

BORN FREE OWNER'S MANUAL

RECREATIONAL VEHICLE

- GENERAL INFORMATION
- REGULATORY-INSTRUCTIONAL
INFORMATION
- MAINTENANCE
- SYSTEMS OPERATION

BORN FREE RECREATIONAL VEHICLE

Division of
DODGEN INDUSTRIES, INC.
U.S. Hwy. 169 North
Humboldt, Iowa 50548

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GENERAL INFORMATION

- BATH ROOM UNIT
- BEDS
- DINING TABLE
- DRIVING TIPS
- ESCAPE HATCH AND ROOF VENTS
- OUTSIDE STORAGE COMPARTMENT
- TRAILER HITCH AND ELECTRICAL CONNECTION
- UNDERFLOOR STORAGE

BATHROOM UNIT:

The combination bathroom unit provides adequate standing room while taking a shower. The total bathroom package includes a disappearing toilet, lavatory sink, medicine cabinet with mirror, light, shower, shower curtain, and full length mirror.

The toilet folds into the module and is held in place with a small locking lever on the side. For use, release the locking lever and pull the handle/leg combination outward until it rests on the leg in a horizontal position. For easier cleaning, a small amount of water should be run into the bowl by pressing the flush pedal part way down. Then place a piece of toilet tissue on top of water. After use, depress the flush pedal to run rinse water into the bowl, and then raise the bowl slowly. Allow the contents to run into the holding tank while holding the pedal down. Release the pedal, and re-engage the locking lever.

Before the toilet is used and each time after the holding tank has been evacuated, the holding tank should be charged. Run one gallon of water into the tank through the toilet and add a prescribed amount of holding tank chemical deodorant to the water. Your Born Free dealer can recommend a suitable chemical for this use.

To operate the shower, set water to the desired temperature by adjusting hot and cold water faucets, then turn shower lever located between the faucets to an ON position. This will divert the water to the shower head. The shower head is equipped with a shut-off valve which will allow it to be turned off to conserve water while soaping up.

BEDS:

The queen size double bed in the cabover portion of your Born Free unit is a permanent bed, and has its own privacy curtain which effectively makes a separate bed room.

In addition, two more beds are available for sleeping up to four persons in the gaucho dinette conversion. Remove the pedestal table, pedestals, and legs that are part of the dinette seating arrangement. These can be stored overnight in the closet or on the floor under the made up beds. Raising the seat cushion of each gaucho, will disclose two locking pegs which hold it in a closed position. Remove the pegs, lift the front legs up slightly to clear the carpet and pull the gaucho toward the center of the coach. Two more locking positions will accommodate the pegs in the unfolded position. The seat cushion will remain as the outside mattress portion when pushed against the wall and the seat backs, together with the smaller cushions, will provide the inside mattress portion.

When restoring the dinette for seating accommodations, be sure that the locking pegs are fastened and the seat backs lie against the wall behind the seat cushions.

TABLE:

The dinette pedestal table can be used in a folded up position and will accommodate several persons. If a larger surface is required for card playing, games, or dining when company comes in, it can be unfolded to twice its size. To open the table, pull out the leaf support and swing it on its hinge to the open position.

It is recommended that the table be placed in a closed position during travel to eliminate the possibility of undue strain being placed on the leaf support by vibration. Care should also be taken by the persons on the extended side of the table (side not supported by table legs) not to place too much weight on the table since it is not supported except by leaf support which will hold a reasonable amount of weight. Failure to observe this precaution will cause the screws in the piano type table hinge to pull out. We do not consider this factor an error in design or construction. We ask your indulgence and request you consider it one of the adjustments to living on the road as compared with your home.

DRIVING TIPS:

Your new Born Free will drive very much like your own family car. The pickup or truck chassis that carries it can be equipped with all of the same deluxe and custom features. The main differences 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 the new rig.

You will be able to drive your Born Free at turnpike speeds, just as you do your car, but it will take longer to reach that speed. You will slow down more when climbing a hill or mountain because of the added weight. When you pass another vehicle on the highway, allow yourself more time and room for overtaking and cutting back in. You are also now a little wider and will have to allow for that too when maneuvering in a tight place.

When backing up, have your co-pilot get out and walk with the coach as it moves. The best place for her is at the left rear where you can observe signals from her in your mirror as she walks along watching out for obstacles, and directing your movements.

You are not likely to forget about your heavier weight, width or length, as the actual driving feel will remind you. However, there is one new dimension that you will have to constantly remind yourself of . . . height. You are almost 10 feet tall and if you have a roof air conditioner, about 11 feet. Always be on the lookout for low hanging branches on trees and for low building canopies. While most buildings will be high enough, there are some that you will have to avoid.

If you travel with a friend who also owns a recreational vehicle, don't bunch up on the highway. Leave an interval so that other motorists can get around you easily. If you find that in proceeding up a long incline, that a long string of cars has gathered behind you, pull off the road at the first safe place to allow them to pass.

When traveling a longer distance, don't get overtired. Stop for a coffee break at least once during the morning, and again in mid-afternoon. Here is an example of one of the best reasons for owning your Born Free. You can park at any rest area and make a pot of coffee, or get a soft drink from the refrigerator. And don't send the wife to get it via the crawl through boot, get out and stretch your legs.

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. One soon learns after acquiring this habit, that he will drive with a more comfortable state of mind afterwards.

ROOF VENTS AND ESCAPE HATCH:

Born Free motor coaches have three roof vents to provide ventilation and the front one on the detachable coach serves as an escape hatch and access to the roof. The escape hatch-roof vent combination is located over the cabover permanent bed and operates as a screened ventilator by turning the crank to raise the outside cover. To use as an escape hatch, the crank is turned one full turn and then the latch lever on the rear side of the unit is operated. This will release the screen and cover so that it will pivot forward, allowing exit through it.

NOTE: While traveling, the escape hatch and all roof vents must be kept closed to avoid damage to them from wind vibration.

TRAILER HITCH AND ELECTRICAL CONNECTOR:

Each Born Free can be equipped with a trailer hitch and ball which can be used for pulling boat or snowmobile trailers or small utility vehicles. Above the step and to the left of the door, is a connector receptacle which will supply turn signals, stop lights, and clearance lights for the trailer. A diagram showing the proper connections of this receptacle will be found in another portion of this booklet.

UNDER FLOOR STORAGE:

A large storage compartment is built into the floor of the Born Free. It will accommodate many odd shaped hard to store articles such as fishing rods, rifles, skis, other sporting equipment, canned goods, and with a little innovation many items necessary to a short or long range trip. To open the left compartment, fold the table to its closed position and push it toward the driver's side of the coach, raising the door in the floor. For a more complete access to this compartment, the table and pedestals can be removed to allow the door to raise up all of the way. Raising the right side compartment is very simple. Just place your finger in the hole provided toward the end of the compartment floor close to the dining area step up and raise the door.

OUTSIDE STORAGE COMPARTMENT — DETACHABLE COACH

A large storage compartment is located on the curb side of the coach. This compartment can be opened from the outside and locked with a key and it is also accessible from the inside of the coach. This compartment is large enough to store tools, water hoses, extension cords and folding aluminum chairs.

On the driver's side of the detachable coach, are located two smaller compartment doors which are opened with the same key. The lower door which is located below the water heater is used to gain access to the auxiliary gas tank on some trucks. The other door, which is somewhat larger and located to the right of the water heater, is the access door to the power converter.

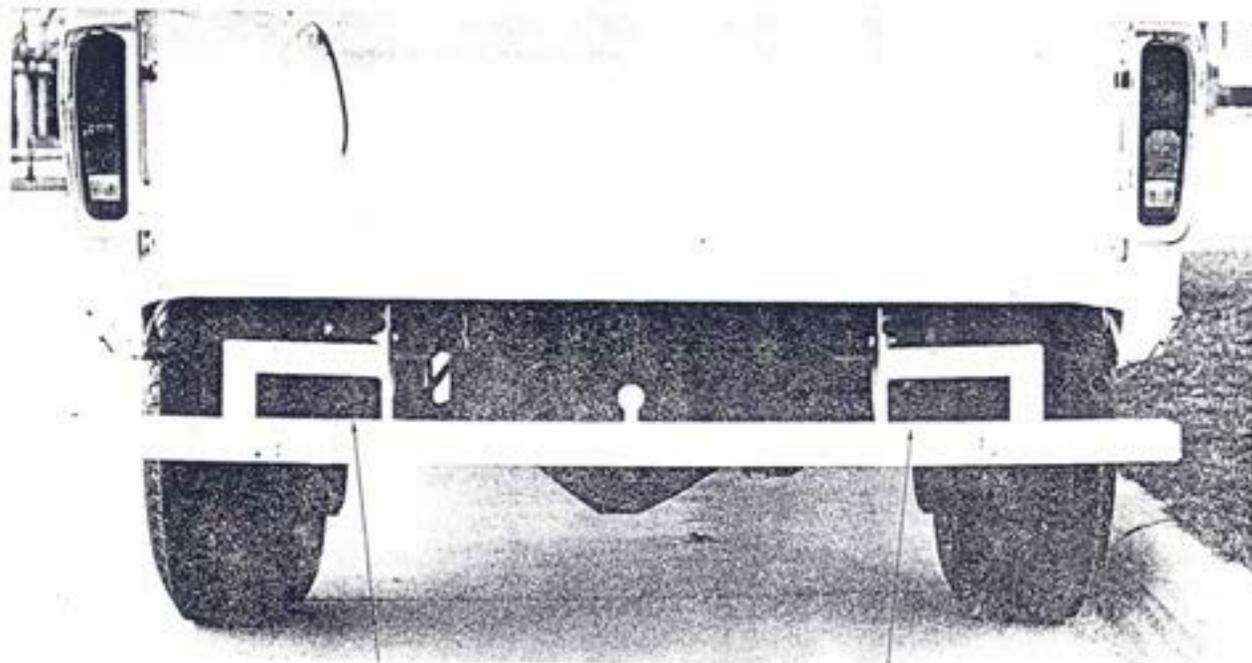
OUTSIDE STORAGE COMPARTMENTS — MOTOR HOMES

Born Free Motor Homes have many outside access storage compartments. A little experimentation will give you the best loading convenience.

INFORMATION

Regulatory Instructional

- ATTACHING AND DETACHING COACH TO AND FROM PICK UP TRUCK
- PREPARING YOUR BORN FREE UNIT FOR USE
- HOW TO ADJUST THE BORN FREE THIRD AXLE
- GROSS VEHICLE WEIGHT-GROSS VEHICLE AXLE WEIGHT RATING
- DETERMINING WEIGHT OF UNIT
- FEDERAL MOTOR VEHICLE SAFETY STANDARD No. 126 - CAMPER LOADING
 - HOW TO LOAD EQUIPMENT IN THE BORN FREE UNIT
 - PLACEMENT OF VEHICLE CERTIFICATION LABELS
 - CENTER OF GRAVITY
- WEIGHTS OF OPTIONAL EQUIPMENT
- WEIGHTS OF PERSONAL ITEMS THAT MAY BE PLACED IN COACH
- RECREATIONAL VEHICLE INSTITUTE



PICKUP WITH PROPER BUMPER INSTALLED. ARROWS DENOTE BUMPER SLOTS WHICH LINE UP WITH TAPERED INSERTS ON THE FRONT OF THE TAG AXLE.

LOADING AND UNLOADING PROCEDURE:

The Born Free detachable coach is more than other campers or motor homes in that it is possible to remove the coach quickly and easily to free the pickup for sight seeing or other transportation. The motor coach, when detached, can be lived in in perfect comfort and safety.

UNLOADING PROCEDURE:

For unloading, the area should be level and as firm as possible. A gravel, asphalt or cement surface is ideal, but it can also be done on hard ground.

1. Disconnect the wiring connector between the coach and pickup.
2. Unsnap boot and turn flaps away from pickup window.
3. Secure jack stands, crank handles, and leverage pipe from storage compartment in the motor coach.
4. On the two rear corners of the coach above the bumper, two jacks are located. Place the jack stands under the jacks and install crank handles on jack shafts, then turn jacks in downward position until they engage in recesses in the jack stands. Continue cranking approximately 15 revolutions. Repeat this process on both sides of the coach.
5. In the center of the tag axle rear underside, a safety keeper pin is installed. This will be located directly forward and underneath the trailer hitch ball. Remove keeper pin.
6. After safety pin is removed, place leverage pipe on cam lever handle. Apply downward pressure to release the locking loop from the pickup bumper. After the lever is released, push forward a full arms length or until the loop hits the spare tire.

7. Using the same crank handles, proceed to the front jacks. Insert jack handles on jack shafts and turn clockwise approximately six revolutions. This will release the hold down pressure on both sides of the coach. At the bottom of the front jacks on the jack extension tube, another small safety pin can be found. Remove this safety pin and the quick pull pin which the safety pin held in place. Do this on both sides of the coach. The cross tube which runs underneath the truck can now be moved downward to the next hole which is six inches from the place it was held previously. When repositioning the cross tube as above, have the jacks at the same level and the pull pins removed on each side. Do not proceed to the next step until both pull pins have been reinserted in the new position and the safety pin reinstalled.
8. Proceed cranking jacks down until the front end of the coach is eight to ten inches higher than the bed of the truck. If one person is unloading alone, crank each side four inches, and then go to the other side so that the coach is raised evenly.
9. Drive the truck slowly forward from underneath the coach. Drive perfectly straight ahead and use caution in driving over the cross tube.
10. Lower coach until wheels of tag axle are setting on the ground and the coach is level. This will maintain a good stable condition and lower the coach for easy entrance.

