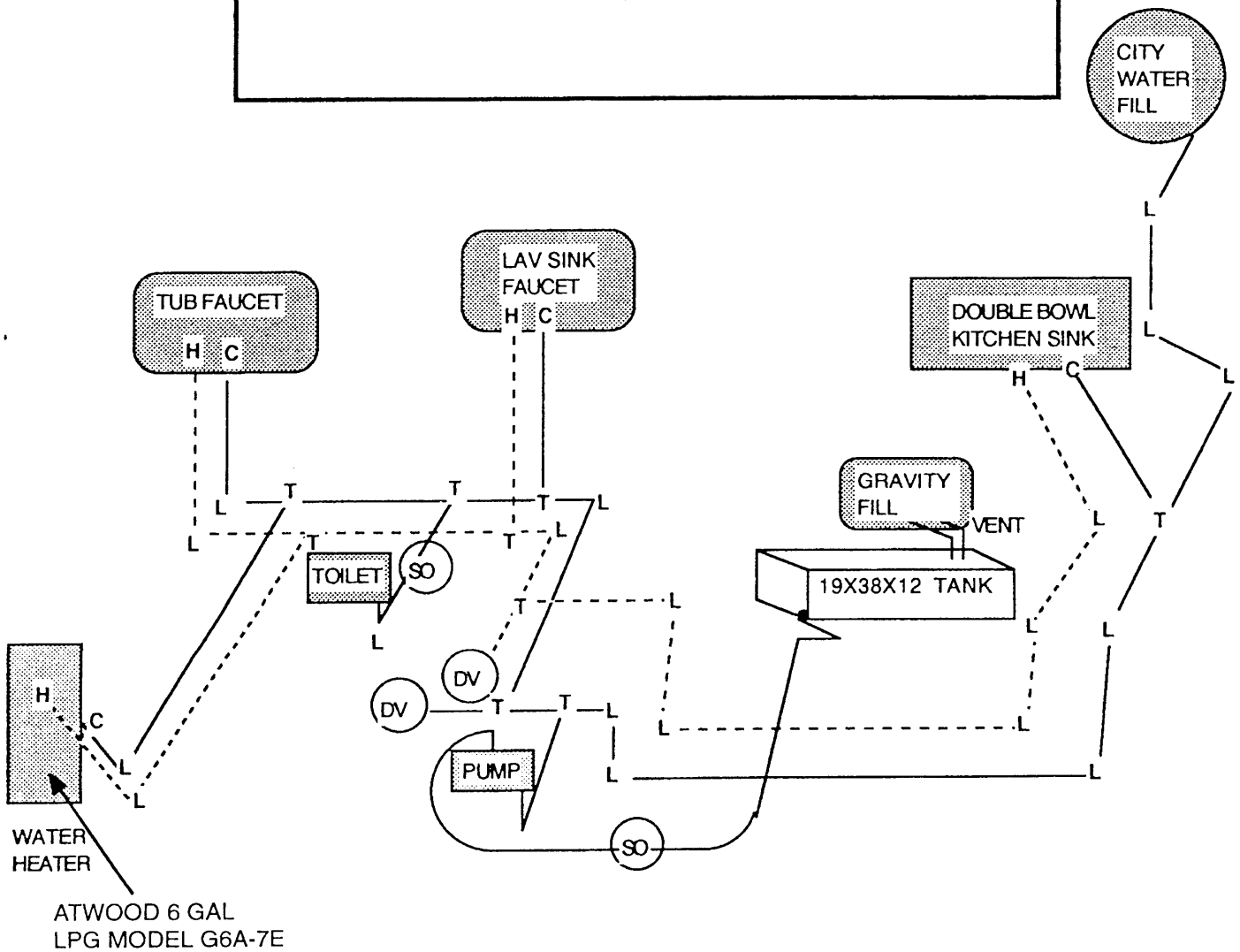
(INTERCONNECTION BETWEEN THE GRAY AND SEWAGE TANKS AT OUTLETS)



ONE PIECE UNIT WITH 3" VALVE ON THE LEFT, 1 1/2" VALVE ON THE RIGHT, AND ELBOWS BONDED TOGETHER TERMINATING 3" SIZE (VALTERRA PRODUCTS)

FRESH WATER SYSTEM
26' REAR SIDE BED

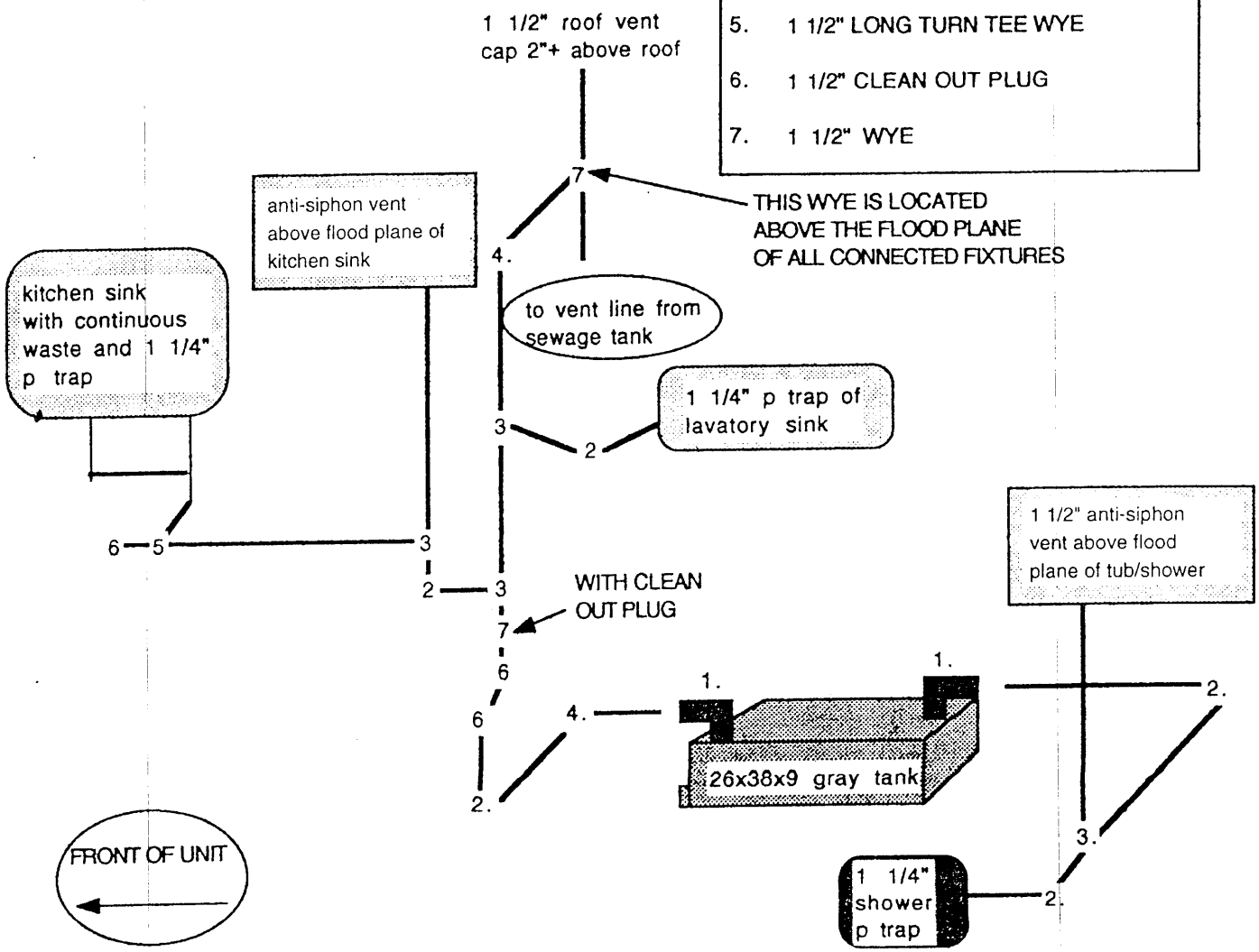
H	IS HOT PORT ON FAUCETS/ WATER HEATER.
C	IS COLD PORT ON FAUCETS/ WATER HEATER.
T	IS 1/2" COPPER TEE.
L	IS 1/2" COPPER 90 ELBOW.
DV	IS DRAIN VALVE.
SO	IS SHUTOFF VALVE.
———	IS 1/2" POLY WATER LINE (COLD) WITH CRIMP CONNECTIONS.
- - - -	IS 1/2" POLY WATER LINE (HOT) WITH CRIMP CONNECTIONS.



