



SERVICE UPDATE

DATE: November 7, 1995

SUBJECT: ANTIFREEZE APPLICATION

The type of antifreeze initially provided by Blue Bird is mandated by the chassis/engine manufacturer. Subsequent additions or re-fills of antifreeze by distributors and/or customers must also match the correct antifreeze required by the chassis/engine manufacturer. The table below provides the required antifreeze for each chassis/engine application.

APPLICATION	VENDOR AND VENDOR PART NO	ANTIFREEZE
Blue Bird Chassis (All American, TC/2000, Q-Bus, CS & Wanderlodge) SBCV	Fleetguard CC 2801	Antifreeze, Low Silicate, Ethylene Glycol Base w/DCA4, Blue Premix 50/50
Ford & International (Navistar) GMCV-Prior to 1996 model year Color: Blue	Fleetguard CC 2701	Antifreeze, Low Silicate, Ethylene Glycol Base w/DCA4, Blue Concentrate
GMCV w/diesel engine Beginning 1996 model units Color: Red	Texaco 7998	Antifreeze, Long Life, Heavy Duty, Red, Premix 50/50
	Texaco 7997	Antifreeze, Long Life, Heavy Duty, Red, Concentrate
GMCV w/gas engine Beginning with 1996 model units Color: Orange	Texaco 7985	Antifreeze, Long Life, Orange, Premix 50/50
	Texaco 7984	Antifreeze, Long Life, Orange, Concentrate
Micro, Mini, GP wide body Beginning Jan 1, 1996 Color: Orange	Texaco 7985	Antifreeze, Long Life, Orange, Premix 50/50
	Texaco 7984	Antifreeze, Long Life, Orange, Concentrate

BLUE BIRD BODY COMPANY

P.O. Box 937 • Fort Valley, Georgia 31030 • (912) 825-2021

CAUTION: Different antifreeze types **can not** be mixed. (Must use red w/red, blue w/blue and orange w/orange).

If incorrect antifreeze has been installed, system **must** be drained, flushed and correct antifreeze installed. Be sure to thoroughly purge the heater core and block as well as the radiator before installing new premix antifreeze. Either use premix or mix concentrate with water for desired freeze protection, never add pure concentrate to system, a 50% - 50% mixture of antifreeze to water provides protection to -34 degrees F. A 55% - 45% mixture of antifreeze to water provides protection to -40 degrees F. Also, follow chassis/engine manufacturers maintenance recommendations for cooling system.

Sincerely,



Kenneth P. Schaeffer
Manager, Product Service

BLUE BIRD BODY COMPANY

jk

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The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author details the various methods used to collect and analyze the data. This includes both manual and automated techniques. The goal is to ensure that the information gathered is both reliable and comprehensive.

The final part of the report provides a summary of the findings and offers recommendations for future work. It suggests that further research should be conducted to explore the long-term effects of the current findings.

The data collected over the course of the study shows a clear trend towards increased efficiency. This is particularly evident in the areas of resource allocation and time management.

It is important to note that these results are based on a limited sample size. Therefore, the findings should be interpreted with caution. Further studies with larger groups are needed to confirm these observations.

Overall, the study has provided valuable insights into the current state of the field. It highlights the need for continuous improvement and the adoption of new technologies to stay competitive.

Filters

94 WB - 8092

BB #

VENDOR #

Filter, Engine Oil -	3734209	FLEETGUARD	- LF3333
Filter, Air Cleaner -	1570415	FARR	99842-004
Filter, Kit, Racor Fuel -	3831310	PARKER	2020SM-OR
Filter, Bendix Air Drier AD-9	4311908	Bendix	AD-9-1537089
Filter, Fuel	3734175	FLEETGUARD	- FF206
Filter, Power Steer. Reservoir	4405783	Nelson	84220-A
Filter, Trans. External	3831302	AC	25010643
Filter, Trans. Internal	2159499	Allison	23014205
Indicator, Air Filter	1022102	Donaldson	RBX002220-20
Filter, Hydraulic FAW system	4405767	Parker	925835

Belts

Belt, Alternator

0964965 gates

7425 matched set

Belt, Freon Compressor

0921908 gates

9385 matched set

GENERATOR

Fuel Filter

3970860

Fleetguard

FF 5106

Filter, Oil

3970878

Fleetguard

LF 3341

Filter, Air

3838158

Donaldson

ECBOS-5001

Belt, Generator

2021731

gates

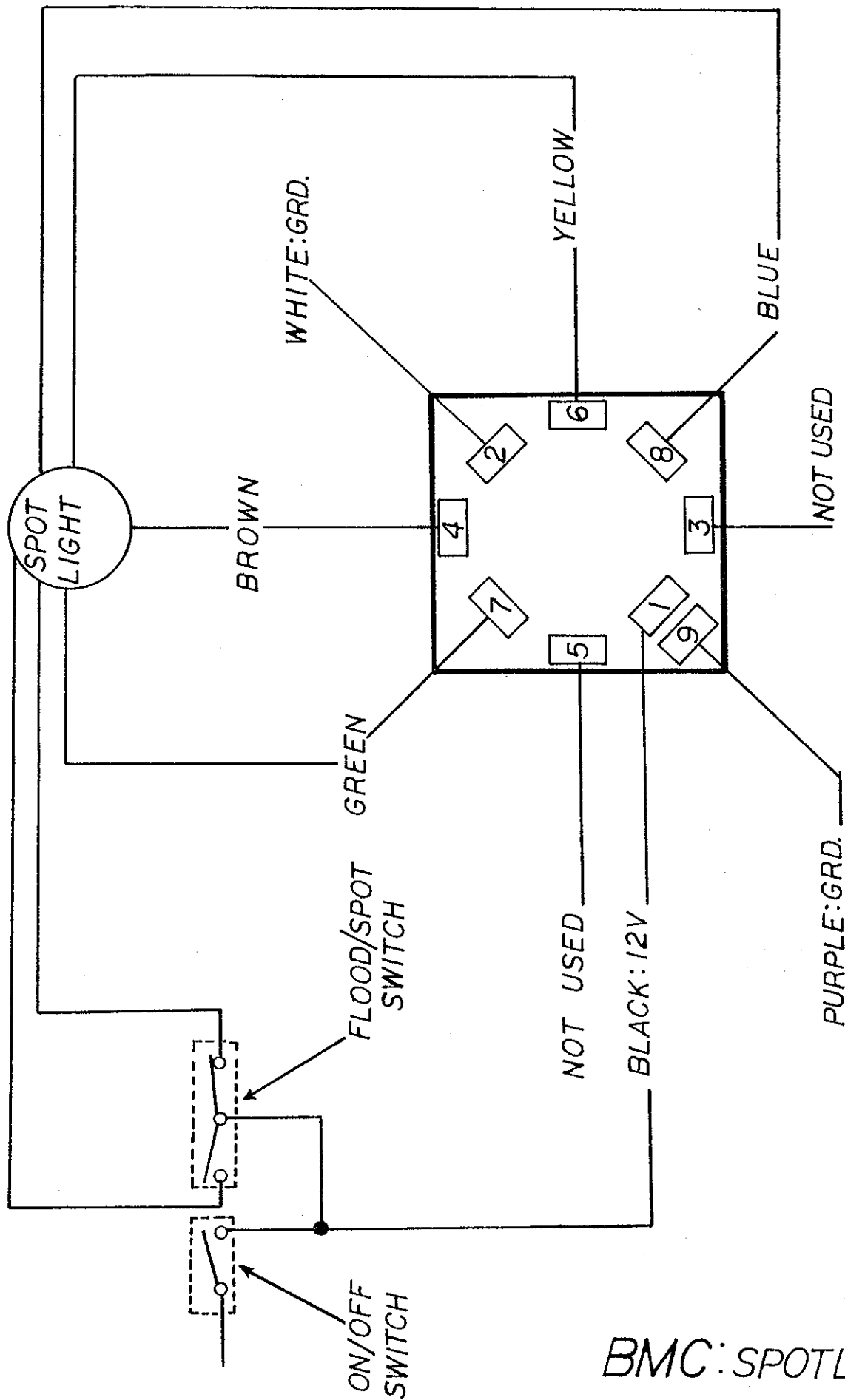
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BMC: SPOTLIGHT SW.



Dear Wanderlodge Owner:

Thanks for choosing Wanderlodge!

We want to personally welcome you to our Family of Friends and we invite you to visit us at our Fort Valley facilities whenever you wish. We are always happy to see you and we are deeply interested in your experiences as you use and enjoy your Wanderlodge coach. We recognize that it is our relationship to you, the Wanderlodge owner, that contributes most to the prestige of ownership of this finest over-the-road coach.

We trust that as you become more intimately acquainted with your new coach, the sound, careful thoughts behind every aspect of its design will become increasingly evident and your initial decision to choose Wanderlodge will be positively reinforced with every mile.

We acknowledge the good faith you have demonstrated in our product. All of us at Wanderlodge take great pride in our handiwork and want to do everything possible to engender in you what has become the Wanderlodge experience; the deep satisfaction that comes from years of a sure confidence of having chosen ... the very best.

John Harris

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In the second section, the author details the various methods used to collect and analyze the data. This includes both primary and secondary research techniques. The primary research involved direct observation and interviews with key stakeholders, while secondary research focused on reviewing existing literature and reports.

The third section presents the findings of the study. It highlights several key trends and patterns observed in the data. For example, there was a significant increase in the use of digital tools, which has led to more efficient processes. However, there were also challenges identified, such as the need for better training and support for users.

Finally, the document concludes with a series of recommendations for future work. These include the need for continued monitoring and evaluation of the implemented changes, as well as the importance of fostering a culture of continuous improvement. The author also suggests further research into the long-term impact of these initiatives.

Limited Warranty Wanderlodge®

Wanderlodge® Division gives this Warranty. The terms "we", "us", and "our" in this Warranty refer to that division. The Warranty extends to the original owner of the Wanderlodge®. The terms "you" and "your" in this Warranty refer to the owner.

Thank you for purchasing a new Wanderlodge®. Wanderlodge® warrants each Wanderlodge® to be free from defects in factory material or workmanship under normal use and service within the time and mileage limits described below:

1. For a period of (3) years or 36,000 miles, whichever occurs first, from date of delivery to the original purchaser or first placed in service as a demonstrator or company vehicle, whichever is earlier (mileage accumulated while in the possession of the dealer is included in the 36,000 mile total), Wanderlodge® warrants the:
 - a. Chassis Frame and Crossmembers
 - b. Body shell (those structural metal components welded or riveted together forming floor, sidewalls, roof, front and rear sections) including rust-through.
 - c. Paint adhesion, except when paint failure is caused by deterioration of paint from weather and exposure or damage to paint after you accept delivery of the Wanderlodge®. This warranty does NOT cover cracks in the paint on rubber fenders and does not cover fading of any paint.
2. For a period of (12) months from date of delivery to the original purchaser or first placed in service as a demonstrator or company vehicle, Wanderlodge® warrants the:
 - a. Interior components of the coach such as the following:
 - Interior fabric
 - Floor covering

- Wall covering
- Cabinets
- Components warranted by other manufacturers are not included in any part of this Warranty. We have supplied to you those separate warranties in your owner's package.

3. From the date of delivery to the original purchaser or first placed in service as a demonstrator or company vehicle, (mileage accumulated while in the possession of the dealer is included in the mileage total) the following power train components will be covered by the manufacturer's warranty for that component.

<i>Engine</i>	<i>Manufacturer's warranty</i>
<i>Transmission</i>	<i>Manufacturer's warranty</i>
<i>Axles</i>	<i>Manufacturer's warranty</i>
<i>Batteries</i>	<i>Manufacturer's warranty</i>

The preceding paragraphs describe everything that is covered by this Warranty. Anything else is NOT covered. Without limiting this general statement about what is covered, examples of such non-covered expenses include:

- Telephone calls
- Loss of time
- Commercial loss
- Inconvenience
- Loss of use of the vehicle
- Towing charges
- Hotel or motel accommodations
- Equipment we do not manufacture or supply
- Maintenance services such as but not limited to:
 - wiper blades
 - oil
 - filters
 - bulbs
 - fluids
 - front end and tag axle alignment
 - brake linings and drums

- Damage from things we could have no control over such as:
 - *collision*
 - *modifications*
 - *misuse*
 - *lack of maintenance*
 - *misuse of electrical systems*
 - *broken glass*
- Any part of the vehicle which fails or malfunctions as a result of work done by anyone other than Wanderlodge®.
- Any equipment added to the vehicle by customer or dealer, or temporary installations at the factory designed to accommodate such additions or alterations, may not be covered by this Warranty.
- Parts or accessories which you or your dealer bought or installed.
- Wanderlodge® makes no warranty whatsoever regarding pneumatic tires. Repair or replacement of defective parts is your exclusive remedy under this warranty.

Wanderlodge® will pay for all parts and labor needed to make necessary repairs due to defects in factory material or workmanship covered under this Warranty.

This Warranty covers the original owner of the Wanderlodge® during the Warranty Period. A transfer fee will be required within 30 days of the sale of the Wanderlodge to transfer the Warranty.

Wanderlodge® reserves the right to make changes in design and changes or improvements upon its products without imposing any obligations upon itself to install the same upon products theretofore manufactured.

In order to have defects repaired under this Warranty, you should promptly take your Wanderlodge® to the dealer who sold it to you or to the nearest Wanderlodge® dealer. (You may obtain the name and address of the nearest dealer by writing or calling us at the address and number set forth below) In the event there is some geographic or mechanical reason you cannot get to a Wanderlodge® dealer, you may (with our prior approval) use any capable and reputable repair facility for the repairs. The Wanderlodge® dealer will

make any needed repairs (or arrange for them to be made) within a reasonable time after you deliver the vehicle to him. You must take the vehicle to the dealer promptly after discovering the defect and, in any event, within the Warranty Period. Warranty claims must be submitted no more than 60 days after repairs are completed.

Defective parts that you have replaced under the Wanderlodge® Warranty must be returned to the factory with your invoice for the new part in order to be credited for the repair work.

You are responsible for properly operating, maintaining and caring for your Wanderlodge® in accordance with the instructions contained in your Owner's Manual.

You are responsible for keeping maintenance records, since in some instances, it may be necessary for you to show that proper maintenance has been performed.

This Warranty applies to those Wanderlodge® which are legally registered and normally operated in the United States or Canada.

ANY IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS, ARE LIMITED TO THE WARRANTY PERIOD OF THIS WRITTEN WARRANTY, AND WE WILL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY. Some states do not allow limitations on how long an implied Warranty will last, or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This Warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Any lawsuit for breach of this Warranty must be filed within one year of breach.

No one, including the dealer, is authorized to modify this Warranty or to make any other warranty on our behalf. There is no other express warranty on this vehicle. To the extent allowed by law, Georgia Law governs this Warranty and rights arising hereunder.

1994
WANDERLODGE
WIDE BODY
OWNER'S
MANUAL

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In the second section, the author details the various methods used to collect and analyze the data. This includes both primary and secondary data collection techniques. The primary data was gathered through direct observation and interviews with key stakeholders. Secondary data was obtained from existing reports and databases.

The third section describes the statistical analysis performed on the collected data. Various tests were used to determine the significance of the findings. The results indicate a strong correlation between the variables being studied, suggesting that the observed trends are not due to chance.

Finally, the document concludes with a series of recommendations based on the findings. These recommendations aim to address the identified issues and improve the overall efficiency of the process. It is suggested that regular audits be conducted to ensure ongoing compliance with the established standards.

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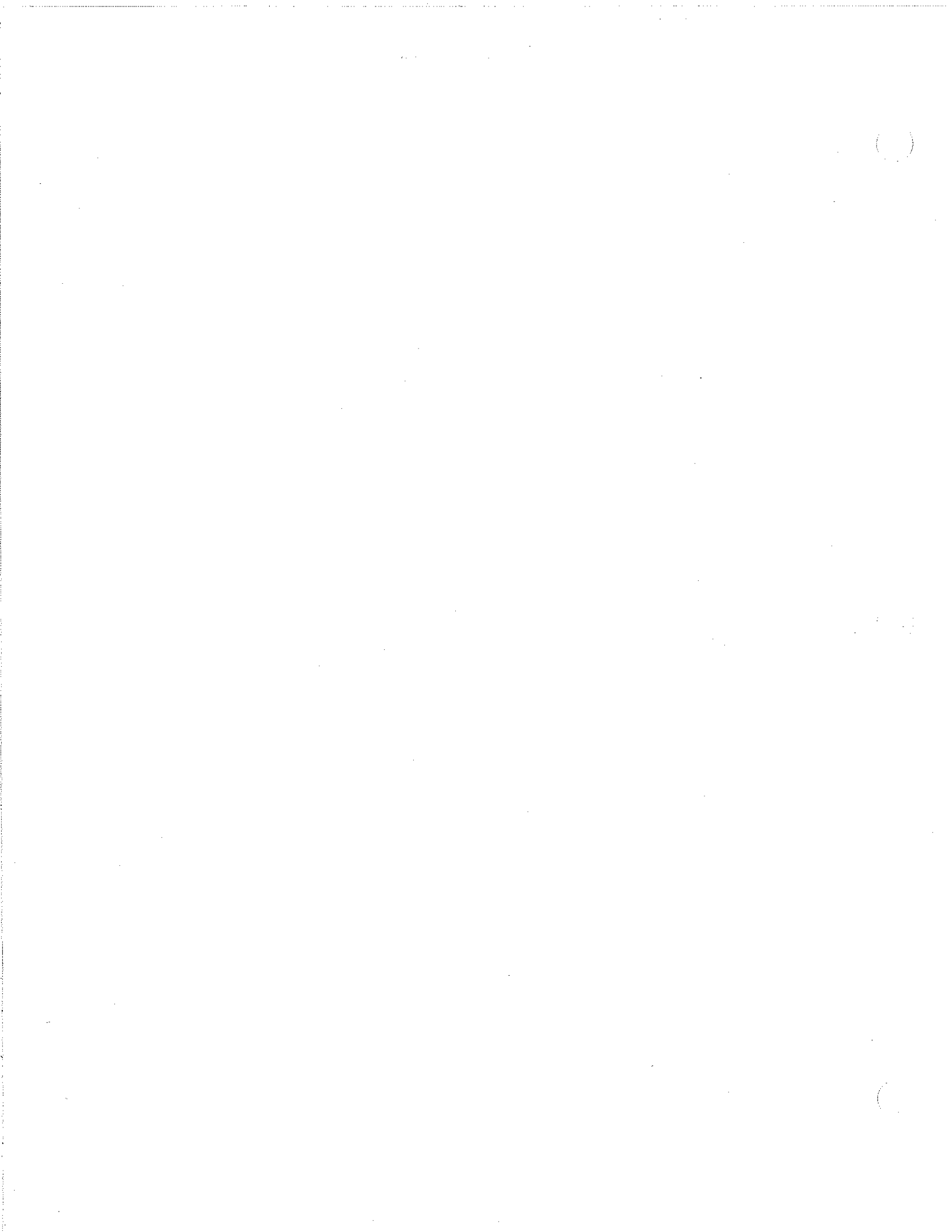
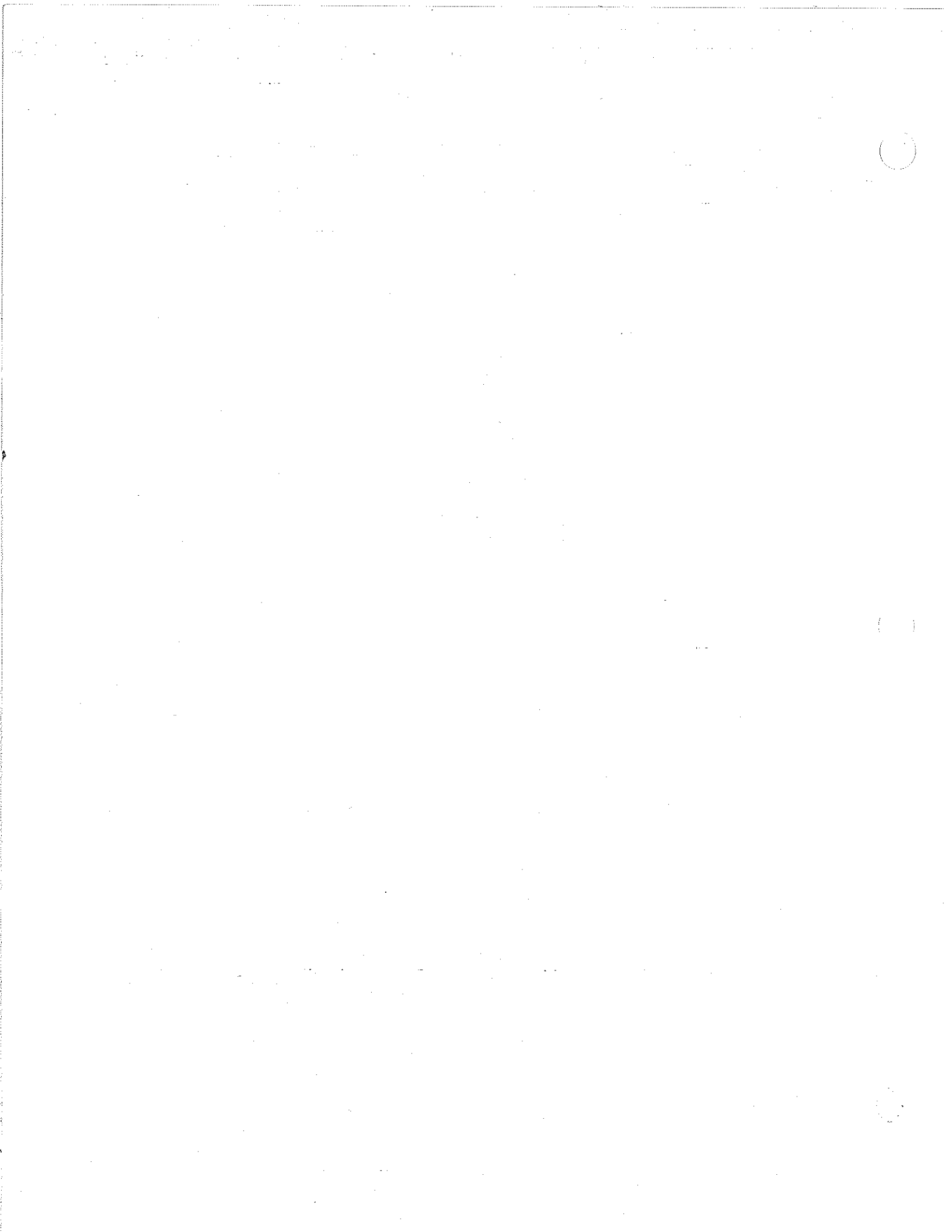


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INTRODUCTION

This section of your Owner's Manual contains general hints and recommendations for using your motor home. Checklists and suggestions are offered which cover just about every phase of motor home travel.

The remaining sections of this manual describe the operation and use of the individual items and systems which comprise your motor home.

Manufacturer's manuals for components and appliances are included in your owner's kit. Please refer to these for more detailed information.

We hope that this manual will help answer questions that may arise about the use operation and maintenance of your motor home. Any suggestions or recommendations that you might have for including or expanding on material of interest will be carefully considered for incorporation in future publications. We are always interested in providing our coach owners with the most current and comprehensive information about our product.

CHECKLISTS

A little preliminary planning will go a long way to help make your trips successful and enjoyable. As an aid to planning your travels, review the following checklists. If there are any additional items that you should be reminded of, add them where you see fit. These lists are only recommendations based on the experience and suggestions of sources well-versed in motor-coach expertise. You will eventually find that a short "walk-around" the coach, outside and inside, will be adequate and comprehensive enough to ensure that you are ready for travel.

BEFORE YOU LEAVE:

- Store valuables and important papers in a safe place.
- Arrange care for your pets.
- Cover all food to keep out mice and insects.
- Store oil, gasoline, matches and other inflammables properly; get rid of newspapers, magazines and oily rags.
- Connect timers to several inside lamps and outside lights; keep some shades open for a lived-in look.
- Discontinue newspaper, milk and other deliveries; store trash cans and outside equipment.
- If weather permits, shut down hot water and heating systems; close main water supply.
- Ask the Post Office to hold your mail.
- Have your lawn, garden and house plants cared for.
- Arrange with the Telephone Company for discontinued or "Vacation Service".
- Lock all windows and doors securely.
- Leave your key with your neighbor and let them know your basic itinerary.
- Notify police.

CHECKOUT YOUR COACH - OUTSIDE

- Disconnect and stow:
 1. Electrical cord.
 2. Sewer hose (flush out).
 3. Water hose.
- Check all exterior lights for proper operation.
- Check wheel lug nuts for tightness. (See **Tire/Wheel Change Procedure**).
- Check tires for correct pressure. (See **Tire Inflation**).
- Check that all external compartments and filler openings are properly closed and/or locked.
- Check that items stored on exterior of coach are secured. (Be sure that these items present no clearance problems.)

NOTE

If the trip you are planning will take the coach well past suggested maintenance intervals, it may be advisable to perform these procedures before leaving. This may avoid unscheduled stops or interruptions during your trip.

- Check that there are no obstacles to avoid above or under the coach. Be sure that there is sufficient clearance front and rear.

CHECK YOUR AUTOMOTIVE SYSTEMS:

- Check that fluid levels are normal (oil, power steering, engine coolant, windshield washers, transmissions, etc.).
- Check generator oil level, coolant level, battery condition.
- Check operation of turn signals, emergency flasher, stoplights and backup lights.
- Check that headlight high- and low-beams operate.
- Check horn operation.
- Check fuel gauge, and add fuel if needed.
- Start engine and check gauges for signs of trouble.
- Check operation of foot brakes and parking brake.

CHECKOUT YOUR COACH - INSIDE:

- Close windows and vents.
- Check that cabinet doors and drawers are secured.
- Check that refrigerator door latch is in-locked-position.
- Check that no heavy item is stored in an overhead cabinet.
- Store large items in base cabinets.
- Check that counter tops, range top, table tops and shelves are clear of unsecured items.
- Turn off interior lights; check that entrance step is retracted. Secure and lock the entrance door.
- Adjust exterior mirrors.

WARNING

Mirrors provide needed additional driver visibility. To be effectively used, mirrors must be properly adjusted for each driver and the driver must be aware of the limitations on viewing area that exist even when mirrors are properly used.

AND, BEFORE DRIVING AWAY

- Check operation of appliances and special equipment.
- Check that fire extinguishers are fully charged.
- Check operation of interior and exterior lighting.
- Start generator and check 120 VAC system and wall outlets.
- Adjust driver's seat so that all controls are within easy reach.
- Make sure that seat is locked in position. Do not adjust driver's seat swivel or fore/aft mechanism while vehicle is moving or seat could move unexpectedly, causing a loss of control.
- Check that front passenger's seat is locked in position.
- Fasten seat belts. Belts should be placed as low as possible around the hips. This places the load of the body on the strong hip bone structure instead of around the soft abdominal area and prevents sliding to in case of accident.

CAUTION

Child restraint systems are designed to be secured in vehicle seats by lap belts or the lap belt portion of a lap-shoulder belt. Children could be endangered in a crash if their child restraints are not properly secured in vehicle.

- Check that warning lights are lit when the ignition key is turned to on or start position.

SOME ITEMS YOU MIGHT WANT TO TAKE ALONG ON YOUR TRIP

NOTE

You may find that many items taken were not needed and that some items that were needed were overlooked during planning of your last trip. Make notes of these items to prevent duplicating the same errors.

- Adequate supply of prescription medicines.
- Prescription sunglasses or reading glasses.
- Camera equipment and film supply.
- Heating pads, ice bags, etc.
- Stationery, envelopes, stamps
- Telephone number list.
- Reading material
- Special pet supplies.

- Extra toilet chemicals and toilet articles.
- Spare belts for engine operated equipment.
- Spare parts for generator: suggested spares include oil filter, fuel pump, air filter, solenoid. Five quarts of approved motor oil.
- A professional-type double-action tire pressure gauge. (Included in coach.)
- Under the heading of Emergency Equipment, it is advisable to consider outfitting your coach with these items:
 1. First aid-kit
 2. Emergency highway flares
 3. Flashlight or lantern (with extra batteries)
 4. Tool kit
 5. Replacement lamp assortment
 6. Replacement fuse and breaker assortment.
 7. Trouble light with a long cord

AND SOME OTHER THOUGHTS TO CONSIDER

- Automobile insurance to cover you and your family.
- Avoid cash. Use traveler's checks and credit cards wherever possible.
- Confirm reservations well in advance of arrival.
- Make a clothing check list for everyone.

CITIZEN'S BAND TRANSCEIVER

You might also bear in mind that your coach is equipped with a CB unit (Citizen's Band receiver-transmitter). In the event of an emergency situation which requires outside assistance, remember to call for help on Channel 9. This channel is restricted to emergency use only and it is monitored 24 hours per day! Don't hesitate to use your CB if you see someone else in need of assistance.

HOT WEATHER OPERATION

Wherever possible, choose a shaded parking site so that the coach will be cooler during the hottest part of the day. The optional patio awning will be especially useful in lowering inside temperature. Air conditioning units are indispensable in hot climates. Keep in mind that their proper operation depends on adequate line voltage. Low voltage causes motors to run hotter and reduces compressor motor life. Supply voltage in some campgrounds may not be as high as necessary, especially when there are heavy loads on the lines from other air conditioners. Check the right hand overhand auxiliary panel 120 VAC meters when in doubt.

COLD WEATHER OPERATION

If frost or condensation accumulates in closets or cabinets during long periods of cold weather operation, leave the doors to these areas slightly ajar to provide air circulation. Be sure that roof vents are open when using the gas cooktop.

CAMPGROUND COURTESY

Don't forget the "Golden Rule". Being considerate of your neighbors will help make friends. A few of the "Do's" and "Don'ts" are:

- Good housekeeping-put all litter in the proper receptacles and leave your site neat and clean.
- Don't allow your water or sewer hook-ups to leak.
- Respect your neighbor's desire to retire at an early hour. Avoid loud noises and bright lights after dark.
- Drive slowly through camp areas at any hour for the safety of pedestrians.

INSURANCE

As with your automobile, it is important that you have adequate protection with insurance coverage for personal liability, property damage, comprehensive, collision, medical payments, loss of use, etc.

Canadian and Mexican Insurance

Insurance for travel in Canada can usually be covered by your present U.S. policy for the recreational vehicle, often at no extra cost. Consult your individual company for procedures and be sure of your coverage before entry.

For travel in Mexico (at the present time) there are no U.S. insurance companies that can provide recognized Mexican coverage, with the exception of that required for travel through a narrow strip of Mexican territory in and around parts of entry and the U.S./Mexican border.

Mexican insurance is controlled, and rates are set, by the Mexican government. There are several reliable companies handling Mexican insurance, with similar rates for the necessary coverage. The principal differences between them are the "fringe benefits", received in the form of informational travelogues and other helpful information, such as dining places considered acceptable for sanitary conditions, fuel stations, and so on.

Some insurance services include detailed route maps with "where to stay" recommendations and "things to see" mile-by-mile (or kilometer-by-kilometer post). While the rates set by Mexico may seem quite expensive at first glance, you usually end up not spending quite as much as expected because you can usually arrange to hold your state-side policy in abeyance during the same period you are in Mexico, thus not having to pay unnecessarily for double coverage. In addition, you may be able to obtain substantial refunds on the Mexican collision insurance after your return to the U.S. Be sure to obtain a certification from the park operator at each location in Mexico to certify the dates that your coach was parked there. If your coach is parked for most of the time, instead of constantly traveling, your refund may be a major portion of the original cost. This feature is referred to as the "in-storage" credit. (It is a good idea to always check with your insurance company before taking a trip to find out whether applicable insurance rules and regulations have changed. Keep up to date on your coverage.)

Carry insurance papers at all times!