LOADING PROCEDURE:

1. Raise the rear jacks until wheels on tag axle clear the ground. Raise the front jacks until the coach is approximately eight inches above the floor of the pickup bed.
2. Back the truck under the coach, being careful when backing over the cross tube. Continue backing in a straight line until the truck is within five or six inches of being all of the way under the coach. Stop the truck, take it out of gear, set the emergency brake, and check that the tapered inserts on the front of the tag axle are lining up with the slots in the bumper. If they are not, raise or lower rear jacks. When good alignment has been achieved, continue to back truck under the coach.
3. When the bumper and tag axle have come together securely, take hold of locking loop and pull it toward the rear down over the ball hitch on the pickup bumper. Using leverage pipe, lock the loop into its position. Remove the leverage pipe and install safety pin under the locking loop.
4. Raise the rear jacks until tag axle wheels are on the ground carrying the full weight of the rear. If you are loading the coach alone, move each jack only four inches then proceed to the other side to lower motor coach evenly.
5. Raise the front jacks until the cross tube is free of the ground. Remove the safety pin and pull pin from the jack extension tube on each side, then raise the cross tube up into the jack stand on the upper hole. Replace the pull pin and safety pin on each side. Continue to raise the front jacks being sure they engage in the two front frame mounts. Raise the jacks until the cross tube is seated snugly but **do not apply excessive pressure. An extra turn of the crank after the cross tube is snug will only damage the gears and is not necessary.**
6. Plug truck connector cord into coach power receptacle.
7. Pull boot flaps through rear window and snap into place.
8. Return crank handles, jack stands, and leverage pipe to storage compartment.

PREPARING YOUR BORN FREE FOR USE AFTER PURCHASE:

Nothing slows down the enthusiasm for a camping trip like having to move the house into the motor coach before leaving, and moving it back in when you come home. It is very easy to avoid this and inexpensive too. Equip the coach with its own gear so that it will be in a "Go" condition at all times!!

Stainless steel flatware and plastic dinnerware can be purchased everywhere. Add a few pots and pans, linens and towels that stay in the coach, and you can be ready to leave in a few minutes. Mom can carry the food, clothing and pillows out while Dad fills the water tank, and you will be on your way. Like many of the rest of us, you will often find that the quickly planned weekend trips are the most memorable.

Check lists can be your best friend. They are a great help in preventing leaving an important item behind, and they will also provide assurance that important tasks have been taken care of.

If your new Born Free is your first RV and you have never camped before, make your first trip a short one, such as a weekend near home. This will give you the opportunity to be sure that you have included all of the items and equipment that should have been brought along. Some families spend their first night camping in their own driveway.

When loading the coach and determining the proper place for each item to be stored, bear in mind that weight distribution is important. Heavier items should always be carried low and nearer to the center of the coach. Do not put heavy objects in upper cabinets.

We all tend to accumulate many unnecessary things during our travels to add to our load and we usually over estimate actual equipment that we need to carry. After you have taken your third trip, empty all equipment out of the coach and assess each item's importance. If there is anything aboard that you have not used in the first three trips, except tools, safety items, or first aid supplies, leave them home, you do not need them.

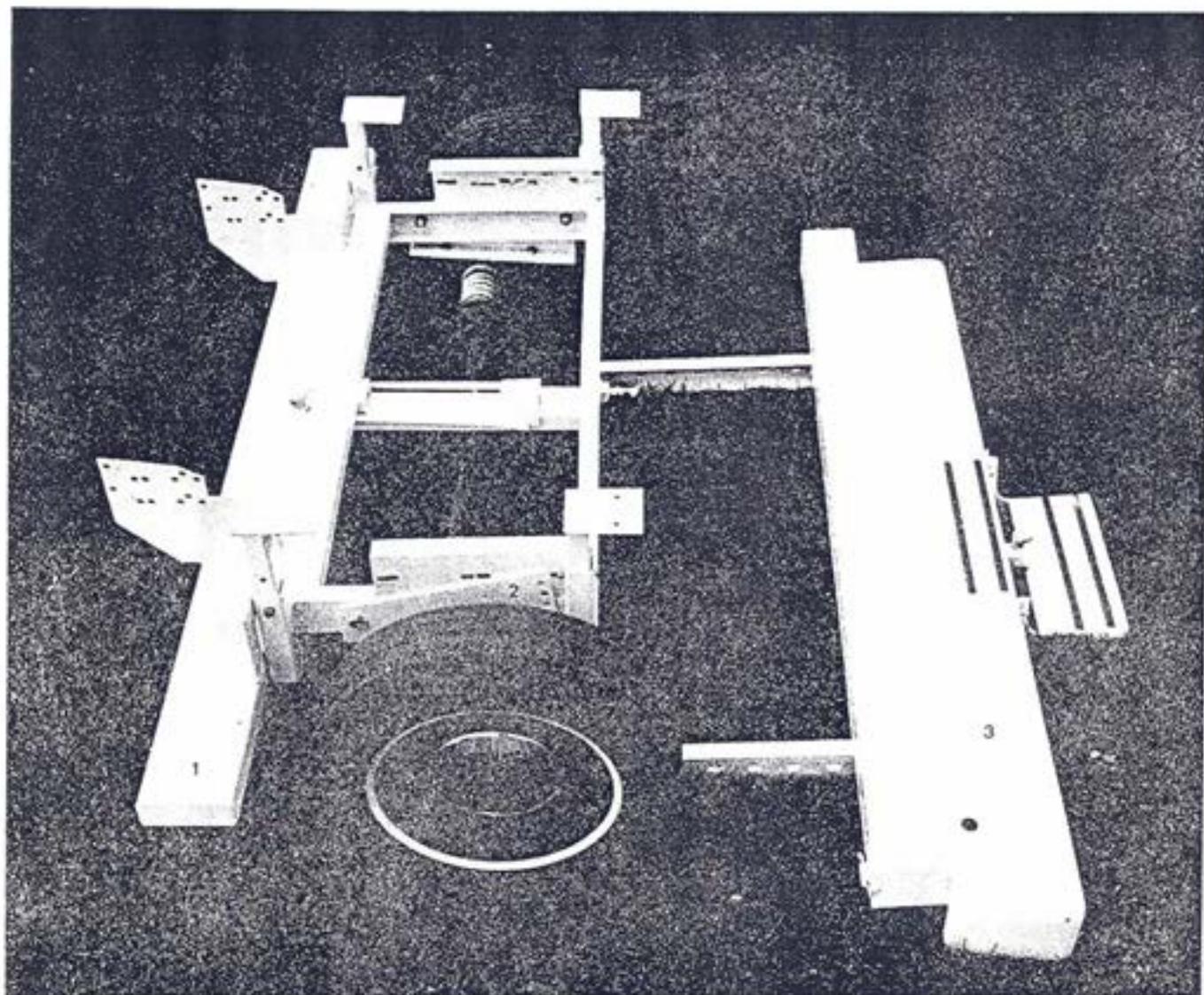
RECOMMENDED TIRE PRESSURE:

PICKUP AND DETACHABLE COACH

Front tires pickup	40-50 lbs.
Rear tires pickup	50-60 lbs.
Third axle	32-35 lbs.

MOTOR HOME

Front tires	45-50 lbs.
Rear tires	60-65 lbs.



1—TRUCK BUMPER
2—THIRD AXLE ADJUSTMENT PLATE
3—REAR COACH BUMPER & STEPS

HOW TO ADJUST YOUR BORN FREE THIRD AXLE:

We suggest you weigh each axle separately to be sure of the best weight distribution on the steering axle, drive axle and third axle. Weight adjustment is made by raising or lowering the axle mount plates to the proper hole setting for the best possible ride, stability and weight distribution. One hole adjustment in axle mount bracket will change the weight distribution approximately 150 lbs. Move axle bracket upwards to decrease weight on third axle and front axle. To increase move bracket downward. After approximately 100 miles use, check all mounting bolts to make sure they are snug. **Important**—check and re-slug all wheel lugs on Roadrunner wheels after 50 miles use.

If electric brakes are ordered instructions for installation come with the brake kit.

If any such adjustments are made and adjustment should be checked by the weighing process described on page 13 to be sure the adjustment has not added weights to either of the truck axles, front or rear, which would cause an excess of weight over the GVWR of either truck axle, and that the total of the axle weights do not exceed the truck GVWR. Further, a check should be made in similar manner to be sure the adjustment has not imposed a load on the Born Free Third Axle which exceeds the GAWR of the Third Axle.

FEDERAL MOTOR VEHICLE SAFETY STANDARD No. 126

GROSS VEHICLE WEIGHT (GVW)-GROSS VEHICLE AXLE WEIGHT RATING (GVAW):

As time goes on the FEDERAL MOTOR VEHICLE SAFETY STANDARD 126, truck camper loading will play a more important part not only in the way the manufacturer of motor vehicles and recreational vehicles are concerned, but in the RV owners role of becoming aware of and applying the rules and regulations governing the operation of RV's on the public highways. The Born Free Third Axle will assist in even distribution of weight, will play a role in determining the center of gravity of the owner's unit besides adding stability to driving conditions in minimizing cross wind influences and aero dynamic pressures caused by large trucks.

DETERMINING WEIGHT OF UNIT:

Federal Motor Vehicle Safety Standard No. 126
Paragraph 5 5 1.2(c)

To estimate the total load which will be placed on a truck add the weight of all passengers in the camper, the weight of the supplies, tools and all other cargo, the weight of the installed additional or optional travel coach equipment, and the manufacturer's recreational vehicle weight. For the Travel Coach you have purchased, it should be noted as indicated on the Certification Label as set forth on page 16 that only a portion of total travel coach weight need to be considered in selecting a truck whose cargo weight rating will be equal to or greater than the total load of the travel coach. The maximum weight on the truck to be considered as above because of the fact a portion of the total weight is carried by the patented Born Free Third Axle System and therefore the weight identified as above is carried by the truck. Considering the above information select a truck that has a cargo weight rating (GVAW) that is equal to or greater than the total load of the travel coach and whose manufacturer recommends a center of gravity zone that will contain the travel coach's center of gravity when installed. See page 17 for center of gravity information.

HOW TO LOAD EQUIPMENT:

Federal Motor Vehicle Safety Standard No. 126
Paragraph 5 5 1.2(d)

"When loading this travel coach, store heavy gear first keeping it on or close to the travel coach's floor. Place heavy things far enough forward to keep the loaded travel coach's center of gravity within the zone recommended by the truck manufacturer. Store only light objects on high shelves. Distribute weight to obtain even side-to-side balance of the loaded vehicle. Secure loose items to prevent weight shifts that could affect the balance of your vehicle. When the travel coach is loaded, drive to a scale and weigh on the front and rear wheels of the truck (i.e., do not weigh on the scale for this purpose the wheels of the Born Free Third Axle System), separately to determine loads on the individual truck axles. The load on any truck axle should not exceed its GAWR (Gross Axle Weight Rating). The totals of the loads on the truck's axles should not exceed the GVWR (Gross Vehicle Weight Rating) of the truck."

These weight ratings are given on the **vehicle certification label** that is located on the left side of the vehicle—normally door latch post, or door edge next to the driver's side on trucks manufactured on or after January 1, 1973. If weight ratings are exceeded, move or remove items to bring all weights below the ratings.

The Gross Axle Weight Rating (GAWR) of the Born Free Third Axle is 2,980 pounds. Weigh the wheels of the Born Free Third Axle System separately from the truck wheels to assure that the load on the Third Axle does not exceed its GAWR.

PLACEMENT OF CERTIFICATION LABEL:

Following is based on information taken from the Federal Register, Volume 37, No. 158 (8-15-72), Chapter V - National Highway Safety Administration, Department of Transportation, Part 571 - Federal Motor Vehicle Safety Standards, Truck Camper Loading, Standard No. 126 with all amendments; (as ready January 13, 1973).

Placement of labels in reference to weight and standard equipment—

"In campers to permanently affix a label to rear surface of each camper that includes the weight of the camper when it contains standard equipment and water, bottled gas, and ice-box with ice, or refrigerator."