GRAY WATER SYSTEM

26' REAR SIDE BED

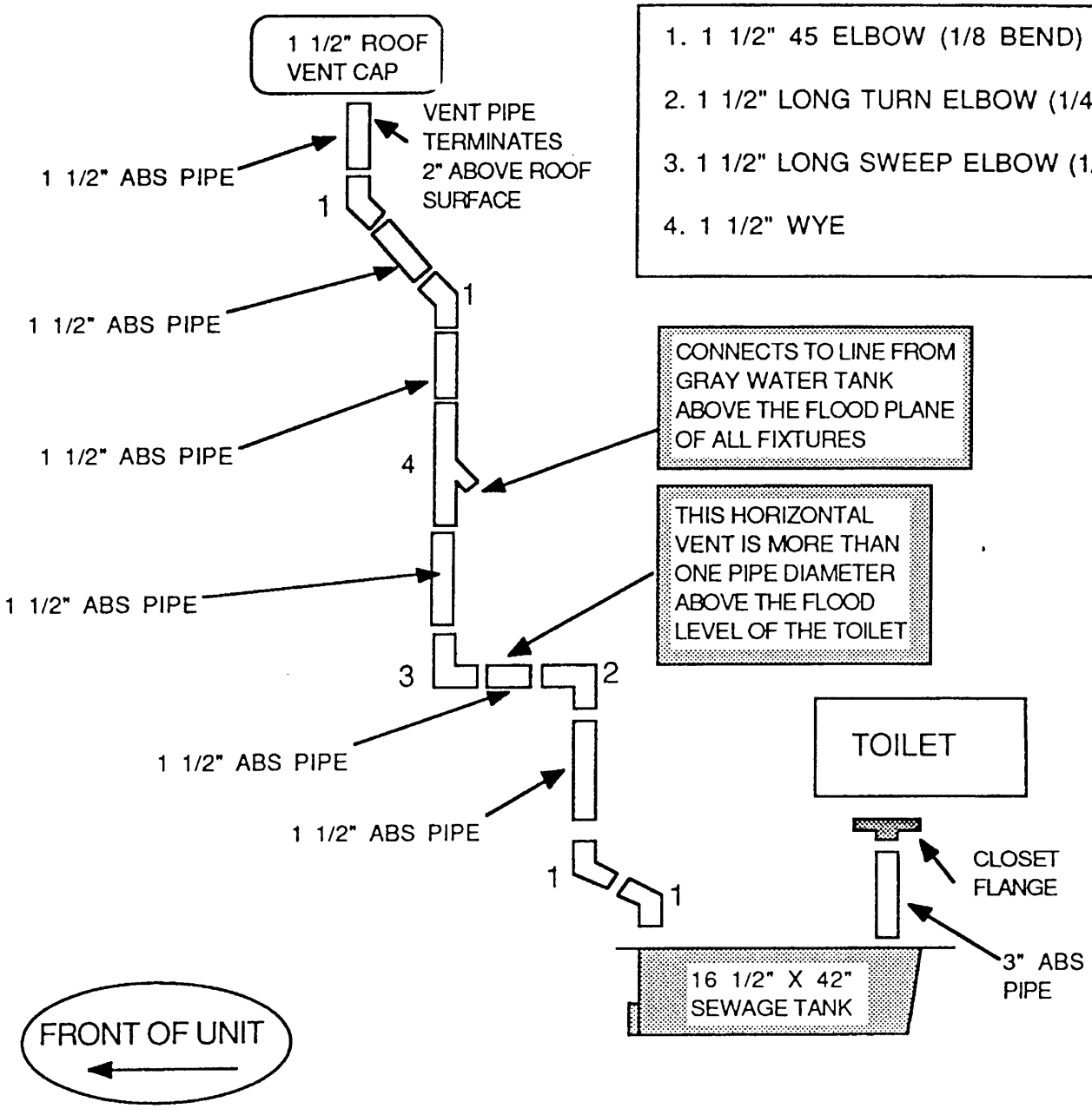
1. 1 1/2" STD LONG TURN 90 ELBOW
2. 1 1/2" LONG SWEEP 90 ELBOW
3. 1 1/2" x 1 1/2" x 1 1/2" TEE
4. 1 1/2" 45 ELBOW
5. 1 1/2" LONG TURN TEE WYE
6. 1 1/2" CLEAN OUT PLUG
7. 1 1/2" WYE



SEWAGE SYSTEM

(BLACK WATER)