SAFETY CONSIDERATIONS

Using LP Gas

Check for leaks at the connections on the LP gas system soon after purchase and initial filling of LP tank; continued periodic checks of the system are recommended. Even though the manufacturer and dealer have already made tests for leakage, this check is advisable because of the vibrations encountered during travel. Apply a soapy water solution to the outside of gas piping connections to find gas leakage (bubbles). Do not use products that contain ammonia or chlorine. Usually, tightening of connections will be sufficient. If not, ask your authorized dealer service to make the needed repairs.

Liquefied Petroleum Gas (LPG) is heavier than air. Leaking gas tends to flow to low places, and will sometimes pocket in a low area. LP gas can usually be detected by an identifiable odor characteristic to garlic.

CAUTION

Never light a match or allow any open flame in the presence of leaking gas!

Be sure that the main LP gas supply valve is closed or galley panel switch OFF during refueling to prevent accidental ignition of gas fumes by appliance ignitors.

WARNING

When coach is to be stored in a confined area, turn off the LPG at the main tank shutoff valve or, more conveniently, at the galley systems control panel.

Your Wanderlodge has been provided with an automatic 80% fill valve to protect you from the dangers of an overfilled LPG tank.

Electrical Systems

Your coach has been engineered and checked for your complete electrical system safety. Circuit breakers and fuses are installed to protect electrical circuits from overloading. Before making modifications or additions to the electrical system, consult your dealer for assistance in obtaining a safe and secure installation.

Do not "jump" circuit protectors!

Emergency Stops

Always carry road flares and/or reflective triangular highway warning markers for emergency warning display. Pull off the roadway as far as possible when changing flats or for other emergency situations. Turn on your hazard warning flashers when parked alongside a roadway, even if only for a short while. Have your coach occupants leave the vehicle and stand clear of the area when parked on the edge of a highway.

In Case of Tire Blowout

Michelin Tire Corp. has tested extensively and recommends the following when a blowout occurs:

1. Quickly step on the gas.

2. Adjust steering as needed.
3. Stay off the brakes.
4. Keep driving until you find a safe place to pull over.

Engine Exhaust Gas

Avoid inhaling exhaust gases because they contain carbon monoxide, which by itself is colorless and odorless. Carbon monoxide is a dangerous gas that can cause unconsciousness and is potentially lethal. If at any time you suspect that any exhaust fumes are entering the passenger compartment, have the cause determined and corrected as soon as possible.

The best protection against carbon monoxide entry into the vehicle body is properly maintained engine exhaust system, body and ventilation system. It is a good practice to have the exhaust system and body inspected by a competent mechanic each time the vehicle is raised for lubrication or oil change. It should also be inspected whenever a change is noticed in the sound of the exhaust system and if the exhaust system, underbody or rear of the vehicle has been damaged.

To allow proper operation of the vehicle's ventilation system, keep ventilation inlets clear of snow, leaves, or other obstructions.

Sitting in a parked vehicle with the engine on for extended periods, without proper ventilation, is not recommended!

More Safety Considerations

- Sanitize fresh water supply system periodically.
- Prevent water connection fittings from contacting the ground or drain hose to reduce chances of contamination.
- Consider using a qualified technician for repairing gas or electrical appliances.
- Check fire extinguishers periodically for proper charge.
- Avoid overloading your vehicle.
- Be careful not to cause an improper load distribution which can adversely affect roadability.
- Insure that tires are in good condition and properly inflated at all times.
- Under-inflated tires overheat and are blowout-prone!
- Check and tighten wheel lug nuts; manufacturer recommends after first 50-100 miles and every 1,000 miles thereafter.

EMERGENCY EXITS

Sliding windows, which can be easily opened, may be used as an emergency exit. Squeeze the window latch and slide window open. Emergency exit windows are identified by an EXIT decal on the glass.

VEHICLE LOADING

The Federal Certification Label, located inside and above the driver's windshield between the sun visor mounting brackets describes the maximum weight-carrying capacities of your motor home and for each axle, respectively abbreviated by "GVWR" and "GAWR".

The Gross Vehicle Weight Rating (GVWR) is the maximum motor home weight allowable with all systems filled and with passengers and supplies aboard.

Each axle also has a maximum load-bearing capacity referred to as the Gross Axle Weight Rating (GAWR).

The load capacity is the difference between the GVWR and the actual weight. This means the total weight of all food, clothing, other supplies and passengers, must not permit the load capacity to be exceeded.

To find the actual weight, with the motor home fully loaded, drive to a scale and read the weight on the front and rear wheels, separately, to determine axle loading. The load on each axle should not exceed its GAWR. If weight ratings are exceeded, move or remove items to bring all weights below the ratings.

When loading your motor home, store heavy gear first, keeping it on or as close to the floor as possible. Heavy items should be stored centrally to distribute the weight evenly between the front and the rear axles. Store only light objects on high shelves. Distribute weight to obtain even side-to-side balance of the loaded unit. Secure loose items to prevent weight shifts that could adversely affect the balance and roadability of the vehicle

COACH SERVICE-REPLACEMENT PARTS

A paint color label is located adjacent to the Federal Certification Label above the pilot's sun visor.

Data plates located on the rear of the chassis (raise rear engine compartment door for access) provide information useful for identifying your coach if you are planning on ordering parts. Identification plates provide information such as:

1. Body Serial Number
2. Model Year
3. Body Service Number
4. Chassis Serial Number
5. Chassis Service Number

ECONOMICAL DRIVING

How you drive, where you drive and when you drive — these factors all have an effect on determining how many miles you can get from a gallon of fuel. Careful maintenance will also contribute to fuel economy.

Frequent stops and starts during a trip diminish miles per gallon. Plan even short shopping trips so you can take advantage of through-streets to avoid the traffic lights. Pace your driving like the professional drivers to avoid unnecessary stops.

An idling engine also consumes fuel. If you are faced with more than a few minutes wait, and you are not in traffic, it may be advisable to shut off the engine and re-start later.

A properly lubricated vehicle means less friction between moving parts. Consult the maintenance schedules for proper lubricants, lubrication intervals and general coach maintenance scheduling.

Fuel economy is also related directly to the amount of work accomplished by the engine. Heavier loads require more power. Keep excess weight to a minimum.

CELLULAR PHONE WIRING

A roof mounted antenna and wiring (terminates in driver area) are supplied for cellular phone hookup.

FOG LIGHTS OR DRIVING LIGHTS

Clear fog or driving lamps are mounted stationary in the front bumper. The fog lamps illuminate only with low beam headlights or the driving lamps illuminate only with high beam headlights, provided the corresponding dash switch is activated.

KEYLESS ENTRY SYSTEM

A keypad is located adjacent to the entrance door. By entering a preset code the entrance door dead bolt lock is unlocked. This keyless entry system will also unlock the optional electric locks on the luggage compartment doors.

NOTE

To facilitate closing compartment doors, grasp lower box section under paddle handle.

TRAVELING IN YOUR MOTOR HOME

NOTES

1. Overall height is approximately 12 1/2 feet.
2. It is recommended that compartment doors be locked so they do not open while in transit. There are many modern recreational vehicle parks with good facilities, including State, County and Federal Parks, where electrical, water and sewer connections are readily available. Directories are published which describe these parks in detail and list available services and hookups.

On overnight or short weekend trips, your motor home has more than adequate holding tanks and water supply capacity in the event that campgrounds or parking sites are not equipped with these facilities.

On longer trips, where sewer connections and utility hookups are unavailable, it will be necessary to stop from time to time to dispose of holding tank wastes and replenish the water supply. Many gas stations (chain and individually-owned) have installed sanitary dumping stations for just this purpose.

When stopping for the night, park the coach in a location that is relatively level and where the ground is firm. This will ensure your comfort as well as the leveling of your refrigerator (for most efficient operation)

Making a long trip is not very different from making a weekend excursion since everything you need is right at hand and you are home wherever you travel. When packing for an extended trip, try to avoid taking non-essential items.

When planning to stay in the same location for several days, weeks, or even months, be sure to maintain the motor home level. Use leveling jacks system for this purpose.

Hook up to the water supply by attaching the water hose to the commercial water supply inlet.

Plug the electrical cable into the shoreline receptacle. Be sure to observe all grounding and connection precautions!

Connect sewage hookup into the disposal facility.

WINTER TRAVELING

- Certain precautions should be taken when traveling in your motor home during the cold winter months. Keep these suggestions in mind:
- Provide heat in the coach at all times.
- Have a plentiful supply of LPG.
- If your stay is longer than overnight, and you do not use the generator, try to have a shoreline hooked up to outside AC power.
- Minimize your use of electricity if 120 vac is unavailable.
- Leave cabinet doors and wardrobe doors slightly open at night to allow for proper air circulation.
- Heat tape greatly decreases the chance of frozen water lines provided the coach is plugged into outside power or the generator is run continuously during cold weather periods.

Remember that low temperatures in combination with high winds will cause an equivalent chill temperature much below that indicated by your thermometer. For instance, with an outside temperature of zero degrees, and a wind velocity of 10 miles per hour, the equivalent chill temperature would be -20 degrees F!

There is no substitute for common sense when traveling in cold weather.

GENERAL STORAGE NOTES

Drawing draperies will reduce fading of rugs and upholstery. Leaving an air freshener agent will minimize odors from plastics and other materials. Slight opening of windows and vents will allow air circulation without worry of water entering. Covering wheels to eliminate direct rays of the sun on tires will reduce sidewall cracking.

NOTE

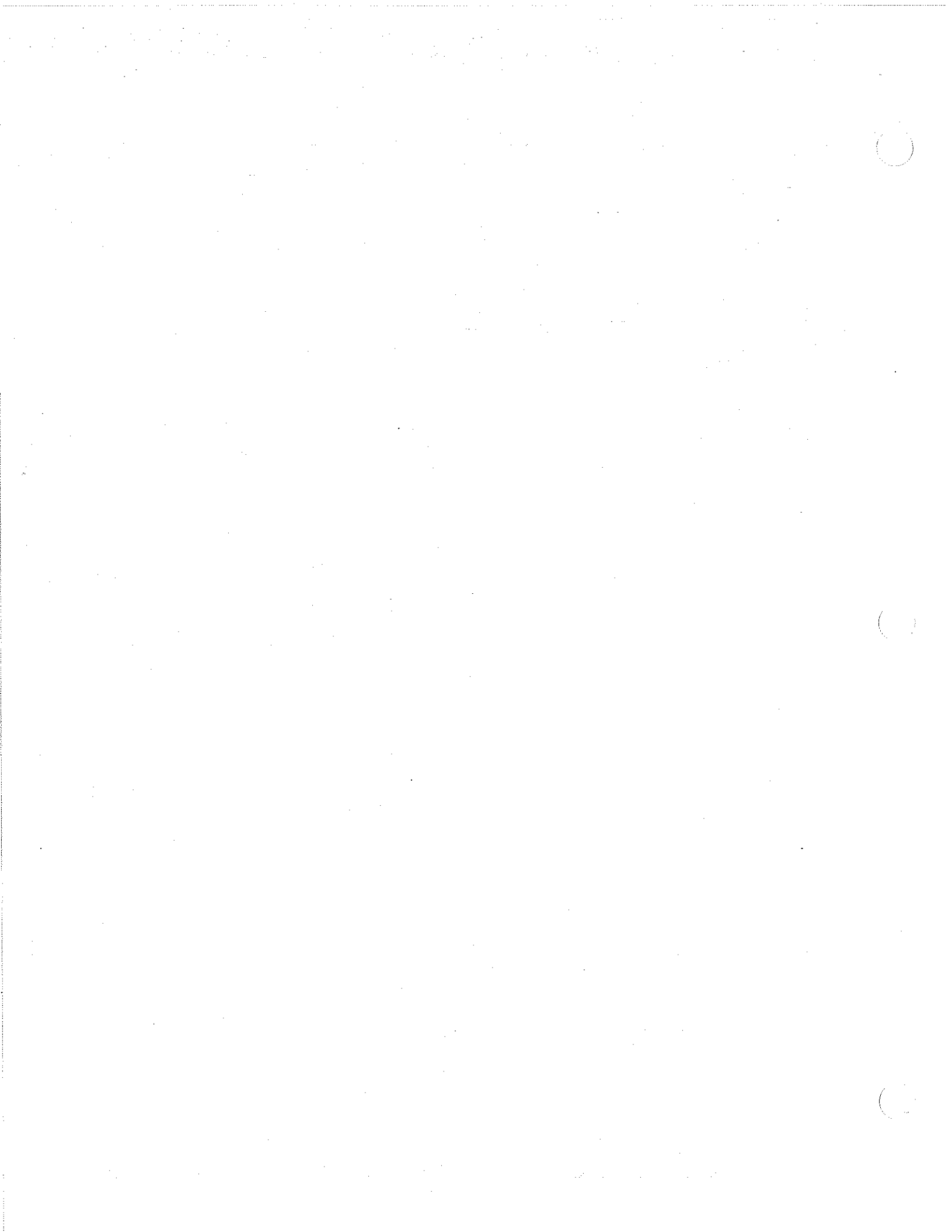
Remove all items from the coach which may freeze, including canned foods, miscellaneous liquids, etc. Remove all contents of the refrigerator/freezer, clean unit and leave doors ajar.

REPORTING SAFETY DEFECTS

If you believe your vehicle has a safety defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Blue Bird Wanderlodge.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Blue Bird Wanderlodge.

To contact NHTSA, you may either call the Auto Safety Hotline toll free at 1-800-424-9393 (or 366-0123 in Washington, D.C. area). Or write to: NHTSA, U.S. Department of Transportation, Washington, D.C. 20590. You can also obtain other information about Motor Vehicle Safety from the hotline.



AIR CONDITIONING SYSTEMS

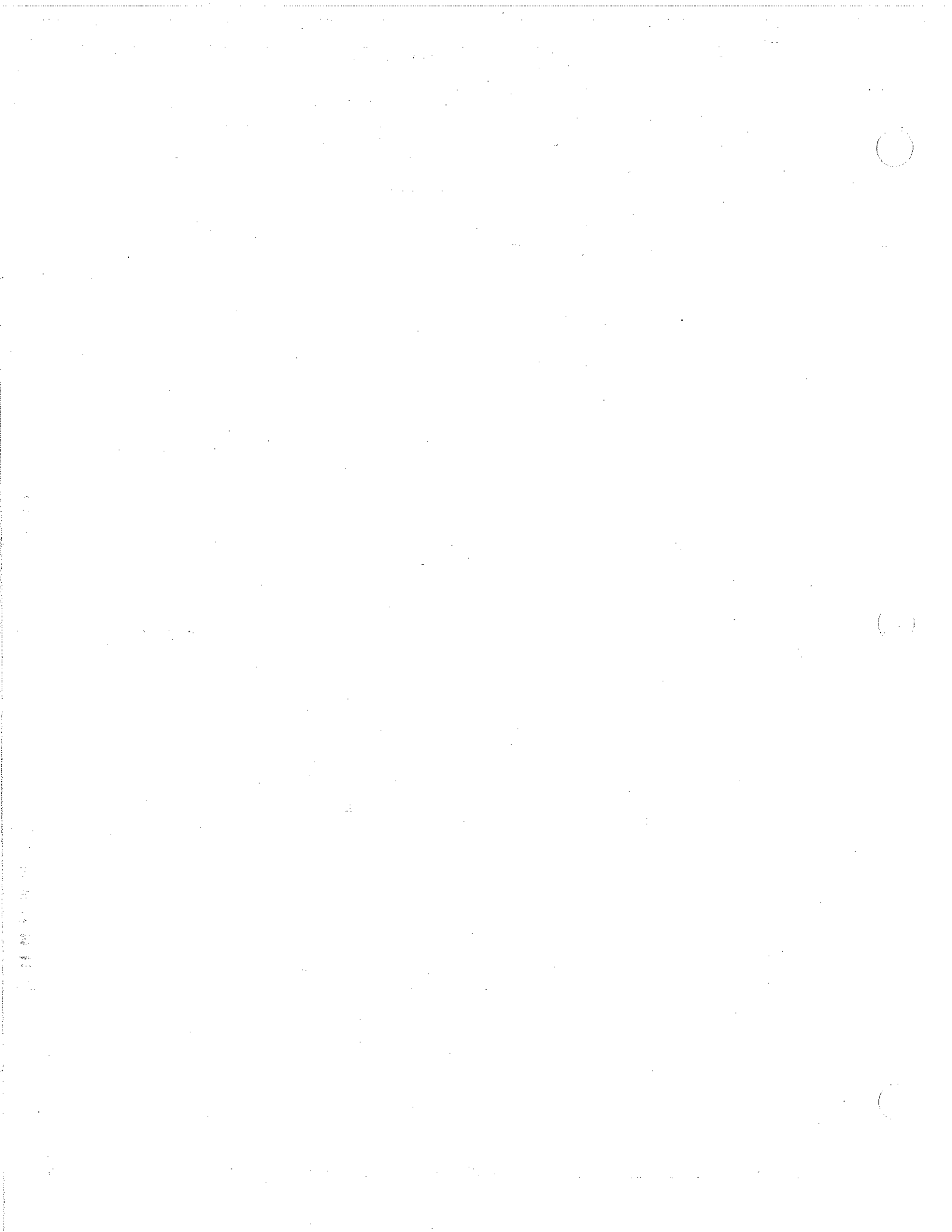
ROOF AIR CONDITIONING

The ducted system includes (3) three 13,500 BTU air conditioning units with condensate drains.

Operation: 120 vac is required from either generator or shoreline. The AC/Heat master switches, located on the Shifter Panel, for each a/c unit must be on. Remote thermostats are located in the driver's area, kitchen and bedroom. Refer to the operator's manual in owner's kit for detailed operating instructions.

CHASSIS AIR CONDITIONING

The 18,000 BTU system has an engine driven compressor. Controls are located on the left hand overhead dash panel. Either of the blower switches must be on for compressor operation.



AIR PRESSURE SYSTEMS

INTRODUCTION

The air pressure system on your coach is supplied by an engine driven compressor. It provides pneumatic power for brakes, suspension, and numerous accessories. This complex, but efficient system is not intended to be totally leak free. After overnight parking, you may notice a significant loss of pressure on the air pressure front/rear gauge, or in systems connected to auxiliary air. This condition is normal, and in fact, our air leakage tolerance is tighter than most manufacturers within the heavy duty equipment industry. Once the engine is running, the engine driven compressor will quickly build up the system to the correct pressure.

AIR BRAKES

Your motor home is equipped with dual service air brake systems for front, rear and tag axle brakes, with integral fail/safe operation; and manual/automatic rear spring (parking) brakes. The service brakes are completely independent systems, each including a reservoir and separate distribution lines and valves. The reservoirs are pressurized from a single compressor. Both service brake systems are brought into operation each time the brake treadle is depressed to slow or stop the coach. Reservoir pressure for each service brake system is monitored by a respective pressure gauge on the front panel; system failure(s) are indicated by low pressure readings, illumination of the Low Air failure lamp and sounding of buzzer.

OPERATION

When the coach is parked, and the engine off, the rear spring brake will normally be set by operating the parking brake. The spring brakes cannot be fully released until the air pressure is above 65 psi. These brakes are in the released position when the control is pushed in. In the event that there is a loss of air pressure, the spring brakes will set automatically, at the brake-applied position, and will not release until the air reserve has again built up to required value. Consequently, there will be a normal delay, after the coach is first started, while the compressor builds up pressure before the brakes can be released and the coach driven. When the brake treadle is depressed, to slow or stop the coach, reservoir air is applied simultaneously to both front and rear service brakes to effect the braking action. The spring brakes are held in a released position by the air pressure supplied from the associated reservoir tank.

CAUTION

Do not attempt to drive the coach until system pressure is above 90 psi.

BRAKE FAILURES

To compensate for normal lining wear, each brake system is individually self-adjusting.

Protection against brake system failures is provided by fail/safe features. If the front brakes fail, operating the brake treadle still activates the rear service brakes to provide stopping capability.

If a failure occurs in the rear, the front service brakes and rear spring brakes provide braking action.

In the unlikely event of a failure where both service braking systems are disabled, the rear spring brakes will apply automatically and bring the vehicle to a stop. As a safety factor, the coach should not be moved until any type of brake failure is corrected.

NOTE

With the front brake system service reservoir fully charged, enough air pressure is available to provide for four full releases of the rear spring brakes. This will allow the coach to be brought to a safe position until repairs can be accomplished.

AIR SUSPENSION SYSTEM

Air suspension bags cushion the front and rear axles. Ride height is automatically maintained by height control valves. Dumping these air bags when the vehicle is parked allows the rubber bumpers to come together and eliminate vehicle springiness. Two switches, located on the top right side of the LOWER DASH PANEL, control dumping and filling of the respective air bags. The SUSP. DUMP switch controls the front, rear and tag axle suspension; the TAG DUMP switch controls the tag axle only.

NOTE

The accessory air tank must contain at least 65 PSI pressure for the DUMP switch to function. The accessory air tank pressure does not register on the dash air pressure gauges.

Moving the SUSP. DUMP switch away from the UP position applies air pressure to air pilot-operated valves on the suspension system. The pilot air shifts the valves, cutting off the air supply to the air bags and allows the air in the bags to escape. After the suspension system has been dumped, and the ignition is turned on, a warning pilot light is illuminated on the dash to warn the driver that the system is dumped and not to drive the vehicle until the SUSP. DUMP switch is set to the UP position.

Refer to the manual in your owner's kit for additional information and maintenance instructions.

NOTE

The TAG DUMP switch may be used to dump the tag axle, only, for close quarter maneuvering or for added traction on the drive wheels. This switch must be in the UP position for normal operation.

ADDITIONAL AIR-OPERATED EQUIPMENT

Besides providing the compressed air supply for the coach braking and suspension systems, the compressor also provides the air supply for the entry step, front air vents, stepwell cover, tag axle, and waste dump system all via separately controlled solenoid switches operated from the dash, or at other locations throughout the coach. (This compressed air source is furnished from the front right side reservoir.) A compressed air outlet fitting and air gun are contained in a center storage compartment on the road side of the coach, convenient for inflating tires, and so on. A schrader valve (air connection) is available in the engine compartment to allow the air system to be pressurized from a "shop" source without the necessity of starting the engine.

AIR STEP SPEED ADJUSTMENT

The adjustments for the entrance step are located under the center portion of the step and are combined with sintered bronze exhaust filters. The extend adjustment is close to the center of step and the retract adjustment is to the rear.

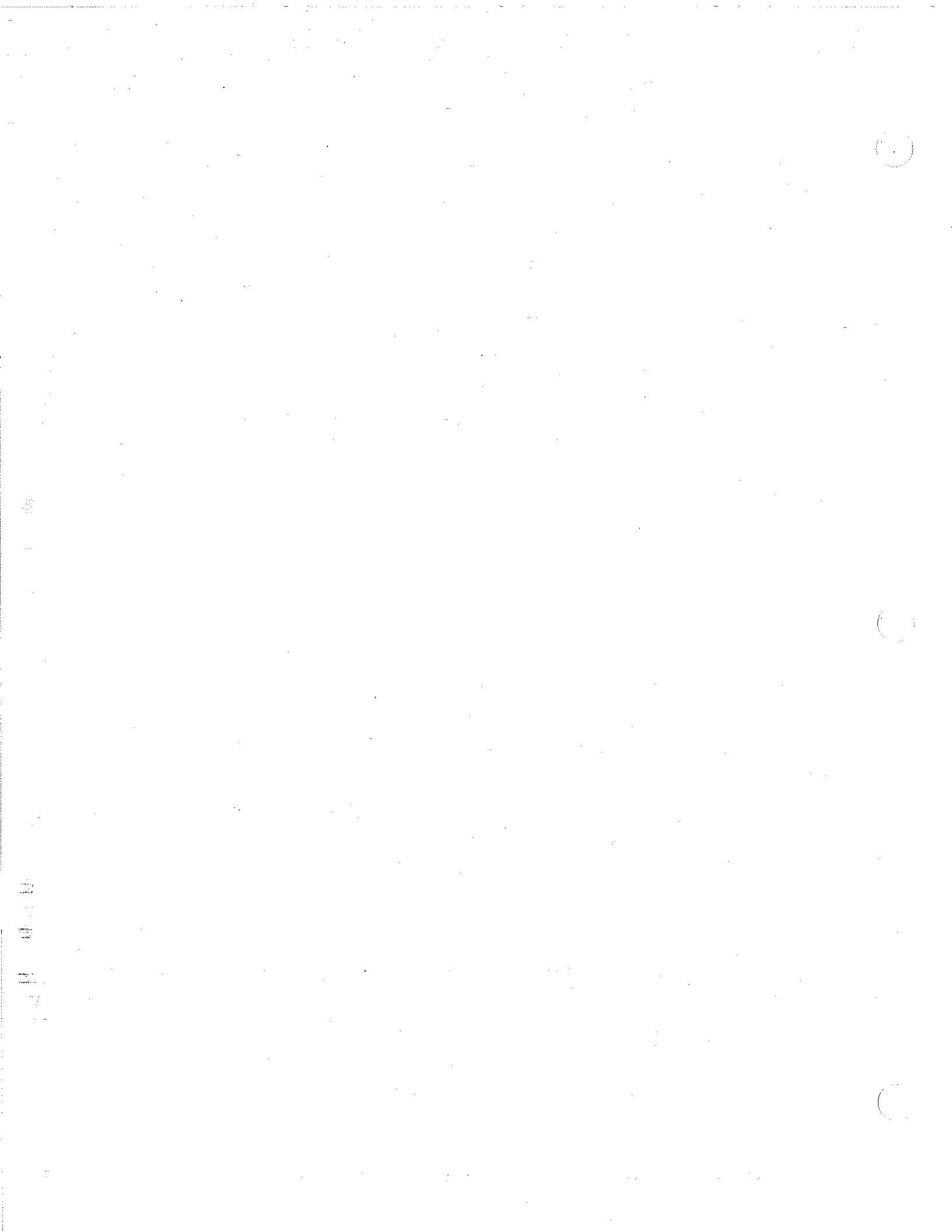
To adjust the extend or retract function, loosen the lock nut (7/16" wrench) and turn adjustment with blade type screw driver as follows. To increase speed turn counter-clockwise. To decrease speed turn clockwise. When adjustment is complete tighten lock nut.

COMPRESSED AIR SYSTEM AIR DRYER

The air dryer unit collects and removes moisture and contaminants from the compressor air output before the air reaches the reservoirs. This unit is different from a reservoir drain or an after cooler in that it provides dry air for the brake system by eliminating the possible accumulation of condensate in the system reservoirs. Note that each reservoir also has a drain cock on the bottom for draining accumulated moisture. This assures a long maintenance-free life for air brake system components due to the removal of system contaminants.

The air dryer is located between the compressor discharge (output) line and the compressed air reservoirs. A safety valve mounted in the air dryer housing assembly protects against excessive pressure buildup. The desiccant cartridge and pleated paper oil filters are easily removable and replaceable as a complete serviceable unit. The desiccant "Beads" which provide the drying action have a large capacity for absorption due to their combined surface area. In addition, an internal thermostatically-controlled heating element prevents freeze ups on the purge rail valve when the unit is used during sub-freezing temperatures.

Purging of the dryer is automatic, exhausting combined oil and water residue to the atmosphere. At the same time that the contaminants are purged, the reverse air flow across the desiccant material removes the accumulated moisture and reactivates the desiccant. Refer to Bendix Air Dryer Service Data Manual for more detailed information.



APPLIANCES

INSTANT HOT

Provides an additional hot water source at the kitchen sink. Switch is located in the kitchen base cabinet. Operates from generator or shoreline.

ICE MAKER

The ice-maker, located in the kitchen base cabinet, is designed to provide a continuous automatic supply of ice cubes. It will operate unattended providing the water supply line is open and AC power is applied to the unit. The water supply cutoff valve is located under the kitchen sink. The AC power may be supplied from shoreline, generator or inverter.

OPERATION

1. Put the ON-OFF Switch, located behind the hole at the top of the front grill, in the ON position.
2. Open the water supply valve, located under the kitchen sink.

The compressor will start. As soon as the ice maker mold reaches the proper temperature, the ice maker mechanism will fill the mold with water. The first cubes may be small because of air in the water line. Subsequent cubes will be of standard size. Approximate time for the first cycle is 45 minutes.

The following suggestions are made for best results.

- When the ice bucket is full, the ice making mechanism will shut off but the refrigeration system will continue to cycle to maintain the cube supply.

IMPORTANT

Never use an ice pick, knife, or other sharp instrument to separate cubes.

- During periods of limited usage or high ambient temperatures, it is common for cubes to fuse together. Ruffle cubes as needed.
- If ice maker is not used regularly, the ice bucket should be emptied periodically to ensure fresh cubes.
- It is normal for cubes to appear cloudy. This is nothing more than air being trapped in the water due to fast freezing. It has nothing to do with the health, taste or chemical make-up of the water. It is the same air that is in every glass of water you drink.
- To provide for higher ice rate (production of more cubes), adjust the temperature control to a warmer setting. If hollow cubes result, adjust temperature somewhat colder. For less cube production, adjust to a colder setting.

NOTE

Use a flat tip screwdriver to turn adjusting screw, located behind front grill, clockwise for colder or counter-clockwise for warmer.

- Cube size may be adjusted by changing the amount of water injected into the ice maker assembly.
 - A. Remove the ice maker assembly cover.
 - B. Locate the adjusting screw on the ice maker assembly control box. The adjusting screw is just below the minus (-) and plus (+) signs on the control box.
 - C. Turn the adjusting screw toward the minus (-) sign (clockwise) for smaller cubes or toward the plus (+) sign (counter-clockwise) for larger cubes.
 - D. Install the ice maker assembly cover.
- To stop ice production, but maintain the existing ice supply, manually raise the bin arm to the full up position.

PERIODIC CLEANING AND MAINTENANCE

- The unit is not frost free and must be defrosted periodically. To defrost, turn the unit OFF, remove cubes and prop door open at least two inches. To speed defrosting place pans or trays of hot water inside the unit.

CAUTION

DO NOT use any type of electrical heating device, ice pick, knife, or other sharp instrument to defrost, as this would damage the inner lining and void the warranty.

- Avoid the use of solvent cleaning agents, abrasives, and all cleansers that may impart taste to the ice cubes. The exterior may be cleaned with cleansers and polish as used on fine furniture.
- The front grill should be kept free of dust and lint to permit free air flow to the condenser.
- The condenser coil, located behind the front grill, should be cleaned three to four times each year. Using a brush or vacuum cleaner, remove dirt, lint and other accumulations from the condenser coil.
The condenser fins are SHARP. DO NOT run hands over condenser fins.
- The solenoid valve inlet screen must be cleaned at least once each year as follows:
 - A. Shut off the water at the water supply valve, located under the kitchen sink.
 - B. Remove the entire hose connector from the solenoid valve.
 - C. Use a toothbrush to clean sediment from the inlet screen. DO NOT remove the screen.
 - D. Attach the hose connector to the solenoid valve. Tighten connector securely with pliers. Open the water supply valve and check for leakage at the hose connector.

STORAGE

If the unit is to be stored or not used for extended periods, it will be necessary to drain the system of water.

1. Shut off water supply at the main water source.
2. Disconnect the water supply line from the solenoid valve.
3. Disconnect the water line from the solenoid valve outlet.
4. Allow the unit to run for an hour or more to drain all the water.
5. Dry out excess water from the ice maker assembly.
6. Prop the door open at least two inches.
7. Disconnect unit from main electrical power source.
8. Leave water supply line and power cord disconnected until ready to reuse.

NOTE

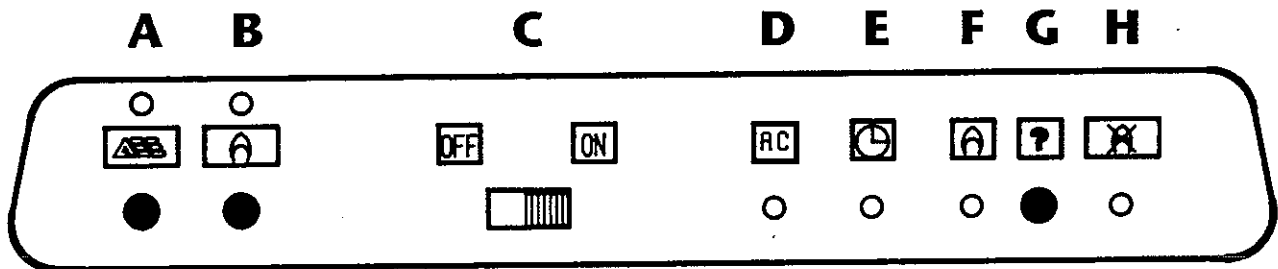
The use of anti-freeze or other products of this nature is not necessary and is not recommended.