THE CERTIFICATION LABEL:

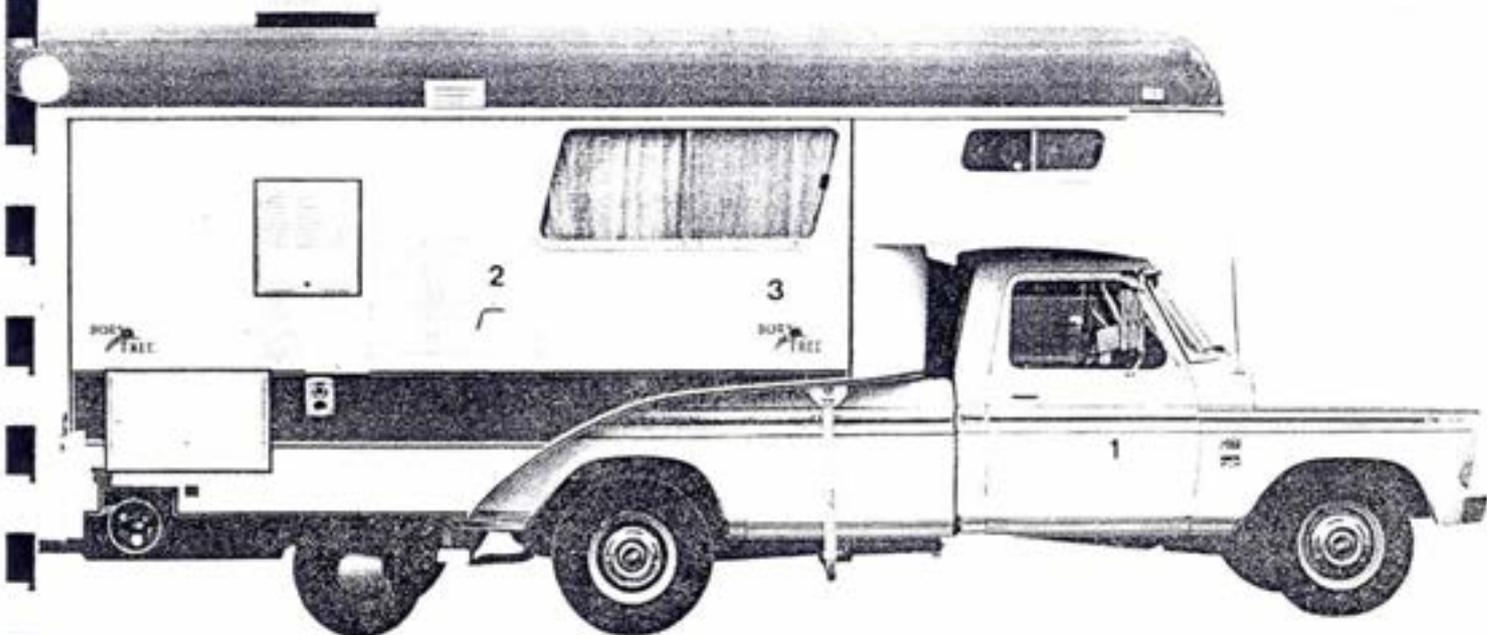
MFG. BY

DATE

This travel coach conforms to all applicable federal Motor Vehicle Safety Standards in effect on the date of manufacture shown above.

Travel Coach weight is _____ pounds maximum when it contains standard equipment, _____gal. of water, _____pounds of bottled gas, and _____cubic ft. refrigerator. _____pounds of the above travel coach weight is supported by the Born Free Third Axle, therefore, in matching this travel coach with a pickup truck only _____pounds need be considered when determining whether this travel coach will match the Cargo Weight Rating of a pickup truck. The Born Free Third Axle weight adjusting system provides a variable range of weight distribution for all axles. See page 12 covering instructions for adjusting third axle.

The statement and information provided on the certification label (as specified in paragraph S 5 1.1 Standard 126), "If water, bottled gas, or refrigerator (icebox) has been omitted from this statement; the manufacturer's information shall note such omission and advise that the weight of any such item when added to the travel coach should be added to the maximum travel coach weight figure used in selecting the appropriate truck." See page 17.



- 1—CENTER OF GRAVITY-TRUCK ALONE
- 2—CENTER OF GRAVITY-COACH ALONE
- 3—CENTER OF GRAVITY-TRUCK AND COACH

CENTER OF GRAVITY:

Above picture with points of center of gravity approximated represents truck alone, truck with coach and coach alone. Information given applies only to Ford Model 1973 F 250 with Born Free Model BF 20 SC 1973 model.

It is no secret, even to the layman, that the engineering principles of the center of gravity, as applied to the utilization of the individual recreational vehicle can be very complex. While we as a manufacturer can determine by acceptable engineering standards where the center of gravity "is", for any combination of truck-camper unit, there is no way possible we can be held accountable or responsible what the center of gravity may be after the owner puts personal and camping equipment within the unit. Refer to page 13 for instructions as to how to load your Born Free unit. However complex engineering principles and /or federal statutes may appear to you as an owner of a Born Free the center of gravity safety depends on keeping the greatest weight of your personal and camping gear equipment in the longitudinal center of the complete unit at the lowest plane possible within the unit. It is that simple.

We are required by Federal statutes to furnish all our customers with information on the center of gravity of your Born Free Unit. Included with your owner's kit is an "empty Weight" center of gravity information. Since center of gravity varies so much with each unit "situation" each combination of truck and Born Free unit must be handled on an individual basis.

FEDERAL MOTOR VEHICLE SAFETY STANDARD No. 126 S 5 1.2(b):

"A list of other additional or optional equipment that the camper is designed to carry and the maximum weight of each of its weight if more than 20 pounds when installed is required by Federal Statute."

OPTIONAL EQUIPMENT

Air Conditioner	121 pounds
Generator	190 pounds
Extra Water Storage Tank (full)	156 pounds
(9.5 gallons)	

WEIGHTS OF RV SUPPLIES AND EQUIPMENT

(For use in estimating realistic camper loads)

CAMPER AND MISCELLANEOUS GEAR

CAMPER AND MISCELLANEOUS GEAR (continued)

ITEM	WEIGHT IN POUNDS
Air Mattress	5
Aluminum Camp Cot	7
Aluminum Camp Cot w/Mattress	22
Army Cot	15
Auto Hand Vacuum	5
Ax	3 - 6
Battery	37 - 50
Battery Box (for boat)	3
Battery Charger	10
Bicycle	45
Binoculars	1-1/2 - 5
Booster Air Shocks	14
Broom	2
Bucket/Wastebasket	3
Camera	3
Camera Outfit, Polaroid	7
Camp Folding Stool	1
Camp Folding Table	16
Camp Stove	18
Camper Fan	4
Camper Fold-away Steps	18 - 19
Camper Generator, 1100 Watt	70
Camper Stabilizer	5
Camper Sundeck & Ladder	19
Canopy	18
Canteen (2-quart)	1
Catalytic Heater	8
Chain Saw & Case	16
Charcoal	10
Charcoal Fluid Igniter	1
Chess/Checkers/Games	1
Clothes Line (50 feet)	1-1/2
Clothes Pine (package)	1/2
Compass	1/4
Double Bass Drum Set (15 pc.) with cases	110
Electric Cable (100 feet)	10
Electric Fan 12"	10
Envelope/Rampe	1/4
Extension Rear Bumper	125
Extinguisher	5 - 11
Film, 4 rolls	1
First Aid Kit	5
Flag/Reflector Kit	7
Flare	1/2
Flashlight	1
Floor Mats	11
Front Tire Carrier	7
Funnel (water, fuel)	1/2
Gas Lantern	6
Gas Stove (2 burner)	11
Gasoline Emergency Can (5 gal.)	11
Grease Gun and Grease	14 - 15
Ground Cloth	1
Guide Book	2
Hammer	1 - 2
Hand Saw	2 - 3
Hand Spotlight	2
Hatchet	2 - 3
Hiking Pack	3
Insect Fogger	7
Inverter, 12-volt	13
Iron	2-1/2 - 4
Ironing Board (portable)	2
Jack	10 - 15
Lantern	6
Laundry Bag	1
Level	1
Map (8)	1
Meas Kit (aluminum)	2
Mosquito Repellent (can)	1 1/2

ITEM	WEIGHT IN POUNDS
Movie Camera (8 mm)	4 - 8
Oil Paints	5 - 11
Osseel	8
Padlock & Chain	1
Picnic Blanket	3
Playing Cards (3 decks)	1/2
Portable Toilet	20 - 30
Power Intercom	4
Propane (20 gal. bottle)	45
Propane Cylinders (disposable)	3
Radio, 2-way, 8-watt	7 - 8
Radio, portable	6 - 16
Refrigerator	100
Rope (100 ft., 5/8")	14
Roof Top Camper Air Conditioner	150
Sewer & Water Hook-up Kit	10
Sewing Machine	20 - 50
Shovel	4 - 5
Shovel (folding)	3
Spare Oil (10 quart can)	20
Stake Pocket Camper Hold-Down (2)	9
Stereo Tape Player	10
Swing-Out Spare Tire Carrier	17
Tape Recorder	4 - 20
Tarp (10' x 12')	20
Television, Battery-Powered	10
Television, Portable B/W	20
Television, Portable Color	61 - 76
Test, pop	12
Test, large	70 - 80
Tire Chain Kit	3
Tire Gauge	1/2
Tire Iron	4
Tire Repair Kit	4 ea.
Thermos (1 quart steel)	3-1/2
Thermos (2 quart, plastic)	5
Tool Kit (45 piece mechanic)	15 - 21
Trailer, Cycle	225
Trailer, Tent	425 - 532
Trailer, Utility 1/4 ton	150
Travel Information	1/4
Trunk Washing Brush	2
Tune-up Kit	20
Two-Buller Case	11
Typewriter	11 - 24
Umbrella	2
Vacuum	10 - 24
Water Heater	65
Water Purification Tablets	1/4
Water/Tire Pump	6
Week-end Case	7
Writing Pad	1/4

CLOTHING

ITEM	WEIGHT IN POUNDS
Blouse, shirt	1-1/2
Coat, lined	4
Culotte	3/4
Dress, skirt	3/4
Jacket, lined	2-4/2
Jeans, slacks	1 - 2
Pajamas	1
Raincoat	2 - 4
Shoes	1 - 3
Shorts	1/2 - 3/4
Sunglasses	1/4
Sweater	1
Sweatshirt & Pullover	1-1/2
Windbreaker	3/4

SPORT ITEMS

ITEM	WEIGHT IN POUNDS
Anchor (boots up to 14 ft.)	30
Beach-V Aluminum Boat	118 - 227
Boat Trailer	132 - 240
Cannon (aluminum)	85 - 75
Fishing Boat (fiberglass)	125
Fishing Kit with light tackle box	8
Fishing Motor (electric)	2 - 25
Jon Boats (10-14 ft. aluminum)	62 - 250
Outboard Motors up to 5 1/2 h.p.	42 - 54
Remote Gas Tank (for boat)	5
Rubber Boat (2 persons)	55
Rubber Boat (2 persons)	15
Safety Vest (adult)	2
Safety Vest (child)	2
Tackle Box (large)	5
Oars	10
Cartridges (20)	2
Deck Decoys	5
Gun Case	2
Gun Cleaning Kit	2
Roasting Box	4
Arrows (4)	1
Hunting Knife	8 ea. - 14
Knife (No. 94)	7 - 12
Scope	1
Rifles	8
Shotgun shells (2)	1
Golf Bag	8 - 12
Golf Cart	18
Golf Irons (8)	11
Golf Set (nickel)	11
Golf Woods (4)	7
Pat./Ball/Glove	4
Boats	2 - 5
Misc. Bites	84 - 170
Scuba Gear (with tank)	71
Skates	2 - 4
Snow Skies, Bindings, Boots & Poles	22 - 27
Water Skies	15 - 18
Tennis Rackets with Cover, Press, Balls	2
Pool Table (8-foot)	208

BASIC KITCHEN ITEMS

ITEM	WEIGHT IN POUNDS
Abrasive Pads (package)	1/4
Bags, Disposable (package)	1-1/2
Baths/Rack (plastic)	2
Bottle Opener	1/4
Can Opener (crank)	1
Coffee Pot	1 - 2
Cookbook	2
Cookware Set (8-piece aluminum)	11
Cookware Set (8-piece stainless steel)	18
Cooler (65-quart)	18
Cups, Disposable (40)	2/4
Cutter Board	1-1/2
Dinnerware (45 pc. plastic)	18
Desk Cloth (12" x 12")	1/8
Desk Towel	1/4
Dishes (12-piece for 8)	40 - 50
Foil (cooking)	1/2
Fry Pan/Skillet (12")	12
Glasses (8 plastic)	1-3/4
Jello Container (plastic)	1/2
Knives (Kitchen)	1-1/4
Machete (carton)	1/2
Mixer (portable)	2 - 5
Oven-Broiler	10 - 18
Plate Scraper	1/4
Plates (40 Disposable)	1/2
Pots & Pans (12 pieces)	14
Pot Holders	1/2
Soap/Detergent (box)	1
Spatula/Pancake Turner	1/2
Sponges	1/4
Striving Spoon	1/4
Table Covering (plastic)	1/2
Tablewear (50 pc. stainless)	2
Thermos (1 gallon aluminum)	4
Toaster	1 - 2
Tongs	1/2
Toweling, Paper (per roll)	2/4
Trunk Caddy	2