26' REAR SIDE BED

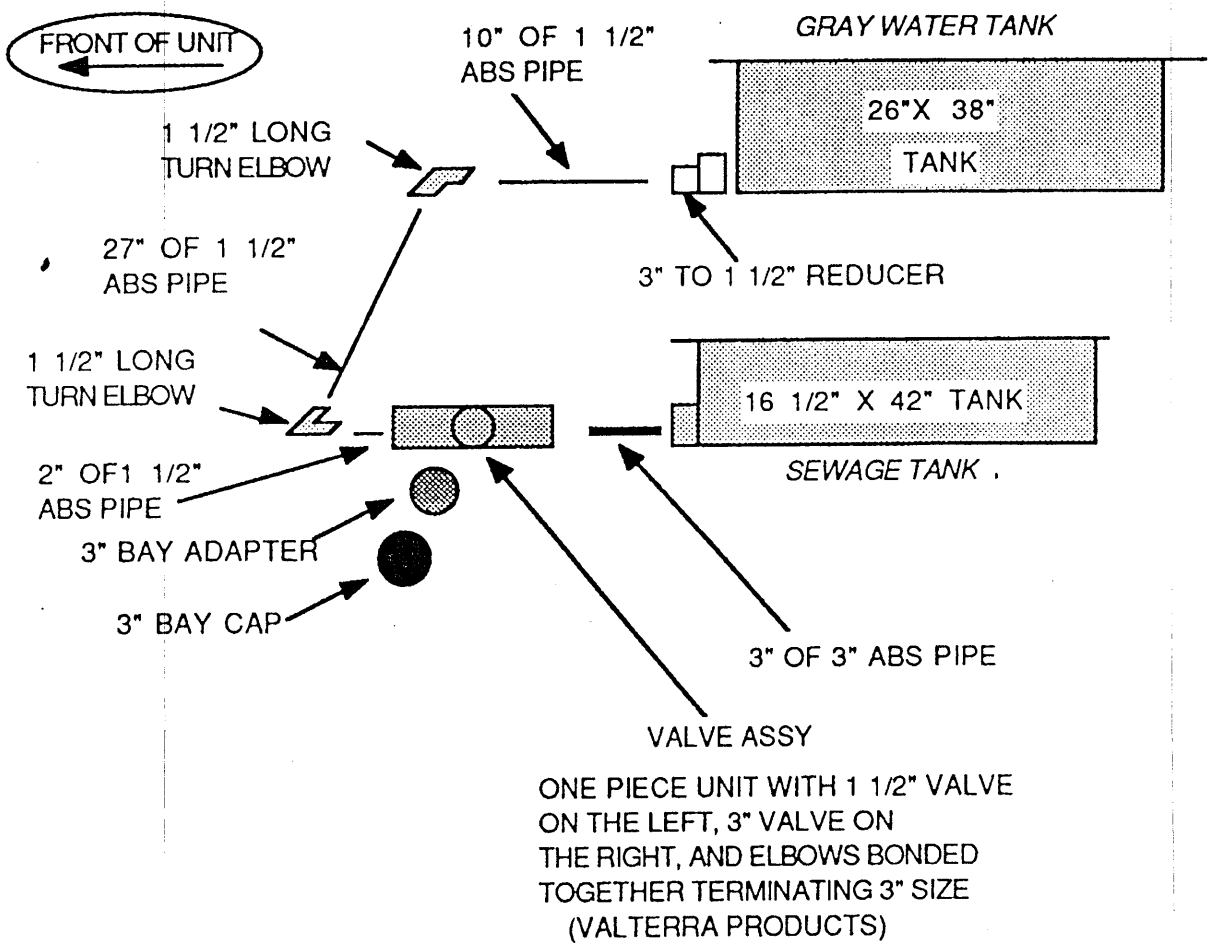


1. 1 1/2" 45 ELBOW (1/8 BEND)
2. 1 1/2" LONG TURN ELBOW (1/4 BEND)
3. 1 1/2" LONG SWEEP ELBOW (1/4 BEND)
4. 1 1/2" WYE

26' REAR SIDE BED

DUMP ASSEMBLY

(INTERCONNECTION BETWEEN THE GRAY AND SEWAGE TANKS AT OUTLETS OF TANKS)



G. Parking In a Campground With Hookups

When parked in a campsite with sewer hookup facilities, connect the drain hose and open the gray holding tank drain valve. This will allow complete water drainage during your stay and your holding tank will remain empty. The drain valve should remain closed during your stay. If you leave the valve open, liquids will run out and leave solids behind. The proper method is to leave the slide valve closed allowing wastes to accumulate. If this is done, the evacuation procedure will allow the quick-flush principle to carry all wastes out the drain at the same time.

VII. SEASONAL PROTECTION

Each year more travelers discover winter camping. With your new Born Free Motorcoach, you don't have to wait, you are ready now. The coach is built with adequate insulation, ventilation, and construction principles that can keep you warm all winter long. If the unit is being heated with the furnace, the only precautions necessary to prevent freezing are to add RV antifreeze to the holding tanks and sink drains.

NOTE - Do not use automotive-type antifreeze. This ethylene glycol-type antifreeze is poisonous and not approved for potable water systems.

A. Winterizing

For this entire process 2 gallons of R.V. antifreeze is sufficient.

1. Turn the by-pass valve on in back of the water heater.
2. Go to the outside of the unit, open the water heater door and remove the nylon plug, lift the stem of the pressure relief valve to help it drain.
3. Locate the fresh water tank and follow the white outlet hose until you come to a wingnut drain valve, turn the wingnut counter clockwise until it stops. Turning this valve will drain the fresh water tank.
4. After the fresh water tank is drained, turn the wingnut drain valve clockwise until it is tight.
5. Follow the white hose from the wingnut drain valve to the water pump. There will be a threaded end on this hose connected to the water pump, remove this threaded nut from the water pump and install winterizing hose in its place.
6. Place open end of winterizing hose into a gallon of R.V. antifreeze.
7. Turn on the water pump, then turn on the bathroom vanity faucet, tub faucet, shower head, toilet, toilet spray hose and kitchen faucet until both hot and cold flow pink with RV antifreeze.
8. Pour R.V. antifreeze down the sink and tub drains to fill the p-traps.
9. Turn off water pump.
10. Remove winterizing hose from the water pump and re-install the water hose from the fresh water tank to the water pump.
11. Dump the black and grey tanks and your winterizing should be complete.