FOOD CENTER

A variable-speed motor-driven unit, recessed in the kitchen countertop that may be used with blending attachments for a large variety of food preparation tasks. The food center is designed for AC operation and is operable only when the generator is on or when the coach is connected to shoreline.

REFRIGERATOR/FREEZER

The refrigerator is equipped with an Automatic Energy Selector (AES) control system, which can automatically select the most suitable energy source which is available - either 120 Volt AC or LP gas operation. The system can be set by the user to be fully automatic, or if desired, it can be set to limit operating modes to AC and LP gas, or LP gas only.



AES Control Panel on Refrigerator

OPERATING INSTRUCTIONS

LEVELING

In an absorption refrigerant system, ammonia is liquefied in the finned condenser coil at the top rear of the refrigerator. The liquid ammonia then flows into the evaporator (inside the freezer section) and is exposed to a circulating flow of hydrogen gas, which causes the ammonia to evaporate, creating a cold condition in the freezer.

The tubing in the evaporator section is specifically sloped to provide a continuous movement of liquid ammonia, flowing downward by gravity, through this section. If the refrigerator is operated when out-of-level when the vehicle is not moving, liquid ammonia will accumulate in portions of the evaporator tubing. This will slow the circulation of hydrogen and ammonia gas, or in severe cases, completely block it, resulting in a loss of cooling.

The vehicle needs to be leveled only so it is comfortable to live in (no noticeable sloping of floor or walls).

When the vehicle is moving the leveling is not critical, as the rolling and pitching movement of the vehicle will pass to either side of level, keeping the liquid ammonia from accumulating in the evaporator tubing.

OPERATION

Before starting the refrigerator check the gas valve in the piping. Do not forget the valve on the rear of the refrigerator.

1. To start the refrigerator set switch C to ON position. The lamp above push-button A will now turn green.
2. Turn the thermostat knob inside the cabinet to a suitable setting, e.g. start with normal position.
3. To shut off the refrigerator set switch C to OFF position.

FULLY AUTOMATIC MODE

When switch C is set to ON the lamp above push button A will light up (green) indicating that the control system is in the fully automatic mode. In this mode 120 Volt AC operation has first priority, meaning the refrigerator will operate on 120 Volt AC whenever it is available. If 120 Volt AC is not available, the system will automatically switch to LP gas operation.

LP GAS ONLY

If push button B is pressed the refrigerator will operate only on LP gas, even if 120 Volt AC is available.

120 VOLT AC AND LP GAS ONLY

If push-button C is pressed, the control system will select only between 120 Volt AC and LP gas operation. First priority is 120 Volt AC, which means the refrigerator will operate in this mode whenever 120 Volt AC is available.

MODE INDICATOR LAMPS

At the right side of the AES control panel are three (3) indicator lamps which give you information about the operation of the AES system. When the push-button G is depressed one of these indicators will light up, showing which operating mode the system is using.

There is an additional indicator lamp H at the far right side of the control panel. This indicator will light only when there has been a flame failure in the LP gas operation mode. (For further information see Flame failure during LP gas operation).

120 VOLT AC OPERATION

Since 120 Volt AC is usually the most economical energy source for operation of the refrigerator the AES control system is designed to select this mode whenever it is available [except when the push-button B, LP gas only mode is selected]. A 120 Volt heating element attached to the boiler tube provides the heat to operate the cooling system. The thermostat inside the refrigerator cabinet turns power on and off to this element as required to maintain the desired temperature.

LP GAS DELAY MODE

When the vehicle engine is turned off the AES system initiates a delay cycle which prevents the refrigerator from operating on LP gas for about 25 minutes. The purpose of the delay cycle is to avoid having a gas flame present during a refueling stop.

If the vehicle engine is restarted during this delay period the LP gas operation will not start until the delay period is over. This means that each time the vehicle engine is stopped, the complete 25 minute delay cycle will take place.

If 120 Volt AC becomes available during this delay cycle the AES system will start operating in the 120 Volt AC mode immediately.

If the vehicle is stopped somewhere other than at a gas station you may wish to cancel the delay cycle. To do this, set the main system switch C to OFF for several seconds then back to ON, and the system will start operating in the LP gas mode.

LP GAS OPERATION

When there is no electrical power available (120 Volt AC or if the indicator lamp above push-button B is lit), the AES system will switch to LP gas operation. When the thermostat in the refrigerator cabinet calls for cooling the following sequence takes place:

1. A high voltage spark is created above the burner.
2. Power is sent to a solenoid which opens the gas control, allowing LP gas to flow to the burner. The spark ignites the LP gas, and a small flame then provides heat for the boiler, and the cooling process begins.
3. A sensor electrode mounted above the burner tube monitors the flame continuously. If the flame should fail for any reason, the high voltage spark will start immediately, and relight the flame.

When the desired temperature is reached the thermostat will shut off the gas flame completely, and the system will remain on stand by until cooling is required again.

FLAME FAILURE DURING LP GAS OPERATION

If the gas flame does not ignite when the burner cycle begins, or if the flame fails during the burner cycle, the high voltage spark will continue sparking, up to 3 minutes. At that time the gas control will completely shut off the gas flow, the high voltage spark will cease and the indicator lamp H will light up. Lp gas operation will not restart as long as this indicator is lit. This shutdown is to make sure that the LP gas flow does not continue for a long time.

To restart LP gas operation, first set switch C to the OFF position for five seconds, then back to ON. The flame indicator will go off, and the system will start another cycle for ignition.

If the refrigerator has not been used for some time, or if the supply tanks have just been refilled, air may be trapped in the LP gas supply line. To purge this air from the lines may require resetting the ON/OFF switch three or four times.

If repeated attempts to start LP gas operation are not successful, check to make sure the LP supply tank is not empty. Also check all manual shut off valves in the LP gas supply line to make sure they are open.

If the problem is still not corrected, contact a service center for assistance.

When the flame failure indicator lamp H comes on, the mode indication lamp (green light) will go off indicating that all operation has stopped. However, if 120 Volt AC becomes available during this period, the mode selection lamp (green light) will come on, indicating that the refrigerator is operating on another energy source, the indicator lamp H will remain lit until there is an OFF/ON operation off the main system switch C.

LOW VOLTAGE MONITOR ON 12 VOLT DC CONTROL SYSTEM

The AES system requires 12 Volt DC power at all times to operate on any energy source, and to operate properly this DC power must be at 9.5 Volts or higher. If this voltage should drop below 9.5 volts the AES system will switch to an emergency cooling mode:

1. The mode indicator lamp (green light) will go off.
2. The system will revert to continuous LP gas operation - with no thermostat control.

The refrigerator will continue operating in this mode, without the thermostat in the circuit, until the DC power supply is increased to 10.5 volts. At that time the mode indicator lamp (green light) will come on and normal operation will resume. During this low voltage condition the interior light will continue to operate normally.

HOW TO USE THE REFRIGERATOR

FOOD STORAGE COMPARTMENT

The food storage compartment is completely closed and unventilated, which is necessary to maintain the required low temperature for food storage. Consequently, foods having a strong odor or liable to absorb odors should be covered. Vegetables, salads etc., should be covered to retain their crispness. The coldest positions in the refrigerator are underneath the cooling evaporator and at the bottom of the refrigerator.

The least cold positions are on the upper door shelves. This should be considered when different types of food are placed in the refrigerator.

FROZEN FOOD STORAGE COMPARTMENT

Quick frozen fruits and ice cream should be placed in the coldest part of the compartment which is on or just below the freezer shelf. Frozen vegetables, on the other hand, may be stored in any part of the compartment.

This compartment is not designed for the deep or quick freezing of food. Meat or fish foods, whether raw or prepared, can however, also be stored in the frozen food storage compartment, provided they are precooled in the refrigerator. They can then be stored about three times as long as in the fresh food storage compartment. To prevent food from drying out, keep it in covered dishes, containers, plastic bags, or wrapped in aluminum foil.

ICE MAKING

Ice cubes can be made in the ice trays. These should be filled with water to within 1/4" (5mm) from the top. For faster ice making, the trays should be placed in direct contact with the freezer shelf.

To release the ice cubes, seize the tray with both hands and twist the tray. Cubes not required should preferably be replaced in the tray. Refill the tray with water and replace the tray on the freezer shelf.

Ice making is accelerated if the thermostat knob is turned to the MAX setting. It is a good idea to do this a few hours before an anticipated need for ice, but be sure to turn the knob back to normal setting when the ice is formed or the food in the lower compartment may be frozen.

DEFROSTING

Shut off the refrigerator by setting switch C to OFF. Empty the refrigerator, leaving the drip tray under the finned evaporator, and the cabinet and freezer doors open. If desired, defrosting may be sped up by filling the ice trays with hot water and placing them on the freezer shelf. When all frost is melted, empty the drip tray and dry the interior of the refrigerator with a clean cloth. Replace the drip tray and ice tray. Replace all food and set the thermostat to MAX for a few hours. Then reset the thermostat to its normal position.

NOTE

On the RM 3804 the drip tray is placed on the rear side of the refrigerator.

CLEANING

To clean the interior lining of the refrigerator, use lukewarm weak soda solution. 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 damaged. It is important to always keep the refrigerator clean.

TO SHUT OFF THE REFRIGERATOR

To shut off the refrigerator, set switch C to the OFF position. IF the refrigerator will not be in operation for a period of several weeks, it should be emptied and cleaned and the doors left ajar. Use the travel latch, integrated in the handle, to lock the doors in the open position.

To activate the airing position of the hook, push the square button A forward at the same time as you fit the hook into the clamp. To release the door from airing position, pull the handle, release, and the hook will return to rest position.

CAUTION

Do not store explosive substances in the refrigerator, such as cigarette lighter gas, petrol, ether or the like.

Refer to the manual in your owner's kit for troubleshooting and maintenance.

COOKTOP (RANGE)

The gas supply for the cooktop burners is provided from the LPG tank. The cooktop is equipped with a 120 volt electric igniter. Refer to the manual in your owner's kit for detailed operating instructions.

MICRO/CONVECTION OVEN

The microwave/convection oven provides programmed microwave cooking, convection operation for crisp, even broiling, or a combination of both. (See the manual in your owner's kit for detailed operation and caution notes.) Operates from shoreline or generator.

ELECTRIC GRILL

The electric grill is stored on a slide out tray in the curb side rear luggage compartment.

NOTE: Grill will not operate unless grill and tray are in the fully extended position.

To use the electric grill, pull on tray to release tension latches at rear of tray. Pull grill and tray to its fully extended position. Ensure that the electrical plug is secure in receptacle and all components of the electric grill are in correct position. Refer to instruction manual on appliance (supplied in coach) for important safeguard and general cooking tips.

To store grill turn grill off and let unit cool down completely. Push grill and tray back into closed position and insure tray is secured by tension latches. Use tie down strap to secure top in stowed position.

CAUTION: Insure that grill is cooled completely before storage and that no flammable materials are stored in close proximity to stored grill.



AWNING OPERATION

A lift handle is furnished with the patio awnings in addition to the pull rod. This 6' aluminum handle may be used to lower/raise the rafter arm from/to locked position. For complete awning operation refer to **Zip Dee Owner's Manual**.

CAUTION

The patio awning is equipped with a manual lock at both ends of the awning. Before driving your coach, verify that both front and rear locks are properly engaged. Failure to lock both ends may allow the awning to unroll while in transit.

CAUTION

Be sure to raise patio awning high enough to clear the top of the entrance door.



CHASSIS SPECIFICATIONS

ACCELERATOR CONTROL

Electronic Accelerator with Transmission Computer Link Up for Precise Shifting.

AIR COMPRESSOR

12.0 CFM capacity @ 1250 RPM, Gear Driven

AIR RESERVOIR

Three tanks with 1760 cubic inch capacity and one tank with 1240 cubic inch capacity.

ALTERNATORS

Dual 160 ampere Delco, Belt Driven

AXLES

14,400 # Front; 23,000 # Drive, Single Speed, 3.42 (Standard) Ratio; 10,000 # Tag; All Wheel Bearings Oil Lubricated.

BATTERY

Three 12 Volt, Group 31, 2775 cold cranking amps @ 0 degrees F, 540 minutes reserve capacity; maintenance free.

BRAKES, EMERGENCY

MGM 36" Magnum Piston Type Spring Brake System with Treadle Valve Control – Separate Instrument Panel Mounted Valve provided for parking.

BRAKES, SERVICE

The coach is equipped with a dual service air brake system which includes two independent systems for the front and rear service brake. The front system includes a 30" brake chamber with 16-1/2 x 5 brake shoes, the rear system includes a 30" brake chamber with 16-1/2 x 7 brake shoes, and the tag has a 16" brake chamber with 16-1/2 x 7 shoes for a total of 1196 square inches of lining area. A Bendix air dryer is included with the air brake system. Each brake chamber has an automatic slack adjuster to compensate for brake shoe wear

CRUISE CONTROL

Combined with DDEC II Engine Control

DRIVE LINE

Spicer 1810 Series with Protective Guard Around Shaft

ELECTRICAL SYSTEM

12 Volt

ENGINE

Detroit Diesel Engine, 8V92TA Turbo charged DDEC II.

EXHAUST SYSTEM

16 Gauge Aluminized Steel with Heavy Duty Muffler (6 inch diameter - inlet & outlet)

FUEL FILTER

Racor Fuel Filter Water Separator and Preheater Secondary Filter at rear of engine

FRAME

Channel 10-1/8" high with 3-1/2" flanges made of 5/16" 50,000 PSI steel, section Modulus - 14.8 in.³ Channels doubled in high stress area - Section Modulus 40.9 in.³

FUEL TANK

300 gallon capacity

GROSS VEHICLE WEIGHT RATING

47,400 lbs. max.

HORN

Dual Electric and Dual Air with Selector Switch

OIL FILL & CHECK

Located at rear of engine on curb side.

SHOCK ABSORBERS

Direct acting, Double Action Piston Type; Front, Drive and Tag

STEERING GEAR

Ross Model TAS-85 with 23.3 to 1 ratio with Integral Power Steering and Tilt and Telescoping Steering Wheel.

SUSPENSION

Ridewell Air Suspension, 15,000 # Front, 25,000 # Drive and 14,000 # Tag. Front and Drive Systems Utilize 4 Air Springs Each, Tag System Utilizes 2 Air Springs.

TIRES

Tubeless 12R22.5 16-Ply rating Michelin Steel Cord Radial with XZA

TURNING RADIUS

- * CURB RADIUS 33.7'
- ** WALL RADIUS 38.5'

- * Curb radius is the distance from the center of the turn to the outside edge of the front tire.
- ** Wall radius is the distance from the center of the turn to the outside edge of the front bumper.

NOTE

Turning Radii is with Standard 12R 22.5 tires

TIRE/WHEEL CHANGE PROCEDURE

The wheel/tire assemblies used on your motor home are heavy-duty truck-type. They are heavy and may be difficult to handle. If at all possible, changes should be accomplished by a service station equipped to handle truck equipment. However, if a situation arises where no service facilities are available, the following procedures may be used.

CAUTION

Severe injury or death may result. **DO NOT** use the leveling system for changing tires or working under the vehicle. Keep the rear wheels in firm contact with the ground with the parking brake set. With the leveling jacks extended, there is a possibility the vehicle may move either toward the front or the rear.

NOTE

Jack and lug wrench are not furnished with coach. An outside drive axle wheel may be used to replace front or tag wheel until permanent replacement can be made. Road speed must not exceed 40 MPH.

FRONT AXLE WHEELS

1. Drive motor home out of traffic lane onto a level surface capable of supporting jack.
2. Turn on hazard flasher and apply parking brakes before leaving coach.
3. Turn off ignition and set transmission selector to Neutral (N) position.
4. Remove white plastic wheel saver from road side rear luggage compartment.
5. Place wheel chocks against front and rear of tires on opposite side.
6. Place jack under axle and raise slightly until securely in place.

CAUTION

Bumpers are not designed for lifting and/or towing of the vehicle.

7. Pull off lug nut covers.
8. Install wheel saver.

NOTE

It is recommended that the wheel saver be used when loosening or torquing lug nuts.

9. Loosen lug nuts slightly, then jack up coach until tire is clear of ground. Solidly support the vehicle under the main frame rails with jack stands or blocks before working under or around the coach.

NOTE

Lug nuts on right side of coach are right hand threaded (turn counter-clockwise to loosen, clockwise to tighten); lug nuts on driver's side of coach are left hand threaded (turn clockwise to loosen, counter-clockwise to tighten).

10. Remove lug nuts and wheel assembly.
11. Install spare and replace lug nuts. Tighten progressively in the sequence shown on lug nut tightening sequence diagram, starting with #1 and proceeding to #10. Final torque will be 450 to 500 foot-pounds. Wheel must be on ground for final torque.
12. Snap front hub cover into front wheel opening after front lug nuts have been properly torqued.
13. Place lug nut covers on all lug nuts. Make certain that these nut covers fit snugly. This is accomplished by squeezing the dimpled sides together before installing.
14. Lower coach to ground and remove jack and handle.
15. Replace wheel saver, lug wrench, jack and handles in storage compartment and tie down to prevent road noise. Return damaged wheel/tire assembly to holder and have it repaired as soon as possible.
16. Remove and stow wheel chocks.
17. Turn off hazard flasher before returning to traffic.

DRIVE AXLE DUAL WHEELS

1. Repeat steps 1 through 10, front axle wheels.
2. Loosen inner lug nuts (studs with square heads), if inner wheel is to be replaced.
3. Remove outer lug nuts from the (5) studs which have lock rings and slide hub cover over remaining lug nuts.
4. Remove the (5) remaining lug nuts and wheel.
5. Remove inner lug nuts and inner wheel, if inner wheel is to be replaced.
6. Install replacement wheel and inner lug nuts. Tighten progressively, in the sequence shown on lug nut tightening diagram, starting with #1 and proceeding to #10. Final torque should be between 450 and 500 foot-pounds.
7. Install outer wheel (or replacement wheel) and lug nuts over inner lug nuts marked 1, 3, 7, 9 and 6. Torque nuts in the following sequence 1, 7, 6, 3 and 9 to between 450 and 500 foot pounds.
8. Install hub cover over the (5) lug nuts holding wheel to hub. Place lock rings and lug nuts on remaining inner lug nuts 10, 5, 2, 4 and 8.
9. Replace wheel saver.
10. Torque nuts in the following sequence 10, 2, 8, 5 and 4 to between 450 and 500 foot-pounds. Wheel must be on ground for final torque.
11. Return to step 13 of Front Axle Wheels and continue.

NOTE

When checking torque on dual wheels loosen all outside lug nuts. Check torque on inner lug nuts (studs with square heads) for torque value shown above then torque outer lug nuts to value shown above.

TAG AXLE WHEELS

1. Repeat steps 1 through 9, front axle wheels.
2. Remove lug nuts from the (5) studs which have lock rings and slide hub cover over remaining lug nuts.
3. Remove the (5) remaining lug nuts and wheel.
4. Install replacement wheel and lug nuts on studs marked 1, 3, 6, 7, and 9.
5. Torque nuts in the following sequence 1, 7, 6, 3 and 9 to between 450 and 500 foot pounds.
6. Install hub cover over the (5) lug nuts holding wheel to hub. Place lock rings and lug nuts on remaining studs 10, 5, 2, 4 and 8.
7. Replace wheel saver.
8. Torque nuts in the following sequence 10, 2, 8, 5 and 4 to between 450 and 500 foot pounds. Wheel must be on ground for final torque.
9. Return to step 13 of Front Axle Wheels and continue.

CAUTION

Check lug nuts for tightness every 1,000 miles. Lug nuts should be torqued to 450 to 500 foot-pounds.

TIRE INFLATION - TOWING - TRAILER

GVWR. FRONT AXLE 14,400 LBS

TIRE INFLATION

Under-inflation causes needless tire wear and promotes excessive fuel consumption. Check tire pressures on a regular basis.

The Federal Certification Label, shows the cold tire inflation pressures necessary to support the Gross Axle Weight Ratings.

These pressures can be reduced to greatly improve the ride quality after the actual axle weights have been determined (see Vehicle Loading in the Introduction Section).

The chart below is taken from the Michelin Tire Data Book and shows the recommended tire inflation pressures for various axle weights. If any axle weight is on the borderline, always use the higher pressure. Be sure weight is distributed evenly, side to side.

FRONT 115 DRIVE: 100 TAG: 80

LOADS PER AXLE (lbs.) AT DIFFERENT PRESSURES										
2 TIRES: SINGLE (S) 4 TIRES: DUAL (D)										
INFLATION PRESSURE (psi)										
SIZE - 12 R22.5 MAX. SPEED - 65 MPH										
PSI	70	75	80	85	90	95	100	105	110	115
LBS. S	9,410	9,980	10,560	11,140	11,740	12,310	12,910	13,480	14,060	14,780
D	16,840	17,860	18,960	20,030	21,130	22,190	23,220	24,220	25,220	26,440

Bridges ALL - 315/75 TAG: 70 DRIVE: 90 FRONT: 100

In addition, a tire inflation information plate is located inside the road side luggage compartment near the air gauge and hose. These are normal pressures as long as the axle weights are not in excess of those shown.

TOWING

Two towing eyes are provided behind the upper part of the generator door. Remove generator panel and center light bar for access.

CAUTION

Do not tow a vehicle equipped with Allison automatic transmission unless the drive shaft has been removed, or the rear wheels raised from the ground. Do not attempt to tow unit by front axle or crossmember. Damage to wiring and/or air lines can result because of proximity of these items to front crossmember. Do not tow with generator tray extended. Do not tow by the bumpers. Air pressure is required to release brakes.

TRAILER HITCH CAPACITY

The Receiver Type Hitch and Drawbar are rated for a 10,000 lb. maximum towing capacity and a 1,000 lb. maximum tongue weight capacity.

Standard equipment includes a 2" hitch ball with a 1" shank rated for a 5,000 lb. maximum towing capacity and 500 lb. maximum tongue weight. Hitch ball nut must be torqued to 200 ft. lb.

NOTE

For more towing capacity, we offer an optional 2 5/16" hitch ball with a 1 1/4" shank rated for a 10,000 lb. maximum towing capacity and 1,000 lb. maximum tongue weight. Hitch ball nut must be torqued to 200 ft. lb.

UPPER DASH PANEL

NOTE

Some items operate at all times, some require the 12 volt master (A/T switch) to be on, while others need the 12 volt master and the ignition on. Gauges marked with an * require the engine to be at normal operating temperature for correct readings.

***WATER TEMPERATURE**

Normal: 180 degrees to 210 degrees F
Monitors engine coolant temperature.

CAUTION

If the engine temperature gauge indicates excessively high temperatures, the engine may be overheating and should be stopped to prevent damage. Allow the engine to cool before checking the radiator coolant level.

***OIL TEMPERATURE**

Normal: 200 degrees to 250 degrees F
Gives a constant reading of the engine oil in the supply line from the pump. If the temperature goes over 250 degrees, the engine may be low on oil or there is overheating of the cooling system.

CAUTION

Your Wanderlodge is designed to operate at ambient temperatures up to 100 degrees F with no problems. If temperatures greater than 100 degrees F are encountered, the operator must closely observe engine water and oil temperature and transmission oil temperature to avoid overheating conditions. If overheating conditions occur at ambient temperatures less than 100 degrees F, the cooling system must be checked and problem corrected.

***OIL PRESSURE**

Normal: 50 to 70 psi at cruising speed, 5 psi minimum at idle. This gauge indicates the pressure of the oil, not the amount of oil in the engine reservoir.

CAUTION

No oil pressure, or low oil pressure readings (below 25 psi) when engine is operating at cruising speeds are trouble indications! **DO NOT** Operate the Engine Under These Conditions!

AIR PRESSURE FRONT/REAR

Normal: 110 to 135 psi

The Dual Air Service Brake Pressure systems are engine operated and supply independent brake system air pressure for front and rear service brakes and the parking brake. During normal operation, each air pressure gauge reading will build up to 110 psi to 135 psi shortly after the engine is started. Note that, as a safety feature, the parking brake cannot be released until air pressure readings are at least 65 psi.

FUEL LEVEL

Indicates the amount of diesel fuel remaining in the tank. Note that the generator also gets its fuel supply from this tank. The gauge reads only when the ignition switch is in ON position. As a precaution against generator operation draining the fuel supply, the generator fuel pickup is shorter than the engine pickup. Separate fuel filters are provided for each fuel line.

ALTERNATOR/CHARGER AMPS

Shows charging amps of alternator 1, alternator 2, or the sum of alternators 1 and 2 depending on the position of the alternators amps switch on the lower dash. When parked, with a source of 120 vac (shoreline or generator) the gauge will show a total output of the battery charger.

DC VOLTS COACH

Normal: 14 Volts \pm 0.5

Monitors the actual voltage at the coach batteries with the engine running.

DC VOLTS ENGINE

Registers the actual voltage at the engine batteries. With the engine running, gauge should read 14 volts (\pm 0.5).

LOW FUEL

When this light comes on the operator should begin looking for a refueling station.

LOW AIR (LIGHT & BUZZER)

These warn the driver that there is an insufficient supply of air (65 psi or less) to properly operate the coach. If the air pressure is low, when the ignition key is turned on, the light and buzzer will come on immediately. Both warnings will continue until the air pressure is built back up, or the ignition key is turned off.

ACCESSORY

This blank position may be used for the installation of an additional switch for customer add-on equipment.

CAUTION

Use existing panel holes for installation of additional controls or indicators. Drilling new holes will destroy the electroluminescent lighting.

A/T

(Anti-Theft) deactivates the starting system for protection against unauthorized cranking and theft. This switch also provides 12V master switch operation to shut off 12V battery power to all circuits except digital clocks, radio memory, monitoring panel functions, refrigerator control system, and burglar alarm.

ENGINE ALARM

This red light with the word FIRE will come on when signaled by over temperature sensors in the engine compartment.

HEADLIGHT ALERT

When the ignition switch is turned off while headlight switch is on, this warning light, along with a buzzer, will come on. These will remain on until the headlight switch is turned off or the ignition switch is turned back on.

LOWER DASH PANEL

NOTE

Some items operate at all times, some require the 12 volt master (A/T switch) to be on, while others need the 12 volt master and the ignition on. Gauges marked with an * require the engine to be at normal operating temperature for correct readings.

SPEEDOMETER

Indicates speed and accumulated mileage (odometer). This is a solid-state electronic monitor.

TACHOMETER/HOUR METER

Indicates actual engine RPM (Revolutions Per Minute) when scale (0-40) reading is multiplied by 100. Idle RPM should be 600 and full load (uphill) 2100 RPM. May go to 2425 RPM under no-load conditions (downhill). HOURMETER shows number of hours engine had been in operation.

TAG AXLE PRESSURE

Monitors the tag axle suspension pressure. Factory set at 60 psi.

CAUTION

Before driving, check gauge to make sure there is pressure in the tag axle air bags. This is critical for proper coach axle weight distribution. Applying brakes with tag axle suspension not inflated will likely cause tire skid and "flat spotting".

TRANS. OIL TEMPERATURE

Indicates temperature of the transmission oil. If the WARNING LIGHT comes on reduce use of transmission retarder. See information on use of transmission retarder in the Transmission Section.

HIGH BEAM INDICATOR

The Blue Bird logo is illuminated when high beam is selected using steering column switch.

ACCESSORY WARNING LIGHTS

WATER IN FUEL

This light comes on when there is an excess of water in the bottom of the fuel tank.

SUSP. DUMP

Light comes on to indicate that the suspension system has little or no air, and that the suspension needs to be pressurized before the coach is driven. See Air Pressure System.

LEVEL WARNING

This light comes on when any of the four (4) leveling jacks are not fully retracted.

TURBO PYROMETER

Registers the temperature of the exhaust gas output of the Turbo. The correct temperature of the exhaust should be around 600 degrees F at power.

***TURBO BOOST**

Registers the pressure of the Turbo Compressor outlet. The gauge should read an approximate maximum of 23.2 psi at maximum power.

COMPARTMENT LOCK

Actuates (optional) electric locks on compartment doors. Doors may be opened with key or actuated from key pad by entrance door or compartment lock/unlock switch by entrance door.

MIRROR HEAT

This switch turns on a thermostatically controlled heater in the right and left outside mirrors (convex mirrors excluded). With the switch ON the mirror heaters will automatically come on to defog the mirrors.

DEFROST

Turns on the blower for defrosting or defogging the windshield. Set to HI- or LOW speed as desired. See Defroster Operation for additional information.

REAR PARKING

This switch controls the on-off operation of the rear parking lights (rectangular halogen lights on the rear of the coach) when transmission selector lever is in R. An indicator next to the switch-lights when the rear parking lights are on.

HEAT (PILOT'S)

To turn on the chassis heater blower for the pilot's area press this switch to either the HI- or LOW position. See Heating Systems for additional information.

HEAT (CO-PILOT'S)

To turn on the chassis heater blower for the co-pilot's area press this switch to either the HI- or LOW position. Note that when the front heat control is in cool position the heat switches can be used to provide cool air circulation by turning on the blowers. See Heating Systems for additional information.

LEFT LANDING

At the ON position this switch turns ON the landing lights on the left side. Note that a small green indicator lights when the lights are on.

RADAR MASTER

Turns on power to radar detector. The RADAR DETECTOR is a high-sensitivity superheterodyne microwave radar detector. This unit, is designed to activate when transmission are received from radar-type speed detection equipment.

NOTE

Because some states have ruled radar detection equipment illegal, it is the responsibility of the driver or owner to obey the appropriate laws. (There are quick-disconnect features provided which allow for easy removal of the unit.)

See Radar Detector Owner's Manual for additional instructions.

ACCESSORY

This blank position may be used for the installation of an additional switch and indicator light for customer add on equipment.

CAUTION

Use existing panel holes for installation of additional controls or indicators. Drilling new holes will destroy the electroluminescent lighting.

RIGHT LANDING

At the ON position this switch turns ON the landing lights on the right side. Note that a small green indicator lights when the lights are on.

DASH DIMMER

This control will only operate when the headlight switch is in the on position. The background lighting (electro-luminescent) for the dash can be dimmed by turning counter-clockwise and brightened by turning clockwise.

HEADLIGHTS

The Headlight switch serves two functions. Press P for parking lights and gauge illumination. Press the bulb symbol for headlights, parking lights and gauge illumination. The dimmer controls brightness of all gauges in dash. Turn counter-clockwise to increase or clockwise to decrease the brightness.

AISLE LIGHTS

This switch allows you to turn the aisle lights on or off from the pilot's chair.

LEFT TURN

When the turn signal lever is pulled down into the left turn position, this indicator flashes in conjunction with the outside directional lights.

The left cornering light will come on continuously if the headlights or the parking lights are turned on while the turn signal lever calls for a left turn.

FAN OVERRIDE

This switch operates the engine cooling fan in the engine compartment. Normally, this fan will operate at 125 to 400 RPM from an engine RPM of idle to 2100. If the coolant temperature reaches 195 degrees F, the fan will be thermostatically controlled to run at 1800 RPM. To override the thermostat, turn the fan override switch ON, and the engine cooling fan will turn 1800 RPM continuously at any temperature. The indicator light shows the fan override is engaged.

AUXILIARY BATTERY

A three-position switch — On, Off, and Momentary On. The Momentary On position connects chassis and coach batteries to aid in engine or generator starting should this need arise. The On position connects both sets of batteries to the battery charger and is primarily intended to maintain all batteries during long-term storage. The Off position is the normal position while the coach is in use either driving or parked.