BASIC OUTFIT
FOOD AND BEVERAGE
CHECKLIST

ITEM	WEIGHT IN POUNDS
Apple (large)	1/2
Beacon/Beausage	1
Baking Soda (box)	1
Beans (large)	1/2
Beverage (can)	1
Bread	1
Breakfast Cereal (box)	1/2
Butter/Margarine (carton)	1
Catnap (bottle)	2-1/4
Chili (can)	1-1/4
Coons	1-1/4
Coffee (1 lb.)	1
Cookies (package)	1
Cooking Oil (quart)	1-1/2
Coronet Beef Ham (can)	1-1/4
Crackers	1
Egg (fresh or hardboiled)	1/8
Flour/Pancake Mix (box)	1
Fruit (1 lb. can)	2-1/4
Fruit Juice (can)	1
Jelly/Jam	1-1/4
Macaroni/Ragoutti (can)	2-1/4
Milk (dryed)	1-1/4
Milk (steril. carton)	1
Mustard (bottle)	1-1/4
Napkins (package)	1/4
Olives (jar)	1
Orange (fresh, large)	1/2
Peanut Butter	1-1/4
Pickles (jar)	1
Pork & Beans (lb. can)	2-1/4
Potatoes/Rice	4
Poultry/Meat/Fish	4
Salt Dressing	1-1/4
Salt & Pepper (measures)	1/2
Soup (can, condensed)	2/4
Spam (can)	1
Spices (assortment)	1
Stew (can)	1-1/4
Sugar (box)	1
Syrup	1
Tea (box of bags)	1/4
Vegetables (lb. can)	1-1/4
Vegetables (fresh)	1-1/2
Water (per gallon)	8.4

BATHROOM SUPPLIES

ITEM	WEIGHT IN POUNDS
Bath Cap	1/4
Bath Towel (22" x 34")	2/4
Chemicals (bottle)	1
Cosmetic Case	8
Facial Tissue (box)	2/4
Hand Mirror	1
Hand Soap (bar)	1/4
Hand Towel (12" x 22")	1/2
Shampoo (bottle)	1/4
Shaving Cream (can)	1
Shaving Kit	2
Sponges	1/4
Sticks Oil	1/4
Toilet Paper (roll)	1/2
Toothbrush Holder	1/4
Toothbrush & Toothpaste (tube)	2/8
Wash Cloth (12" x 12")	1/8

BEDDING

ITEM	WEIGHT IN POUNDS
Blanket (wets)	2 - 5
Pillow	1 - 2
Pillowcase	1/2
Sheet, Disposable	10 ea.
Sheet, twin	1 - 2
Sleeping Bag (cold weather)	12
Sleeping Bag (double)	18

CAMPER AND MISCELLANEOUS GEAR

ITEM	WEIGHT IN POUNDS
Air Mattress	5
Aluminum Camp Cot	7
Aluminum Camp Cot w/Mattress	23
Army Cot	15
Auto Band Vacuum	5
Ax	3 - 8
Battery	37 - 50
Battery Box (for boat)	3
Battery Charger	10
Bicycle	45
Biscuitaire	1-1/2 - 3
Booster Air Shocks	14
Broom	2
Bucket/Wastebasket	2
Camera	3
Camera Outfit, Polaroid	7
Camp Folding Stool	1
Camp Folding Table	16
Camp Stove	18
Camper Fan	4
Camper Fold-away Sees	18 - 19
Camper Generator, 1100 Watt	70
Camper Stabilizer	8
Camper Sundeck & Ladder	19
Canopy	18
Cans (2-quart)	1
Catalytic Heater	8
Chain Saw & Case	18
Charcoal	18
Charcoal Fluid Igniter	1
Chess/Checkers/Games	1
Clothes Line (50 foot)	5-1/2
Clothes Pins (package)	1/2
Compass	1/4
Double Bass Drum Set (15 pc.) with cases	115
Electric Cable (100 feet)	10
Electric Fan 12"	10
Envelopes/Stamp	1/4
Extension Rear Bumper	123
Extinguisher	5 - 17
Film, 4 rolls	1
First Aid Kit	3
Flag/Reflector Kit	7
Flare	1/2
Flashlight	1
Floor Mats	13
Front Tire Carrier	7
Funnel (water, fuel)	1/2
Gas Lantern	8
Gas Stove (2 burner)	13
Gasoline Emergency Can (5 gal.)	11
Grease Gun and Grease	14 - 15
Ground Cloth	1
Guide Book	2
Hammer	1 - 2
Hand Saw	2 - 3
Hand Spotlight	2
Hatchet	2 - 3
Hiking Pack	3
Insect Fogger	7
Inverter, 12-volt	13
Iron	3-1/2 - 4
Ironing Board (portable)	2
Jack	10 - 15
Lantern	8
Laundry Bag	1
Lever	1
Map (R)	1
Meas Kit (aluminum)	2
Mosquito Repellent (can)	1 1/2

CAMPER AND MISCELLANEOUS GEAR (continued)

ITEM	WEIGHT IN POUNDS
Movie Camera (8 mm)	4 - 8
Oil Paints	3 - 11
Isabel	8
Padlock & Chain	1
Plastic Blanket	3
Playing Cards (3 decks)	1/2
Portable Toilet	20 - 25
Power Inverter	4
Propane (20 gal. bottle)	65
Propane Cylinders (disposable)	3
Rack, 3-way, 6-watt	7 - 8
Radio, portable	4 - 12
Refrigerator	100
Rope (100 ft., 1/2")	14
Roof Top Camper Air Conditioner	150
Sewer & Water Hook-up Kit	10
Sewing Machine	20 - 50
Shovel	4 - 5
Shovel (folding)	3
Spare Oil (16 quart can)	20
Spare Pocket Camper Hold-Downs (2)	9
Stereo Tape Player	10
Swing-Out Spare Tire Carrier	17
Tape Recorder	4 - 20
Tarp (10' x 12')	20
Television, Battery-Powered	10
Television, Portable B/W	20
Television, Portable Color	21 - 75
Tent, pop	12
Tent, large	70 - 80
Tire Chain Kit	3
Tire Gauge	1/2
Tire Iron	4
Tire Repair Kit	4 ea.
Thermos (1 quart steel)	3-1/2
Thermos (2 quart, plastic)	5
Tool Kit (85 piece mechanic)	15 - 21
Trailer, Cycle	330
Trailer - Tent	425 - 532
Trailer, Utility 1/4 ton	190
Travel Information	1/4
Trunk Washing Brush	3
Tune-up Kit	20
Two-Bulb Case	11
Typewriter	11 - 24
Umbrella	3
Vacuum	10 - 24
Water Heater	68
Water Purification Tablets	1/4
Water/Tire Pump	5
Week-end Case	7
Writing Pad	1/4

CLOTHING

ITEM	WEIGHT IN POUNDS
Blouse, shirt	1-1/2
Coat, hood	4
Culotte	3/4
Dress, skirt	3/4
Jacket, hood	2-1/2
Jeans, Slacks	1 - 3
Pyjamas	1
Haircoat	3 - 4
Shoes	1 - 3
Shorts	1/2 - 3/4
Sunglasses	1/4
Sweater	1
Sweatshirt & Pullover	1-1/2
Windbreaker	3/4

Furnished Courtesy of Recreational Vehicle Institute

THE RECREATIONAL VEHICLE INSTITUTE:

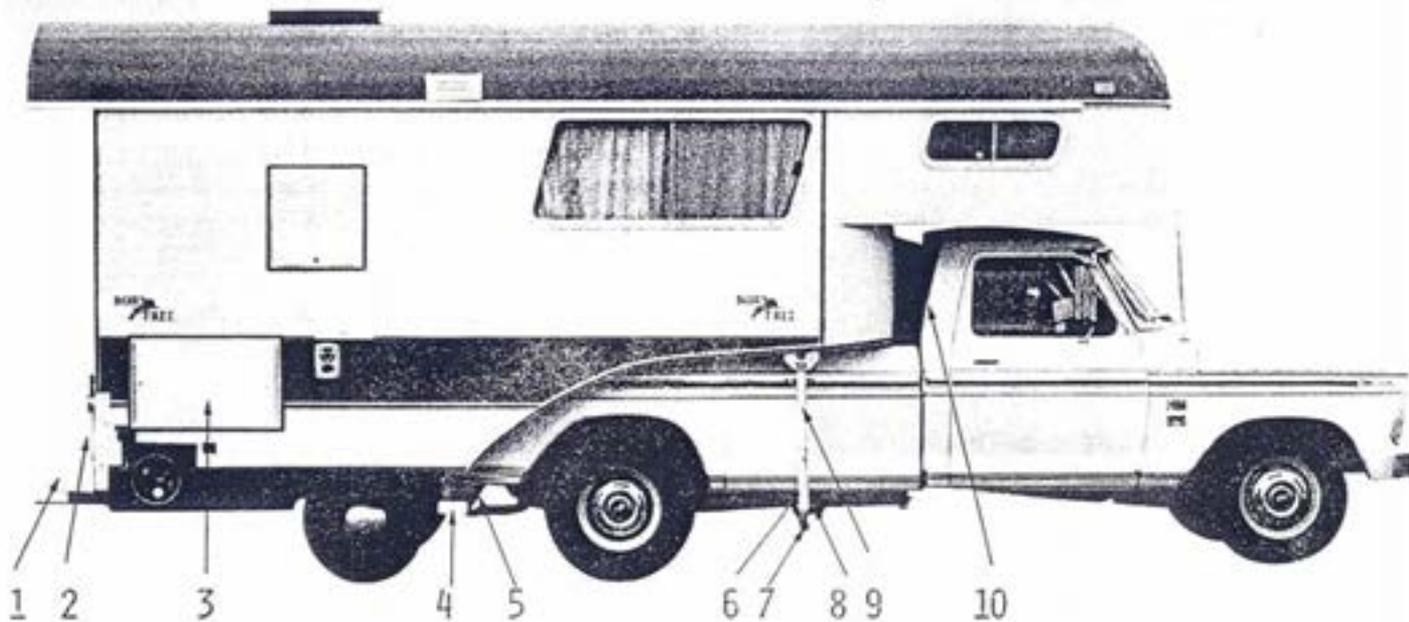
The Recreational Vehicle Institute is a national trade organization serving all its members within the Continental United States. Like other trade associations it is a non-profit organization dedicated to preserving and promulgating the standards of safety for the enjoyment and convenience of all recreational vehicle owners within the area of its influence. We adhere to the disciplines recommended by the RVI because it is in tune with all state and federal agencies that not only affect Dodgen Industries, Inc. as a profit making organization but gives us guide lines to serve the industry and the final consumer in the best representative manner. Another way of saying it is that the RVI insures that a continuity of understanding of what is expected of Dodgen Industries, Inc. in the area of being a responsible group of business people in the industry as a whole.

We belong to other trade associations such as the Indiana Mobile Home Association (IMHA), the Pennsylvania Recreational Vehicle and Camping Association (PRVCA), Texas Recreational Vehicle Association and the Trailer Coach Association (TCA). It is our intent to join other state associations as they become organized to represent qualified dealers and RV owners within the various states. The RVI, the TCA on a wide area basis and the state associations on a more local basis represent a sounding board by which we determine what real and potential owners of recreational vehicle owners desire.

We know of no product being produced in our time that is perfect and free from defects. We as a member of a young, vigorous and growing industry pledge that we will on a reasonable level of technical ability and standards imposed or suggested by others to produce a safe and enjoyable product for your use.

MAINTENANCE OF THE BORN FREE

- GENERAL MAINTENANCE TIPS
- BORN FREE THIRD AXLE
- FLOOR CARE
- CARE OF WALLS AND CEILINGS
- CARE OF UPHOLSTERY, CUSHIONS AND DRAPES
- CARE OF BATTERY
- CLEANING REFRIGERATOR
- WINTER PROTECTION



1. REAR BUMPER AND STEP
2. REAR JACK
3. STORAGE COMPARTMENT
4. SPECIAL TRUCK BUMPER
5. TAPERED INSERT ON TAG AXLE
6. JACK EXTENSION TUBE
7. CROSS TUBE
8. PULL PIN AND SAFETY PIN
9. FRONT JACK
10. TRUCK TO COACH BOOT

GENERAL MAINTENANCE TIPS:

This Owner's Manual is designed to provide you with the necessary information to operate your Born Free motor coach and all of its appliances. When you took delivery, your Born Free dealer explained most of these things to you. However, one often does not remember all of these items covered in one short session, and this booklet should provide that information again which you can refer to as often as necessary.

If all of the steps in this booklet are followed and you still have trouble, we suggest you contact your Born Free dealer for service. We have not recommended any major repairs which can be done in the field. To have done so would take a book many times this size and would not have helped the camper who would need parts to make repairs.

New owners are sometimes confused by RV refrigerators when they are operated on electricity. All absorption refrigerators operate from the principle of heat causing the movement and circulation of liquids and gases within the cooling unit. In the case of LP Gas, the heat is from a flame, and in both 12 volt DC and 110 volt AC operation, an electric heating element produces the necessary heat. Operation is silent and no motor or compressor can be heard running as on a home type refrigerator.

When placing the unit in operation of either electrical mode, it will be necessary to wait an hour or two to ascertain that it is operating and is cooling down. Check that the refrigerator is actually plugged into the receptacles located on the wall in back of the unit. This check will probably need to be done only once, but unfortunately, it is often overlooked the first time.

If you should have an accident and some part of your coach exterior is damaged or punctured, cover the hole with duct tape to keep the moisture out of it until permanent repairs can be made.

Make sure that you carry a tool kit. Even though you will not be making major repairs, there are small tasks which crop up that could cause a delay or waste some of your valuable vacation time. The following is a list of items your tool kit should include. You will no doubt find other items which you will want to add.