Along with protecting the water and drain systems, we advise you to follow these simple suggestions for proper winter storage:

1. Remove all bedding and clothing to prevent mildewing.
2. Remove all good stuffs and clean cupboards.
3. Affix newspapers to inside windows with masking tape. This protects carpets, curtains, and cushions from ultraviolet damage.
4. Clean the refrigerator thoroughly and place an open package of baking soda inside, leaving the door open.
5. Clean all appliances and stove vents.
6. Shut LP tank valve "OFF."
7. Turn battery disconnect switch to the "OFF" position.

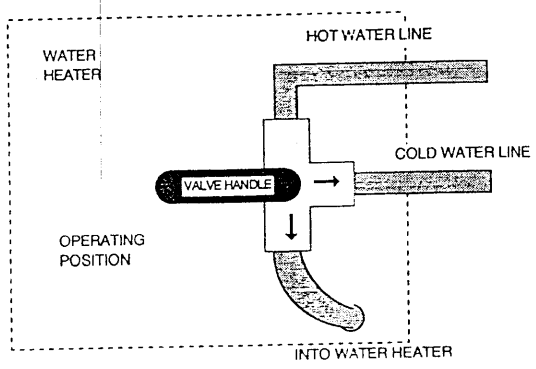
B. Summer De-Winterizing of Unit

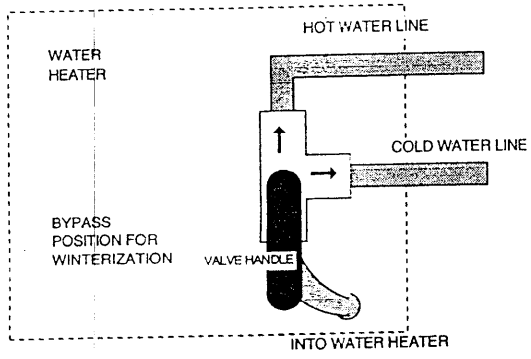
Perform the following procedure to de-winterize your coach:

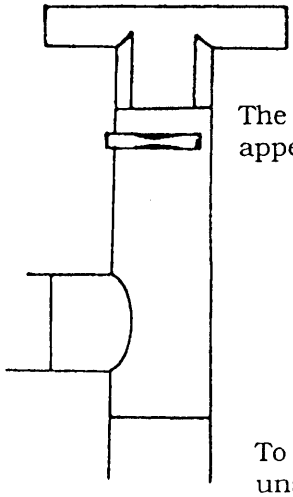
1. Fill your fresh water tank with clean water.
2. Turn on the water pump.
3. Turn on all the faucets, toilet and hoses until they flow clear with water.
4. Only after all of the faucets flow clear with water can you open the by-pass valves on the rear of the water heater and fill the water heater.
5. After the water heater is full of fresh water your de-winterizing in complete.

Water Heater Bypass and Draining Illustrations

RIGHT HAND SIDE
WATER HEATER BYPASS

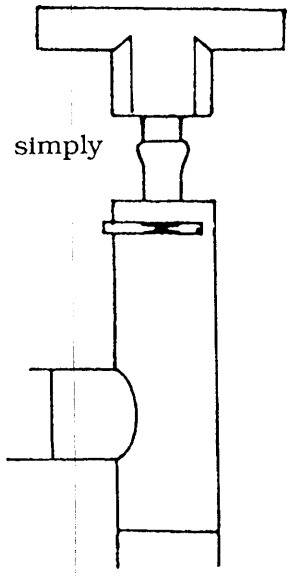


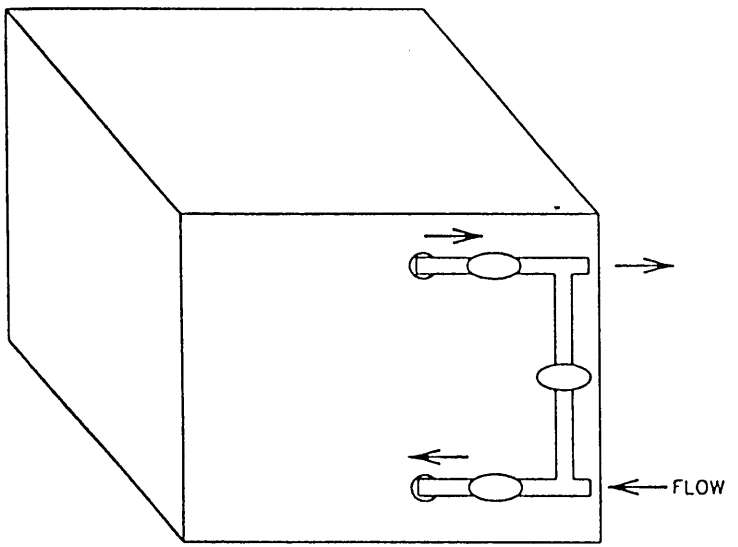




The three drain valves should appear like this when closed.

To open, simply unscrew.

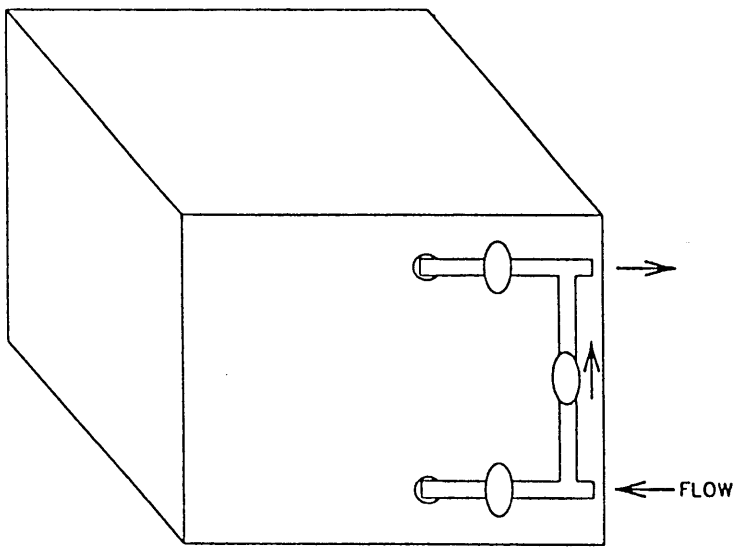




HORIZONTAL:

Valve in useable position

(SUMMER)



VERTICAL:

Valve in by-pass position

(WINTER)

			SCALE 1/1
			SHEET
AAT		3-26-99	
DODGEN INDUSTRIES AND BORNFREE MOTORCOACHES HWY 169N., P.O. BOX 39 HUMBOLDT, IA 50548			TITLE WATER HEATER BY-PASS
			1

Winterizing

For this entire process 2 gallons of RV antifreeze is sufficient

STEP ONE – Turn the by-pass valves behind the water heater.