SUSP. DUMP

Switch for main suspension air. See **Air Suspension System** for operation.

ALTERNATOR AMPS

Selects the display mode of the Alt Charging Amp gauge on the upper dash. When depressed to the left, alternator 1 amps are displayed. When depressed to the right, alternator 2 amps are displayed. When in the center position, the sum of alternator 1 and 2 amps or battery charger output is displayed. The indicator lamp next to the switch will come on whenever a fault condition occurs with alternator 1 or 2.

AIR COMPRESSOR MASTER

This switch operates the auxiliary air compressor (optional equipment) which is a 120 vac operated back-up air compressor. See **Optional Equipment** for additional information.

TAG AXLE DUMP

Switch for tag suspension air. See **Air Suspension System** for operation.

HORN SELECTOR

Allows selection of the air or electric horns when the steering wheel horn button is depressed.

BACK UP ALARM

This switch, in the ON position, enables the back-up alarm buzzer when transmission selector is in R.

WIPER DELAY

Knob adjusts wiper speed from 2 to 20 sweeps per minute when intermittent operation is selected at steering column switch.

AUX. STEP

An ON-OFF switch when set to the EXTENDED position with the ignition off, activates a relay locking the outside entry step in the EXTENDED position. When the ignition is turned on, the entry step automatically extends when the door is opened and automatically retracts when the door is closed. The indicator reminds you that your switch is in the ON position.

HAZARD

This switch turns on the emergency flashers. When switch is used, both left and right turn signals will flash in unison.

THE HORN

See Musical Horn for operation.

RIGHT TURN

When the turn signal lever is pushed up into the right turn position this indicator flashes in conjunction with the outside directional lights. The right cornering light will come on continuously if the headlights or the parking lights are turned on while the turn signal lever calls for a right turn.

The indicator, along with the left turn indicator and all outside directional lights, flash in unison when the HAZARD switch is pressed to the ON position.

LO WASH FLUID

Light indicates when there is approximately 1/4 fluid level remaining in the fluid reservoir. See Windshield Washers for additional information.

UPPER RIGHT HAND DASH PANEL

LIGHTER

Depress to heat the element; pops out when hot.

DOOR LOCK

Switch used to lock and unlock the dead bolt lock on the entrance door.

COLD START

An ether injection system used to aid starting the engine in cold weather. To activate valve, depress switch for three seconds to fill valve then release switch to inject charge into engine. Allow three seconds before starting engine.

CAUTION

Use only for starting engine and inject just prior to cranking.

LEFT VENT

Opens and closes pilot's fresh air vent.

RIGHT VENT

Opens and closes co-pilot's fresh air vent.

NOTE

To circulate fresh air:

1. Open fresh air vent with the **RIGHT VENT** switch.
2. Adjust **FRONT HEAT** temperature slide to desired setting.
3. Turn on blower for the desired fresh air location (pilot, co-pilot or both) with the **HEAT (PILOT'S)** and **HEAT (CO-PILOT'S)** switches.
4. To obtain ram air for the pilot without running the blower, turn the left vent switch to open.

LOWER RIGHT HAND DASH PANEL

IGNITION SWITCH

A four-position, standard-type key switch. In OFF position (center), ignition and accessory positions are disabled and the key can be inserted or removed. In ON position (right) the battery is connected to the engine-run ignition circuits (with A/T switch on) and the key can be advanced to START to start the engine, providing that the transmission selector is in neutral N position, and toggle switch in engine compartment is in FRONT position. The accessory position is not used.

SHIFTER PANEL

SHIFTER

This is the push button shift selector made available with the Allison Transmission Electronic Control (ATEC). See Transmission Section for detailed description.

RETARDER

Refer to Transmission Section.

ACCESSORY POSITION

This blank position may be used for the installation of an additional switch for customer add on equipment.

CAUTION

Use existing panel holes for installation of additional controls or indicators. Drilling new holes will destroy the electroluminescent lighting.

CLS LPS

This switch controls the operation of the clearance, identification and marker lights. The switch has three positions and each position has the following function. In the ON position the lights will remain lighted continuously. When the switch is in the middle (OFF) position, these lights are turned on by the headlight switch. The MOM OFF position is to flash lights as a courtesy signal when the headlight switch is ON.

LIGHTS

Switches for fog lights or driving lights. Fog lights will only operate while headlights are on low beam. Driving lights will only operate with headlights on high beam.

CRUISE CONTROL

These three switches operate in the following manner: The switch on the left turns the cruise control on or off. The switch on the right locks the cruise control in on the desired cruising speed and permits resetting at a lower speed following a previous setting. The switch in the middle permits returning to cruising speed following disengagement by stopping and also permits obtaining a higher cruising speed.

NOTE

The coach must be traveling at least 35 MPH before the cruise control will operate properly.

When the desired speed is reached, press the ON-OFF switch to the On position, then press the Set-Coast switch to the Set position and hold for two seconds before releasing. The coach should automatically remain at that speed. If a lower cruise speed is desired, press the Set-Coast switch to the Coast position and hold until the desired cruising speed is obtained. Release the switch immediately. The coach should remain at the new speed.

Following disengagement of the cruise control by braking, the previously set cruising speed may be obtained by depressing the Resume-Accel switch to the Resume position for two seconds. Note that the coach should be at or above 35 MPH before attempting the Resume function. In addition, if the ignition switch has been turned off, the previous cruise speed will be erased from memory and the new cruise speed will be that speed when the Resume switch was pressed.

If a higher cruising speed is desired and the cruise is enabled, press the Resume-Accel switch to the Accel position. The coach will begin to accelerate. When the higher desired cruising speed is obtained, immediately release the Accel switch. The coach should remain at the new speed

NOTE

If retarder becomes activated, it will disable the cruise control.

ENGINE MONITOR

HIGH IDLE

This switch when turned to On, increases the engine idle speed to approximately 1100 RPM. This will provide a faster engine warmup and also provide better cooling when stopped in traffic with chassis A/C on.

NOTE

Your motor home is equipped with an engine shutdown protection feature.

ENGINE SHUTDOWN PROTECTION FEATURE

The engine will shutdown within 30 seconds after the stop engine lamp illuminates. The engine will power down from 100% throttle to 70% throttle immediately. Power reduction will continue to reduce to 50%. The stop engine override switch can be used to reset the 30 second shutdown sequence (must be depressed prior to engine shutdown) with a maximum power of 50%. This shutdown protection feature will begin when limits of oil pressure, oil temperature, coolant level or coolant temperature are exceeded.

STOP ENGINE

Indicates when a potential engine damaging condition has been detected.

STOP ENGINE OVERRIDE

This switch momentarily overrides DDEC engine shut-off system.

CHECK ENGINE

Indicates that a problem has occurred.

ENGINE TEST

This switch is to check the system for problems.

TRANS TEST

A TEC has a built-in diagnostic system. If any problem should develop, the Check Trans. light will come on.

A Detroit Diesel Allison service facility will immediately be able to determine the cause by pushing the momentary Trans. Test rocker switch. The Check Trans. light will then blink out the code for the problem. For codes, refer to diagnostics card furnished in the owner's kit.

COCKPIT LIGHT

This switch controls On-Off operation of the reading lights above the driver.

AC/HEAT MASTER

These switches allow the driver to start or stop the roof air conditioners or the electric heaters from the dash area while driving.

LEFT HAND LOWER DRIVER'S AUXILIARY PANEL

MONITOR

Brightness, contrast and On/Off controls adjust in the same manner as any black and white TV.

System includes CCTV camera located in rear of coach. See **Video and Audio** Section for more information. Refer also to manual for additional information.

CHASSIS HEAT

This slide control opens or closes and modulates the valve in the Chassis heater hose line. Controls heat to the pilot/co-pilot area. Refer to Heating Systems for additional information.

CB VOLUME

Volume control for CB speaker.

ELECTRIC MIRROR ADJUST

Each switch controls both left and right mirror heads. Rotate the switch either left for the left mirror or right for the right mirror. Pushing the switch knob to the left rotates the selected mirror to the left, pushing the switch knob to the right rotates the selected mirror to the right, pushing the switch knob up rotates the selected mirror up, and pushing the switch knob down rotates the selected mirror down. The two switches provided control the upper (flat) and lower (convex) section of each mirror, as marked. The mirrors also contain a heating element to help prevent fogging over in inclement weather. The switch for the heater element is located on the lower dash panel.

LEFT HAND OVERHEAD DASH PANEL

ENGINE PREHEAT

Energizes the engine coolant circulation pump for heat exchangers in the hydronic system. The indicator light shows the pump is on.

WATER PUMP

Switch for "Demand" water pumps in fresh water system. Indicator light shows when pumps are enabled.

DASH DIMMER

This control will only operate when the headlight switch is in the on position. the background lighting (electro-luminescent) for the overhead dash can be dimmed by turning counter-clockwise and brightened by turning clockwise.

SPOTLIGHT

The roof-mounted remote-control high intensity spotlight is operated by the SPOTLIGHT controls. The spotlight produces 130,000 BCP (beam candle power) and can be turned on and off, positioned horizontally or vertically at an adjustable rate of speed, and can be used for spot- or flood-lighting. The following controls operate the spotlight:

SPOTLIGHT BEAM SELECTOR SWITCH

Depressing left side of switch turns on both lights in the FLOOD mode. Right side position selects SPOT mode. Center position is OFF.

SPOTLIGHT SPEED CONTROL

Adjusts speed of light head movement during aiming function.

SPOTLIGHT AIM CONTROL

Controls horizontal and vertical beam position of light.

CAMERA DEFOG

Energizes the circulation fan in the compartment for Closed Circuit TV (CCTV) camera to minimize interior fogging.

AIR CONDITIONER

Controls the pilot and co-pilot chassis air.

LEFT FAN SWITCH

Three speed blower for left front area of coach.

TEMPERATURE SWITCH

Thermostat setting controls temperature by cycling compressor.

RIGHT FAN SWITCH

Three speed blower for right front area of coach.

CLOCK PANEL

This panel includes a digital readout. Four switches to the left of the display set clock timing. To set TIME display, press HR SET/MIN SET switch to HR SET position and hold until correct hour is displayed; repeat with switch in MIN SET position until correct minutes are displayed.

The ELAPSED TIME display will show elapsed time in terms of hours and minutes, or in minutes and seconds, depending on the position of the HRS/MIN-MIN/SEC switch. Set this switch as desired, press ZERO or reset the display to a 00:00 readout, and the elapsed time will count. The HOLD/GO switch may be set to HOLD position to suspend operation of the elapsed time display; for elapsed time operation, leave switch in GO position.

SAFELINE ALARM

The Safeline alarm operates whenever the shoreline is connected to the coach and the ignition switch is in the ON position as a reminder to disconnect the shoreline before driving away.

With the Safeline switch ON, the alarm is given by buzzer sound and red light. The buzzer can be deactivated in favor of a flashing amber light by turning off the switch. In addition, this alarm will operate whenever the TV antenna is not fully retracted.

ACCESSORY

This blank position may be used for the installation of an additional switch for customer add on equipment.

CAUTION

Use existing panel holes for installation of additional controls or indicators. Drilling new hole will destroy the electroluminescent lighting.

WATER IN FILTER

Light and buzzer alarm indicates that excess water is in the Diesel Fuel Filter (Racor).

GENERATOR START/STOP

See Generator Section for operating instructions.

TRIP ODOMETER

Indicates miles driven since last reset. Depress bar to reset.

ANTENNA SWITCHES

Both switches must be pushed simultaneously to cause raising or lowering of TV antenna. Indicator will light and a buzzer will sound when TV antenna is up from the secured position when ignition switch is turned on.

FUEL VACUUM GAUGE

Racor fuel filter element should be changed when pointer goes over 10 inches HG vacuum. See Racor Fuel Filter.

RIGHT HAND OVERHEAD DASH PANEL

GENERATOR OIL PRESSURE

Shows the oil pressure, not the amount of oil in the generator engine reservoir. This gauge will normally read between 30 and 60 psi. Low oil pressure indications are often a symptom of possible generator failure. Oil level should be checked on a regular basis. Note that the generator has a low-oil pressure shut-off switch which activates if the generator oil pressure falls below 15 psi.

GENERATOR WATER TEMP.

Displays generator engine coolant temperatures. Normal operating temperatures vary from 160 to 200 degrees F. If consistently high temperatures are indicated, shut down the generator, wait for the engine to cool, then check radiator coolant level. Note that the generator has a high-temperature shut-off switch which activates if the generator temperature reaches 208 degrees F.

D.C. AMPERAGE

Ammeter on left (labeled CHARGE) shows net current flow to or from batteries. Needle movement from the center of the gauge indicates discharge to the left and charge to the right. When parked, following highway travel, it is normal to see a needle position to the left of center even when plugged into shore power (or running generator). This will gradually diminish and should eventually show some movement to the right with coach loads turned off.

Ammeter on right (labelled COACH LOAD) shows current demand of 12 volt load.

A.C. VOLTAGE

Voltmeter on left monitors LEG ONE while that on right monitors LEG TWO of 120 volt alternating current circuits.

CAUTION

Appliances can be damaged by low voltage. Loads should be balanced so voltage does not drop below 110 volts for either leg. Low campground (shore power) voltage can be detected quickly from gauge readings. If cause of low campground voltage can not be corrected, generator power will have to be used during periods of high appliance demands.

A.C. AMPERAGE

Ammeters show current flow in LEG ONE (left) and LEG TWO (right) of 120 volt alternating current circuits. POLARITY NORMAL indicator (yellow), lights whenever the shoreline hookup is properly connected and grounded and line polarity is compatible with coach wiring and a POLARITY REVERSED indicator (red) lights when hookup is reversed.

A faulty ground connection is indicated if none of the LEDs are lighted.

ENTRANCE DOOR SYSTEMS CONTROL PANEL

(Note: This is located on the wall beside the co-pilot's seat).

ACC

Accessory Blank Position / LH PORCH LIGHT - 3WAY

DOOR LOCK

Activates the dead bolt lock on the entrance door.

PORCH

Operates all exterior right hand side porch lights.

UPPER LIGHTS

Controls the fluorescent lights above the living room overhead cabinets.

LOWER LIGHTS

Controls the fluorescent lights under the living room overhead cabinets.

CO-PILOT

Controls the co-pilot reading light.

CO-PILOT SYSTEMS CONTROL PANEL

STEPMASTER

If it is desirable for the step to be left in the extended position, for repeated trips into the coach, the Step Master may be switched.

NOTE

When air pressure drops below 65 psi the entrance step will extend and lock into place. The step will not retract until sufficient air pressure has built up.

CB VOLUME

Controls the volume of the CB.

STEPWELL COVER

Controls the IN/OUT movement of the stepwell cover. Adjustments for the cover travel speed can be made by removing the top drawer in the hood table and adjusting the regulator and/or needle valve.

NOTE

If air pressure drops below 65 psi while the stepwell cover is in the extended position (over the stepwell) an air override switch to the right side of the co-pilot seat can be switched to permit manual retraction.

STEPLIGHT

Three position switch controlling lights in stepwell area.

GALLEY SYSTEMS CONTROL PANEL

The systems monitoring and control panel is located in the kitchen base cabinet. This panel provides a convenient means of displaying level of potable water supply, holding tanks, and LPG supply, as well as other functions discussed in the following paragraphs.

GENERATOR

Start-Stop switch; refer to **GENERATOR SECTION** for operating instructions.

PUMP

Switch for "Demand" water pumps in fresh water system. Indicator light shows when pumps are enabled.

LPG MASTER

Switch provides convenient means for controlling LPG supply to coach. Eliminates necessity of operating exterior LPG mechanical service valve, especially while refueling.

REFRIGERATOR ALARM

When the switch is on, the refrigerator temperature is being monitored. Normally, the ON indicator is lit; if the refrigerator temperature increases to an unsafe level, an audible alarm is sounded.

TANK MONITOR

The Tank Monitor panel provides an illuminated readout of the content level of the pure water, gray and waste water tanks, and the LPG tank level. Use the features of this panel as follows:

1. Monitor Pure, Gray or Waste Tank levels by depressing the respective button. The content level in the tank is indicated by five sets of lit readings. The E lamp, at the left of the display, is lit all the time; if the next indicator is lit, the tank is approximately 1/4 full; if the center indicator is lit, tank is between 1/2 and 3/4 full; if the 3/4 indicator is lit, tank is between 3/4 and full; and if the F indicator is lit, tank is full. IF only the E indicator is lit, the tank is between empty and 1/4 full.
2. LPG tank level can be monitored in the same manner as the water tank level by depressing the Propane Tank button. Note that this display is precalibrated. However, if it is necessary to recalibrate the display, this can be done when the tank is full by setting a rear-panel adjustment. Note that the display will read Full when the LPG tank float reads 80% because the remaining 20% volume is needed for vapor space.

BEDROOM PANEL

The bedroom panel located in the overhead cabinet or beside the bed, contains the following:

GENERATOR

Refer to **Generator Section** for operation.

LIGHTS

AISLE switch controls the aisle lights and FLUO controls the fluorescent lights in the bedroom only. The latter is three way with the light switch on the bedroom wall.

SECURITY

LOCK switch controls the dead bolt entrance door lock. LIGHT switch illuminates left and right hand landing lights, and rear halogen parking lights. Panic switch trips the burglar alarm, to turn off the system use the key chain wireless transmitter.

ALARM CLOCK

Set the clock by depressing the Fast or Slow Set button until the correct time is shown. PM is indicated by lighted dot in the upper left corner. The dot in the center of the display marks the seconds. Set alarm as follows: depress Alarm Display button then depress the Fast or Slow button to set the alarm time. Dot in upper left corner will light when alarm is set for PM. After setting the alarm, release Alarm Display button to return to the normal time mode. To activate the alarm feature, depress Alarm On/Off button to On; to shut off the alarm, depress Alarm On/Off button and release so it pops out to Off.

NOTE

When 12 volt power has been interrupted (batteries disconnected or electronic Master switch turned off) clock display will flash "12:00". Reset clock to eliminate flashing. Alarm will also have to be reset.

ELECTRIC DRAPES

Open or close the bedroom drapes.

INVERTER PANEL

Refer to **Electrical Systems Section** for operating instructions.

DRIVER & CO-PILOT AREA

HORN

Operate the horn by pressing in on the center section of the wheel. Select air or electric horn with the HORN SELECTOR switch on the dash.

COMBINATION TURN SIGNAL/HIGH BEAM AND WASHER/WIPER SELECTOR

Push lever toward dash for right turn signal, pull lever away from dash for left turn signal. Pull lever up toward steering wheel and hold for momentary high beam. When lever is released, low beams are activated. Push lever back away from steering wheel to go to high beam operation. The washer ring is located at the end of the lever and when pushed, activates the windshield washer. To activate the wiper twist lever from 0 position to I or II for continuous speeds or to INT for intermittent operation. When in INT position the delay of the wipers can be changed by the wiper delay knob on the lower dash panel. Twist lever back to 0 position to turn wipers off. Ignition must be on to operate the wipers.

Check windshield washer reservoir fluid level periodically and use a prepared washer solution if possible. (Note that low reservoir levels are indicated by a dash monitor light.) During freezing weather, use a solution additive, or a solution specifically designed for cold weather usage. The washer reservoir is accessible through the front road side storage compartment.

TILT LEVER

Pull lever up to release lock mechanism. While holding lever up, adjust the steering wheel to a comfortable position and release lever. Move the steering wheel slightly to make sure the column locks into position.

CAUTION

Always make sure that the lever is in the fully locked position in whichever detent setting is used. Do not change the wheel tilt setting while the coach is in motion.

TELESCOPING STEERING WHEEL

To unlock the telescoping wheel, twist center section of steering wheel counter-clockwise and adjust wheel to comfortable position. While holding steering wheel at desired position with one hand, lock it into position by turning the center section of wheel clockwise.

PARKING BRAKE

The Parking Brake control is located under the lower dash, to the right of the steering column. Note that the parking brake cannot be released unless the system air pressure is at least 65 psi. Pull to set and push to release.

AIR HORN FOOT SWITCH

Operates highway horns. Located on the floor to the left of the steering column.

ACCELERATOR PEDAL

Controls engine fuel flow to select power output. See Diesel Engine Section for detailed description.

BRAKE PEDAL

The coach is equipped with a dual air brake system which includes independent systems for the front and rear service brakes. A separate reservoir and panel mounted pressure gauge is provided for each service brake system. Refer to Air Brake System Section.

SEAT CONTROLS

Electrically operated six-way seat adjustments are built into the pilot's and co-pilot's seats.

Three electric SEAT CONTROLS are used to control seat bench tilt, up-down and front-back seat movement. These seats may be rotated by a knob in the arm rest. A lever on the outboard side of seats controls back tilt. An additional switch controls lumbar support.

DEFROSTER OPERATION

The Defrost HI-OFF-LOW Switch is included on the lower dash panel. Hot air may be diverted to assist in the defrosting operation provided that:

1. The engine is running.
2. The Slide Control for Chassis Heat is moved from the Cool Position.

The chassis air conditioner blowers can be used for cold air defogging of windshield in high humidity conditions. Turning either left or right fan switch on will energize the compressor if the temperature selector setting demands cooling.

CAUTION

For proper defroster operation, do not block the area between the dash and the windshield.

DEAD BOLT LOCK OPERATION, ENTRANCE DOOR

The entrance door has an automotive style two position catch. The second position is required for FMVSS certification. For maximum security and minimum wind noise be sure the door is fully closed. A dead bolt lock is also provided for your security, however it will only engage and retract if the door is fully closed. Should you inadvertently open the automotive latch with the dead bolt engaged, you will have to shut the door to retract the dead bolt.

Dead bolt can be activated from switches located on the upper right hand dash panel, the entrance door systems control panel, and the bedroom control panel.

ELECTRICAL SYSTEMS

There are two interrelated electrical systems used in your motor home ... the 12 volt DC supply system; and the 120 volt AC supply system. The 12 volt DC system is divided into several branches, or zones, each functioning from the common 12 volt battery source. One branch provides the 12 volts required for the automotive starting, ignition and lighting systems; remaining branches supply those motor home circuits and appliances which require 12 volts DC for operation.

The 120 volt AC system includes those motor home appliances which require 120 volts for their operation, supplied from either the internal generator, or from the external 120 volt AC (or a split 240 volt AC) supply, via the shoreline hookup. The inverter will supply 120 volt power from the coach batteries to selected circuits.

12 VOLT DC SUPPLY SYSTEM

Wiring diagrams of the 12 volt supply and distribution system are included in the Illustrations and Diagrams Section.

The 12 volts supplied to all motor home appliances, outlets and accessories is routed from the batteries through a main 12 volt master switch (A/T) and routed through buses to the individual branches, or zones, that are serviced from this supply. Circuit breakers are located behind the pilot's overhead compartment, lower front load center (behind removable panel outside front of coach) and at each of the zones. The circuits supplied and fuse or circuit breaker protection at each zone are shown on the diagrams.

COACH BATTERIES

Four (4) 12 volt Marine/RV Deep Cycle batteries are located on a roll-out tray in the "tag axle" compartment on the curb side. These will provide 8.4 hours of operation, at a 25 ampere rate, when a charging source is not available.

NOTE

Roll-out tray is retained in stored position by a quick release pin with button on top. Be sure to reinstall pin after battery service.

BATTERY CHARGING

The 12 volt coach battery supply, is maintained fully-charged by either the engine alternators (when engine operates); or by battery charger. The engine battery system is normally charged by the alternators only. The coach and engine battery systems are separated by a relay to prevent deterioration of voltage in the event of one or the other supplies becoming defective.

In the event of a failure of either battery system, the systems may be tied together through the above relay by the aux. battery switch on lower dash. The momentary position of the switch should be used for cranking engine. The ON position should only be used for charging engine batteries by the battery chargers.

Batteries can become discharged because of coach 12 volt loads, while parked, without a 120 volt AC source. For overnight stops this presents no problem, with judicious use of 12 volt service, because the engine alternators will recharge the batteries rapidly during the next day's travel. When operating from shoreline or generator power, the batteries obtain the major portion of the charge during "sleeping" time, while coach loads are low, so that the battery charger can "top off" the batteries.

If it is planned to leave the coach parked without exterior power for two days or longer turn off the Electronic Master switch (in addition to the A/T) located in the pilot's front over head cabinet. This will ensure that there is no drain from the circuits which remain on when the A/T switch is Off (clock, memory and LPG leak detector).

While in transit, the DC volts gauges on the upper dash panel should reflect an alternator regulated setting of 14 volts (+ 0.5). When parked, with 120 volt source supplied, the DC VOLTS COACH gauge should read between 12.5 and 14.0 volts depending upon load. When parked, without 120 volt source, do not permit voltage to drop below 11.5

After a trip, ALTERNATOR/CHARGER AMPS ammeter may show some discharge reading, even when 120 volt source is supplied, if there is a load on the 12 volt coach circuits. The Float type battery charger operates in the 13 - 14 volt range when there is a load.

AC SUPPLY SYSTEM

Motor home AC-operated appliances are supplied from either an external shoreline hookup or from the on-board generator. Selection of shoreline or generator power source is determined automatically by a remote changeover switch located in left center road side compartment above cable storage shelf. The 120 VAC circuits are normally supplied by the shoreline power cable. Whenever the generator is started, the automatic changeover switch will detect the generator voltage and will switch to the generator in approximately 25 seconds.

CAUTION

Use of excessively long and improperly rated extension cords may cause your auto changeover system to fail prematurely.

If you must use an extension cord, follow these guidelines:

- for 30 amp receptacles: USE 10 GAUGE WIRE
- for 50 amp receptacles: USE 6 GAUGE WIRE

CAUTION

After connecting to shoreline power, check your AC voltage gauges and make sure they show at least 110 volts present on the system. If not, disconnect immediately or you will cause premature failure of your auto changeover.

NOTE

Occasionally you may hear a slight humming or buzzing noise coming from the vicinity of your auto changeover or relay contractor box. This is completely normal behavior.

POWER LINE MONITORS

Dual power line monitors are located on the right hand over head dash panel, to monitor the voltage and amperage in both legs of the AC shoreline supply (or generator supply). The monitors have a polarity and ground detector circuit to indicate possible electrical hazards due to incorrect hookups.

An additional power line polarity monitor is located in the shoreline/utility box. Refer to **Shoreline Operation Section**.

AC CIRCUIT BREAKER AND DISTRIBUTION PANEL

The main AC Distribution Panel is located in the bedroom behind the mirrored door on the curb side.

BATTERY CHARGER/CONVERTER

Two 45 amp chargers are located in the curb side "3RD" compartment. They convert 120 volt AC into 12 volt DC to maintain the batteries in a charged condition when there is a 120 volt source.

BATTERY CHARGER HIGH/LOW SWITCH

This switch is located in the utility (Shoreline) compartment. It disconnects one charger when there are low demands for 12 volt service.

CELLULAR PHONE WIRING

A roof mounted antenna and wiring (terminates in driver area) are supplied for cellular phone hook up.

INVERTER

A 2800 watt inverter provides auxiliary power to all user accessible interior receptacles, ice maker, front overhead television, bedroom television, and electric drapes, while in transit, from 12 volt source. It is located in the curb side "tag axle" compartment. See the manual in your owner's kit for operating instructions.

KEYLESS ENTRY SYSTEM

Your Wanderlodge Keyless Entry System permits the locking and unlocking of your entrance door (Electric-Dexter-Deadbolt-Lock Only) and the optional electric luggage compartment door locks. Both of these door systems also have manual key locking and unlocking which will permit you to override the electrical locking system.

KEYLESS ENTRY OPERATION

To unlock the entrance door - enter the five digit combination code via the externally mounted keypad (the keypad will illuminate to aid visibility at night). Note: If more than five seconds elapse between button pushes, the system will time out, requiring that you start over. You will hear the electric solenoid engage and unlock the deadbolt immediately after you enter the fifth digit of your combination code.

To unlock the optional electric luggage compartment door locks - enter your code as described in the section "To unlock the entrance door" and then within five seconds depress the 3/4 button on the keypad. You will hear the electric solenoids engage and unlock the luggage compartment doors immediately after you enter you depress the 3/4 button.

To lock both the entrance door and the optional electric luggage compartment door locks. Depress simultaneously the 7/8 and 9/0 buttons on the keypad. You will hear the electric solenoids engage locking the entrance door and the luggage compartments.

In addition to using the combination supplied with your system, you may also program in a second code of your choice. This code must be five digits in length. Note: If for any reason the door lock module senses a loss of coach voltage, or you turn off the electronic master switch, this second code will be erased from memory and the factory pre-programmed code only will be active. To program a second combination code- Enter your factory code as described in the section "To unlock the entrance door" and then within five seconds depress the 1/2 button. Then within five seconds of each other, depress five buttons in any sequence you choose. Wait six seconds before depressing any other button. Your system is now programmed for the second code. To erase the second code, enter your factory code and then depress the 1/2 button, wait six seconds, the code is now erased.

LOAD MANAGEMENT

There are five important 12v system gauges located in the driver's area which, if properly understood and occasionally monitored, will ensure proper operation and prevent an inconvenient and possibly damaging situation of discharged batteries.

On the upper dash are:

- Engine volt gauge for three engine batteries.
- Coach volt gauge for four coach batteries. Proper charger operation while parked will keep batteries between 12.5 and 14.0 volts depending on load.
- Alternator/charger Amp gauge shows alternator output while driving or charger output while parked with 120 VAC service from shoreline or generator.

On the overhead dash are:

- DC amperage gauge (labeled CHARGE) shows net output from the battery charger or alternators to the batteries.
- DC amperage gauge (labeled COACH LOAD) shows the amount of 12v current being consumed by coach systems.

The sum of these two readings should approximate the alt./charger amp reading. Be sure, with load management techniques, that coach load does not exceed charger capacity. This is easily determined by ensuring; (1) DC amperage (charge) gauge shows positive reading, and (2) upper dash coach volt gauge does not drop below 11.5 volts. Should battery voltage fall below this range, remember:

1. The auxiliary battery switch on lower dash may be helpful in starting the engine or the generator as needed.
2. **Battery voltage below 9v will damage fluorescent light bulbs and possibly the light ballast. Turn off fluorescent lights with low battery voltage!**

STORING THE COACH

If you plan to store your coach without 120 v power for (2) days or longer, be sure to turn off your master (A/T) switch, the electronic master and inverter at both shifter panel and inverter switches. Your objective is to minimize power drain.

With both masters off, you can still expect a battery discharge of 2-4 amps because of non-mastered circuits to refrigerator, and engine/transmission control circuits.

For storage over a (3) week time period, disconnect your batteries if there is no shore power available for the battery charger. The best storage technique is to turn off both master switches, turn off the inverter at both switch locations and run your battery charger 24 hours per week. This procedure will keep batteries up but avoid a damaging overcharge condition.

ENGINE, DIESEL

IMPORTANT

Always consult your Detroit Diesel and Allison owners and operators guides before operating vehicle. These manuals and ATEC and DDEC II diagnostic code cards are furnished in your owner/operator kit.

NOTE: In the event your Detroit Diesel Engine service technician must use a diagnostic reader to perform tests on the engine computer, access to the diagnostic connector may be obtained by removing the driver's auxiliary control panel (the one with the remote mirror adjust switches) from the front of the shifter box. The diagnostic connector is attached to the side approximately six to ten inches from the front.

TO START ENGINE

Detroit diesel Engines will start at temperatures above 10 degrees F (-12° C) without using a starting aid. However, for cold temperatures it will be helpful to activate the engine block heater (120 volt AC-operated). The ENGINE BLOCK HEATER is controlled by a switch located in the kitchen base cabinet. Remember to turn the switch OFF after starting. Refer to Detroit Diesel Manual in your owner's kit for starting instructions.

When outside temperature is below 35 degrees F (+2° C), turn on ignition switch for a maximum of 10 minutes, so Racor fuel filter heater element can warm the fuel, before starting engine.