- Screw drivers - large and small sizes of regular, Philips and clutch head
- Pliers - side cutters, long nose, and regular gas pliers
- Open end wrenches - all sizes by 1/16 to 9/16 and 1/8 up to 1 inch
- Flash light
- Electrical test light - 12 volt type
- Large crescent wrench
- Electrical tape
- Duct tape - 2 inch size - don't leave home without it, it is handy for everything
- LP Gas leak detector solution
- Automotive type fuses - all sizes which are used in the motor coach
- Pig tail connector
- Safety flares
- Reflector triangle
- First Aid Kit
- Fire extinguisher

BORN FREE THIRD AXLE MAINTENANCE:

The vital points of your Born Free third axle are not in the steel frame work and other supporting members as important as they are as much as bearings and the grease associated with their proper maintenance, the wheel lugs and their snugness to each wheel and the electric brakes with their proper alignment for maximum security. After approximately 50 miles have been driven check the snugness of wheel lugs. After 100 miles check all mounting bolts to make certain they are snug and recheck wheel lug bolts at this point also. It is our intent to make certain that these precautions are handled before we put you on the road with the security of the third axle. Pack wheel bearing every 10,000 miles. Watch tires for excessive wear inside or outside of tread. Report to your dealer if any such excessive wear occurs.

FLOOR CARE:

The kitchen floor is maintained very much like your kitchen floor at home except that camping and beach sites will probably track in more sand and grit. A cocoa door mat or rug on the rear step of the coach will catch some of that grit before it can be brought in on the floor. Keep the floor waxed with any good product that you have found suitable for use at home.

Your living room floor is carpeted with the finest shag carpeting on the market. Dirt is its worst enemy and the vacuum sweeper its best friend. After every outing, use the vacuum sweeper to be sure that the carpet pile gets a thorough cleaning. Carry a good broom as part of your motor coach equipment and sweep the rug and kitchen floor every day.

WALLS AND CEILINGS:

The wall paneling and ceiling of your Born Free are vinyl-clad. A mild solution of warm soapy water will keep them clean or any liquid or spray cleaner which is specified for vinyl will insure that they will always have that "like new" look. There are many such products on the market today and you probably already have a favorite which you use at home.

Never use abrasives, solvents, strong soap or hot water.

UPHOLSTERY, CUSHIONS AND DRAPES:

Vacuum your upholstery, cushions and drapes as regularly as you do the carpet. When they need a more thorough cleaning, they should be sent to a dry cleaner. Zippers are built into all cushions so that covers can be removed for this purpose. Peg Board is used under all cushions and mattresses to provide air circulation and protect against mildew. Remove all cushions and mattresses regularly and vacuum under them.

CARE OF BATTERY:

Check battery water level before every trip, and at least once a week during actual use. If the motor coach is stored for the winter, remove the battery(s) from its carrier and store it in a place that is cool, but above freezing. Even when idle, the battery(s) will discharge from chemical action and should be recharged about once a month. Do not connect it to a charger and leave for the winter as the danger of overcharging is too great. If this happens, the water will be boiled out and after they dry out, the plates will buckle.

CLEANING THE REFRIGERATOR:

When returning from a trip, turn the refrigerator off and remove all contents. Wash the interior lining of the cabinet with detergent and water. The evaporator, ice trays and shelves must however, be cleaned with warm water only. Never use strong chemicals or abrasives to clean these parts or the protective surface will be spoiled. After the cleaning job is completed, the cabinet doors must be propped open long enough to allow the refrigerator cabinet to dry out thoroughly.

If the door of the cabinet is allowed to close before the interior has dried out, mildew will form inside the box when it is not in use. If this should happen, wash again with a luke warm weak solution of water and baking soda to remove the mildew.

WINTER PROTECTION:

Each year more travelers discover winter camping. Some experts predict that eventually year round use of recreational vehicles will be enjoyed by all. With your new Born Free motor coach, you don't have to wait until then, you are ready now. The coach is built with adequate insulation, ventilation, and construction practices that can keep you as warm in the winter as in the summer, as long as the furnace is operating.

The only additional precautions necessary for you to take are to add anti freeze to the holding tank and sink drains. The low cost ethylene glycol types which are used in automobiles are suitable for protection of your holding tanks but are not safe for your potable water supply. These anti freezes can be bought at gasoline stations and discount stores everywhere.

If you choose to store your motor coach during the winter months and for the periods in between use in that season, protection has to be provided for the water and drains systems. There are drain pet cocks located underneath the kitchen sink which are accessible after removal of a piece of peg board. More drain outlets are located behind the bathroom unit wall and are accessible by opening the narrow cabinet doors.

The water heater can be emptied by opening its drain valve, and the pressure relief valve at the top of the tank to allow air to enter. During the draining process, the water pump switch has to be turned off and all hot and cold water faucets opened.

Even though adequate drainage is provided, it does not always insure 100% positive protection. A low spot caused by the coach not being quite level can retain enough water to freeze and burst a pipe. The water pump itself is difficult to protect unless it is removed from the coach and traps on sink and shower drains are difficult to protect as they are not all accessible.

A new type anti freeze was developed about three years ago which does provide positive protection down to 40° below zero. This anti freeze is non toxic and certified safe for use in potable water tanks and lines during storage. It can be quickly rinsed out when the coach is ready to be used again. Several brands are available and your Born Free dealer can service your motor coach with one of them for you. If you prefer to do the job yourself, he can sell you a product to use that includes complete instructions. We highly recommend the use of these anti freezes as their cost is only a fraction of a possible repair bill which could result from a freeze up problem.

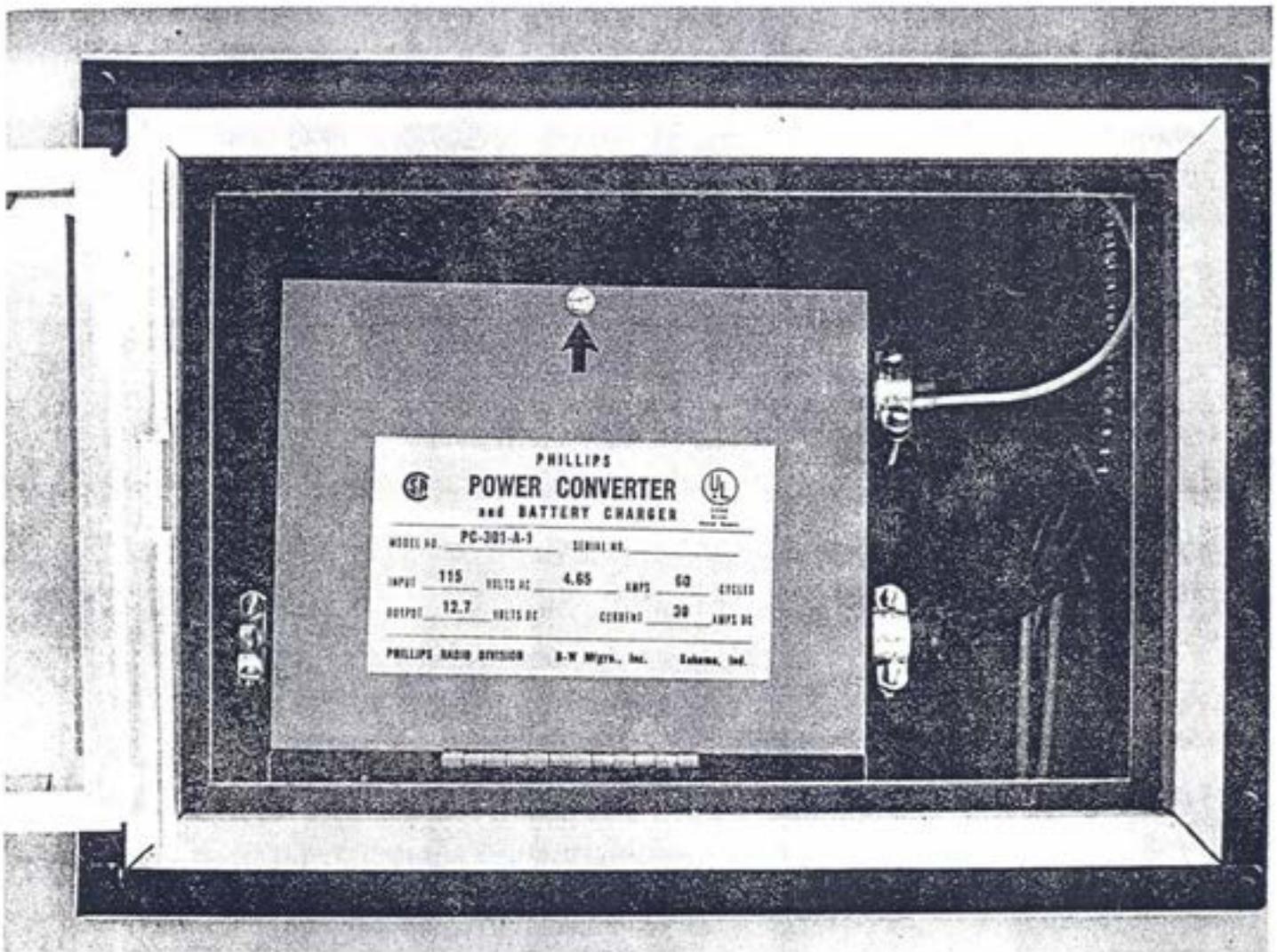
APPLIANCE MAINTENANCE:

In general maintenance on all appliances should be handled as described in the individual manufacturer's operations manual furnished in a kit with other manufacturer's operations manuals. By adhering to the manufacturer's instructions you will not only add to the life of the appliances but if and when a warranty adjustment becomes necessary your chances for an equitable adjustment are more favorable. While all warranty adjustments are made direct with the suppliers we pledge our support in assisting you obtain prompt and efficient service and suggest that you call Humboldt office for any and all claims.

SYSTEMS

HEATING, PLUMBING AND ELECTRICAL

- POWER CONVERTER
- ELECTRICAL WIRING
 - 110 Volt System
 - 12 Volt System
- AIR CONDITIONER
- LP GAS SYSTEM
- FURNACE
- REFRIGERATOR
- HOT WATER HEATER
- RANGE AND OVEN
- WATER SYSTEM



POWER CONVERTER:

The power converter is a recent development which is designed to provide 12 volt DC power directly without depleting battery supplies, when commercial power is available at a campsite. Since all appliances and lights operate on 12 volt DC, the coach battery would run down even when AC power was available unless some means of recharging the battery could be found.

The power converter takes 110 volt AC, converts it to 12 volt and rectifies it to DC current. It supplies this DC directly to the appliance and lighting circuits in the motor coach. It also contains a battery charger to keep the battery(s) up to a full charge. The converter plays no part in the operation of the coach unless 110 AC power is available. When connected to such a source, a relay built into the converter places it in the circuit and all power is drawn from it instead of the battery(s).

ELECTRICAL SYSTEM:

DUAL BATTERY SYSTEM:

The main source of power used in your Born Free and all recreational vehicles today is 12 volt DC power. It will operate all of the lights and appliances in your motor coach except the roof top air conditioner.

We derive this power from automotive type storage batteries. The coach is equipped with its own battery(s) which is located on the curb side of the vehicle behind an access door. This battery(s) is separated from the truck battery during all camping situations but is connected to the truck battery when the ignition switch for the truck is turned on. This operation is under control of an electronic relay located in the engine compartment of the truck. Its purpose is to isolate the truck battery so that it will always be charged up ready to start the engine and provides no power to the motor coach. When the ignition switch is turned on and the engine is running, the truck generator (or alternator) will charge both truck and coach batteries.

If the coach battery becomes run down, start the truck engine and running it at fast idle for about twenty minutes, should charge the battery(s). While camping with the motor coach detached from the truck, the coach battery(s) can be charged by parking the truck next to the coach and plugging in the electrical connector, and running the truck engine as above.

NOTE: In an emergency, the ignition switch can be turned on to supply power from the truck battery to the motor coach. In doing so, it must be remembered that the truck battery would be run down if this practice was continued for very long. You would then be unable to start the truck engine.

AC POWER:

Commercial 110 volt AC power, the same as we use in our homes, can also be utilized for camping. Modern campgrounds which are increasing in numbers each year, usually have AC available for us to plug into. We use this source to operate the refrigerator, air conditioner, and Power Converter. The electric cord is located on the outside of the coach on the drivers side in a receptacle just underneath the city water connection. It is 25 feet long and can be pulled out far enough to reach the park power receptacle. Note that it is equipped with a three pronged 30 amp plug which will connect directly to a 30 amp receptacle. An adapter is provided to connect to regular 15 amp services.

The large round prong on this plug is a ground connection, and the adapter also has a matching ground terminal. If either of these prongs should ever break off, have the plug replaced immediately. Grounding the motor coach while connected to AC power is absolutely necessary for the protection and safety of you and your family. If the park power is only available in a 2-wire receptacle, use a pigtail connector and fasten the green pigtail to the center screw on the receptacle for grounding.

EXTENSION CORDS:

Occasionally we need extension cords to reach facilities which are farther away. These cords should always be three wire type to include the ground connection. There is a power loss, or voltage drop, when transmitting electricity and this requires a heavy conductor wire to compensate for it. Purchase cords of number 14 gauge wire as a minimum, and if you are equipped with an air conditioner, number 12 will be necessary.