STEP TWO – Go to the outside of the unit, open the water heater door and remove the plastic plug, lift the stem of the pressure relief valve to help it drain.

STEP THREE – Locate the fresh water tank and follow the white outlet hose until you come to a wingnut drain valve; turn the wingnut counter clockwise until it stops. Turning this valve will drain the fresh water tank.

STEP FOUR – After the fresh water tank is drained, turn the wingnut drain valve clockwise until it is tight.

STEP FIVE – Follow the white hose from the wingnut drain valve to the water pump. There will be a threaded end on this hose connected to the water pump; remove this threaded nut from the water pump and install the winterizing hose in its place.

STEP SIX – Place the open end of the winterizing hose into a gallon of RV antifreeze.

STEP SEVEN – Turn on the water pump, then turn on the bathroom vanity faucet, tub faucet, shower head, toilet, toilet spray hose, kitchen faucet and outside shower until both hot and cold flow pink with RV antifreeze.

STEP EIGHT – Pour RV antifreeze down the sink and tub drains to fill the p-traps.

STEP NINE – Remove winterizing hose from the water pump and reinstall the white water hose from the fresh water tank to the water pump.

STEP TEN – Dump the Black and Gray tanks and your winterizing is complete.

De-winterizing

STEP ONE – Fill your fresh water tank with clean water.

STEP TWO – Turn on water pump.

STEP THREE – Turn on all the faucets, toilet and hoses until they flow clear with water.

STEP FOUR – Only after all of the faucets flow clear with water can you open the bypass valves behind the water heater to fill the water heater.

STEP FIVE – After the water heater is full of fresh water your de-winterizing is complete.

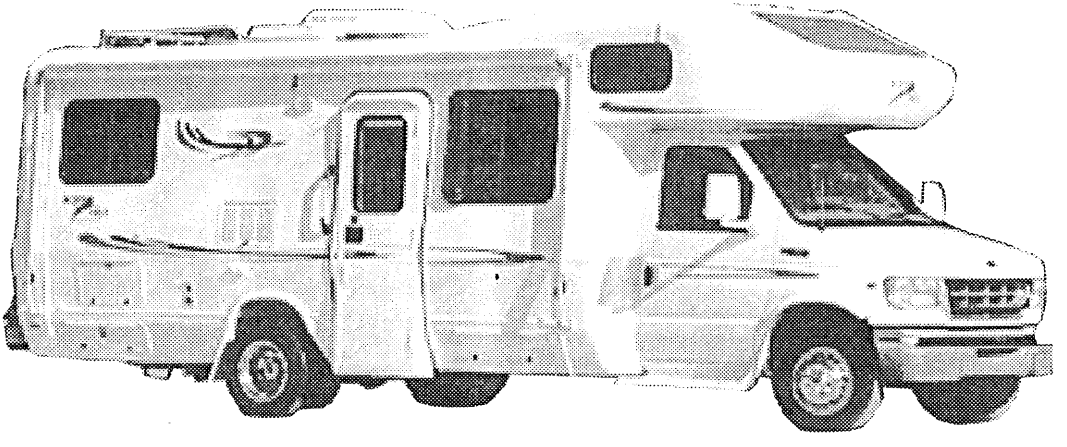
Dear Born Free Owner:

Proper front-end alignment is a critical element in keeping your new Born Free vehicle handling properly and getting the maximum tire life.

Alignment will change as the vehicle breaks in. The individual tire pressure you choose for your ride; the air pressure in the air bag suspension that you choose (if you have this option); the truck springs as they soften with use; the load (equipment, accessories, personal belongings, etc.) that you decide to add; and the location in the vehicle of this weight, can all have an effect on the alignment.

It is important for you to outfit and prepare your vehicle the way you intend to use it, and then have the front end alignment checked. Try and choose a reputable alignment shop, who has experience in larger vehicles and specifically the Ford twin I beam axle design. Dodgen Industries/ Born Free Motorcoach is under no obligation to pay for this alignment, because each customer will outfit their vehicle uniquely.

Our Customer Service Department will be happy to discuss with you any questions you may have on this, when you have your unit outfitted and are ready to have the alignment checked. Please call our Customer Service Manager at 800-247-1835 if you need assistance.



PLUMB-PEX PLUMBING REGISTRATION

Uponor's 10/25 YEAR LEAK-FREE PLUMBING GUARANTEE
Your plumbing system -- the PLUMB-PEX™ Clamp System -- withstands leaks like no other plumbing system. Uponor backs you with a 10/25 limited warranty covering costs of system repairs up to 25 years on the tube and 10 years on the fittings (see Uponor Limited Warranty below).

Uponor provides the most proven PEX tubing worldwide. More than two billion feet of Uponor PEX tubing is used in applications worldwide, ranging from residential homes to recreational vehicles.

- UPONOR-PEX cross-linked polyethylene (PEX) tubing is durable and flexible, to accommodate all conditions.
- UPONOR-PEX tubing withstands temperatures as low as –95° F without cracking or shattering.
- PLUMB-PEX patented clamps constantly constrict around the tube and fitting, maintaining a tight seal year after year.
- UPONOR-PEX thicker walled tube insulates better and reduces tube sweating.
- UPONOR-PEX flexible plastic tubing helps eliminate hammer noise inherent with ridged plumbing systems.

User Friendly.
UPONOR-PEX tube is manufactured to strict tolerances -- the outside diameter is that of copper tubing, and additional plumbing can be added with common everyday compression fittings.

Winterizing Friendly.
UPONOR-PEX can be winterized using antifreeze solutions, without the occurrence of chemical reactions that could damage the plumbing system. That's just one of the user-friendly benefits of PLUMB-PEX.

Non-Toxic.
UPONOR-PEX tubing has been tested to be totally nontoxic, leaving NO chemical residue. The PLUMB-PEX Clamp System also is free of any glues, solvents and solder -- the healthiest plumbing system on the market.

PLUMB-PEX 10/25 Year Limited Warranty

Limited Warranty: Uponor warrants the PLUMB-PEX Clamp System to be free from defects in material or workmanship under normal use and service, and limits the remedies to repair and replacement. The warranty guarantees that when the PLUMB-PEX Clamp System is installed and tested by a trained installer, the tube will not leak for 25 years, and the fittings will not leak for 10 years.

Warranty Duration: UPONOR-PEX tube warranty extends for 25 years from the date of installation, sold separately and/or in conjunction with the 10 year warranty for PLUMB-PEX fittings.