1. As soon as the engine starts, reduce engine speed to low idle. After normal oil pressure is indicated, HIGH IDLE may be used to build up air pressure more rapidly.
2. Do not apply a load to the engine or increase engine speed until oil pressure gauge indicates normal.
3. Operate the engine at low load until all systems reach operating temperatures. Check all gauges during warmup period.

REMOTE ENGINE STARTING

Because it may sometimes be necessary to start the diesel engine remotely, a separate key switch is located on the right side of the engine compartment. Be sure the hinged switch cover is snapped back in place after key withdrawal to prevent moisture damage. Toggle switch must be down (REAR) to start from engine compartment.

TO STOP ENGINE

CAUTION

Before stopping the engine, operate at low idle for a minute or so. This will allow hot areas in the engine to cool gradually and extend engine life.

Refer to **Detroit Diesel Manual** for additional information.

FUEL TANK

If Water-In-Fuel light on dash comes on, open petcock at rear of sump on the bottom of tank to drain. Fill fuel tanks after completing a run. Partially-filled tanks will collect moisture if the coach is allowed to sit for an appreciable length of time.

FUEL ADDITIVE

Fuel Additive Recommended for use with #2 Diesel Fuel ... US Borax Biobor JF Fuel Additive to use per 100 gallons ... 2.8 fl. oz.

ENGINE AIR FILTER

Check the air filter condition indicator, on a regular basis. Sometimes the red band will show after a high power run. This is a normal condition. Reset to green band and run engine at a maximum of 2000 RPM. Filter should be replaced if red band is shown. WL P/N 1570415, (ECO-SM) (Disposable).

CAUTION

Do not operate the engine without the air filter in place or sensitive air metering systems may be damaged.

CRANKCASE OIL LEVEL CHECK

The oil level must be checked only with the engine off. Maintain oil level at the proper fill line. If checking oil level immediately after engine has been operating, allow a few minutes for the oil to drain back into the crankcase before checking the oil level reading.

The best time to check the oil is before getting underway because the engine is cool and the reading will be most accurate.

Check crankcase oil level before starting and when refueling. The oil level dipstick is located at the rear of the engine on the curb side, directly behind the right side exhaust manifold. The dipstick has 2 markings, **FULL** and **LOW**, and the distance between them represents 6 quarts (5.75 liter) for the 8V92 engine.

FUEL FILTERS

A Racor fuel filter/water separator is incorporated in the diesel fuel supply line and processes the fuel supply for maximum purity. It is located on the curb side of the engine compartment.

The fuel filter/water separator includes a built in Racor in-filter disc pre-heater, which operates automatically below 35° F, [+2° C], when ignition switch is on, from the 12 volt DC battery supply, and a water sensor, which lights a dash indicator and sounds a buzzer when the water level in the bowl is high enough to require drainage. (See Racor Manual for additional information.)

When fuel vacuum gauge goes over 10 inches HG vacuum, replace element with WL P/N 3831310 (Racor 2020SM); also gasket (large) WL P/N 3747359 (Racor 11007), T-Handle WL P/N 3747342 (Racor) 11350)

A secondary fuel filter is located on the rear of the engine. This element is WL P/N 3734175 (Fleetrite FFR8206)

OIL FILTER

Oil filter is located under engine on road side. It should be replaced at each oil change. WL P/N 3734209 (AC PF911 or FLEETGUARD LF3333).

COOLANT

Open rear engine door and check coolant level (with engine cool and off). Fill with coolant mixture to the top of the surge tank sight glass.

Coolant Specification:

50% water, 50% low silicate ethylene glycol base antifreeze (formulation standard GM 6038-M)

Coolant Additive:

NALCOOL 2000

POWER STEERING & HYDRAULIC COOLING FAN

RESERVOIR FLUID LEVEL CHECK

Regularly check fluid level in the power steering and hydraulic cooling fan reservoir. The oil reservoir is the large canister located between the fan assembly and the engine. Add only 10W-30 motor oil as necessary to maintain the correct dipstick reading, depending on fluid/engine temperature. (Note that dipstick is attached to the bolt on top of the reservoir). If the fluid is at normal operating temperature ... about 150 degrees, and hot to touch ... the dipstick should indicate 1/2 to 3/4 full. If engine cool, fluid level should read about 1/2 full.

CAUTION

The hydraulic fluid used in this unit is 10W-30 Motor Oil. Do not use conventional power steering fluid or the pump may be damaged. Filter oil through a 10 micron filter or install a new Parker filter, run engine with fan on at idle for 10 to 15 minutes. Replace Parker filter. Run engine and fan again. Check reservoir and add oil as necessary.

Check condition of oil frequently when engine is hot. Run engine to 2100 RPM if red light (located on rear switch panel) comes on, change oil and filters.

One filter is in Parker unit at left rear axle, the three stacked filter elements must be replaced in the reservoir.

CAUTION

When inspecting or servicing engine or other components in engine compartment the engine control switch must be placed in OFF or REAR position to prevent starting of the engine from the driver's area.

WARNING

Cooling fan is driven by hydraulic pressure and by the air conditioner compressor drive signal. Flow is controlled electrically by a thermostat which senses engine coolant temperature. Any time the engine is running, the fan may engage and start without warning. Also on hydraulically driven fans, the fan may start and run for several seconds when the engine is shut off or if electrical power is interrupted. Shut off engine and wait for fan to stop before servicing.

Power Steering and Hydraulic Engine Cooling Fan Maintenance

Specification	10W-30 Motor Oil
Capacity	20 quarts
Filter Element	WL P/N 2122026 (Parker 925835)
Reservoir Element	WL P/N 2137065 (3 req'd)

ENGINE COOLING SYSTEM REFILL

Use of low silicate ethylene glycol base antifreeze (formulation standard GM 6038-M) is recommended for summer or winter operation because of its corrosion inhibition and lubrication properties. A 50-50 solution of antifreeze and water is preferred and it gives freeze protection to about 30° F below zero. Ultimate protection is attained at 68% antifreeze (about 92° F below zero) a higher concentration of antifreeze should never be used.

The approximate (dry) cooling system capacity is 100 quarts.

The system requires 12.5 gallons of antifreeze for a 50% solution or 17 gallons for a 68% mixture. Final solution should always be tested with a thermo-hydrometer or equivalently reliable testing device to determine actual protection.

If it becomes necessary to completely refill the chassis coolant system, the following procedure must be followed. Pure antifreeze can be used initially until prescribed amount has been installed, and then water for final filling.

1. Fill the engine, radiator, and engine hoses. Locate and close the manual gate valves separating the engine from the heater system. Pressure and return gate valves are located at the engine. Remove the radiator surge tank cap and fill to the top. Replace cap and run engine @ 1500 to 1800 RPM for one minute to purge air from the engine water jacket. Shut off engine; carefully remove the radiator surge tank cap; refill and replace the cap.

CAUTION

Use extreme care at all times when removing the radiator surge tank cap as hot coolant under pressure can cause injury.

2. Fill the heater system. An air bleeder valve for the front heater is located behind the exterior front access panel on the right side. Leave the return line gate valve, located at lower left side of engine, closed and open the pressure line valve, by hydraulic reservoir. Move the Front Heat Selector to the warm position. Using suitable containers to catch coolant, open the bleeder valve at front heater and remove hose from return valve and run the engine at 1,800 RPM until a steady flow of coolant passes through the front bleeder valve and open hose at rear.

The radiator must be refilled often during this time as coolant from the engine will be filling the heater lines. When steady flow is attained, close pressure valve and reconnect return hose. Open both valves allowing coolant to flow back into the engine. Shut off engine. Refill radiator using coolant caught from bleeding operation and add coolant as necessary. Restart engine and run at 1800 RPM for at least two minutes to complete system purge. Test heater blowers to make sure heaters are filled with hot coolant.

Allow engine and radiator to cool. Remove cap and fill radiator surge tank to the top of sight glass. Replace cap - refill procedure is completed.

COOLING SYSTEM ADDITIVES

Automotive cooling systems are subject to various types of corrosion, rust, pitting and cavitation-erosion. These are common factors which prevent efficient cooling and contribute to engine overheating and higher maintenance costs resulting from replacement of hoses, fittings, filters and cracked heads. The manufacturer of the engine used in your motor home recommends the use of Nalcool 2000 - a chemically buffered liquid additive which effectively neutralizes the formation of acids caused by dissolved exhaust gases, and inhibits the cooling system against corrosion and scale formation. This additive is compatible with most commercial automotive and antifreeze solutions containing ethylene glycol; however, its use is not recommended in cooling systems using DOW Therm 209. When refilling the coolant system, add seven pints of Nalcool before topping off with antifreeze solution. To ensure constant system protection, replenish Nalcool 2000 additive, periodically, in accordance with manufacturer's instructions. Use only low silicate ethylene glycol base antifreeze.

BATTERY MAINTENANCE

Your motor home is equipped with separate engine and coach battery systems for greater assurance that there will be sufficient voltage to crank the motor home engine.

Three engine batteries are located in the engine compartment on the curb side. Those located in the curb side "tag axle" compartment are used for coach loads.

The coach batteries are charged from either the alternator or battery chargers. The engine batteries are charged from only the alternator (unless the auxiliary battery switch is in the ON position which permits the engine batteries to be charged by the battery chargers.) In order for the battery chargers to operate, either the generator must be running or the coach must be connected to a shoreline supply.

To make sure that the batteries are always ready for use, periodically check and charge as necessary.

A dirty battery may eventually dissipate its charge through conductive surface contamination. Clean battery top surface with a damp cloth and dry thoroughly. Check that battery terminals and associated battery jumper terminals are tight and free of corrosion. To clean terminals, neutralize corrosive deposits with a solution of baking soda, rinse with clear water, and dry. Note that commercial type spray-on battery cleaners are available at automotive supply stores. Use as directed to keep the batteries clean. Spray-on cable and terminal protective coatings are also available, easy to use, and effective.

CAUTION

Avoid sparking of any form in the vicinity of the batteries.

CAUTION

Do not wear metal rings, watches or jewelry when working on or near the batteries, cables, solenoids, or chassis wiring. These can short out electrical wiring and cause injury.

BATTERY STORAGE IN FREEZING WEATHER

Batteries that are not kept full-charged must be given protection against freezing. Partially-charged batteries will freeze at low temperatures, so batteries must either be left charged or removed from the vehicle and stored in a warm location.

The motor home can be left connected to the shoreline AC supply and the coach battery chargers will keep the coach batteries charged. Note that even in a warm location is advisable to keep the batteries charged to prevent deterioration. The engine batteries are the sealed type and require no electrolyte service.

Replenish cells of coach batteries with distilled water to 3/8 inch above plates.
Coat Battery terminals with lubricant or protective coating.

BATTERY TERMINALS & JUMP STARTING

Proper procedure for jump-starting, using the Wanderlodge® engine batteries is as follows:

1. Turn off all main battery-operated accessories in both vehicles ... lights, radio, etc.
2. Connect one end of the positive-coded jumper cable to the positive (+) battery terminal, and the opposite end of the cable to the positive (+) terminal on the other battery.
3. Connect one end of the negative-coded jumper cable to the negative (-) terminal on the other battery and the opposite end of the cable to the Wanderlodge engine block.
4. Once the engine of the disabled vehicle is started and brought up to the idle, reverse the above procedure to remove the jumper cables. Always remove the jumper cable connected to the Wanderlodge engine block terminal first to prevent sparks at the other battery.

CAUTION

Avoid sparks in the vicinity of a charging battery. The gas produced is explosive.

BULK OIL FILL

The bulk oil fill system provides a convenient means of replenishing the oil supply during an oil change and for adding oil between changes. There is no need to use valuable storage space for bottles of oil, etc.

An oil storage tank (with approximate 20 quart capacity) is located at the rear on the right side of the engine compartment. When this is pressurized from the air supply, oil can flow through the nozzle directly into the engine crankcase return oil passage. A meter is provided to measure quantity by means of quart and gallon pointers for each individual fill and a totalizer to show all oil added to date. This is a handy way to keep track of oil consumption, etc.

WARNING

Bulk oil system is under pressure when the red light is illuminated. Do not open the filler cap before making sure the bulk oil switch is turned off (red light off). Open the filler cap slowly to allow any pressure in the tank to bleed off before removing the cap completely.

OPERATION

1. Run engine, if necessary, to build up on board air supply.
2. Shut down engine.

CAUTION

Do not run engine while bulk oil fill is in use. Place engine compartment ignition switch in OFF or REAR to prevent starting from the driver's area.

3. Zero meter pointers.
4. Turn on bulk oil switch.
5. Observe that bulk oil red light is on.
6. Push nozzle tab lock out of the way and depress lever until desired amount of oil is shown by meter pointers.
7. Turn off bulk oil switch.
8. Check oil level.

ENGINE SPECIFICATIONS

MAKE

GM Detroit Diesel 8V92TAC (DDEC II)

TYPE

2 Cycle Diesel Turbo Charged Jacket Water after cooled Electronic Injection.

NUMBER OF CYLINDERS

8-63 1/2 degree VEE

BORE ... (INCHES)

4.84

STROKE ... (INCHES)

5.00

DISPLACEMENT

92 Cubic Inches Per Cylinder
(736 Total Cubic Inches)

COMPRESSION RATIO

18 to 1

SAE HORSEPOWER

75.0

MAX. (NET) BHP @ RPM

500 @ 2100

MAX. (NET) TORQUE @ RPM

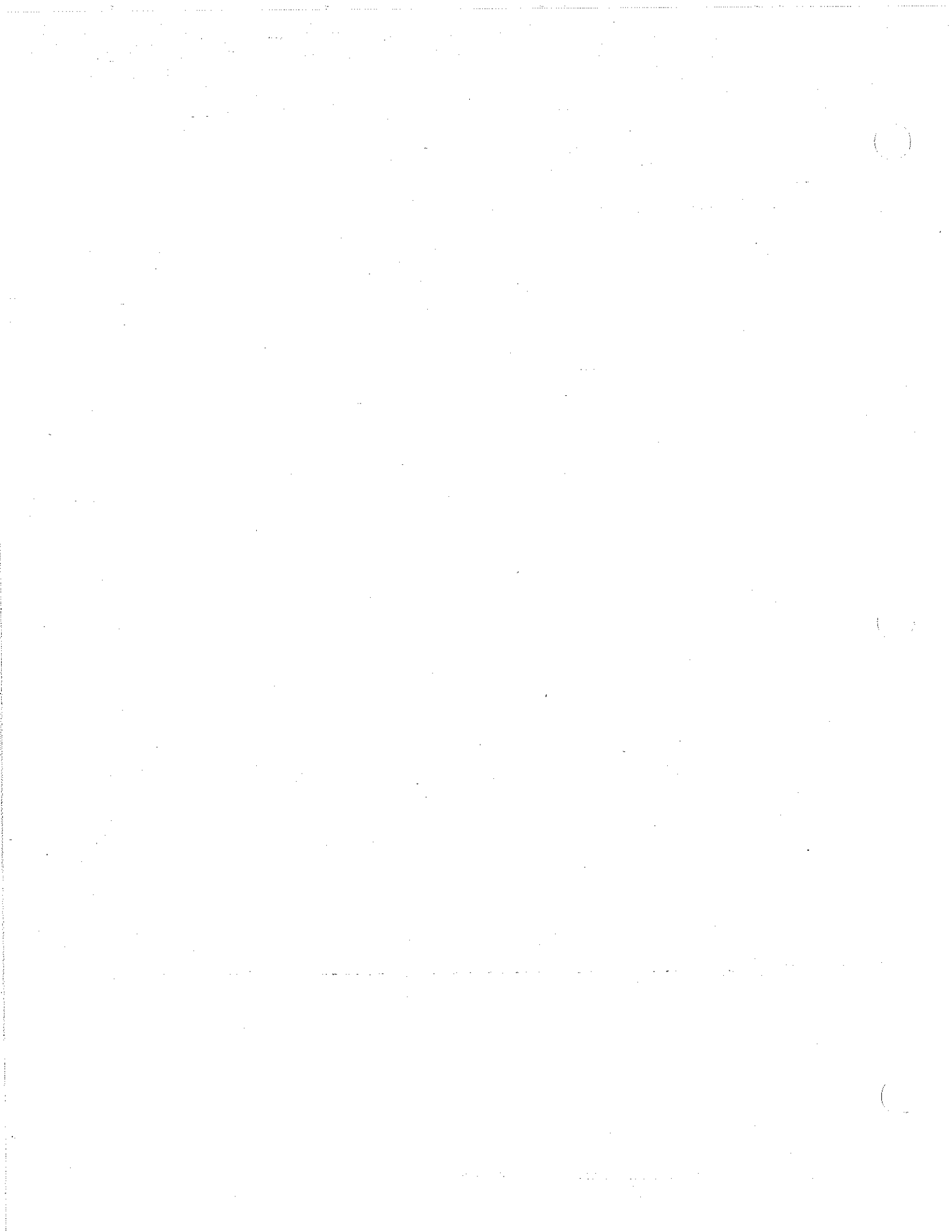
1425 @ 1300

MAX. GOV. RPM

Load ... 2100
No Load ... 2425

GOVERNOR TYPE

Electronic



FANS, VENT & EXHAUST

KOOL-O-MATIC FAN

12 VDC power ventilator located in the kitchen.

OPERATION

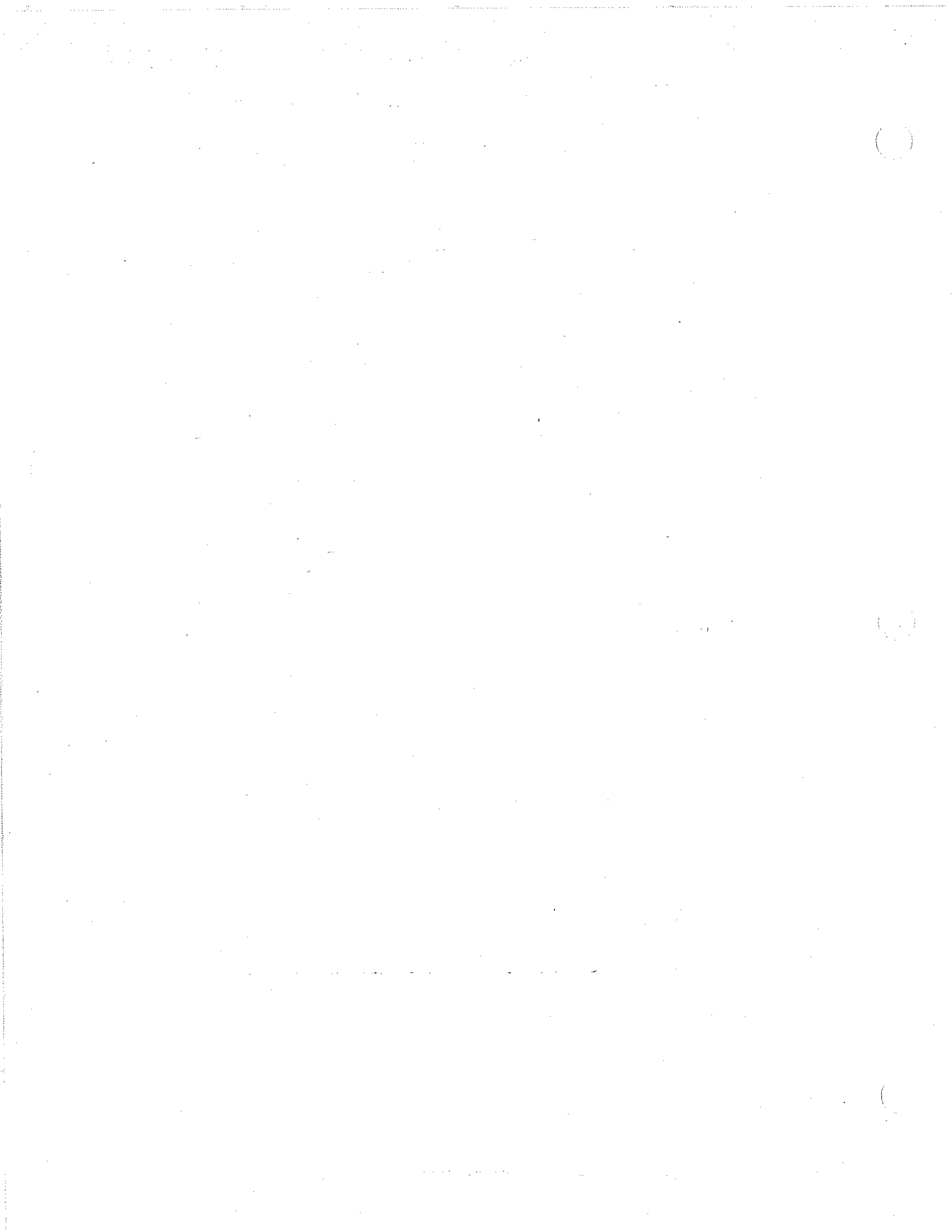
1. Open inlet dampers on fan.
2. Be sure windows are open to provide proper air flow cooling and ventilation.
3. The heat-cool thermostat located in the kitchen activates the fan. The selector switch (at the bottom) must be moved to COOL and the temperature lever set so the fan will operate. The fan will then start automatically whenever the temperature rises above the desired level.
4. Thermostat on fan position will run all the time.

FANTASTIC FAN

12 VDC exhaust fan located in the bathroom.

OPERATION

1. Open damper from control located on the face of the vanity.
2. Turn on fan from control located on the fan. Set desired speed. Switch on fan may be left on in order for the vanity (remote) switch to operate all functions.



FRESH WATER SYSTEM

WATER SUPPLY AND DISTRIBUTION SYSTEM

The dual purpose Tank Water Fill/Commercial Water inlet connection is located on the road side at the rear of the coach. The Tank Fill On-Off switch located in the shoreline/utility compartment, diverts the commercial water input to fill the pure water storage tank, located under the bed. System water pressure is provided by water pumps located in the road side rear luggage compartment, rather than by tank pressurization. A bacteriostatic water purifier system purifies all the water supplied to the coach.

COMMERCIAL WATER HOOKUP

When facilities are available, the Commercial Water hookup can be used to supply all coach water system requirements. In this manner, the coach water tank and pump system are automatically bypassed and water pressure is developed by the external connection. Water inlet pressure is regulated to 40-psi maximum, by a valve which is part of the city (commercial) water fill.

FILLING THE TANK - STANDARD CAPACITY APPROX. 130 GALLONS

To fill the water supply tank, connect the water hose to the commercial water inlet, set Tank Fill switch to ON, then turn on the water supply. When tank is full, as indicated by water overflow beneath the coach, set the Tank Fill switch to OFF position, shut off the water supply and disconnect the hose. At this time, check that the Monitor panel readout indicates a full water tank. To check, press the Pure tank switch and observe that the E through F indicator segments are lit.

NOTE

The Tank Fill switch should be ON only when the water tank is being filled. This switch must be in OFF position at all other times.

SANITIZING THE WATER SYSTEM

Water system sanitizing procedures should be followed before the system is used for the first time, after long idle periods, where water may become stagnant; or after any suspected contamination of the water supply. Whenever possible, use a commercially approved tank sanitizer and follow the procedures on the product package. If it is not possible to use a commercial product, prepare your own mixture and sanitize the tank in accordance with the following procedures:

1. **Empty the Water Tank** - To drain tank, open the 2 inch Cold Water Drain Valve under flip up panel at the head of bed. After tank is completely drained, close Cold Water Drain.
2. **Prepare the sanitizing solution** - using 1/4 cup of household bleach (sodium hypochlorite solution) for each gallon of water. Use one gallon of the solution for each 15 gallons of tank capacity. This procedure will result in a residual chlorine concentration of 50 ppm in the water system. If a 100 ppm concentration is required use 1/2 cup of household bleach with one gallon water to prepare the chlorine solution. Nine to ten gallons of solution will be adequate for the tank. (Approx. 130 Gallons).
3. **Add sanitizing solution to water tank** - Remove 1-1/4" plug from depression in top of tank and pour solution into tank. Reinstall plug in tank.
4. **Fill tank to capacity** - Connect hose to the commercial water inlet, turn on the Tank Fill Switch and fill water tank completely. Shut off hose, and turn off Tank Fill switch. Turn on the water pumps Open each faucet (hot and cold) and run the water until a distinct odor of chlorine can be detected. Shut off the water pumps.
5. **Allow the system to stand** - for at least 4 hours when disinfecting with 50 ppm residual chlorine. If a shorter time period is desired, then a 100 ppm chlorine concentration should be permitted to stand in the system for at least 1 hour.
6. **Drain tank** - Open the Cold Water Drain valve and allow the tank to drain completely.
7. **Refill tank** - Close the Cold Water Drain valve and turn on the water supply to the commercial water inlet, turn on Tank Fill switch and fill tank completely. When the tanks are full, turn off Tank Fill switch, shut off water supply and disconnect hose, replace fill cap and turn on water pumps. When water flows from opened faucets, close them and open other faucets until water flows. This flushes the system, removing trapped air from the piping and ensures that the fresh water supply is ready for use.

CAUTION

Do not permit sanitizing or antifreeze solutions to enter water purifier.

PURIFIER REPLACEMENT

Depending upon the condition of the municipal water used, the filter media will normally process 75,000 gallons of water before the purifier will need to be replaced. For the majority of "Wanderers" this means there will be at least five years of useful life. The only practical way to determine when replacement is required is to go by the sense of taste. If a faint taste of chlorine is detected, it is time for a change. Even when there is a noticeable taste, the bacteria stopping properties have not been compromised.

WATER HEATER

The 10 gallon Marine Electric Water Heater has a "motor aid" heat exchanger to ensure a supply of hot water while in transit and upon arrival at your destination. The electrical heater can be used whenever 120 volts AC is available. The heater switch, located in the kitchen base cabinet, should be switched OFF when heated water is not needed.

CAUTION

Do not turn water heater off if outside temperature is 32 degrees or lower when potable water system is not drained.

CAUTION

Be sure water heater tank is full before turning switch on.

OUTSIDE FAUCET

An outside faucet is provided in the road side rear luggage compartment.

WATER PUMPS

The water pumps, located in the road side rear luggage compartment, are equipped with a factory-calibrated pressure control switch which is preset to turn the pumps on when the system pressure falls below 20 psi; and turn the pumps off when the pressure reaches 35 psi. If the pumps have been out of service for a period of time, it is advisable to open a faucet before turning them on. When water flows steadily from the opened faucet, close faucet and observe that the pumps shut off when system becomes pressurized (It may also be necessary to bleed the air from the other faucets as well.) When the potable water supply tank level is low, or empty, shut the pumps off to prevent possible damage to the pump motors.. In addition to integral motor overload protection, the pump mechanisms are also protected from damage by the presence of a filter at each water pump inlet. These filters should be cleaned periodically.

Under normal usage, the water pumps should require no periodic maintenance other than ensuring that the input water supply is properly filtered of particles that could damage the pump mechanisms. Pump failures can generally be tied in to the plumbing system, or to electrical wiring. If a pump fails to operate properly, refer to the general troubleshooting guide. Note that detailed pump repairs and overhaul should be performed by a qualified repair facility.

WATER PUMP SWITCH

The central control switch for the water pumps is in the bathroom and has three settings. For a longer interval between water pump maintenance, select either "Pump A" or "Pump B". When one pump fails, the other pump can be used as a backup. For a higher flow rate, select "Pumps A & B".

The associated indicator is lit whenever power is being supplied to the pumps. Turning ON a switch pressurizes the water system, with the pumps operating on demand to maintain constant pressure. Continuous or erratic pump operation can indicate an empty water tank, system leakage, or air lock in the water lines. Switches enabling the water pumps are located on the systems monitor panel, in the bathroom, in kitchen and dash area.

TOILET SHUT OFF VALVE

Located under kitchen base cabinet for walk through bath models. Other models will have an access below the bath vanity.

WATER PUMP TROUBLESHOOTING GUIDE

Symptom:

Possible Cause:

Corrective Action:

Pumps operate but no water flows through faucet

Low water level in tank.

Add water.

Suction lines or filters clogged.

Clear water lines and clean filters.

Kink in water suction hose.

Check water hose connections to tank and straighten or replace, as necessary.

Air leak in suction line.

Replace suction line.

Defective water pump.

Replace diaphragm or jammed check valve.

[See Flojet's service instructions].

Pump cycles on and off when faucets are closed:

Water leak in plumbing.

Check for signs of leakage and tighten or replace fittings, pipe, etc.

Defective toilet flush valve.

Repair flush valve.

Defective water pump.

Replace upper housing.

[See Flojet's service instructions].

Pump operates roughly and has excessive noise and vibration:

Intake line is restricted, kink in suction hose or fittings are too small.

Check input hoses and straighten or replace, as necessary

Defective water pump.

Replace lower housing.

(See Flojet's service instructions)

Pump fails to start when faucet is opened:

Clogged pressure piping.

Blow out water lines with compressed air.

No voltage to pump.

Check input wiring circuit breaker and switches.

Defective water pump.

Replace upper housing or check valve.

(See Flojet's service instructions).

Pump gives low water pressure and flow:

Defective water pump.

Replace diaphragm or motor.

(See Flojet's service instructions).

WINTERIZING

If you are planning on storing your motor home in an unheated area during cold weather, it will be necessary to winterize the water system to prevent damage from freezing conditions. Winterizing procedures are covered in the following paragraphs.

DRAINING AND WINTERIZING THE FRESH WATER SUPPLY SYSTEM

The following procedures show the use of the various drain valves, controls and pressurized air system to remove the water from the plumbing and appliances in the fresh water supply system.

1. Open the main circuit breaker box and turn off the Water Heater and Instant Hot circuit breakers.
2. Turn on Water Pump switch and open all faucets (galley sink, lavatory, shower, outside hose connection and toilet water valve - after depressing pedal insert block to maintain position). Note that the outside water hose connection should always be left open when freezing temperatures are expected. Also remove drain plugs at rear of toilet and at bottom of Instant Hot. Refer to the Ice-Maker and Toilet Manuals for winterizing these units.
3. Open the water heater drain valve located through the carpeted access door in bed base.
4. Open the two Cold Water Drains and Hot Water Drain valves. They are located in road side rear luggage compartment.
5. Allow water to drain completely before proceeding to the next step.
6. Close the Hot Water Drain and Water Heater Drain valves.

7. Turn ON Water Purge Air Pressure switch to activate the solenoid which applies air pressure to the input water line to purge the water system. Note that it may be necessary to start the engine to build up air pressure.
8. When only air remains in the lines, close two cold water drain valves and all faucets. Replace drain plugs in toilet and Instant Hot. Operate the Instant Hot valve to clear the heat exchanger of remaining water.
9. Turn Water Purge Air Pressure Switch and Water Pump switch off, and shut down engine.
10. Separate water pumps from fresh water system by closing shut off valves on input and output of pumps. This prevents residual water from backing up into the pumps.
11. Open all faucets (toilet valve to remain open).
12. At this point, the only water remaining in the system is contained in the P traps beneath the lavatory and kitchen sink. To prevent this water from freezing and damaging the traps, put one pint of RV system anti-freeze into each drain. See WASTE SYSTEM winterizing.

NOTE

When reactivating system, make sure Instant Hot and Water Heater are full of water before switching on.

FREEZE PROTECTION

Thermostatically controlled heat tapes (120 vac) are run on the fresh water plumbing and then wrapped with insulation. The heat tapes will begin to heat when the air temperature drops below 35° F.

Thermostatically controlled heat blankets (120 vac) are located under the holding tanks. They will begin to heat when the air temperature drops below 40° F.

A thermostatically controlled heat strip is located in the road side rear luggage compartment in the fresh water pump area for freeze protection. This heat strip is activated by the heat tape breaker.