It is far better to carry two extension cords of 25 feet in length than one 50 footer. The shorter cord will usually suffice, and if not, two can be used. It is a very poor practice to use an extension cord with part of it curled up in a coil, as this has an inductive effect that also reduces power. Therefore, use only the shortest cord needed for the job and spread out any surplus so that it is not wound together.

AC FUSE LOCATIONS:

The AC fuse box is located under the kitchen sink behind the left cabinet door. Circuit breakers are labeled to show which circuits they control.

DC FUSE LOCATIONS:

The converter is located behind an access door on the driver's side of the coach just to the rear of the city water and electrical cord connections. At the top of the power converter case is a screw which holds a hinged door closed. Removal of this screw allows the door to open, revealing fuses for all the DC circuits in the motor coach.

WHAT TO DO IF A FUSE BLOWS:

It will usually be found when a fuse blows or a circuit breaker trips, that it has happened just as some change has been placed on the electrical load, perhaps an appliance has been turned on or plugged into a wall receptacle. Turn off this appliance or remove the plug before resetting the circuit breaker or replacing the fuse. If it holds, check the offending appliance before attempting to use it again. The actual electrical load on that circuit should also be checked because it is possible that there is no trouble in that appliance except that it may present an overload to an already well used circuit.

AIR CONDITIONER:

The air conditioner will keep your motor coach cool in the warmest of climates. To operate it, you must have a source of 110 volt AC electric power. The five position control switch has two fan settings, two cool settings, plus off. The thermostat control regulates the amount of cooling.

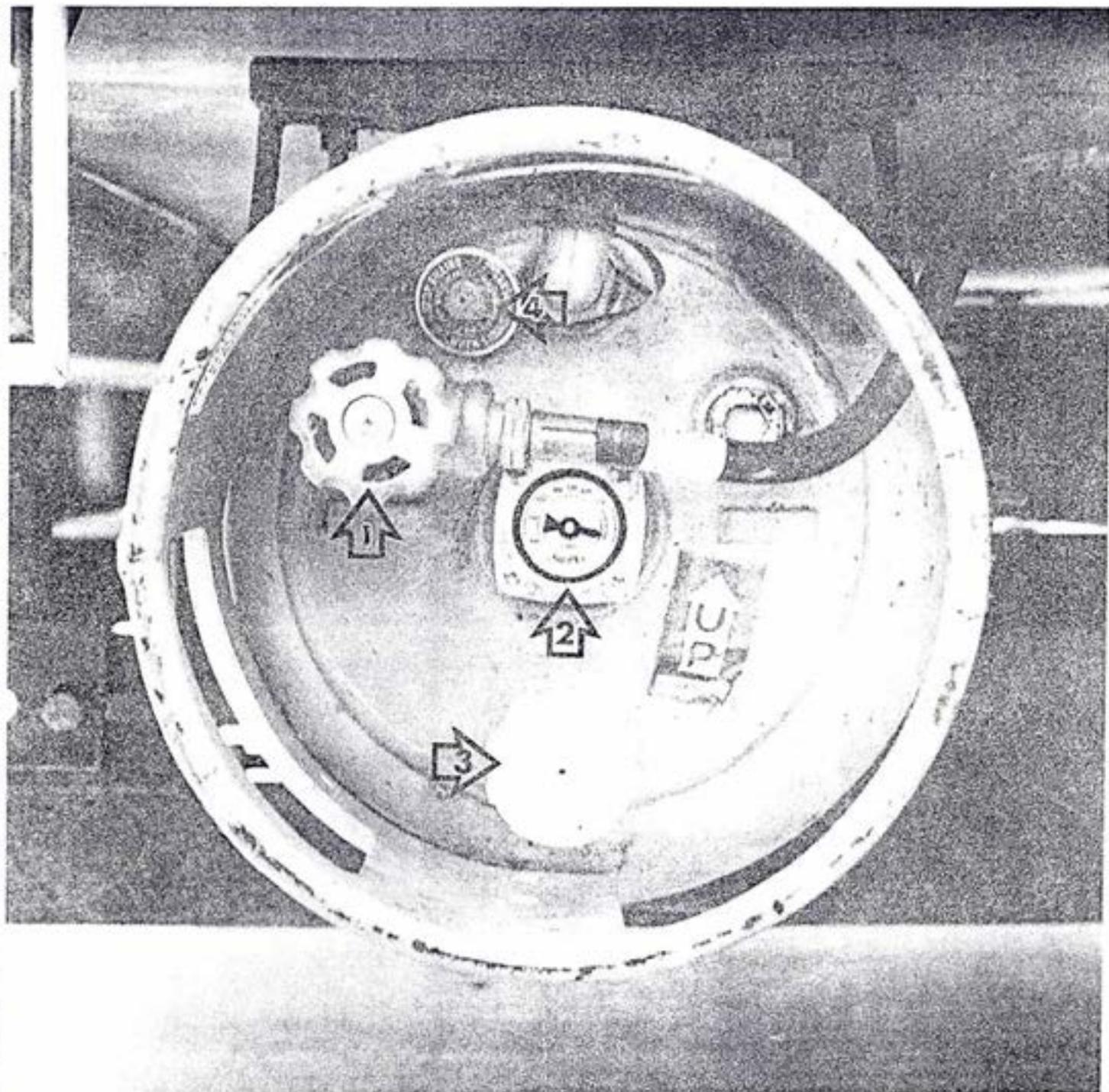
When entering the coach, turn the thermostat to its highest setting and the fan switch to High Cool. If it is unusually warm in the coach, open at least two windows slightly, but remember to close these windows as soon as the coach starts to cool down. After the temperature has reached a comfortable range, the thermostat can be reduced and the control switch changed to Low Cool to maintain that temperature.

In the winter time, the High Fan and Low Fan settings can be used to help circulate warm air from the furnace.

The center plate in the ceiling shroud can be removed to gain access for removing the air filter. It should be washed regularly in soap and water, dried out and reinstalled.

When using extension cords to obtain power for the air conditioner, be sure that they are three wire (grounded) cords and are made of at least No. 12 gauge wire.

In some campgrounds you may find difficulty in running the air conditioner because of low voltage. If it starts and stops frequently or blows fuses in the park line, check the voltage of their AC supply. If it is low, consult the campground manager about moving to a site that has a higher voltage.



BUILT-IN LP GAS TANK

1. SHUT OFF VALVE
2. FUEL LEVEL GAUGE
3. FILLER CONNECTION
4. 10% VALVE (USED ONLY FOR FILLING)

LP GAS SYSTEM:

Liquefied Petroleum is used in recreational vehicles to provide a low cost portable fuel. It has the advantage of being able to carry a supply which will last a reasonable length of time in a relatively small space, and with complete safety. We use LP Gas to cook our food, heat our water, preserve our food with refrigeration, and to heat the coach.

Two types of LP are used, Butane and Propane. They are purchased in a liquid state and stored in a permanently mounted tank which is carried on the outside of the motor coach. Standard tank capacity is 40 pounds (11 gallons) and an optional tank of 60 pounds (16½ gallons) is available. The tanks are designed by law to be filled to a level of 80%, allowing a space for expansion and vapor. The withdrawal tube built into the tank reaches only into the vapor space, insuring that no liquid can be extracted from the tank and into the coach or appliances.

Both butane and propane change to a gaseous state when they reach their boiling temperatures, and this vapor or gas is what we burn in our appliances. Butane has the highest boiling point at 32° F, while propane boils at 40° below zero F. Butane, though slightly hotter fuel, will not vaporize at temperatures below 32° and cannot be used in cooler climates in the winter. It is often said that butane "freezes" at 32°, but this is not the case, it merely becomes inert and stays in a liquid state. The LP Gas that we buy at most areas is called propane, but is actually a combination of butane and propane.

LP Gas is safe to use but certain precautions need to be taken. A chemical is added to the odorless gas to provide a pungent odor for detection of leaks. Gas connections are made with copper tubing and a quick check of all fittings to insure tightness should be done once or twice per season, depending on how much the coach is used. It is a good plan to go through and paint the gas connections to identify them from water connections on the first time that the system is completely checked.

To locate a leak when the odor of gas is present, use a liquid solution to pinpoint the trouble spot. A small bottle of a prepared solution can be purchased from your Born Free dealer, or at a place where LP Gas is sold. In an emergency, you can make a thick solution using water and detergent. Daub either of these liquids on the gas connections with a paint brush or a rag. Allow time for bubbles to form before passing on to the next connection and add more liquid if necessary. Usually any leaks that are found will be in a connection rather than in the copper tubing itself.

When checking connections for tightness, use an open end wrench of the proper size on each side of the fitting in order to prevent twisting the tubing with the possibility of adding the very trouble which you are trying to prevent.

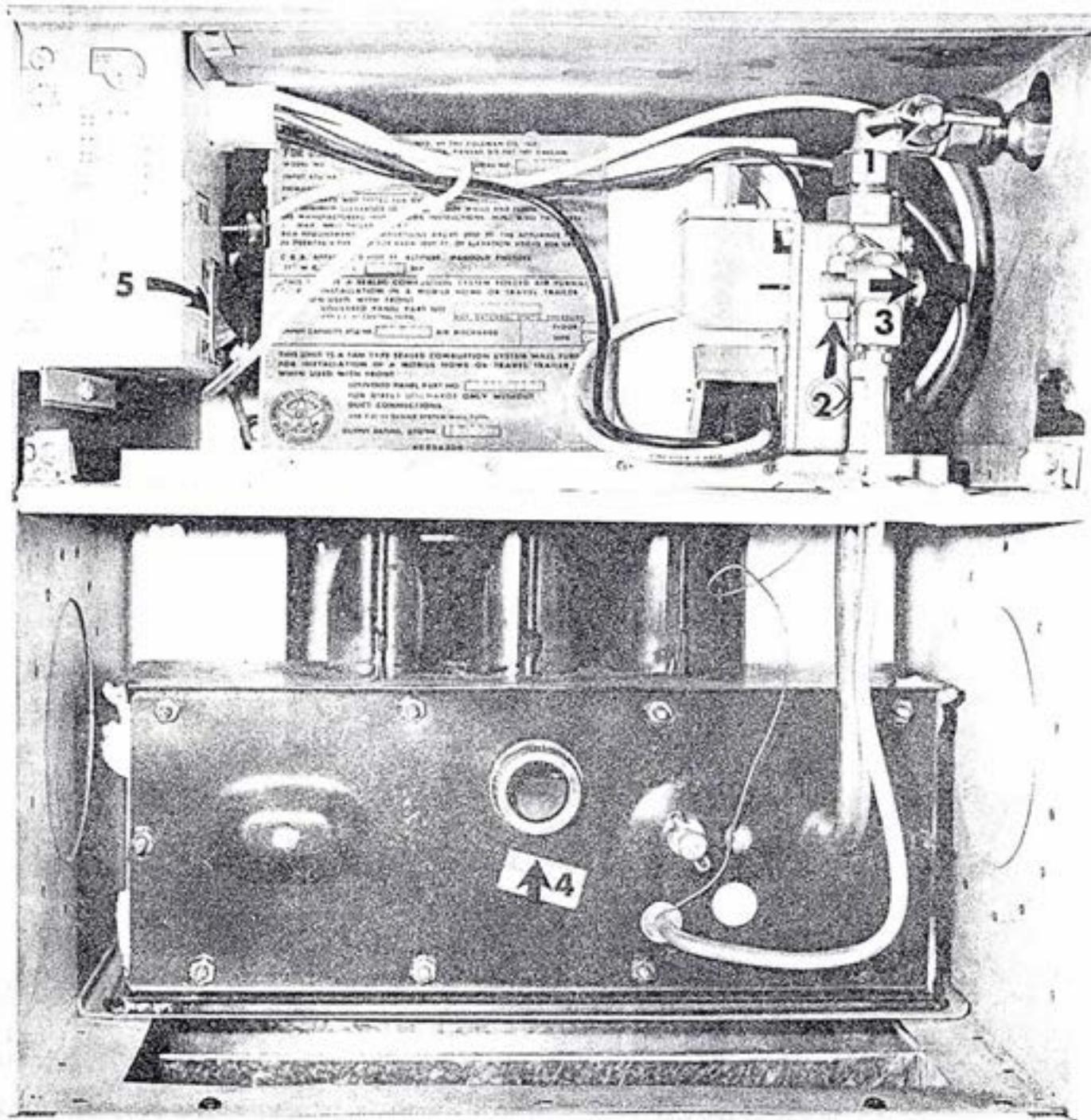
If tightening the connections does not stop the leak, replace the fittings. Never use pipe dope, sealants, or tape on brass flared connections.

REFILLING THE LP GAS TANK:

The LP Gas tank is equipped with a gauge which will show its contents in percentages of LP remaining in the tank. This gauge may be covered with a snap-on plastic cover. The tank must not be removed for filling, and it will be necessary to locate a LP Gas bulk plant or a service truck of the plant. LP Gas is not difficult to locate as rural areas depend on it for their total supply and even in small towns, bulk plants can be readily found by checking the telephone directory.

The shut-off valve must be turned off before entering the yard of a bulk plant or when stopping for gasoline at a regular service station. This is to extinguish all pilot lights within the coach and eliminate any possibility of fire.