Warranty Exclusions: This warranty specifically does not apply to:

1. Any PLUMB-PEX product that has been repaired or altered in any way by an unauthorized person, or service station other than in conjunction with installation guidelines.
2. Damage caused by misuse, negligence, improper storage, and/or accident.
3. Any connections made with fittings other than the PLUMB-PEX Clamp System.
4. Consequential damages including, but not limited to: loss of use of this product, inconvenience; loss or damage to personal property of loss of revenues.
5. Any PLUMB-PEX product that was not installed by a trained PLUMB-PEX installer. PLUMB-PEX installed by a non-trained installer is warranted for (1) year.
6. Any PLUMB-PEX product that has been exposed to temperatures and/or pressures that exceed the limitations printed on the tubing.

The Uponor Warranty is limited to only repair and replacement of PLUMB-PEX defective materials. All claims should be made through the original place of purchase prior to sending in a claim to Uponor's National Parts and Service Center, (Master Techs Inc., 17111 "F" Drive South, Marshall, MI 49068). Defective parts must be made available for inspection by Uponor.

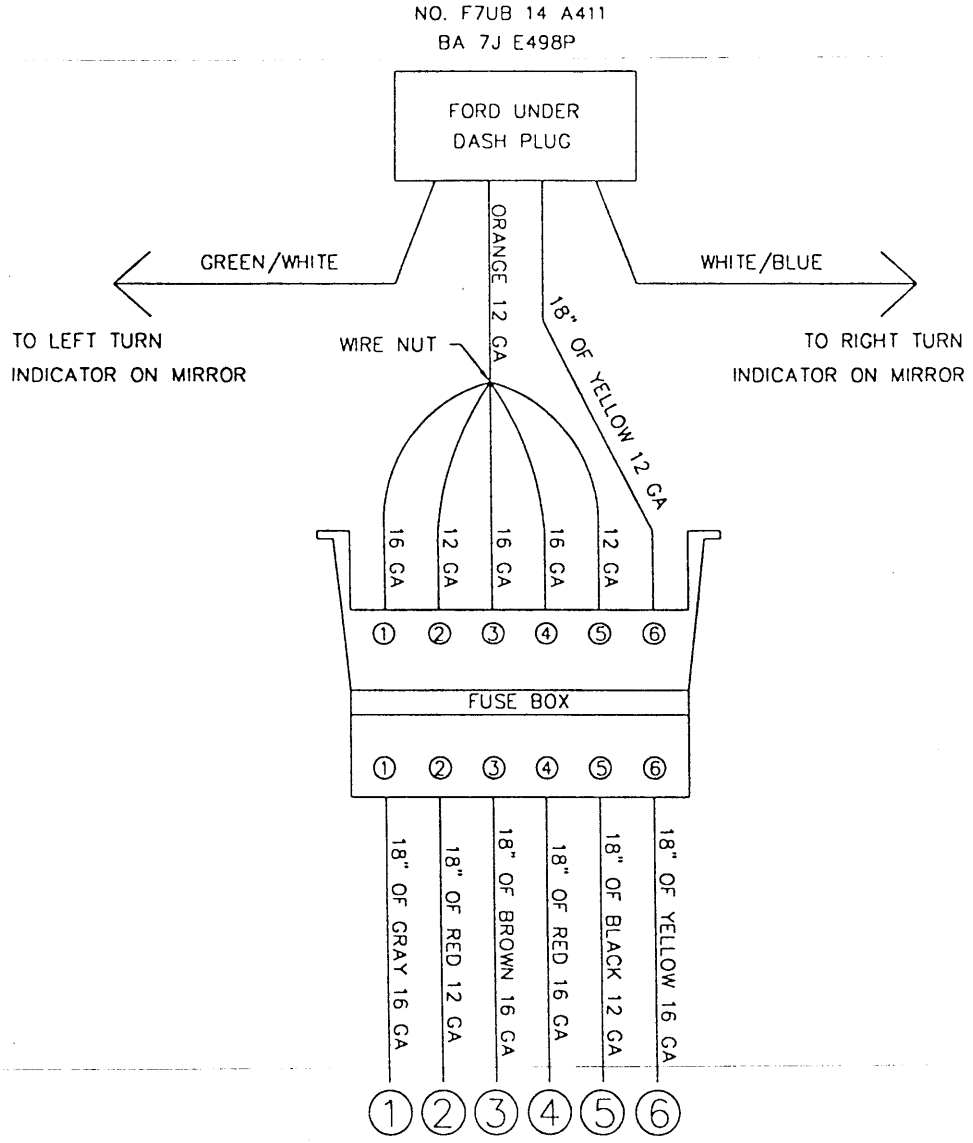
Please fill out and return this registration card to:
Uponor, 54345 Homeland Road, Elkhart, IN 46514, Attn. Warranty

Dear Born Free Owner:

Motorcoach owners many times look for possible ways to improve the mileage and power performance of their vehicles. One alternative many people consider is dual engine exhaust systems.

We do not recommend that you convert your truck to dual exhaust. The wires, fuel hoses, generator fuel line, electrical isolator, and optional hydraulic jack pump and reservoir are positioned when we finish the construction of your unit so that they are shielded, or far enough away from the single exhaust system and catalytic converter, to withstand the higher temperatures of today's vehicle engine. Adding dual exhaust would put these components in an unsafe distance to the added exhaust pipe. Installing dual exhaust may negatively impact your warranty on many of the components listed above; therefore, we do not recommend that you do this.

If you have any questions about this, please feel free to contact our Customer Service Department.