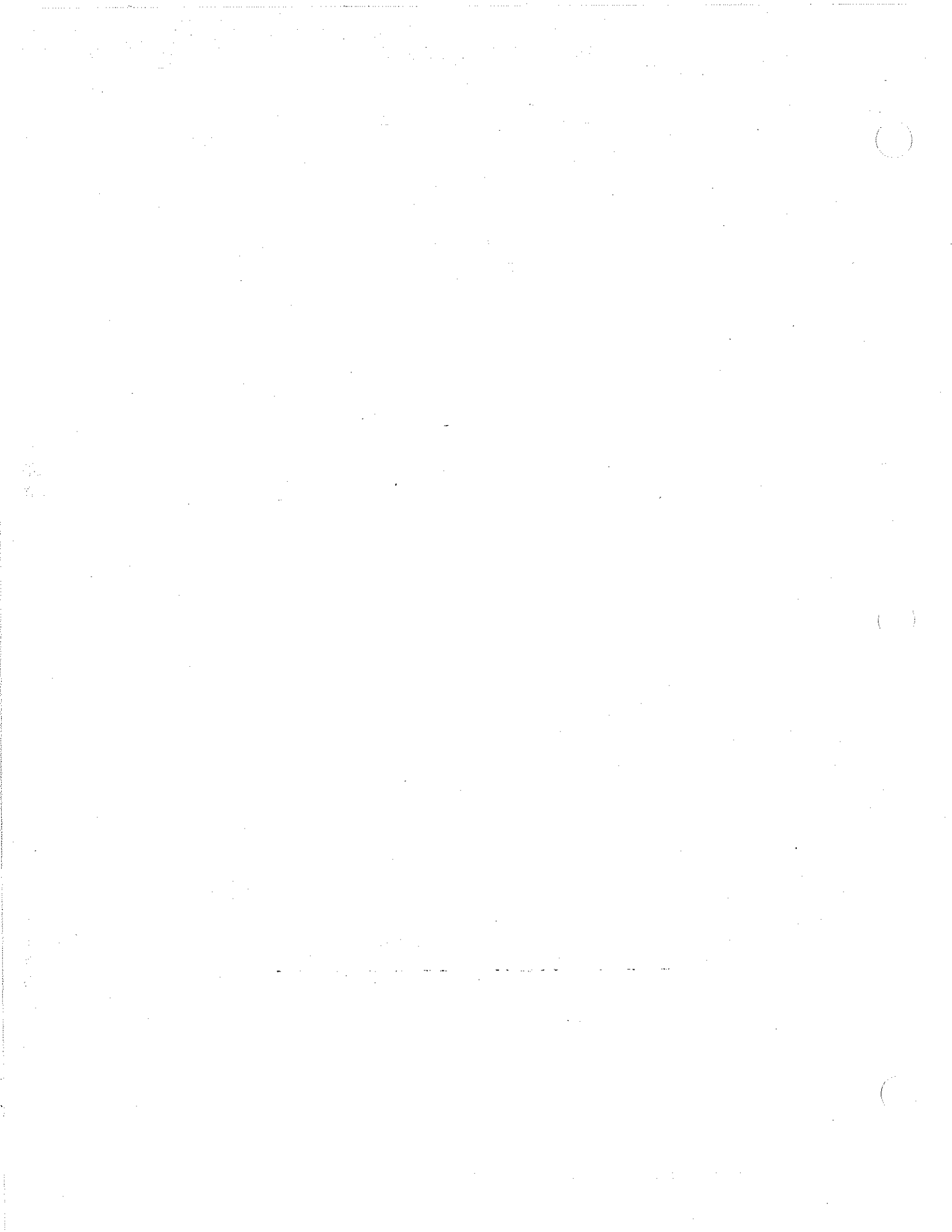
By using the appropriate circuit breaker in the 120 volt load center, these heating elements can be turned on and off. The breaker for the heat tape is labeled as such. The breaker for the heat blankets is labeled as "holding tanks".

NOTE

The heat tapes and heat blankets will only operate when shoreline power is present or the generator is run continuously during cold weather periods.

WARNING

Do not operate heat tapes unless there is water in the plumbing to dissipate the heat. DO NOT operate heat blankets unless the pure water and holding tank levels read 1/4 full (minimum) at galley panel.



GENERATOR

GENERATOR OPERATION

The generator can be started and stopped from any of three locations within the coach. At the left hand overhead dash panel, at the galley panel, or at the bedroom panel. In addition, the generator can also be operated from the controller box in the blower/radiator (front roadside) compartment.

To start the generator, push the Generator switch to the Start position and hold until the generator starts, as indicated by the indicator light. Do not hold switch on for longer than 5 seconds at a time! If the generator does not start the first time, wait a minute and try again. Release the switch when the indicator light glows. After starting, there will be a delay of approximately 25 seconds before the automatic change over switch will permit the generator to pick up the load. The generator may be stopped at any time, by holding the switch to the Stop position until the generator stops (light extinguishes).

In cold weather, it is necessary to activate the cylinder glow plugs before starting. Push start-stop switch to stop position and hold for 15-20 seconds. See operator's manual for more detailed information.

GENERATOR MAINTENANCE

Refer to Operator's Manual in your owner's kit for inspection maintenance requirements.

CAUTION

The generator tray is electrically operated and extends outward with considerable force. To extend the tray, move around to the road side and operate the tray switch in the front compartment to out position. Be sure that there is sufficient clearance in front of the tray and that nobody is in the way! Use extreme caution when observing and operating generator with tray extended.

GENERATOR EXHAUST

The generator can be run in one of two ways. The cap on the blow out pipe can be left on if the generator is to be run while in close proximity to other coaches in a campground situation. Or it can be left open while traveling or when the exhaust gases will not bother neighbors in camping situations. The generator runs on diesel fuel, so to reduce water contamination and sooting, Wanderlodge recommends that the roof exhaust only be used when needed in campground situations.

CAUTION

The generator exhaust will be hot when generator is running and for a time after generator has been turned off. To avoid burn injuries, allow generator exhaust to cool down before any contact with pipe.

AIR CLEANER

Cleaning Instructions:

Donaldson does not authorize cleaning the Dura-Lite unit (throwaway type) but this can be impractical in most cases. If it is cleaned, the following should be observed.

Blow air into the Dura-Lite's outlet neck causing dirt to flow off the media and out the dirty air inlet opposite the normal air flow direction. This procedure keeps the abrasive contaminants away from the clean air side.

Do Not use pressurized air higher than 100 psi.

Do Not use compressed air cleaning when the filter media is wet.

OIL CHECK/CHANGE

To be on the safe side, check oil (dipstick located on road side of generator) in engine crankcase daily, or before each start, to ensure that the level is in the safe range between the upper and lower marks on the dipstick. Do not operate generator if level exceeds the upper mark, or is below the lower mark.

CAUTION

Do not check oil level while engine is operating. Engine must be stopped to obtain a true reading, as well as for safety reasons!

Whenever possible, drain the oil while the engine is still warm. To drain, place a container below the unit, open the oil drain and allow sufficient time for the old oil to drain completely. After draining, close drain plug and tighten securely.

COOLING SYSTEM

Cooling system capacity is about 16 quarts of liquid. System should be filled using equal parts of water and ethylene glycol. (A drain petcock is provided on the underside of the radiator.)

When draining the coolant, remove the cap from the top of the engine and open the engine block drain cock located below the fuel injection pump.

Check coolant level frequently and add antifreeze mixture as needed to maintain full system.

HOURS RUN METER

Meter is located on generator control panel.

GENERAL TROUBLESHOOTING

Refer to the Generator Service Manual for repair and maintenance data. Generator repairs should be accomplished by a qualified repair agency.

GENERATOR OVERLOADS

If the rated capacity of the generator is exceeded, the safeguard circuit breaker, located on the front surface of generator electrical box, will trip to protect the generator against damage. This condition could be caused by a short in the coach AC supply circuits, or by operating too many appliances simultaneously, resulting in an overload condition. If the safeguard circuit breaker trips, the generator will continue running but no AC output will be supplied. Before resetting the circuit breakers, turn off some of the coach appliances and lighting to reduce the load to within the operating limits of the generator. If this is done, and the generator breakers still trip, a short circuit is indicated. Turn off the generator, locate and correct the cause of the short circuit.

OIL PRESSURE

Always ensure that with the engine running, oil pressure is registering on the upper dash generator oil pressure gauge.

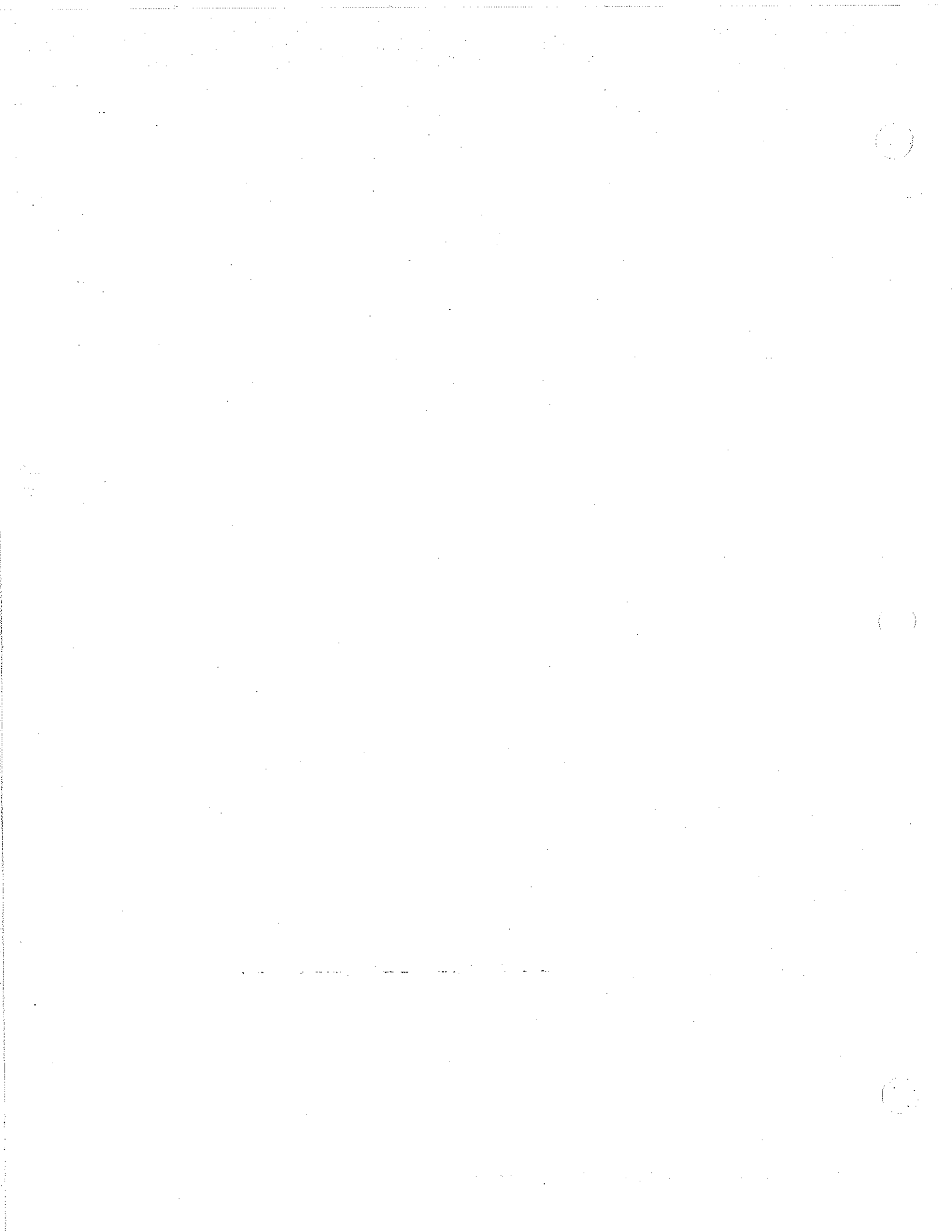
STORAGE PROCEDURES

If the generator is to be out of service for a long period of time, perform the following procedures before placing the unit in storage:

1. Drain oil from crankcase (while hot) and refill with specified oil. Run generator after change to circulate new oil.
2. Clean exterior surfaces of generator set then spread a light film of oil over any unpainted metallic surfaces which could corrode.

GENERATOR SPECIFICATIONS

Electrical Rating	15 KW at 120 VAC
Fuel Supply	Diesel, separate pickup in main tank
Fuel Filter Element	WL P/N 3970860
Cooling System	16 quarts
Crankcase Capacity	9.5 quarts
Oil Filter	WL-P/N 3970878
Oil Specifications for Generator API Classification	CD 10W30/10W40 (See Operator's Manual)
Air Filter Element	WL P/N 3838158 (Donaldson ECBO5-5001)



CHASSIS HEATING SYSTEM

Heat generated by the engine is supplied through the coolant to a 90,000 BTU unit for the pilot and co-pilot area.

OPERATION FOR DRIVER/CO-PILOT HEATER

1. The coach ignition switch must be on for operation of blower motors.
2. Select driver or co-pilot heat by the HI-OFF-LOW heat switches on the lower dash.
3. Move slide control on the left hand lower driver's auxiliary dash panel to warm position.
4. Heated outside air can be provided for the co-pilot by opening the vent switch on the right hand upper auxiliary dash panel. For chassis heat on the pilot side, the left hand vent switch must be in closed position.

The driver and co-pilot heater is equipped with three squirrel cage dual speed blowers. One blower provides defroster air, one provides air to pilot side and the third provides air to the co-pilot side.

HYDRONIC HEAT EXCHANGER

Heat generated by the engine coolant is also supplied to heat exchangers which provide heat to the Hydronic System, while in transit, without the necessity of using the LPG boilers.

ELECTRIC HEAT

Electric forced air heaters (120 vac) are located in the bathroom, and living room. Your electric heaters are provided for auxiliary heating. Since each heater draws 10-15 ac amps, operator load management becomes an important consideration.

LIVING ROOM HEATER OPERATION

1. On/Off thermostat control on the unit (under front hood table) must be turned on and set.
2. A/C Master Front switch on shifter panel must be turned on.
3. Living room thermostat must be set to HEAT and set for temperature desired.

BATHROOM HEATER OPERATION

1. On/Off thermostat control on heater must be turned on and set.
2. Bathroom thermostat must be turned on and set for temperature desired.

LPG HYDRONIC HEATING

INTRODUCTION

The coach heating system uses circulating heated anti-freeze solution, electronically controlled. Using LPG, as the heat source the system will keep you comfortable while outside temperatures fall well below freezing.

The heating system is a single loop system. The system is controlled by the panel in the driver's area. The coach interior temperature is maintained at full capacity with only an approximate 8 amp draw on the 12 VDC system while using about 1 pound of LPG per hour. The boilers used to heat the circulating fluid are 95% efficient. These extract the maximum amount of heat from the LPG energy source.

The coach interior is heated by circulating a hot solution through convectors located near the floor. Where fan driven heat is utilized, the fan speed is controlled by a rheostat located in the vicinity of the blower. These controls resemble dimmer switches, and are functional only when the circulating fluid reaches operating temperatures.

PRIMUS CONTROLS

FRONT CONTROL PANEL

The front control panel is the main control panel for the coach. Through this panel, domestic water can be kept warm, the coach is heated, and the engine can be preheated. This panel can also heat the luggage bays, if this option is included.



1. TEMPERATURE SET AND ADJUST

Temperature can be set between 41 and 82° F. When the knob is pointing straight up, the temperature level selected corresponds to approximately 68°F.



2. FAULT INDICATOR LIGHT

Light comes on if the LPG source or the 12 VDC current is interrupted and the boiler will no longer function. Light will flash momentarily to indicate ignition.



3. BOILER BUTTON (Green LED 1-Boiler, Red LED 2-Boilers)

Operates the LPG boiler. If the desired temperature is higher than the current temperature inside the coach, the LED above this button will be lit and the boiler(s) will start. If the current interior temperature is higher than the desired temperature, the LED will not be lit and the boiler(s) will not start.



4. WATER HEATER BUTTON

This moves the thermostatic temperature control from the coach interior to the hot water heater (summer months only). In the overhead dash (or in the rear engine compartment on 90 and 91 models), switch the summer/winter solenoid valve to the "summer" position. Both the boiler button and water heater button must be depressed to heat the water with the LPG boiler. To heat the water with the optional immersion heaters, depress both the first and second stage buttons, and the water heater button.

WARNING

At no time while heating the coach interior (summer/winter valve in winter position) should the water heater button be pushed. If this occurs; the interior temperature of the coach cannot be controlled successfully. This is a summer time button only (eg. only when domestic hot water is needed and coach heat is not).



5. IMMERSION HEAT, SECOND STAGE BUTTON (OPTIONAL FEATURE)

This button is used in conjunction with the immersion heat first stage button to provide 1600 watts of heating capacity. This button will not signal the heater unless the first stage button is depressed first.



6. IMMERSION HEAT, FIRST STAGE BUTTON (OPTIONAL FEATURE)

This button is used to provide the coach with 800 watts of heating capacity.

FRONT CONTROL PANEL OPERATION

Move temperature adjusting knob to the plus sign and leave it until the coach warms up. If the desired temperature is not attained after approximately 30 minutes, adjust accordingly.

1. LPG HEATING (Green LED 1-Boiler, Red LED 2-Boilers)

To heat the coach with LPG, depress the boiler button. The LED indicator light above the button will come "on", indicating that the boiler(s) is set to operate. The domestic water is being heated as well as the coach.

2. 120 IMMERSION HEATING (OPTIONAL FEATURE)

This feature will only work when shoreline power is available or the generator is running. Immersion heating can be used when it is not feasible to use LPG. This feature can also be used as an additional means of freeze protection. To get 800 watts of electric heat on the coach with 120 VAC, depress the first stage button. For 1600 watts of electric heat, depress the first and second stage buttons.

NOTE

The second stage button will not signal the heater unless the first stage button is depressed first. While heating with the 120 VAC heaters, the domestic water is also being heated.

3. MOTOR AID HEATING

This feature allows Primus to operate while the coach is in travel. To operate motor aid heating, the first stage button must be depressed on the front panel. The pre-heat switch, mounted in the front overhead dash, must also be turned "on". The domestic water will also be heated while using motor aid heat.

4. ENGINE PREHEAT

This feature allows Primus to preheat the engine. This is used to aid engine starting in cold climate conditions. To preheat the engine, LPG or 120V Immersion Heating must be in operation. The Engine Preheat switch located in the overhead dash should be switched to "on". The first stage button must be depressed.

5. SUMMERTIME HEATING OF DOMESTIC WATER ONLY

In the overhead dash, switch the summer/winter solenoid valve to the "summer" position. Both the boiler button and the water heater button must be depressed to heat the water with the LPG boiler. To heat the water with the optional immersion heater; depress both the first and second stage buttons, and the water heater button.

6. BAY HEAT (OPTIONAL FEATURE)

Bay heat is automatic while functions 1, 2, 3 or 4 are in operation. The power convectors in the storage bays are controlled by a separate thermostat in the bay area.

NOTE

The power convectors will not operate until the coolant reaches operating temperature, around 140° F.

POWER CONVECTORS

There are five power convectors included with the Primus heating system. These convectors are intended to increase the heating capability in select areas of the coach. The fan speed of the power convectors is controlled by a rheostat placed near each convector. The power convectors will only operate when the coolant reaches its operating temperature, about 140° F.

There is one power convector located under the kitchen sink. The rheostat that controls this power convector is located under the kitchen overhead cabinet. There is one power convector located under the vanity in the bathroom. The rheostat that controls this power convector is located on the front of the vanity cabinet. There is one power convector located under the FWD nightstand in the bedroom. The rheostat that controls this power convector is located in the davenport behind the driver's side mirrored access door. There are two power convectors in the living room, one under the couch and one under the end table. The rheostats that control these convectors are located underneath the pilot and co-pilot overhead transition boxes, respectively.

SUMMER/WINTER VALVE

The summer/winter valve is used to open or close the coolant flow to the convectors. When the valve is in the summer position only the domestic water will be heated. With the valve in the winter position both the domestic water and the interior of the coach will be heated.

There are two summer/winter valves on the coach, one is manual and the other is controlled by a switch on the dash. These valves are located in the engine compartment above the Primus boilers. Both valves must be open for the system to function properly in the winter mode.

BLEEDING THE SYSTEM

The Primus system is self purging via the header (or surge) tanks located in the engine compartment.

Begin by filling both tanks to the 1/2 full mark with a 50/50 mixture of antifreeze and water.

Lower the front of the coach by dumping the air suspension and raising the rear jacks. This will assist in pushing the air up to the rear of the coach.

Check that the summer/winter valve is in the winter position. Turn the thermostats to the highest setting on the primus panel. Turn the Primus pump on by depressing the first stage button on the primus panel.

Watch the surge tank and replenish with a 50/50 mixture as required when air is released from the system. The system should completely purge within 30 to 60 minutes.

MAINTENANCE OF THE PRIMUS SYSTEM

Check the fluid levels in the rear surge tanks weekly. Fill the surge tanks to the 1/2 full line with a 50/50 mixture of water and std. automotive antifreeze.

Water can be used to top off the system, but low-temperature freeze protection should be checked every 6 months.

Flush surge tanks to remove sediments as needed.

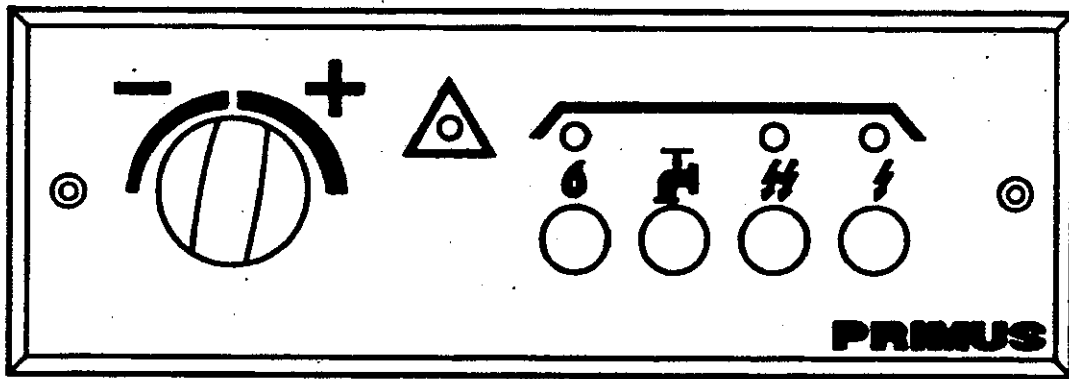
Change antifreeze every 2-5 years.

WARNING

**Do not spray wash LPG boilers (may damage electronics).
Cover with plastic bags if spray washing engine compartment.**

PROBLEM	CAUSE	REMEDY
1. Fault Indicator Light Comes "on". Boilers Don't operate.	1. LPG supply interrupted <ul style="list-style-type: none"> - LPG tank shut off - LPG tank empty - LPG solenoid valve closed - LPG detector tripped 2. Voltage supply dropped below 10 volts. <ul style="list-style-type: none"> - batteries not holding charge - batteries charging less than discharging - alternator malfunction - short circuit in Primus System 	<ul style="list-style-type: none"> - Check manual valve at tank - Check LP level at Galley Panel, Fill if required - Turn LPG Master "on" at Galley Panel - Reset Gas detector - Verify 120V supply, check charger circuit breaker "on". - check chargers on "high" in rear shoreline box - check 1 & 2 alternator output at dash gauge (eng running)
2. Fault Indicator Light stays "Off" Boilers don't operate.	Air bubble in system turns to steam in boiler, causing hi-temp cutoff switch by boiler to trip.	<ul style="list-style-type: none"> - check and fill surge tank to 1/2 mark. Reset cutoff in water line behind boiler (push down red button between wires) - restart system, if cutoff switches are tripped after repeated attempts, bleed system - check fuse on control panel circuit board - bleed system
3. Boiler turns on but begins boiling.	<ul style="list-style-type: none"> - Air in system - Circulating pump is defective 	<ul style="list-style-type: none"> - check that the pump is running - bleed system - check for changing level in surge tanks by disconnecting & reconnecting plug at pump or by turning system on and off. If level does not change, verify bleed line and red cap holes are clear. If venting is clear, replace pump's brushes and blow carbon dust out. (Temporary fix - place old brushes back after blowing carbon out until replacements arrive.)

PROBLEM	CAUSE	REMEDY
4. Winter-to-summer conversion is unsuccessful after switching summer/winter solenoid valve to the "summer" position. Interior of coach is still being heated.	Summer/Winter solenoid valve locked in the "winter" position. Replace this valve during the next scheduled service stop.	- Close the manual summer/winter valve near the boilers in the engine compartment. Do not forget to open this valve in the fall, when coach heat is needed again.



PRIMUS HEAT OPERATION MATRIX SHOWS ALL OPTIONS

		WLWB	SUMMER/ WINTER VALVE	PRE-HEAT SWITCH	PRIMUS CONTROL PANEL			
LPG	HEAT & HOT WATER	S	WINTER	OFF	*			
IMMERSION HEAT	HEAT & HOT WATER 800W	O	WINTER	OFF				*
	MAX HEAT & HOT WATER 1600W	O	WINTER	OFF			*	*
MOTOR AID HEATING	HEAT & HOT WATER	S	WINTER	ON				*
ENGINE HEAT	LPG	S	WINTER	ON	*			
	IMMERSION HEAT	S	WINTER	ON				*
DOMESTIC HOT WATER ONLY	LPG	S	SUMMER	OFF	*	*		
	IMMERSION HEAT	O	SUMMER	OFF		*	*	*
	MOTOR AID HEAT	S	SUMMER	ON		*		*

* - BUTTON DEPRESSED
 O - OPTION
 S - STANDARD

THE BAY HEAT OPTION WILL OPERATE WITH THE LPG, IMMERSION HEAT, AND MOTOR AID HEATING OPERATIONS. THE BAY HEAT OPTION CAN BE ADJUSTED BY USING THE THERMOSTAT, LOCATED IN THE PASS-THRU COMPARTMENT.

INTERIOR & EXTERIOR CARE

CORIAN TOPS

Even stubborn stains ... such as grape or beet juices ... wipe off with a damp cloth and household cleanser. Because CORIAN is solid all the way through, it cannot be harmed by abrasive cleansers and normal household cleaners.

CORIAN is strong and tough, but slicing on it with knives can cause scratches. Use a cutting board.

While CORIAN does provide an extra measure of protection (better than ordinary counter tops), it is not recommended as a hot pad. Do not place hot pots and pans directly on your CORIAN counter top.

Since it's a solid material with color and pattern all the way through, unusual damage such as cigarette burns, scratches, or other surface abuse can usually be removed using ordinary household cleansers or fine sandpaper. If the stain persists, or if the scratch is particularly deep, first use a medium sandpaper (120 or 240 grit) then fine sandpaper (320 or 400 grit) followed by circular motion buffing with a Scotch Brite pad to match the gloss of adjacent surfaces. Household cleanser, steel wool or Du Pont No. 7 polishing compound can also be used if higher gloss levels are needed.

CAUTION

Certain chemicals found in the home—such as paint removers, paint brush cleaners, acid drain cleaners and certain brands of nail polish and polish removers - can harm CORIAN if left in contact even for short periods of time. These materials should be wiped away promptly and flushed with water. Depending on time of exposure, surface damage caused by these materials can sometimes extend too deeply for practical repairs.

INTERIOR CARE

The interior can be kept in good condition with the use of approved cleaning agents for wall coverings and ceilings, plastic fixtures, stainless steel, formica and so on. Never use abrasive cleaning agents on interior of refrigerators, or on the lavatory, tub/shower, or toilet, as they can cause permanent scratches. Be sure that the cleaning agent will not damage the material. Note that some plastics are incompatible with certain cleaners. Read the directions on the container before using. For the most part, the cleaners and polishes that would normally be used in your home are equally well-suited for use in your motor home.

EXTERIOR CARE

Exterior paint finish life can be extended by periodic cleaning and waxing. This will preserve the paint and allow easier removal of dirt and road tars. Use touch-up paint for small areas to keep the coach finish in like new condition.

Frequent washing of the coach is necessary to prevent corrosion in areas where heavy salt sprays are evident. A clear acrylic spray may be used, with care, to control corrosive effects of salt spray on metal surfaces.

CAUTION

Some car/truck wash facilities may use strong detergents or other chemicals that could cause permanent staining or streaking of exterior paint and aluminum trim. A strong alkaline solution, while useful for dissolving dirt, is a suspected harmful ingredient.

Before enlisting any commercial wash service or facility, you should determine that cleaning agents used will not damage the finish of your coach.

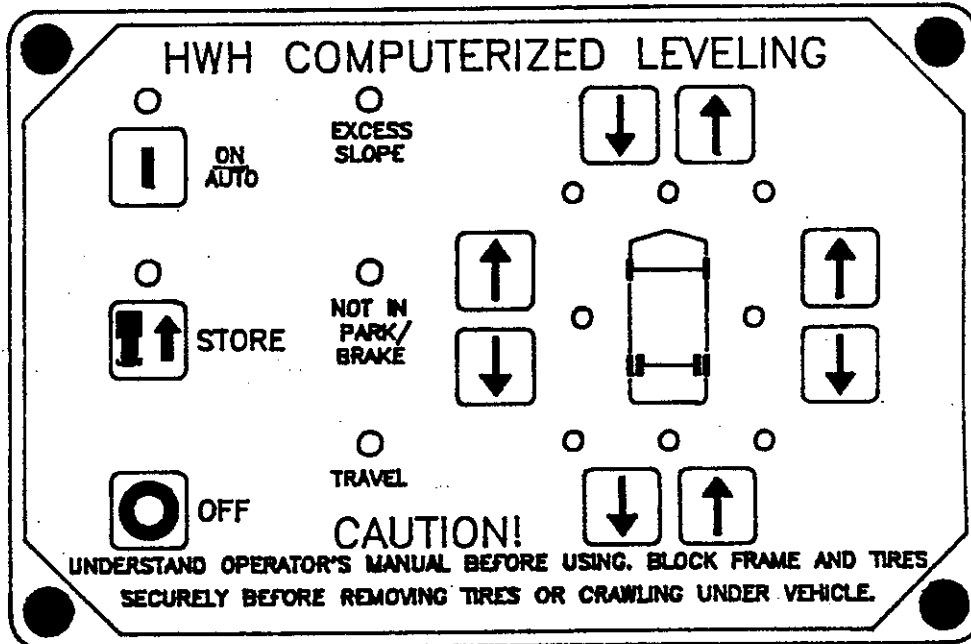
CAUTION

Avoid spraying water through the refrigerator vent door. Refrigerator PC control boards are not completely sealed and are vulnerable to an inadvertent dousing.

LEVELING JACK OPERATION

AUTOMATIC LEVELING JACKS CONTROL

The control panel is mounted on the sidewall beside the pilot.



CAUTION!

Read and understand entire operators manual before operating.

Block frame and tires securely before changing tires or crawling under vehicle. Do not use leveling jacks (or air suspension) to support vehicle while under vehicle or changing tires. Vehicle may move forward or backward without warning causing injury or death.

Keep all people clear of vehicle while leveling system is in use.

Do not over extend the rear jacks. If the weight of the vehicle is removed from one or both rear wheels, the vehicle may roll forward or backward, off the jacks.

Never place hands or other parts of the body near hydraulic leaks. Oil may cut and penetrate the skin causing injury or death.

Kickdown type leveling jacks may abruptly swing up anytime the foot clears the ground.

1. RED WARNING LIGHT (DASH MOUNTED)

Anytime one or more jacks are not fully retracted this light should be on. Do not move the vehicle if this light is on.

PANEL FUNCTIONS

1. CONTROL BUTTONS

The "OFF" button is in the lower left hand corner of the touch panel. Push the "OFF" button to stop hydraulic operation.

Top left is the "I" button with its operating light above it. Below the "I" button is the "STORE" button for retracting hydraulic jacks, with its operating light directly above it.

The remaining buttons on the right hand side of the panel are MANUAL control buttons that operate only during the manual mode. The manual buttons are the eight (8) buttons on the right half of the label, two for each of the FRONT, REAR, LEFT SIDE, and RIGHT SIDE. Pushing UP arrows will cause the coach to raise and DOWN arrows will cause the coach to lower.

2. INDICATOR LIGHTS

The four (4) yellow indicating lights are level sensing indicators. When a yellow light is "ON", it indicates that its side or end of the vehicle is low. No more than two (2) lights should be on at the same time.