NOTE: When having the tank filled for the first time, tell the dealer that it is a new tank and needs to be purged. This process takes only a few minutes and removes all moisture which may have accumulated inside the tank before use. Even small droplets can freeze into ice particles because of the cold temperature of the gas, and could damage the regulator diaphragm. Whenever the tank is empty or when returning home from a trip, turn off the LP gas at the tank shutoff to insure that no moisture can get inside.



FURNACE

1. MANUAL GAS VALVE
2. PILOT VALVE
3. PILOT BY PASS

4. SIGHT WINDOW
5. POWER SWITCH

FURNACE:

The furnace in your Born Free motor coach is a gas burning ducted heat model which will distribute heat throughout the coach and to the bathroom. It is controlled by a wall thermostat. It is equipped with an electric ignition and can also be lighted manually. Always remember, when the coach is not in use, have the furnace turned off, both at the gas valve and the thermostat so that the fan will not operate.

LIGHTING INSTRUCTIONS:

Electric Ignition:

1. Turn on gas at LP tank.
2. Set wall thermostat to Off.
3. Remove front louvred panel by turning knob $\frac{1}{2}$ turn, pulling up and out.
4. Set power switch (5) to type of electric service being used.
5. Turn manual valve (1) to Off (handle vertical), and wait five minutes.
6. Turn manual valve (1) and pilot valve (2) to On position (the manual valve is On when its handle is horizontal, the pilot valve is On when its handle is vertical. This can best be remembered by observing that gas valves are always on when positioned in line with the pipe which serves them.)
7. Depress Pilot By Pass red button (3) as far as possible. Glow coil can be observed through sight glass window (4).
8. Continue to hold in red button (3) for one minute after pilot flame is established. Release button, pilot should remain lit. If necessary, pilot adjustment can be made with screw in center of pilot valve.
9. Replace front louvred panel.
10. Set wall thermostat to desired setting.

Manual Ignition:

If ignition coil should become inoperative, the pilot may be lit manually with a match.

1. Repeat steps 1 - 6 above.
2. Remove sight glass window (4).
3. Attach match to lighter rod supplied with furnace.
4. Light match, insert into pilot area through window while depressing red button.
5. Hold red button for one minute after pilot is lit.
6. Replace sight glass window.
7. Replace front louvred panel.
8. Set wall thermostat to desired temperature.

FURNACE ADJUSTMENTS:

Since the pilot and main burner adjustments are preset at the factory, such field adjustments are normally not required. However, if some adjustment is deemed necessary, proceed as follows:

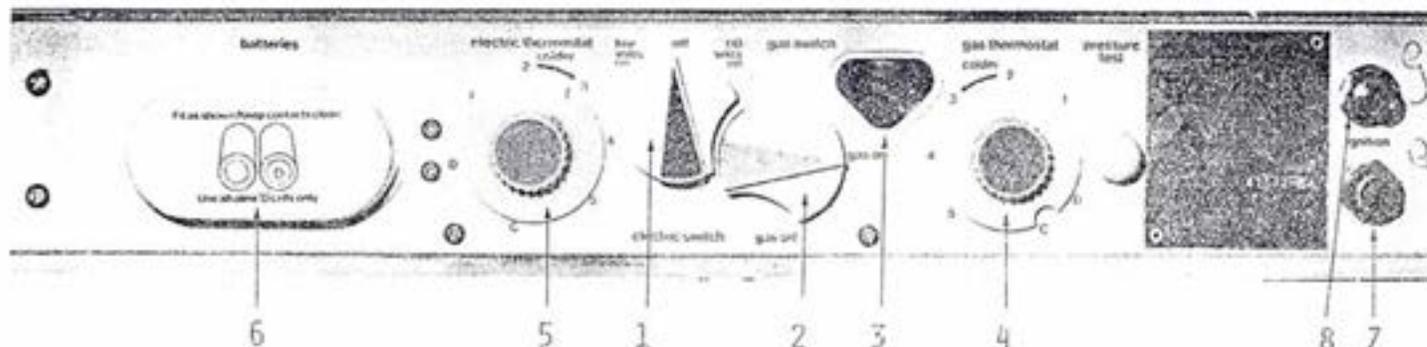
PILOT ADJUSTMENT:

When observed through the sight glass window, only the tip of the pilot can be seen and should be a soft blue color. The pilot flame can be adjusted by removing the cap screw from the center of the pilot valve and rotating the small screw inside. Counter clockwise turning will increase the flame size, and clockwise will reduce it. Do not set the pilot flame higher than is necessary to maintain the pilot.

MAIN BURNER ADJUSTMENT:

Adjust the main burner at the primary adjustment screw located on the burner plate just to the right of the sight glass window. Loosen the wing nut and turn the screw in or out as necessary for blue flame burner adjustment. A slight yellow tip on the flame is satisfactory.

If you have any difficulty with these adjustments, or any other service problems, consult your Born Free dealer.



FRIGIKING THREE-WAY REFRIGERATOR

- | | |
|--------------------|------------------------|
| 1. ELECTRIC SWITCH | 5. ELECTRIC THERMOSTAT |
| 2. GAS SWITCH | 6. BATTERY TRAY |
| 3. SIGHT WINDOW | 7. IGNITION BUTTON |
| 4. GAS THERMOSTAT | 8. PILOT BY PASS |

REFRIGERATOR:

The refrigerator should be started up a few hours before leaving on any trip or outing, 110 volt electric operation will probably serve best for this purpose. Pre-chill all food and beverages in the 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 inside by placing too great a load on it suddenly. An inexpensive refrigerator thermometer can be purchased in most any hardware store and will prove very valuable in monitoring the temperature inside the box.

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 causes the unit to be on both sides of level. Whenever the coach is stationary, do not dig a hole or trench to level up. Elevate the low side or corner by driving it up on a block of wood or use the jack to raise it. Experienced campers learn to carry a few short pieces of 2x4 or 2x6 lumber for this purpose, or leveling blocks can be purchased from your Born Free dealer.

DEFROSTING:

When the frozen food storage compartment and cooling bins are covered with frost, the refrigerator needs to be defrosted because operation is impaired. Turn off the cooling unit and allow the frost to melt. Ice trays can be filled with hot water to hasten this process. Do not attempt to chip the frost or ice off any part of the unit but allow it to melt.

Before the refrigerator is restarted, it should be completely dried out, the ice trays washed and refilled with fresh water. The drip tray must also be emptied, washed and dried.

THREE-WAY REFRIGERATOR:

The refrigerator will operate on LP Gas, 110 volt AC power, or 12 volt DC from your battery. While traveling along the highway, 12 volt DC is recommended as the alternator on the truck engine will produce enough power to keep batteries charged. If you park or camp at a location where 110 volt AC electric power is not available, LP Gas will be the best method of operation. In a park that has hook-ups, 110 volt AC should be used. The "low volts" (12 volt DC) should not be used for more than a few hours as this will create too severe a battery drain, and the battery will become run down.

OPERATING INSTRUCTIONS:

The battery tray (6) should be equipped with a pair of Alkaline D cells which are the size used in an ordinary flash light. Alkalines are recommended because they have a longer life, in fact, several times that of regular batteries. They are used only for lighting the pilot for LP Gas operation and are installed as shown on the cover, with one in each direction.

Note that the Electric Switch (1), and Gas Switch (2) are arranged so that both cannot be turned ON at the same time. This prevents operating on both modes simultaneously and seriously damaging the unit. Both of these switches have an arrow to point to their proper setting. The Gas and Electric Thermostats have a notch in their ring to denote their settings.

ELECTRIC OPERATION - LOW VOLTS:

1. Turn Gas Switch 2 to OFF.
2. Set Electric Thermostat (5) to position C (coldest).
3. Set Electric Switch (1) to Low Volts.
4. After refrigerator has had time to cool down, adjust Electric Thermostat to a lower setting which will maintain the desired cooling temperature.

NOTE: In Low Volts operation, the refrigerator is operating from 12 volt DC battery power. Do not operate in this position for long periods of time when the coach is stationary, or the battery will be depleted. Switch to LP operation.

ELECTRIC OPERATION - 110 VOLTS AC

1. Plug electric cord of coach into commercial power outlet.
2. Set Electric Switch (1) to 110 VOLTS ON.
3. Set Electric Thermostat (5) to position C (coldest).
4. After refrigerator has had time to cool down, adjust Electric Thermostat to a lower setting to maintain the desired cooling temperature.

LP GAS OPERATION:

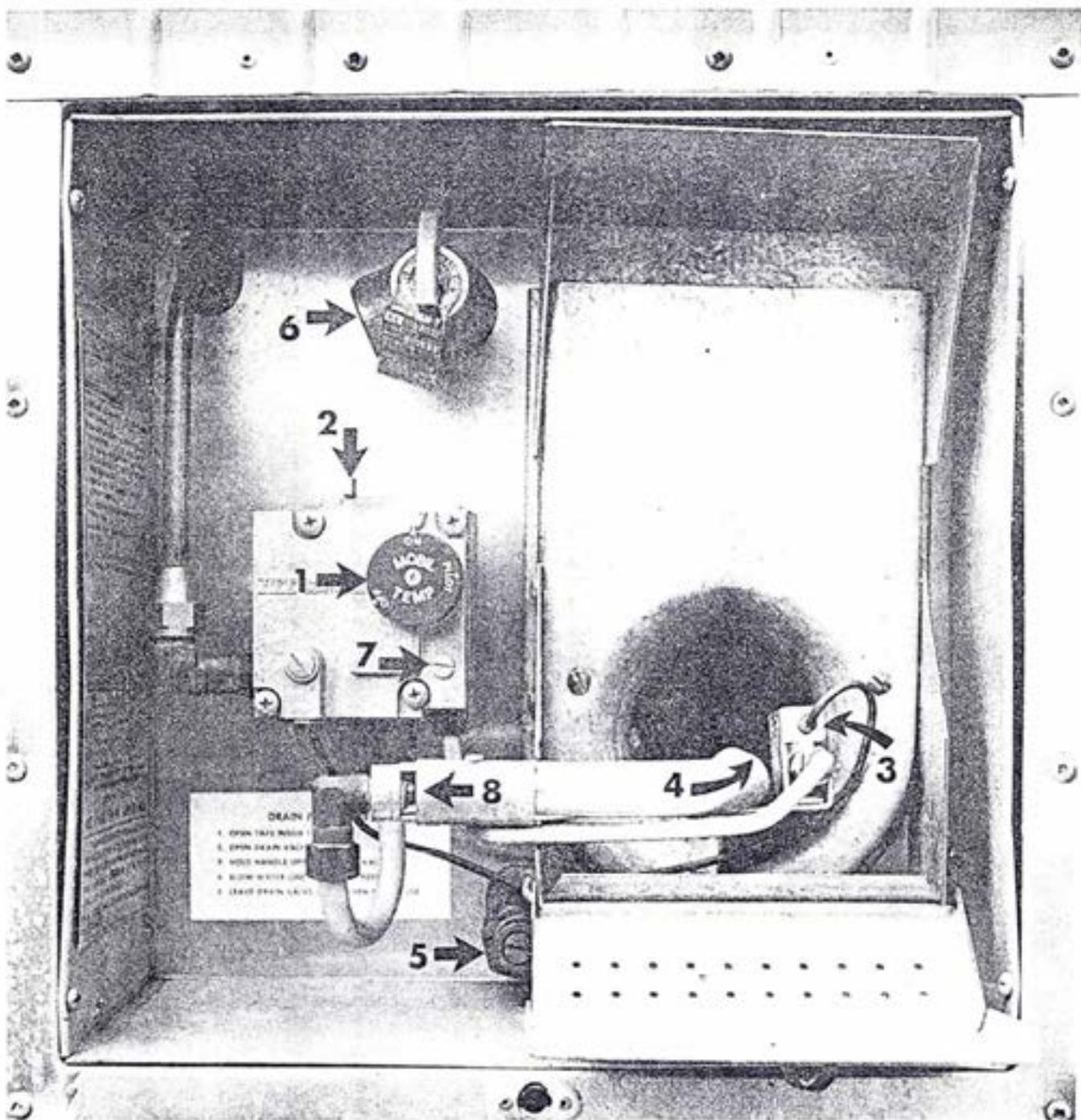
1. Turn on LP Gas at supply tank.
2. Turn Electric Switch (1) to OFF.
3. Turn Gas Switch (2) to on.
4. Set Gas Thermostat (4) to C (coldest).
5. Press Ignition Button (7) and Pilot By Pass (8). Hold both buttons in.
6. Look in Sight Window (3) and watch for pilot to light.
7. Release Ignition Button (7), holding Pilot By Pass (8) for an additional 15 seconds.
8. After refrigerator has had time to cool down, adjust Gas Thermostat (4) to a lower setting to maintain the desired cooling temperature.

If pilot fails to light, it could be due to air in the LP Gas line or dead batteries in the Ignition supply. Continuing to hold the pilot by pass will clear the air in 2 or 3 minutes. If pilot still fails to light, replace batteries, paying special attention to their proper mounting position.

TRAVEL LATCH:

A travel latch is built into the refrigerator door to prevent it from opening during transit. It is located on the outside lower corner of the door and is visible when it is opened.

Turn the latch to a vertical position for travel and horizontal while parked.