① IGNITION FEED FOR MIRRORS
5 AMP FUSE / 16 GA GRAY

② IGNITION FEED FOR LUMBAR & HEAT IN CAB SEATS
15 AMP FUSE / 12 GA RED

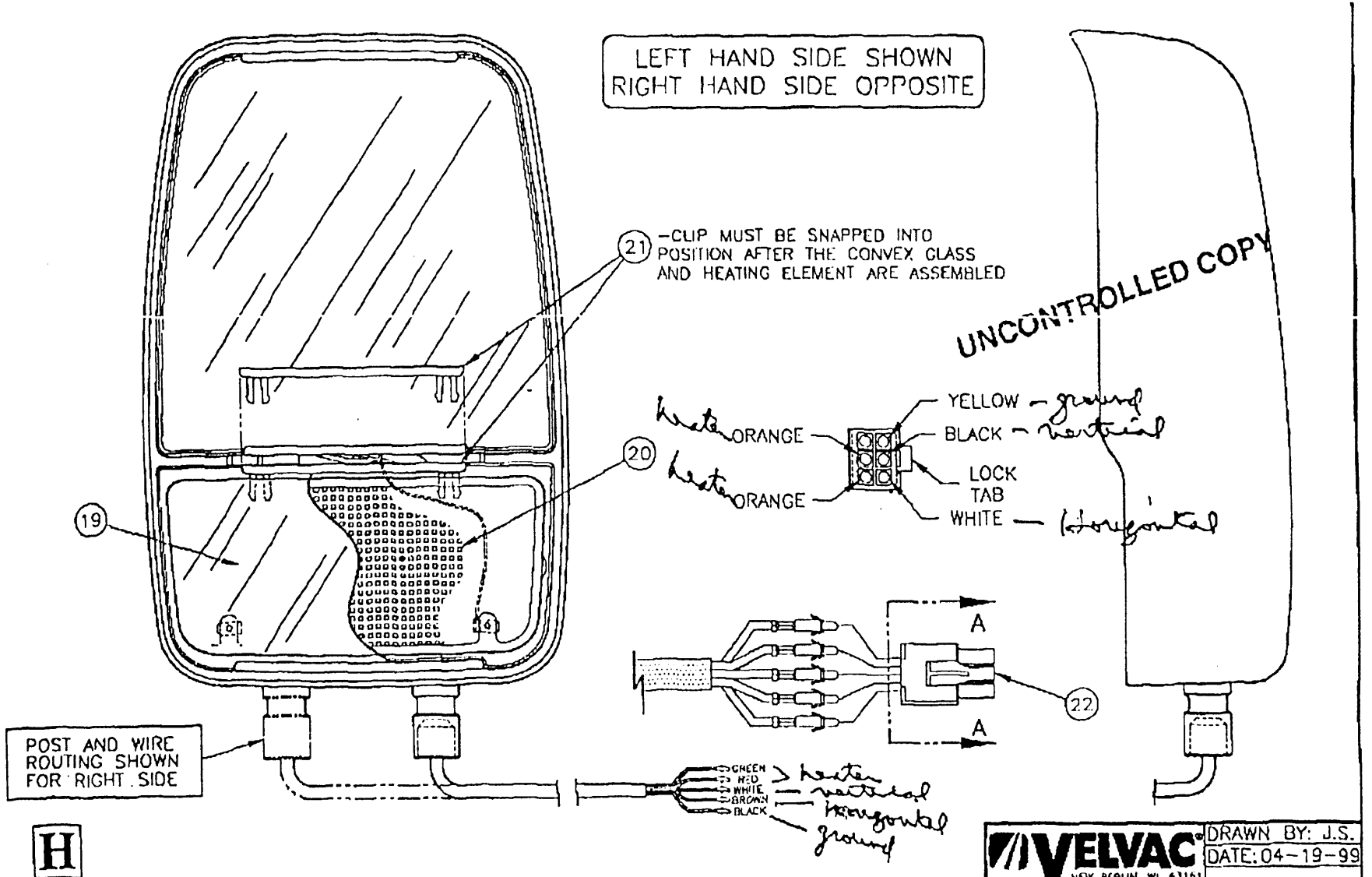
③ IGNITION FEED FOR SATELLITE DISH OPTION
3 AMP FUSE / 16 GA BROWN

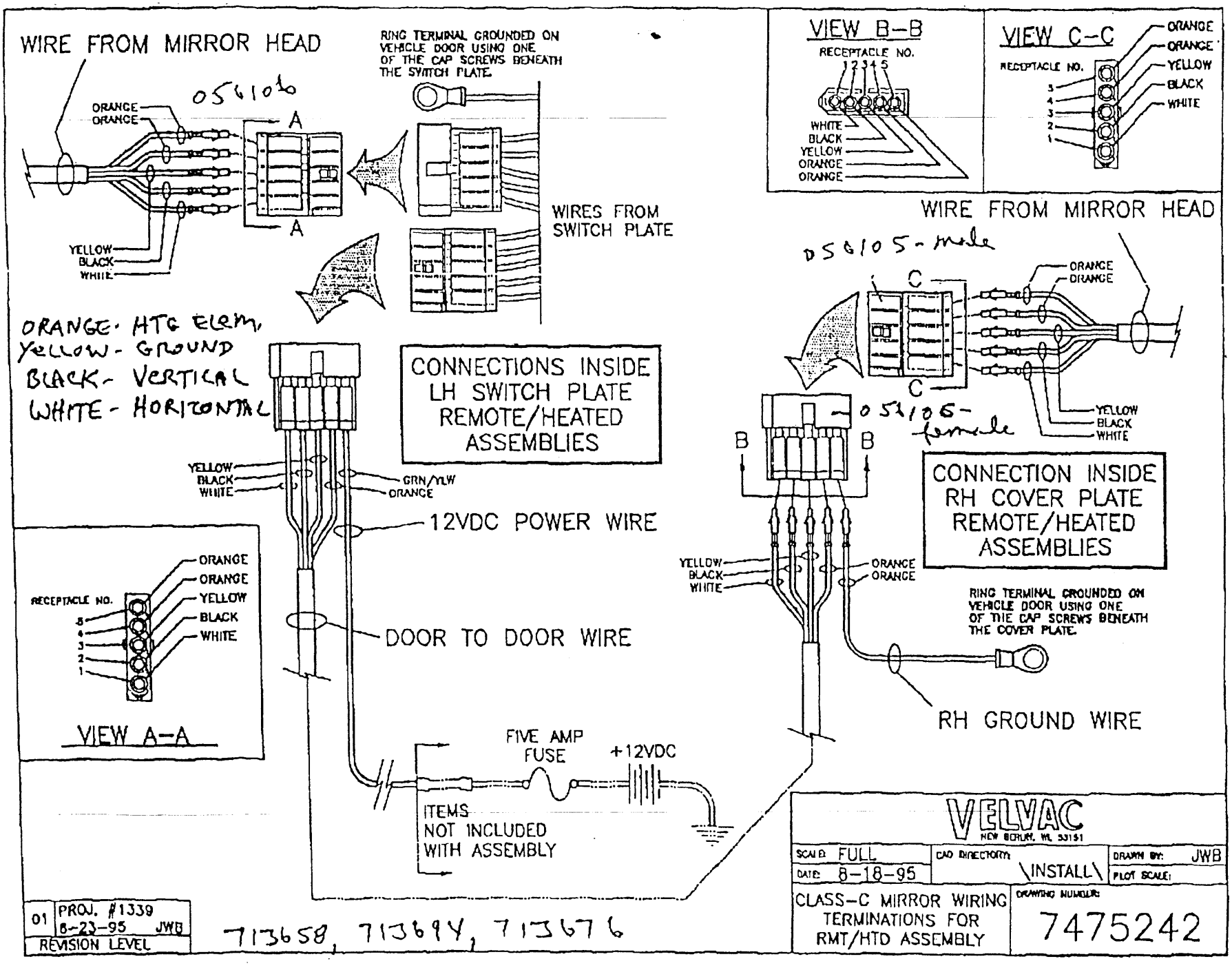
④ IGNITION FEED FOR POWERTAP FOR BETWEEN CAMERAS AND/OR LIGHTED WINDSHIELD MIRROR
3 AMP FUSE / 16 GA RED