The four (4) red lights surrounding the yellow level indicators are jack warning lights. They are functional only when ignition is "ON" or in "ACCESSORY". During the hydraulic mode they light when the respective jack is extended. The vehicle should not be moved while these lights are on.

The "EXCESS SLOPE" indicator will light when the leveling system cannot level the coach.

The "NOT IN PARK" indicator is "ON" when the control panel is "ON" and the park brake is not set.

The "TRAVEL" indicator is "ON" when the control panel is off, the jacks are retracted, and the ignition switch is on. Do not move vehicle unless travel light is "ON".

The "LOW BATTERY" indicator is "ON" when the controls sense low voltage set between 8.0 and 9.0 volts. The system will stop leveling functions when low voltage is detected.

The master "JACKS DOWN" warning light, on the dash, will be lit when any one touch panel "Jacks Down" warning light is on. This light will function when the ignition is "ON" and the touch panel is "ON" or "OFF". IMPORTANT: This light will be the only working "Jacks Down" warning light when traveling.

GENERAL INSTRUCTIONS

Press the "OFF" button and turn the ignition switch OFF at any time to stop the operation of the system.

Any time a hydraulic leveling process is interrupted, retract the jacks according to the "JACK RETRACTION" section and then restart the leveling process.

Do not operate the system when the "LOW BATTERY" light is on. If the park brake is not set when the "I" button is pressed, the "NOT IN PARK" light will come on and the system will not operate. It will remain "ON" only while the "I" button is pressed.

PREPARATION FOR TRAVEL

Before traveling, the red jack warning lights must be "OFF" and the travel light must be "ON". If lights are not correct for travel, retract jack as described in the "JACK RETRACTION" section.

CAUTION; Do not rely solely upon the warning indicator lights. It is the operator's responsibility to check that all jacks are up before moving the vehicle.

SYSTEM OPERATION

AUTOMATIC HYDRAULIC LEVELING

1. Place transmission in neutral position and set parking brake. Turn the ignition to the "ON" position. Note: Coach engine must be off for leveling.
2. If the vehicle is parked on soft ground, blocks may be placed under the jacks for added support.
3. De-pressurize the suspension system by moving "TAG DUMP" and "SUSP DUMP" switches to "DUMP", (away from "UP"). Dump tag axle first.
4. Press the "I" button to enter the hydraulic operation mode. The "I" indicator light will glow steady.
5. Press the "I" button a second time. The "I" indicator light will start to flash. The system automatically extends the jacks to level the vehicle and then extends any remaining jacks until they touch the ground. In the event the jacks are unable to level the vehicle, the "EXCESS-SLOPE" indicator light will come "ON". One or more yellow level lights will be "ON" indicating that its jack is fully extended.
6. After a short pause the system will automatically shut off.
7. Turn the ignition switch to the "OFF" position.

JACK RETRACTION

1. The operator must be sure that there are no objects under the vehicle and that all people are clear of the vehicle.
2. Start coach. Pressurize the suspension system by moving the "SUSP DUMP" switch to the "UP" position. When the front and rear suspension is fully pressurized, put the "TAG DUMP" switch in the "UP" position.
3. Press the "I" button one time. The "I" indicator light will glow steady. Press the "STORE" button. The store indicator light will flash. As each jack retracts, its red warning light will go out. Approximately one minute after the four red warning lights are off and the "TRAVEL" light is on the vehicle may be moved.
4. The system will automatically shut off six minutes after the four "Jacks Down" warning lights on the touch panel have gone out. If a "Jacks Down" warning light stays lit, the system will continue to run for thirty minutes. It will then shut off regardless of the touch panel warning lights. Note: DO NOT interrupt power to the control box until the red indicator light above the "I" button has gone out.
5. If jacks cannot be retracted by the above procedure see "VALVE RELEASE OPERATION" section.

MANUAL HYDRAULIC OPERATION

1. Place transmission in neutral and set the parking brake. Turn the ignition to the "ON" position.
2. If vehicle is parked on soft ground, blocks may be placed under jacks for added support.
3. De-pressurize the suspension system by moving "TAG DUMP" and "SUSP DUMP" switches to "DUMP" (away from "UP"). Dump tag axle first.
4. Press the "I" button. The indicator light will glow steady.
5. The vehicle may be leveled using the manual raise buttons on the right half of the panel. If a yellow "LEVEL SENSING" light is "ON", that side or end of the vehicle is low. Jacks will extend (or retract) in pairs to raise (or lower) a side or end of the vehicle. When a jack is extended, approximately two (2) inches, the respective jack warning light on the right half of the panel will come on.

IMPORTANT: Do not continue to push a raise button for more than ten (10) seconds after that pair of jacks are fully extended.

6. When leveling is completed, push the "OFF" button on the leveling panel and turn the ignition switch to the "OFF" position.

VALVE RELEASE OPERATION

1. Use the valve release "T" handles for retracting only if the "STORE" button on the control panel will not retract the jacks for travel.

CAUTION: Keep away from the wheels, do not crawl under coach, keep a safe distance in front and rear of vehicle. The vehicle may drop and/or move forward or backward without warning or as the valve release is operated.

2. Locate the valve release "T" handles on the solenoid valves. The solenoid valves are located on the pump manifold assembly.
3. Allow clearance for the coach to lower.
4. Open the two outer valves slowly by turning counter clockwise. The handles may turn easily at first but as an internal spring is compressed, turning may become more difficult. The valves need only be opened enough to retract the jack.
5. Retract the front jacks by opening the two center valves as described in step 4.
6. Check that all four jacks are now retracted.
7. Close the valves by turning the release handles clockwise. Once the internal spring tension has been released, the handles will turn free for several turns. DO NOT tighten the handles past this point as internal damage may occur to the solenoid.
8. The system should now be repaired before being used again.

SERVICING OF LEVELING SYSTEM

HYDRAULIC OIL

Retract the four leveling jacks before checking oil level. Locate the pump/manifold assembly and clean any dirt away from the breather/filler cap on the oil reservoir. Check that the oil is within one (1) inch of the top of the reservoir.

The oil should be checked when the vehicle is first purchased and then once every two years. More often if there is an oil leak in the system. Use universal, multipurpose or Dexron transmission fluid. DO NOT USE brake fluid or hydraulic jack fluid. Use of these fluids can damage seals. The hydraulic tank should be filled to within one (1) inch from the top.

VISUAL INSPECTION

Periodically inspect the leveling jacks for damaged or missing parts such as pivot bolts, springs, or warning switches. Check the hydraulic lines and wiring for damage and wear.

"NOT IN PARK/BRAKE" CHECK

Set park brake. Switch ignition to the "ON" position. Continuously press "I" button on touch panel to turn on system. Release parking brake and confirm that the "NOT IN PARK/BRAKE" indicator light comes on. Reset parking brake. Switch ignition to "OFF" position.

NOTE: If any of the above checks or inspections reveal a problem or if there are other problems or questions, consult your vehicle or coach manufacturer, or HWH Corporation for service or repair.

OPERATIONAL CHECK

Review operator manual and confirm that the system is operating correctly. Check warning switch operation by extending one jack approximately four inches, check that the warning light on the dash came on, retract the jack, then repeat for other three jacks.

NOTE

If any of the above checks or inspections reveal a problem or if there are other problems or questions consult your nearest service center.

NOTE

If the jacks are not retracted before driving away, a buzzer will sound.

CAUTION

Do not drive the coach unless the tag axle is correctly pressurized to assure even weight distribution. There must be pressure in the TAG AXLE air bags to prevent flat spotting of TAG AXLES tires during brake application.

CAUTION

Severe injury or death may result. Do not use the leveling system for changing tires or working under the vehicle. Keep the rear wheels in firm contact with the ground with the parking brake set. With the leveling jacks extended, there is a possibility the vehicle may move either toward the front or rear.

LPG SYSTEM

LPG SYSTEM

The coach is equipped with a permanently mounted 44 gallon (148 pounds of fuel-net) LP gas tank which is the energy source for the cooktop (range) hydronic heat system and alternate source for the refrigerator.

LPG TANK AND CONTROLS

The LPG supply tank is located between the frame rails directly to the rear of the pass-thru compartment. LPG system controls include a main gas service valve, solenoid shut-off valve, two stage pressure regulator, filler connection with Auto Stop (80%) fill valve, 20% vapor (stop filling when liquid appears) valve, and the pressure relief valve. The main gas service valve has an extension accessible through a door on the road side. Extensions for the filler connection and the 20% vapor valve terminate below the road side diesel fuel fill. The regulator and associated components at the tank are accessible after removal of a plate in a road side compartment.

WARNING

When the coach is to be stored in a confined area, turn off the LPG at the main tank shutoff valve. With the LPG leak detector this may now be accomplished by turning off the LPG Master Switch on the galley panel.

LPG tank level can be monitored at the galley panel above the microwave oven.

FUEL REQUIREMENTS

Liquefied petroleum gas is a material composed of various hydrocarbons such as propane, butane, or a mixture thereof. In its gaseous form (vaporized) it is colorless and has a garlic-scented additive to ensure detection. In addition to being highly inflammable, it is also dangerous to inhale. For ease of transportation and storage, LPG is compressed into a liquid state and stored, in this form, within the LPG tank. As fuel is used, vapor passes from the top of the tank into the two stage pressure regulator and to the various gas appliances.

Appliances will not function if the LP gas does not vaporize. Butane will not vaporize below 32° F. (the freezing point of water), but propane will continue to vaporize down to 44 degrees below zero. Propane has become the main type of LP gas used in RV's in recent years. Your LP supplier will have the correct type or blend for your locale. If your travels will take you into an area where climate differs, ask your LP dealer for his recommendations. The names of LP suppliers can be found in the yellow pages of the telephone directory under "Gas-Liquefied Petroleum-Bottled & Bulk". Many campgrounds now have LP gas fill facilities, as do some service stations.

Prevent condensation and possible regulator or line freeze-ups, when filling the tank, by requesting the dealer to add a small amount of methyl alcohol to the fill up. A common mixture is one ounce of Methyl Alcohol to each 20 pounds of LPG.

NOTE

Liquefied petroleum gas is heavier than air.

FILLING THE LP GAS TANK

When the tank is being filled, the service valve must be closed and the 80% liquid level valve (20% vapor valve) must be open. The 80% auto stop fill valve may close before liquid appears at the 80% liquid level valve, but if liquid does appear, stop filling immediately; the tank is filled to its LP capacity. Close the liquid level valve. Do not use a wrench to tighten this or the service valve; they are designed to be closed leak-tight by hand. If you cannot hand-tighten properly, the valve probably needs repair or replacement.

CAUTION

Be sure that the main LPG supply is shut off during refueling to prevent accidental ignition of gas fumes by appliance igniters.

CAUTION

All gas appliances must be cut off before filling the LPG tank. Check gas lines and fittings periodically for tightness and leakage.

REGULATOR

The two stage pressure regulator regulates the pressure of the LPG supplied to the appliances. The regulator functions automatically and is factory-preset to provide the correct line pressure. Do not attempt to tamper with or reset the regulator! Even a small variation above the normal gas line pressure can be sufficient to create a dangerous situation and cause possible damage to individual appliance components. If there is any doubt about the regulator setting it can be checked by your Wanderlodge dealer or LPG supplier. The correct setting is 11-14 inch water column.

OPERATION

To operate any LPG appliance, the main gas (Service) valve, must be open. Also individual valves at each appliance must be opened prior to use. When first used, or after a refill, there may be some air in the gas lines which will escape when you open a range burner or similar LP gas valve. The air may extinguish your match or igniter the first time or two, before you get ignition. Remember, too, that when you close the tank's service valve some of the gas will remain in the lines. To completely bleed the lines of gas, close the tank's service valve and light a range burner to use up the excess. When the flame burns out, turn the range burner off.

CHECKING FOR LEAKS

Periodically check the LPG system for possible leakage. Do not wait for an alarm condition to occur before correcting a leak! Although the entire system and associated appliances undergo extensive factory testing for leakage, road shocks and heavy vibrations may loosen or damage piping or fittings. Leaks will usually become noticeable by the characteristic odor of the garlic-scented gas additive. To check, turn off all burners and pilot lights. Open all doors and windows. Open LPG tank service valve and use an ammonia and chlorine free soap-bubble solution on all connections. Any bubbles are evidence of leakage.

NOTE

The gas leakage detectors may momentarily sound an alarm when the engine is initially started or when a heavy electrical load is placed on the system. Further, the ultra sensitive response of these units may also cause an alarm to be given in the presence of certain pressurized-can sprays or cleaning agents. Do not assume! Always determine the reason for this vital alarm being given!

LPG CONSUMPTION

Most gas appliances are intermittently operated. However, operation during cold weather conditions does cause heavy consumption. The amount of LPG consumption depends on the total use and manner of use of these appliances.

Note that each gallon (4 1/4 lb) of LPG fuel produces approximately 91,500 BTU's of heat energy. The LPG tank used in your coach will furnish over 3 million BTU's.

For your guidance in estimating your anticipated fuel consumption, the following is a listing of typical appliance consumption ratings when the appliance is operated for one hour:

Refrigerator	1,500 BTU's
Cooktop Burners	5,200 BTU's each
Hydronic Boilers	(2) 21,500 BTU's each

LPG SYSTEM WARNINGS

WARNING

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

WARNING

It is not safe to use cooking appliances for comfort heat.

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

Cooking appliances need fresh air for safe operation. Before operation:

1. Open overhead vent or turn on exhaust fan.
2. Open Window.

A warning label has been located near the LP gas container. This label reads.

WARNING

Do not fill container(s) to more than 80 percent of capacity.

Overfilling the LP gas container can result in uncontrolled gas flow which can cause fire or explosion. A properly filled container will contain approximately 80 percent of its volume as liquid LP gas.

WARNING

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

WARNING

Do not bring or store LP gas containers, gasoline or other flammable liquids inside the vehicle because a fire or explosion may result.

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

IF YOU SMELL GAS

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

LP gas regulators must always be installed with the diaphragm vent facing downward. This will minimize any chances of vent blockage which could result in excessive gas pressure causing fire or explosion.

WARNING

Never check for leaks with an open flame. Do not check copper plumbing lines for leaks using ammoniated or chlorinated household-type detergents. These can cause cracks to form on the line and brass fittings. If the leak cannot be located, take the unit to your Wanderlodge dealer or LPG supplier.

LPG LEAK DETECTOR SYSTEM

The system has been developed to the point where it is unique; it shuts off the LP gas at the high pressure source, yet holds the valve open to provide ample appliance flow with a minimum amount of current usage.

Three components make up the system

1. **Gas Detection Control Unit:** mounted on the rear dinette seat base. This is the "brains" of the system and provides an electrical signal to the solenoid valve when LPG service is required.
2. **Solenoid Valve:** installed in the high pressure LPG line feeding the two stage regulator. It is a "normally closed" solenoid valve and has a special winding of 22 ohms (approximate) resistance, so it uses very little current in the "hold open" position. In order to close the valve, it is only necessary to break the circuit. This provides a "fail-safe" feature in the event of loss of 12 volt power.
3. **LPG Master switch:** located on the galley panel.

The following events will result in an open/low voltage circuit and allow the solenoid valve to close and shut off the LPG supply:

1. Pushing the switch to OFF on LPG MASTER switch or the Gas Detection Control Unit. Green light will go out.
2. The Gas Detection Control Unit senses the presence of LP gas (or can be triggered by a propane lighter or even hair spray!) Green light out, Red light on, along with audible signal.
3. The Electronic Master switch is turned off. Green light will go out.

NOTE

System is not Master Switch activated.

In order to restore LP gas flow to the coach, use the following procedures corresponding to the events above:

1. Push switch on the LPG MASTER and the Gas Detection Control Unit to ON. Green light will come on.
2. Correct the cause of LP gas leak, or determine if other fumes caused the shut down. Green light will come on.
3. Turn Electronic Master Switch on. Green light will come on.

NOTE

Because of the presence of an excess flow valve in the LPG tank outlet (safety feature), sometimes an appliance will not relight after a shutdown. In this circumstance, wait five (5) minutes for LPG pressures to equalize before relighting.

OPTIONAL EQUIPMENT

AUXILIARY AIR COMPRESSOR

This unit provides a quick source of air so there is no need to wait for pressure to build up after starting engine. It can be used to operate air tools and accessories without starting the coach engine. It also serves as a standby unit in the rare case of a malfunction in the engine driven air compressor system.

The compressor and starting relay are located in a left (road) side center compartment while the 12 volt switch to operate the relay is located on the lower dash panel.

OPERATION

The compressor operates from 120 volt AC power so the coach must be plugged into shore power or the generator must be running. Press dash switch on.

Refer to Operating Manual for additional information.

MAINTENANCE

No lubrication is required for the life of the unit.

The air inlet filters should be inspected once or twice a year. The black plastic air inlet covers can be removed by turning counter-clockwise. This will reveal the felt filters. If there is evidence of dirt on filters and covers they may be washed in a solvent and air dried.

BATTERY HEATERS

120 volt AC battery heater pads provide faster engine starts during cold weather conditions by increasing the available cold cranking power.

NOTE

To avoid premature deterioration of the batteries, heaters should be used only when the temperature is below 32° F.

The battery heater switch is located in the kitchen base cabinet.

PREMIUM SOUND SYSTEM

Sound system features a 10 disc multiple CD player, graphic equalizer, and tuner cassette. The graphic equalizer features nine bands of equalization, three programmable memory presets, and three built in memory presets. The Tuner cassette features 24 channel preset memory; 18 FM and 6 AM, seek and manual tuning, Dolby B noise reduction, metal tape capability and loudness switch. The system includes four full range coaxial speakers and 120 watts of power. (See manufacturer's operation manual for additional information.)

SPARE PARTS KIT, ENGINE 8V92

Option includes additional belts, filters, hoses, Racor element, oil, transmission fluid, and grease gun.

SPARE PARTS KIT, AIR SUSPENSION

- 1 ... 1286814 ... Front Air Spring
- 1 ... 0961250 ... Rear Air Spring
- 1 ... 0871376 ... Height Valve Control
- 1 ... 0962183 ... Air Filter
- 1 ... 0990671 ... Tag Air Spring

TIRE CHANGE KIT

Includes a 12 ton hydraulic jack, jack handle, torque multiplying lug wrench and handle.

EXTERIOR LIGHTING PACKAGE

This lighting package includes an additional porch light on the curb side in the rear and an additional porch light on the road side above the utility box.

MUSICAL HORN CONTROLS-REMOTE

With this option a remote horn panel is located on the co-pilot's kick panel. (See **Musical Horn** for operating instructions.)

TOILET, ELECTRIC OPERATED

Includes vitreous china toilet, ultra-low water use and 12 volt electric flush. (See manufacturer's operation manual for further information.)

TABLE INFINITY

This option provides an infinity table in lieu of the standard living room table. Table is two tiered with wood tops. Top is smoked glass with vista lighting. Inside of table includes mirrored back and sides with provisions for bottle storage. Front of table includes two smoked glass doors.

The vista lights operate from a 12 volt DC source. The On/Off switch is located in the drape channel on the back of the table just below the top.

DINETTE PACKAGE, "L" SHAPED

Dinette is a three place dinette with a motorized retractable table for increased kitchen work space. Option includes:

1. Eight strips of vista lights inside the ceiling fixture. Vista lights are wired to a separate switch.
2. Switches for in-out operation of dinette table, overhead fluorescent light fixture, vista lights and reading light are located in bottom of dinette overhead cabinet.

SEAT, CO-PILOT 33" W/POWER FOOTREST

This optional seat is a wider seat with power footrest and lumbar support. It has the same six way electric seat adjustments as the standard co-pilot seat.

WASHER AND DRYER

The Washer/Dryer combo is mounted on a slide out tray with an access panel on the shelf above washer/dryer. Shut off valves for hot and cold water are located below the washer/dryer. 120 VAC power is supplied by shoreline hook up or generator. A ground fault interrupter circuit breaker controls power to washer/dryer. (See manufacturer's operation manual for further information.)

FREEZER, 50 LB. CAPACITY

Freezer is located in the curbside center luggage compartment. It is mounted on a roll out tray, with latch on right side. Power is supplied by either 120 or 12 volt. (See manufacturer's operation manual for further information.)

GARBAGE DISPOSAL

The disposal is located under the sink bowl and requires 120 vac power via the generator or shoreline hook up. The switch controlling the disposal is in the kitchen base cabinet. (See manufacturer's operation manual for further information.)

SKYLIGHT

A skylight with sliding covers, roof mounted, is offered in the ceiling. To open the skylight for fresh air or light, slide covers outward by applying pressure on the cover handles.

To adjust covers for optimum sliding tension:

1. Remove caps over the screws which hold the skylight trim in place. Caps may be removed by lifting the edge with the tip of a small screw driver or knife blade.
2. Screws along straight section of frame may be loosened or tightened as required to obtain the desired sliding tension.

NOTE

Do not adjust the two screws on each end for slide tension purposes.

Occasional glass adjustment may be required to maintain weatherproof integrity. Follow adjustment instructions that are printed on the skylight glass to obtain proper sealing between glass and rubber gasket.

CAUTION

Improperly installed glass can lift while vehicle is in motion.

BAY HEAT

This option allows outside storage compartments (not holding tank) to be heated for freeze protection by the LPG hydronic heating system. It contains 2-10,000 BTU fan forced power convectors that are activated by a thermostatically controlled switch at approximately 40° F.

ELECTRIC IMMERSION HEAT, HYDRONIC SYSTEM

This is an accessory to the LPG hydronic heat system. It's primary use is to provide freeze protection heat for the interior of the coach when it is stored in an enclosed area where LPG heat is not safe because of combustion gasses. It can also serve as a low requirement heat source. It is NOT intended to heat the coach in extreme cold conditions. In these conditions LPG must be the source of energy.

LUGGAGE COMPARTMENT LOCKS

Operated by the keyless entry system.

PROTECTIVE FRONT COVER

An optional protective front cover is available. This cover prevents road debris, bugs, etc. from damaging the paint on the front of the coach. It also is equipped with a front flap that allows access to the generator pull-out tray. Simply unhook the bottom straps and pull the flap free of the attaching Velcro. Roll up, then reattach the flap to the velcro for generator access.

If you have removed the cover for an extended period of time, do the following to reattach:

- Place the cover in direct sunlight for approximately 30 minutes to 1 hour to remove wrinkles and shrinkage.
- Remove all debris from the back of the cover to prevent paint scratching.
- Snap cover back on coach with the following steps:
 1. Snap center front snap first, then center cover up. Hook lower part of cover tightly in place.
 2. Snap center left and right hand sides.
 3. Snap remaining front snaps on, working out from center.
 4. Hook remaining lower parts of cover to bumper.
 5. Swap on side snaps working out from center.

Your cover may initially be tight or wrinkled; but will conform to the contour of your coach within 4 to 6 hours due to the nature of the cover material. Store your cover in a dry location and never put your cover on if it is damp or wet.

WARNING: If cover becomes wet or is rained on, remove cover as soon as possible. Moisture trapped behind cover can catalyze, or fog, clear coat paint if left in direct sunlight for prolonged periods of time. Moisture will become trapped, then evaporate into clear coat. If your front protective cover is rained on, remove at next stop, dry cover and front of coach completely before reattaching.

SAFETY & SECURITY FEATURES

FIRE EXTINGUISHER

A portable, multi-purpose dry chemical fire extinguisher is located behind the rear living room companion chair. A second fire extinguisher is located in an outside coach compartment. To use, release the clamp and remove the fire extinguisher from the bracket, pull safety pin from handle, squeeze handle and apply chemical under flame.

SMOKE DETECTOR

A smoke detector (now code mandated) is installed over the rear dinette seat. A warning label is attached to the exterior of the smoke detector.

LP GAS LEAKAGE DETECTOR

The gas leakage detector, is located below the rear dinette seat. In the event of an LP leak, the unit sounds an alarm and closes the main LPG supply by deactivating the solenoid valve located in the high pressure gas line just before the regulator. See LPG Leak Detector System for additional information.

HEAT ALARM

Heat alarm sensors are located at the 120V distribution panel and in the refrigerator vent stack. A buzzer in the pilot's front overhead will sound if excessive heat is detected in either area.

BURGLAR ALARM

The security of your motor home and contents are assured by an intruder alarm system which protects windows and entry door. Each window is protected by a magnetic proximity switch which triggers an alarm if a window is opened. The windows are also protected by two glass breakage sensors, which are located in the bedroom and living room area. These sensors trigger an alarm if a window is opened. The entry door uses a door jamb switch which activates the alarm when the door is opened. A panic switch, located on the bedroom control panel, allows you to alarm the system any time that a disturbance is noted. To arm or disarm the system, use the key chain (RF) wireless transmitter. For more detailed information, see manual in owner's kit.

A/T SWITCH

Anti-theft switch for the ignition circuits (A/T switch on lower dash) can be operated so that the unit cannot be started. This also serves as the coach master switch.

MIRRORS

All interior mirrors meet ANSI A119, and 297.1 codes, for your safety.

KEYLESS ENTRY OPERATION

Your Wanderlodge Keyless Entry System permits the locking and unlocking of your entrance door (Electric Dexter Deadbolt Lock Only) and the optional electric luggage compartment door locks. Both of these door systems also have manual key locking and unlocking which will permit you to override the electrical locking system as well.

To unlock the entrance door - Enter the five digit combination code via the externally mounted keypad. (The keypad will illuminate to aid visibility at night). You will hear the electric solenoid engage and unlock the deadbolt immediately after you enter the fifth digit of your combination code.

To unlock the optional electric luggage compartment door locks - Enter your code as described in the section "To Unlock the Entrance Door" and then within five seconds depress the 3/4 button on the keypad. You will hear the electric solenoids engage and unlock all of the luggage compartment doors immediately after you depress the 3/4 button.

To lock both the entrance door and the optional electric luggage compartment door locks - Depress simultaneously the 7/8 and 9/0 buttons on the keypad. You will hear the electric solenoids engage locking the entrance door and the luggage compartments.

POWER CORDS & HOOK UP

Your coach is supplied with a permanently attached 50 amp power supply cord, in the utility compartment (road side rear), for hook up to an external power source.

In addition, a single 30A twist lock connection is supplied to provide two 30A 120 vac lines (from separate external circuits in conjunction with the 50A fixed cord and 50A/30A adapter). This will permit use of all motor home appliances without overloading the supply lines. The total cord complement is as follows:

- 50A male (1) fixed
- 50A female to 30A male (1)
- 30A female to 30A male (1)
- 30A female to 30A male extension (2)
- 30A female to 20A male adaptor (2)

Note that each cord has a ground pin which provides proper electrical system grounding.. The ground pin is your personal protection from electrical shock hazards. **Do not use any adapter, cheater, or extension cord that will break the continuity of the grounding circuit. Never remove the grounding pin for convenience of being able to make a connection to a non-grounded receptacle!**

Never operate your coach with a "hot skin"! If you can feel even a slight "tingling" shock from touching the coach body while standing outside on the ground, immediately disconnect the electrical hookup until the trouble is located. This fault is usually caused by a break in the grounding circuit, which should be continuous from the coach skin or frame to the distribution panel board to the ground pin on the power supply cord, and from there to the park receptacle and earth ground.

NOTE

In order to keep the utility compartment clean while traveling. Move the flap located at the bottom of the compartment to its outward position and then shut the compartment door.

SHORELINE OPERATION (COMMERCIAL POWER)

CAUTION

Your motor home has been wired in accordance with the National Electrical Code. All 120 volt AC wiring is two-wire service with ground; all 240 volt wiring is three-wire service with ground. For personal safety, check the polarity detector indicators on the power line monitors to be sure that lines are properly connected and grounded.

CAUTION

During thunderstorms lightning strikes may detrimentally impact the electrical system of your coach just as it would your home. To avoid potential catastrophic damage to sensitive electronic devices in your coach, disconnect shore power and cable television service prior to electrical storms reaching maximum intensity.

CAUTION

If the ground pin is used as a starting point for insertion of the 50 amp plug, the possibility exists that an over voltage condition will occur on the 120 volt lines, ie, the neutral pin of the plug will not make contact at the same time the two 120 volt pins and thus, without the neutral pin making contact as a voltage reference 240 volts may be presented to the 120 volt appliances.

Therefore, to reduce the possibility of over voltage, switch off the 50 amp main breakers located in the 120 volt ac load center prior to insertion and removal of the 50 amp plug. In addition, insert and remove the 50 amp plug straight into the receptacle instead of tilting the plug. (See Power Cord Hookup Illustration in last section of manual.)

For purposes of safety, observe all precautions when making **SHORELINE** connections. Poor grounding or incorrectly-wired receptacles can cause personal harm as well as equipment damage or fire hazards. Check reverse polarity indicator in shoreline/utility compartment to verify correct polarity and grounding of hookup.

30 AMP ADDITIONAL SERVICE HOOKUP

First, connect the shoreline to the coach (rotate plug clockwise to assure firm connections). The coach receptacle is located in the left side utility compartment. Connect the other end of the shoreline to the power source. Poor grounding or incorrectly-wired receptacles can cause personal harm as well as equipment damage or fire hazards. Check reverse polarity indicator in shoreline/utility compartment to verify correct polarity and grounding of hookup.

ELECTRICAL RATINGS FOR MOTOR HOME APPLIANCES

In many instances, the shoreline hookups will not be rated to operate all electrical appliances in your coach. Check with facility personnel to determine the maximum current capability of the hookup. Sometimes, only one air conditioner may be operated.

<u>ITEM</u>	<u>CURRENT RATING (AMPERES)</u>
Air Conditioners	13,500 BTU (Run) 15.0-18.0
Water Heater	10.0
Television Receivers (Color)	1.0
Battery Charger <i>(depends on battery condition/load)</i>	0 to 14.0
Engine Block Heater	10.0
Electric Heaters	
Interior Heater	12.5
*Battery Heaters	1.2
Heat Tapes	3 watts/ft
Microwave Oven	15.0
Food Center	4.0
Refrigerator	2.7
Ice Maker	Start 15, Run 2.5
Instant Hot Water	6.5
*Optional Item	

SHORELINE OPERATION ... TROUBLESHOOTING

Your coach is designed and tested to make sure the 120 volt AC Neutral (white) wire and the Ground (bare copper or green) are not tied together (no continuity). This will prevent any danger of a "hot skin" if the source of power has reversed polarity (red LED lit) as indicated on the polarity indicator panels located on the right hand overhead aux. panel and in the utility compartment.

Problem
 Probable Cause
 Corrective Action

Yellow LEDs lit ... Normal (desired)

Red LEDs lit
 Reversed Polarity at power source.
 Convince park management to correct or change lot assignment.

Neither Red or Yellow LED lights
 No ground connection with park service
 Use jumper lead from ground pin on shore cord to service box.

Power source (park) circuit breaker trips.

Reversed polarity in park and coach neutral and ground tied together.

Use on-board generator until qualified electrician can correct coach problem.

(Generator polarity is correct).

Yellow LED's lit plus Red LED's glow when additional load is turned on (Air Conditioner or Water Heater).

Poor ground connection at park (floating ground).

Make sure shoreline plug is fully engaged. Twist locked (clockwise) at coach.

SAFELINE ALARM

See Left Hand Overhead dash for function.

TRANSMISSION

IMPORTANT

Your Wanderlodge® is equipped with an Allison model HT-755CR with electronic controls (ATEC) Please refer to the operator's manual supplied in your owner's package before vehicle operation. Also included is a code card for diagnostic analysis of your transmission operation.

NOTE; In the event your Allison transmission service technician must use a diagnostic reader to perform tests on the transmission computer, access to the diagnostic connector may be obtained by removing the driver's auxiliary control panel (the one with the remote mirror adjust switches) from the front of the shifter box. The diagnostic connector is attached to the side approximately six to ten inches from the front.

The Allison transmission provides five forward ranges and one in reverse. Speed selection is provided through the transmission shift panel.