**MOBIL TEMP
HOT WATER HEATER**

- | | |
|---------------------------------|--------------------------|
| 1. MAIN GAS CONTROL | 5. DRAIN VALVE |
| 2. WATER TEMPERATURE THERMOSTAT | 6. PRESSURE RELIEF VALVE |
| 3. PILOT BURNER | 7. PILOT ADJUSTMENT |
| 4. MAIN BURNER | 8. AIR ADJUSTMENT |

HOT WATER HEATER:

Before you can light the hot water heater, it must first be filled with water. With the water pump switch on, open a hot water faucet to fill. The pump will push water into the heater tank and the air will escape from the hot water faucet. A steady flow of water from a hot water faucet will indicate that the tank is full. The best time to do this is during the water supply tank filling process if the hot water heater was previously empty. If you wait until later, you will take six gallons of water from your supply tank to fill the hot water heater. However, water will always remain in the hot water heater unless drained because water can only be taken from it, once full, when new water is pumped into it.

LIGHTING PROCEDURE:

1. Turn on gas at LP supply tank.
2. Remove or open outside door.
3. Open door covering burner chamber.
4. Set water temperature control lever (2) to mid scale.
5. Turn gas control dial (1) to pilot.
6. While holding lighted match at pilot burner (3), turn control knob (1) counter clockwise past pilot and hold.
7. Pilot will light, continue to hold knob (1) against stop for 30 seconds more, then release.
8. Pilot will continue to burn. Turn gas control (1) to ON. Main burner (4) will light unless water is already hot. Close cover over burner opening, and replace outside cover.

MAINTENANCE:

To drain hot water heater, open drain valve (5) and open lever on pressure relief valve (6). Remember to turn gas control (1) to OFF before draining. Pilot height can be increased or decreased by means of a small screw driver adjustment. Remove cover at (7) to gain access to the adjusting screw. Air adjustment for the burner (4) can be adjusted by moving sleeve (8) to increase or decrease air. Yellowish, smoky flame will indicate that burner needs more air. If adjustment at (8) does not reduce yellow flame, problem is likely due to spider web. This particular pipe which is open at both ends, is often a favorite place for spiders to spin a web, impeding air circulation to the burner. To remove a spider web in the tube or pipe, take a short length of ordinary clothesline or rope about a foot long. Fray one end so that it spreads out about one inch. Push the frayed rope into the tube all the way to the other end and then remove it. This action should clear the obstruction.

Like all other components in the coach that hold water, the hot water heater must be drained if it is not operated in temperatures below freezing. It can be, however, safely used, even in sub-zero weather providing it remains lit.

STOVE AND RANGE:

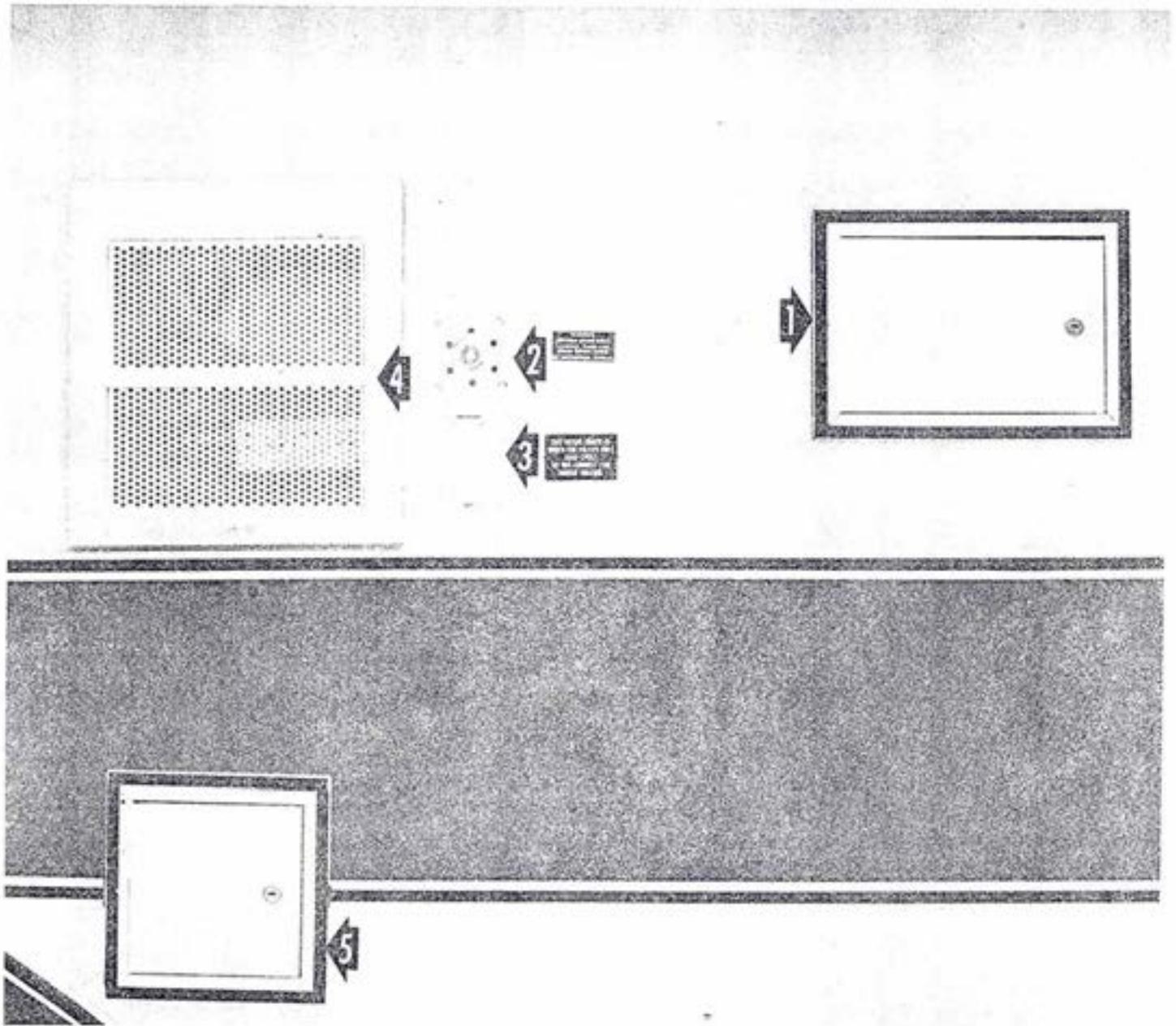
The eye level oven-range combination has a built-in fan and lights in both the oven and over the range top burners. To operate the fan or open the oven, the decorative panel above the oven is opened by pulling on its handle. A travel pin is removed so that the oven door can be opened, and the fan switch is also located under this panel. The fan has a permanent type filter which should be washed periodically in soap and water to remove accumulated grease.

The light switch is located at the left of the burner control and the single switch turns on and off both the upper and lower lights.

RANGE:

The range top burners are equipped with a pilot light but can be lit separately with a match each time they are used. The oven has a safety pilot which must be lit before it is used. The oven heat control lever controls both the oven and range pilot. In the position "Pilots Off", the range burners can be used individually but the oven cannot be used. Push down the control lever and turn it to the "OFF" position. Light the oven pilot which is located on the oven burner. Access to the range pilot is gained by raising the range top. The single pilot controls all four burners, and is centrally located between them.

It must be remembered that whenever the oven control is in "OFF" position, both pilots must be lit and the stove is ready for use without further need for matches. To light the oven burner, merely advance control to the desired temperature, and range top burners will light when their individual valves are turned on. After you are finished using the oven, turn the control to "OFF", and the burner will extinguish but the pilot will remain on.



1. POWER CONVERTER ACCESS DOOR
2. CITY WATER CONNECTION
3. ELECTRICAL CORD OUTLET
4. HOT WATER HEATER
5. TRUCK GASOLINE TANK ACCESS DOOR

WATER SYSTEM:

The water system in your Born Free motor coach is a demand type system. Flow of water is controlled by a pressure switch built into the pump. When a faucet is opened, pressure in the line drops, causing the pump to start (on demand) and it pumps water to the open faucet. When the faucet is closed, pressure builds up quickly and the pressure switch shuts off the pump. A switch is provided near the kitchen sink to cut electrical power to the demand pump when the tank is empty or the system is not in use. The pump operates from the 12 volt DC battery supply.

Other components in the water system include a 31 gallon supply tank and a six gallon hot water heater in the detachable coach and a 40 gallon in the motor home. An optional auxiliary water tank is available for the detachable coach to add another 10 gallons to the water supply.

A special fitting has been installed for filling the water tank. This fitting is located at the outside front of the coach on the driver's side next to the DC electrical connection to the truck. A water hose is connected to the female coupling and the other end of the hose connected to a water faucet. The faucet should be opened to a moderate flow, allowing water to run into the tank. Incorporated into this tank fitting is a vent hose which allows the air to escape from the tank as water is introduced. Water should continue to run into the tank until a full flow of water runs out the air vent, indicating that the tank is full.

During the water fill procedure, the hot water heater tank should also be filled, providing it was not done previously. Open a hot water faucet within the coach and allow air from the hot water heater tank to escape. A free flow of water from the hot water faucet will indicate that its six gallon tank is full. If you forget this step until later when a water source is not available, you will be filling the hot water tank from the coach supply tank and reduce the supply unnecessarily. The hot water heater is arranged so that the water inlet is on the bottom and the outlet of the tank is on the top. Therefore, water cannot be drawn from it unless more is pumped in at the bottom. When the water supply tank is empty, no hot water can be drawn even though the tank is full because no water from the supply tank is available to push the hot water through. This explains why the hot water tank only needs to be filled the first time.

NOTE: In an emergency situation, water can be taken from the hot water tank when the supply tank is empty. This can be done by turning off the pump switch, and opening the drain valve on the hot water heater and releasing the pressure relief valve which will allow air to enter the tank at the top and water to run out the bottom drain valve. If you use this procedure, caution must be taken as this water will be very hot. Since you will be emptying the tank, the gas control on the hot water heater must be turned off.

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 located next to the water heater and above the electrical cord outlet. To use this connection, connect a water hose to this fitting and turn off the demand pump switch, using the city water pressure to provide for the movement of that water. Built into this connector is a pressure limiting valve which will reduce excessive water pressures to a safe limit for the copper lines within the coach. It must be remembered that connection to this water facility bypasses both the pump and the water supply tanks and therefore will not fill the tank.

The city water connection has a cap which must be removed to connect the hose. It is important that this cap is replaced tightly so that the system will be able to hold pressure from the automatic pump. If the pump is heard to cycle on and off occasionally, it will indicate that a leak is present to allow a drop in pressure. Check all water connections for the presence of a leak, paying special attention to the cap on the city water connection.

NOTE: It is good practice to turn off the pump switch when leaving the coach for a period of time and when retiring at night.

CLEANING THE WATER TANK:

To assure complete sanitation of your potable water systems, it is recommended that the following procedures be followed on a new system, one that has not been used for a period of time, or one that may have become contaminated:

1. Prepare a chlorine solution using one gallon of water and $\frac{1}{4}$ cup of Chlorox or Purex household bleach (5% sodium hypochlorite solution). Pour one gallon of solution into tank for each 15 gallons of tank capacity.
2. Complete filling of tank with fresh water. Open each faucet and drain cock until all air has been released from the pipes and entire system is filled.
3. Allow to stand for three hours.
4. Drain and flush with potable fresh water.
5. To remove any excessive chlorine taste or odor which might remain, prepare a solution of one quart vinegar to five gallons water and allow this solution to agitate in tank for several days by vehicle motion.
6. Drain tank and again flush with potable water.

DRAIN SYSTEMS:

To provide complete self-containment and to comply with requirements of good sanitation practices, your Born Free motor coach is equipped with a dual tank drain system. The holding tank has a capacity of 25 gallons and receives waste from the toilet only. A separate waste water tank of 15 gallons collects waste water from the kitchen and bathroom sink drains, as well as the shower pan.

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

As you face this connection, the slide valve nearest to you, and on the right is for the toilet holding tank, while the one on the left and inset more under the coach is the sink drain tank.

The sewer hose is stored in a carrier which is accessible at the center of the rear bumper above the trailer hitch.

HOLDING TANK EVACUATION:

The holding tank should be evacuated at an authorized sanitary disposal station or sewer hookup in a campground only. Never empty the holding tank into a ditch or gutter. Position the motor coach at the sanitation station so that the sewer connection is located near the drain opening. Remove cap on the drain opening and install 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. Release the retainer clips on the slide valve handle and pull the handle all of the way out so that the contents will run out in a quick flushing manner. After the tank has emptied, close the slide valve and run clear water through the toilet into the tank for rinsing. Open drain valve to allow rinse water to run out. Close slide valve and re-engage retaining clips. Run water through the sewer hose to rinse it and replace it in its carrier. Recharge holding tank.

The sink drain tank is emptied in the same manner, but each tank should be drained separately and the slide valves opened one at a time to avoid the contents of either tank running into the other.

PARKING IN A CAMPGROUND WITH HOOKUPS:

When parked in a campsite with sewer hookup facilities, connect the drain hose and open the sink tank drain valve. This will allow complete water drainage during your stay. Showers can be taken, as well as free use of sink drains without the worry of filling your tank. However, the holding tank drain valve for the toilet waste should not be left open during your stay. If this is done, liquids will run off quickly but solids have a tendency to remain in the tank. 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, and will keep the inside of the tank in a cleaner condition.