⑤ IGNITION FEED FOR AIR RIDE COMPRESSOR OPTION
15 AMP FUSE / 12 GA BLACK

⑥ BATTERY FEED FOR CB
3 AMP FUSE / 16 GA YELLOW

		FINISH COLOR	SCALE 1/1
			SHEET NO.
BY AAT	CHK	DATE 8/26/99	DESIGN USING STANDARD
			DRAWING FROM MODEL ALL
DODGEN INDUSTRIES AND BORNFREE MOTORCOACHES HWY 169N., P.O. BOX 39 HUMBOLDT, IA 50548			TITLE OPTION FUSE BOX
			NUMBER 2 REV


LEFT HAND SIDE SHOWN
RIGHT HAND SIDE OPPOSITE
21 -CLIP MUST BE SNAPPED INTO POSITION AFTER THE CONVEX GLASS AND HEATING ELEMENT ARE ASSEMBLED
UNCONTROLLED COPY
20
19
YELLOW – ground
heater ORANGE
BLACK – vertical
heater ORANGE
LOCK TAB
WHITE – horizontal
A
A
22
POST AND WIRE ROUTING SHOWN FOR RIGHT SIDE
GREEN
RED
WHITE
BROWN
BLACK
heater
vertical
horizontal
ground
H
CONVEX GLASS/HEATING ELEMENT SUB-ASSEMBLY
VELVAC
NEW BERLIN, WI. 53151
DRAWN BY: J.S.
DATE: 04-19-99
MODEL 2020 MIRROR ASSEMBLY
CLASS "A" REMOTE/HEATED/LIGHTED
HEAD FORD SUPER DUTY VERSION
PROPRIETARY
THIS CONCEPT & DESIGN IS THE PROPERTY OF VELVAC, INC. AND SHALL NOT BE REPRODUCED, COPIED, DISCLOSED, USED FOR THE MANUFACTURE OR PROCUREMENT FROM SOURCES OTHER THAN VELVAC INC. WITHOUT WRITTEN PERMISSION FROM VELVAC INC.
SCALE:
* DRAWING NO.
PAGE 16 OF 22
7145210
REVISIONS
SEE PAGE 1 OF 22


WIRE FROM MIRROR HEAD
05610b
ORANGE
ORANGE
A
A
YELLOW
BLACK
WHITE
RING TERMINAL GROUNDED ON VEHICLE DOOR USING ONE OF THE CAP SCREWS BENEATH THE SWITCH PLATE.
WIRES FROM SWITCH PLATE
ORANGE- HTG ELEM.
YELLOW- GROUND
BLACK- VERTICAL
WHITE- HORIZONTAL
CONNECTIONS INSIDE LH SWITCH PLATE REMOTE/HEATED ASSEMBLIES
YELLOW
BLACK
WHITE
GRN/YLW
ORANGE
12VDC POWER WIRE
DOOR TO DOOR WIRE
RECEPTACLE NO.
5
6
3
2
1
ORANGE
ORANGE
YELLOW
BLACK
WHITE
VIEW A-A
FIVE AMP FUSE
+12VDC
ITEMS NOT INCLUDED WITH ASSEMBLY
VIEW B-B
RECEPTACLE NO.
1 2 3 4 5
WHITE
BLACK
YELLOW
ORANGE
ORANGE
VIEW C-C
RECEPTACLE NO.
5
4
3
2
1
ORANGE
ORANGE
YELLOW
BLACK
WHITE
WIRE FROM MIRROR HEAD
05610 5- male
C
C
ORANGE
ORANGE
YELLOW
BLACK
WHITE
05310 6- female
B
B
YELLOW
BLACK
WHITE
ORANGE
ORANGE
CONNECTION INSIDE RH COVER PLATE REMOTE/HEATED ASSEMBLIES
RING TERMINAL GROUNDED ON VEHICLE DOOR USING ONE OF THE CAP SCREWS BENEATH THE COVER PLATE.
RH GROUND WIRE
VELVAC
NEW BERLIN, WI 53151
SCALE: FULL
DATE: 8-18-95
CAD DIRECTORY: \INSTALL\
DRAWN BY: JWB
PLOT SCALE:
CLASS-C MIRROR WIRING TERMINATIONS FOR RMT/HTD ASSEMBLY
DRAWING NUMBER:
7475242
01
PROJ. #1339
6-23-95 JWB
REVISION LEVEL
713658, 713694, 713676

Dear Born Free Owner:

Every Born Free has an on-board water pump system. Unlike a city water system to your home, you have the ability to shut off your system with a switch, which is located in the range hood face above the cooktop.

RVs have numerous plastic fittings and lines, which make up the water system. We recommend that you always shut off your pump when the vehicle is in motion. If a fitting or line should break, due to the stress of some of America's poorer roads, you may not hear the pump running above the engine or radio sounds; and if a leak should occur, you could experience water damage in your coach. We feel this has only a slight risk of happening, but we want you to be aware of it.

Another good idea is to **shut off your pump when you leave your vehicle** for any length of time. Small drips can occur, just like in your home plumbing around faucets and drains. If the pump is left on, it will continue to feed a drip or leak in your absence. When you are in the vehicle, you will hear the pump run for a second or two, which will be the tell-tale sign that there is a leak. Periodic inspections of the drain p-traps and the faucet connections are recommended to avoid problems. ***Remember:*** Plumbing fittings may loosen or break under certain road conditions, which makes following these guidelines critical.

Born Free always tries to use the very best products manufactured in our motorcoach construction, and we feel our plumbing system is superior to other brands. But we also want you, the owner, to be aware of the trouble areas that can occur, and to take precautions to avoid trouble.

Please feel free to contact the Born Free Customer Service Department if you have concerns or questions.