The selector must be in N (neutral) position when the engine is started. If the engine can start in any other position, the neutral start switch deficiency should be corrected as soon as possible. Use D position for all normal driving conditions so that the coach begins moving in first gear and upshifts automatically into 2nd, 3rd, 4th and 5th gears. As the coach slows, the transmission automatically downshifts to the correct gear. Use a low gear 2 or 3 when road, load or traffic conditions make it desirable to restrict automatic shifting to a lower range; or use the Allison transmission retarder, as subsequently described. Use 1 or 2 when pulling through mud and snow or driving up steep grades. The vehicle should be completely stopped before shifting into reverse.

ACCELERATOR CONTROL

Foot pressure on the accelerator pedal influences the automatic upshifting or downshifting within each driving range. When the pedal is fully depressed against the floor pedal stop, the transmission automatically upshifts near the recommended governed speed of the engine. A partially depressed position of the pedal causes the upshifts to occur sooner at a lower engine speed. This throttle-modulation method provides the accurate shift spacing and control necessary for maximum performance.

DOWNSHIFT CONTROL

The transmission can be downshifted or upshifted, even at full throttle, and, although there is no speed limitation on upshifting, there is a limitation on downshifting and reverse. Good driving practices indicate that downshifting should be avoided when the vehicle is over the maximum speed attainable in the next lower gear. Allison transmissions incorporate downshift inhibitors to prevent harmful shifts when the vehicle is traveling too fast for the next lower gear. If downshifts are attempted at excessive speeds, the inhibitors prevent the selected downshift until the vehicle reaches an acceptable speed.

TRANSMISSION OIL TEMPERATURE

Extended operation at low vehicle speeds, with the engine at full throttle, can cause excessively high temperature in the transmission. These temperatures may tend to overheat the engine cooling system as well as cause possible damage to the transmission. If excessive temperature (215° F) is indicated by the engine coolant temperature gauge, stop the vehicle and determine the cause. If the cooling system appears to be functioning properly, the transmission is probably overheated. Shift to N and accelerate the engine to 1,200 to 1,500 RPM. This should reduce the oil sump temperature to operating level within a short time. If high temperatures persist, stop the engine and have the overheating condition investigated by service personnel.

CAUTION

Do not operate the engine for more than 30 seconds at full throttle with the transmission in gear and the unit stationary. Prolonged operation of this type will cause the transmission oil temperature to become excessively high and may result in severe overheat damage to transmission components. Do not leave transmission in drive for more than 5 minutes while stationary because of heat damage.

If the transmission overheats during normal operation, check transmission oil level.

TRANSMISSION MAINTENANCE

Refer to operator's manual for Allison Transmission for maintenance schedules.

TRANSMISSION SPECIFICATIONS

NO. SPEEDS GEARS

RATIOS

First	3.69
Second	2.02
Third	1.58
Fourth	1.25
Fifth	1.00
Reverse	9.65

Torque Converter
Lubricant Capacity

TC 496 1.83 Stall Ratio
31 qts. (Includes Filter and Cooler)
Dexron II (or Mecnron)

Bellhouse Size
Companion Flange
Dipstick Location

SAE #1
1810 Spicer
Left side of engine (at rear)

RETARDER OPERATION

Retarder operation is controlled by the retarder switch on the shifter panel. In the ENABLE position, the retarder will activate with closed throttle and brake pedal depressed. In the APPLY position, the retarder will activate by releasing the throttle. The indicator lamp will light when the retarder is operating.

An input retarder basically depends on engine speed to modulate retardation. At engine speeds below 1600 RPM retarder operation can be improved by manually down shifting the transmission to the next lower gear. It is important not to allow the engine to over speed by downshifting.

Refer to **Allison Transmission Manual** for additional information.

VIDEO & AUDIO

STEREO TELEVISION RECEIVER

Installed in the front overhead. Operates from a 120 volt source (inverter, shoreline or generator). Will not operate while in transit. Refer to owner's manual supplied with set for operating instructions.

TELEVISION RECEIVER

Installed in the bedroom. Operates from a 120 volt source (inverter, shoreline or generator). Refer to owner's manual supplied with set for operating instructions.

AUTOMOTIVE STEREO

Installed in the lower right dash. Is comprised of a tuner/cassette with two (2) 6 x 9 inch coaxial speakers, and two (2) 4 x 10 inch coaxial speakers. The tuner/cassette has auto reverse, electronic tuning sensor, Dolby noise reduction and metal tape capabilities.

The speakers are located two (2) in the living room and two (2) in the front overhead. See instruction manual for operating instructions.

STEREO SYSTEM

AM/FM tuner cassette with electronic tuning and auto reverse located in the bedroom night table with two (2) 6 1/2 inch coaxial speakers.

CLOSED CIRCUIT TV SYSTEM

Includes a monitor which enables the operator to view behind the coach for purposes of backing, or passing other vehicles on the highway. See RH lower auxiliary panel for controls.

The rear-facing CCTV camera transmits images directly to the monitor via coach cabling.

Note that the system requires a brief warmup period before achieving full resolution. CCTV camera controls are preset and the standard lens supplied with the unit is designed to focus from about two feet to infinity.

CB RADIO

CB radio is in compartment (floor) at driver's right leg. Refer to CB Operator's Manual for additional information.

VIDEO CASSETTE RECORDER

Installed in co-pilot side of overhead dash. Operates from a 120 volt source (inverter, shoreline or generator). Refer to owner's manual supplied with the VCR for operating instructions.

VIDEO CONTROL CENTER

Installed in the overhead dash above the pilot. Provides independent switching capabilities for two (2) VCR's, TV antenna, cable TV, and a TV game to the television sets. Provisions have been made for the installation of a second VCR to be connected near the rear television.

With a second VCR installed, it becomes possible to record video tapes between the two VCR's. The following procedure allows this to be accomplished.

- Place the tape that is going to be played in VCR 2 (the rear VCR).
- Place the tape that is going to be recorded in VCR 1 (the front VCR).
- The TV/VCR button on VCR 2 should be depressed.
- The VCR 2 button that is listed under the VCR 1 input of the video control center should be depressed.
- Press the play button on VCR 2 and the record button on VCR 1.
- The VCR's are now recording the tape.

TV ANTENNA & ROTATOR SYSTEM

The control components of the radome-type TV roof antenna, are a hand held rotator, switch for the antenna or cable inputs and a switch for raising and lowering the antenna.

The antenna rotators, located in the co-pilot's front overhead compartment, and in bedroom control the position of the TV antenna within the radome. The three-position momentary switch (center OFF) provides right/left antenna rotation.

The Video Selector switch, located in the pilot's front overhead compartment, switches antenna or cable input.

The switches for raising or lowering the antenna are located in the Pilot's Area Overhead Dash, and in bedroom.

The radome includes an amplifier and rotator mechanism. The remote power supply operates from 12 volts dc. Low-loss coaxial cable and three wire rotator control cable interconnect the antenna and power supply.

Note that the system is protected by a fuse in the front overhead load center. In the event that the TV set exhibits problems relating to low antenna input (ghosts, etc.) check this fuse before servicing the TV set.

ANTENNA OPERATION

With the TV on and a station tuned in, rotate the antenna by pressing the rocker switch located on the control unit. Press the right side of the switch to run the antenna clockwise; press the left side to turn the antenna counter-clockwise. Although the actual antenna movement is not visible, the indicator arrow on the control unit lights and shows the direction of movement. When the antenna has made one full turn (360 degrees), the End of Rotation light comes on. Observe the picture while rotating the antenna, first in one direction, then the other, to obtain best picture quality.

MUSICAL HORN

The lower dash panel has three different switches for use with the musical horn. The POWER switch provides power to the horn. When this switch is turned on, the selection display will light up and indicate selection number 0.

The SONG select switch controls the scanning of the song desired. When this switch is pressed in the up position, the selection display will begin to increment up, slowly at first and then increase in speed. When this switch is pressed in the down position, the selection display will increment down.

The PLAY switch, when depressed, initiates the selection displayed on the selection display. If this switch is depressed while a song is playing, the horn will automatically reset and repeat the song.

The volume control operation is controlled by operating the PLAY switch and the SONG select switch simultaneously. To increase volume, depress the PLAY switch and the SONG select switch in the UP position at the same time. To decrease volume, depress the PLAY switch and the SONG select switch in the DOWN position at the same time. The volume level will be displayed on the selection display in levels from L1 (lowest) to L5 (highest).

ELECTRONIC DOOR CHIME

The door chime is located in a removable compartment in the right hand overhead storage compartment.

The door chime can be preset to play any one of 60 different tunes when the doorbell button is pressed. All controls for tune selection, volume, tone and tempo are easily accessible. Tunes may be selected as follows:

1. Refer to tune index, at bottom of chime, and note the code number for the desired tune. For example, "William Tell Overture" is identified by D8.
2. Press in the left hand tune selector button and move it to position D.
3. Press in right hand button and move it to position 8.
4. Press test button to play selected tune and adjust volume, tone and tempo as desired. Note that tunes identified with an asterisk (*) will play longer if the button remains depressed.

PHONE OUTLETS, LAND LINE

Phone outlets are located in the bedroom and at rear of sofa. Connection is in utility box.

WASTE SYSTEM

Separate holding tanks for gray water and body waste are located in compartments directly in front of the drive wheels. Drainage plumbing diagrams are included in the owner's manual kit to show which fixtures drain into each holding tank. Each holding tank has a separate drain valve, dumping gray water and wastes through a common single discharge connection. Separate vents from each holding tank extend through the roof of the coach.

In the New Dimension Walk-Thru-Bath (Option 5989), the right (curb) side holding tank serves as the body waste tank. In the other floor plans, the left (road) side holding tank serves as the body waste tank.

Holding Tank Capacity: Approx. 95 Gallons Each

DRAINING THE HOLDING TANKS

The body waste (brown) holding tank is drained first, then the gray water tank. Drain the holding tanks as follows:

NOTE

It is advisable to drive your unit for a short distance to agitate the contents of the holding tank before dumping.

1. Check that both drain valves are in a closed position before removing drain cap.
2. Remove the safety cap from the single discharge connection by turning in a counter-clockwise direction and connect the 3-inch sewer hose coupling to the end of the valve. Tighten securely, in a clockwise direction. The sewer hose is stored in a tube under the coach. Place the discharge end of the hose into the sewer connection and check that all connections are secure to prevent accidental spillage.
3. Move the waste tank toggle switch on the power dump valve control panel (located in the roadside holding tank compartment) from the closed to the waste position. Then dump the gray tank by moving the toggle switch from the closed to the gray position

NOTE

The air system must be pressurized to use the power dump valve system. A manual operating tool is provided in the case of low or no air pressure.

4. After contents are emptied, dislodge remaining solids in the body waste tank by attaching a garden hose to the water inlet labeled "sewer." Valve must be open when using this inlet." Flush for about 2 minutes.

NOTE

Do not use the same hose to fill your potable (fresh) water tank that is used for the flushing system.

5. Disconnect garden hose from faucet and lay on ground to allow water to drain from the system before detaching from water inlet.
6. After flushing the body waste tank, move the toggle switches to the closed position.

NOTE

To clean the holding tanks, add a detergent solution to the tanks after they are emptied. The agitation action caused by vehicle movement will clean the tank.

7. Disconnect and wash out the sewer hose. Replace hose and replace safety cap securely.

HOLDING TANK DRAIN VALVE MAINTENANCE

Periodically the drain valve may become difficult to open. It is recommended that the (2) two screws in top of mechanism be removed and pull paddle out. After cleaning paddle, a coat of Vaseline should be added to both surfaces and valve reassembled.

WASTE TANK LEVEL INDICATORS

Each holding tank has a level detector which provides an electrical input to the Systems Monitor panel in the galley area. Activate the display to read the level of liquid remaining in each tank by pressing the appropriate push button switch.

HEATED HOLDING TANKS

Both holding tanks on the coach are equipped with 120 VAC electric heating pads with thermostats to prevent freezing down to 0° F.

WINTERIZING HOLDING TANKS

Drain the holding tanks and add RV antifreeze (several quarts) to each tank through the toilet (into the sewage tank), and through the tub/shower drain (gray water tank).

WINTERIZING FIXTURE TRAPS

In addition to the above, pour a pint of RV antifreeze into the kitchen sink and bathroom lavatory drains.

TOILET

The toilet, operates from the fresh water supply, flushing wastes directly into the sewage holding tank. After use, depress bowl drain pedal until water swirls, draining waste into tank, then release pedal. A water saver feature, consisting of a manually operated spray hose, is located at side of bowl. To raise the level of water in the bowl, lift up on the foot pedal. A water shutoff valve is located under the kitchen counter.

NOTE

A water pump must be on or coach connected to city water to operate toilet.

WINTERIZING TOILET

See toilet user manual in owner's kit.



AUTHORIZED SERVICE CENTERS

Blue Bird Wanderlodge

One Wanderlodge Way
Fort Valley, GA 31030
1-800-992-6337 (Outside GA)
Phone: (912) 825-2021
Fax: (912) 825-9625
Service Manager - Mike Forbus

Buddy Gregg Motor Homes

11730 Snyder Road
P.O. Box 23408
Knoxville, TN 37933
Phone: (615) 675-1986 or
1-800-421-0031
Fax: (615) 675-2077
Service Manager - Jim Gregg

Buddy Gregg Motor Homes

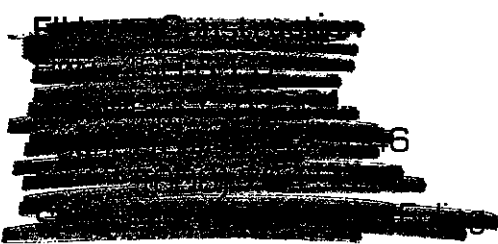
940 Crevasse Street
Lakeland, FL 33809
Phone: (813) 859-5656 or
1-800-243-5278
Fax: (813) 858-2702
Service Manager - Troy Moody

Dallas Motor Coach

1706 N. I-35 E.
Lewisville, TX 75067
Phone: (214) 221-4959
Fax: (214) 221-4251
Service Manager - Ron Carlson

Dotsco

P.O. Box 210
Grandview, TX 76050
Phone: (817) 866-4441
Fax: (817) 866-2616
Service Manager - Marvin Dotson

**Fantasia Coaches**

1607 Loop 577
Branham, TX 77833
Phone: (409) 830-1477
Fax: (409) 830-7199
Service Manager - Jim Swingholm

Greenway Construction

P.O. Box 2822
Pikeville, KY 41502-2822
Phone: (606) 432-2897 or
(606) 754-5678
Service Manager - Tom Epling

Holland Motor Homes

670 East 16th Street
Holland, MI 49423
Phone: (616) 396-1461 or
1-800-221-7197
Fax: (616) 396-1391
Service Manager - Mike Meulenberg

Holiday On Wheels

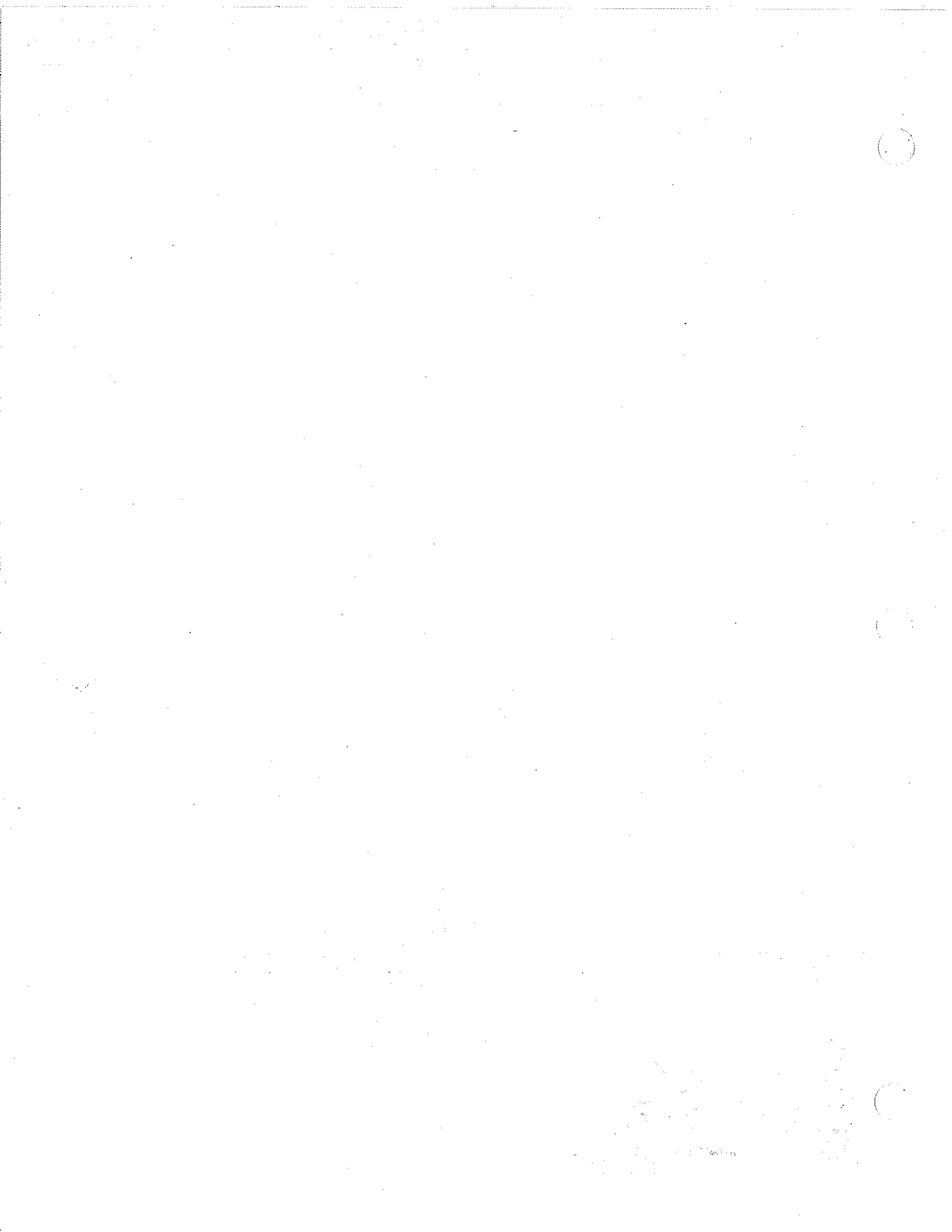
Robin Hill Corporate Park
Route 22
Patterson, NY 12563
Phone: (914) 878-9400
Fax: (914) 878-3647
Service Manager - Chris Grindley

Mike Eidsmoe's RV Service Center

9398 Bond Avenue
El Cajon, CA 92021
Phone: (619) 561-3531
Fax: (619) 561-3534
Service Manager - Mike Eidsmoe

Miller's RV

12912 Florida Boulevard
Baton Rouge, LA 70815
Phone: (504) 275-2940
Fax: (504) 275-6807
Service Manager - Doug Miller



Section 4 TROUBLESHOOTING CHARTS

A. THE DIAGNOSTIC PROCEDURE - WHERE TO START

When diagnosing the cause for engine performance, fuel economy or exhaust system complaints, perform normal checks (non DDEC-III items) before considering DDEC as the possible source of the problem.

When diagnosing the system, always start with the first chart (labeled "START") on page 39. This will ultimately lead to other diagnostic charts, even in the cases where no fault codes were logged but a symptom(s) was noted. In fact, if no faults were recorded (but a symptom remains), the "START" chart will refer you to the "Customer Complaint" Chart 1 on page 55, which can identify fault trees to use based on the customer complaint.

NOTICE: Although there are many charts connected with diagnostics, only one is needed to determine that the system is operating properly. Normally, only two charts are necessary to find a problem.

B. DDEC III DIAGNOSTIC CODES/WHAT THEY MEAN

The following pages give a brief description of each diagnostic code. Basic facts about these codes are given below:

- Most problems must occur for a total of at least two (2) seconds before the "Check Engine" light comes on and a code is stored.
- If a problem goes away, the "Check Engine" light will turn off. But the code will remain stored in the ECM.
- Code 25 means no codes were stored at all.

FLASH CODE: 11
DDR DISPLAY: VSG SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 187 FMI: 4

Indicates that the Variable Speed Governor (VSG) input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor +5 volt supply circuit
- (3) sensor signal is shorted to the sensor return circuit or to ground
- (4) sensor +5 volt supply is shorted to sensor return circuit or to ground

FLASH CODE: 12
DDR DISPLAY: VSG SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 187 FMI: 3

Indicates that the Variable Speed Governor (VSG) input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 13
DDR DISPLAY: COOLANT LEVEL SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 111 FMI: 4

Indicates that the Coolant Level Sensor (CLS) input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) sensor signal is shorted to the sensor return circuit or to ground
- (2) sensor +5 volt supply is shorted to sensor return circuit or to ground

The DDEC III ECM supplies a switched ground to the AUXILIARY OUTPUT #8 circuit to turn ON the function assigned.

FLASH CODE: 14
DDR DISPLAY: COOLANT TEMP SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 110 FMI: 3

Indicates that the engine Coolant Temperature Sensor (CTS) input to the ECM has exceeded 95% (normally 4.75 volts) of the sensor supply voltage. NOTE: This code will only be logged during warm engine operation. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor return circuit
- (3) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 14
DDR DISPLAY: OIL TEMP SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 175 FMI: 3

Indicates that the engine Oil Temperature Sensor (OTS) input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. NOTE: This code will only be logged during warm engine operation. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 14
DDR DISPLAY: INTERCOOLER SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 052 FMI: 3

Indicates that the engine Intercooler Temperature Sensor input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. NOTE: This code will only be logged during warm engine operation. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 15
DDR DISPLAY: COOLANT TEMP SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 110 FMI: 4

Indicates that the engine Coolant Temperature Sensor (CTS) input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) sensor signal circuit is shorted to sensor return or to ground
- (2) sensor +5 volt supply is shorted to sensor return circuit or to ground



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 15
DDR DISPLAY: OIL TEMP SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 175 FMI: 4

Indicates that the engine Oil Temperature Sensor (OTS) input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) sensor signal circuit is shorted to sensor return or to ground
- (2) sensor +5 volt supply is shorted to sensor return circuit or to ground

FLASH CODE: 15
DDR DISPLAY: INTERCOOLER SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 052 FMI: 4

Indicates that the engine Intercooler Temperature Sensor input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) sensor signal circuit is shorted to sensor return or to ground
- (2) sensor +5 volt supply is shorted to sensor return circuit or to ground

FLASH CODE: 16
DDR DISPLAY: COOLANT LEVEL SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 111 FMI: 3

Indicates that the Coolant Level Sensor (CLS) input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor return circuit
- (3) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 17
DDR DISPLAY: BYPASS POSITION SENS INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 72 FMI: 3

Indicates that the engine Blower Bypass Position Sensor input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 18
DDR DISPLAY: BYPASS POSITION SENS INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 72 FMI: 4

Indicates that the engine Blower Bypass Position Sensor input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor +5 volt supply circuit
- (3) sensor signal is shorted to the sensor return circuit or ground
- (4) sensor +5 volt supply is shorted to sensor return circuit or to ground

FLASH CODE: 21
DDR DISPLAY: THROTTLE SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 91 FMI: 3

Indicates that the Throttle Position Sensor (TPS) input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 22
DDR DISPLAY: THROTTLE SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 91 FMI: 4

Indicates that the Throttle Position Sensor (TPS) input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor +5 volt supply circuit
- (3) sensor signal is shorted to sensor return circuit or to ground
- (4) sensor +5 volt supply is shorted to the sensor return circuit or ground

FLASH CODE: 23
DDR DISPLAY: FUEL TEMP SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 174 FMI: 3

Indicates that the engine Fuel Temperature Sensor (FTS) input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. NOTE: This code will only be logged during warm engine operation. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor return circuit
- (3) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 24
DDR DISPLAY: FUEL TEMP SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 174 FMI: 4

Indicates that the engine Fuel Temperature Sensor (FTS) input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) sensor signal circuit is shorted to sensor return or to ground
- (2) sensor +5 volt supply is shorted to sensor return circuit or to ground

FLASH CODE: 26
DDR DISPLAY: AUX ENG SHUTDOWN #1 INPUT ACTIVE
SAE J1587 CODE: PID: 25 FMI: 11

Indicates that the Auxiliary Engine Shutdown #1 switch input to the ECM is active. The active switch input represents a low (grounded) external input circuit to the ECM.

FLASH CODE: 26
DDR DISPLAY: AUX ENG SHUTDOWN #2 INPUT ACTIVE
SAE J1587 CODE: PID: 61 FMI: 11

Indicates that the Auxiliary Engine Shutdown #2 switch input to the ECM is active. The active switch input represents a low (grounded) external input circuit to the ECM.

FLASH CODE: 27
DDR DISPLAY: AIR TEMP SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 172 FMI: 3

Indicates that the engine Air Temperature Sensor (ATS) input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. NOTE: This code will only be logged during warm engine operation. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor return circuit
- (3) sensor signal circuit is shorted to the sensor +5 volt supply



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 28
DDR DISPLAY: AIR TEMP SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 172 FMI: 4

Indicates that the engine Air Temperature Sensor (ATS) input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) sensor signal circuit is shorted to sensor return
- (2) sensor signal circuit is shorted to ground

FLASH CODE: 31
DDR DISPLAY: ENG BRK LOW OPEN CIRCUIT
SAE J1587 CODE: SID: 51 FMI: 3

Indicates that the Engine Brake Low function assigned to the Auxiliary Output #3 circuit is open or is shorted to battery (+). This diagnostic condition is detected when Engine Brake Low driver is OFF and the DDEC III ECM measures a high voltage on the circuit output.

FLASH CODE: 31
DDR DISPLAY: ENG BRK LOW SHORT TO GROUND
SAE J1587 CODE: SID: 51 FMI: 4

Indicates that the Engine Brake Low function assigned to the Auxiliary Output #3 circuit is shorted to ground. This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning ON the Engine Brake Low driver output.

NOTE: The Engine Brake Low output is a high side driver which means that the DDEC III ECM supplies battery (+) to the engine brake low circuit to turn ON the function.

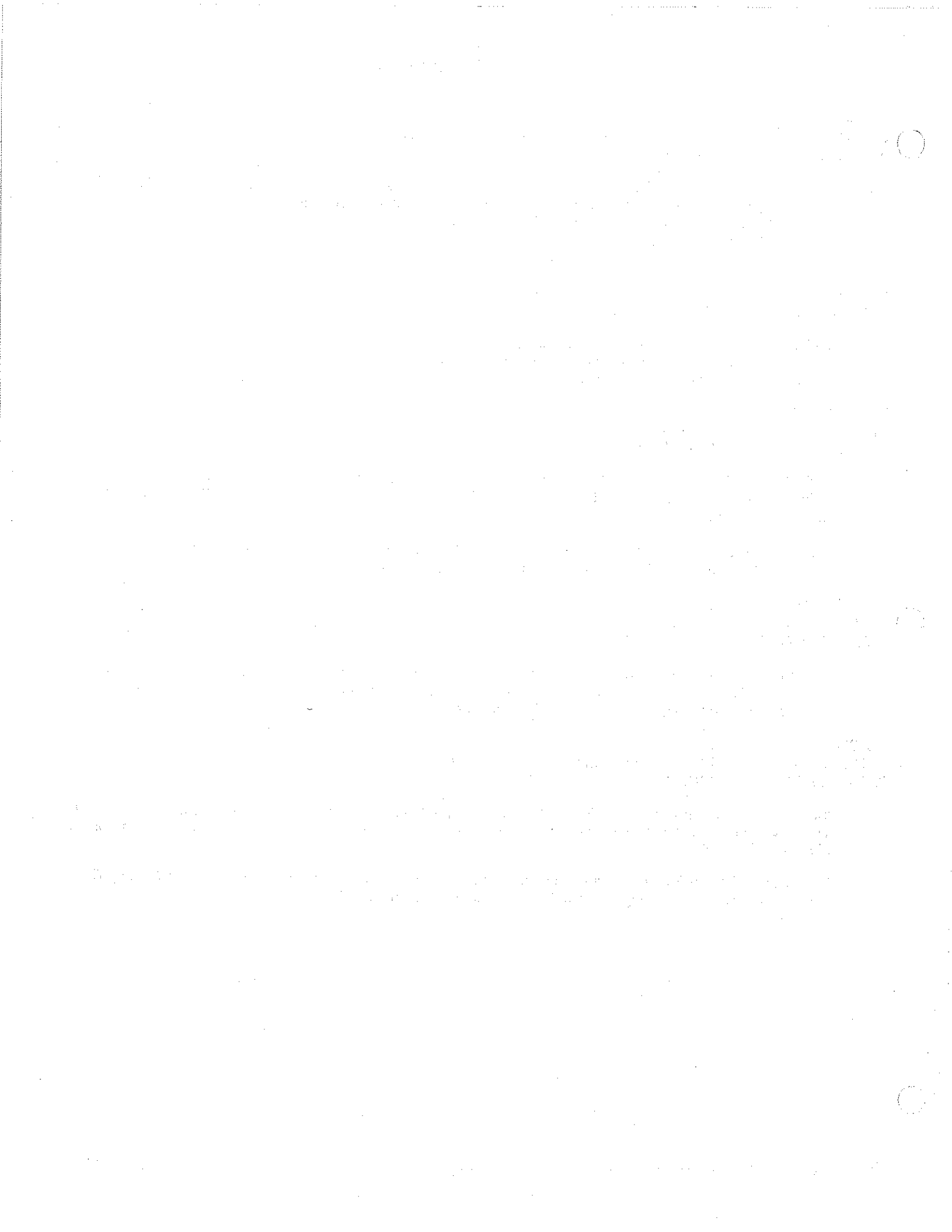
FLASH CODE: 31
DDR DISPLAY: ENG BRK MED OPEN CIRCUIT
SAE J1587 CODE: SID: 52 FMI: 3

Indicates that the Engine Brake Medium function assigned to the Auxiliary Output #4 circuit is open or is shorted to battery (+). This diagnostic condition is detected when the Engine Brake Medium driver is OFF and the DDEC III ECM measures a high voltage on the circuit output.

FLASH CODE: 31
DDR DISPLAY: ENG BRK MED SHORT TO GROUND
SAE J1587 CODE: SID: 52 FMI: 4

Indicates that the Engine Brake Medium function assigned to the Auxiliary Output #4 circuit is shorted to ground. This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning ON the Engine Brake Medium driver output.

NOTE: The Engine Brake Medium output is a high side driver which means that the DDEC III ECM supplies battery (+) to the engine brake low circuit to turn ON the function.



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 32
DDR DISPLAY: STOP ENGINE LIGHT SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 238 FMI: 3

Indicates that the Stop Engine Light (SEL) circuit is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning ON the stop engine light. This diagnostic code is typically:

- (1) failed short SEL light bulb
- (2) SEL wire in vehicle harness is shorted to battery (+)

NOTE: The DDEC III ECM supplies a switched ground to the stop engine light circuit to turn ON the light.

FLASH CODE: 32
DDR DISPLAY: STOP ENGINE LIGHT OPEN CIRCUIT
SAE J1587 CODE: SID: 238 FMI: 4

Indicates that the Stop Engine Light (SEL) circuit is open or shorted to ground. This diagnostic condition is detected when the stop engine light is OFF and the DDEC III ECM measures a low voltage on the stop engine light circuit output. This diagnostic code is typically:

- (1) failed open SEL light bulb
- (2) SEL wire in vehicle harness is open or shorted to ground

FLASH CODE: 32
DDR DISPLAY: CHECK ENGINE LIGHT SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 239 FMI: 3

Indicates that the Check Engine Light (CEL) circuit is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning ON the stop engine light. This diagnostic code is typically:

- (1) failed short CEL light bulb
- (2) CEL wire in vehicle harness is shorted to battery (+)

NOTE: The DDEC III ECM supplies a switched ground to the check engine light circuit to turn ON the light.

FLASH CODE: 32
DDR DISPLAY: CHECK ENGINE LIGHT OPEN CIRCUIT
SAE J1587 CODE: SID: 239 FMI: 4

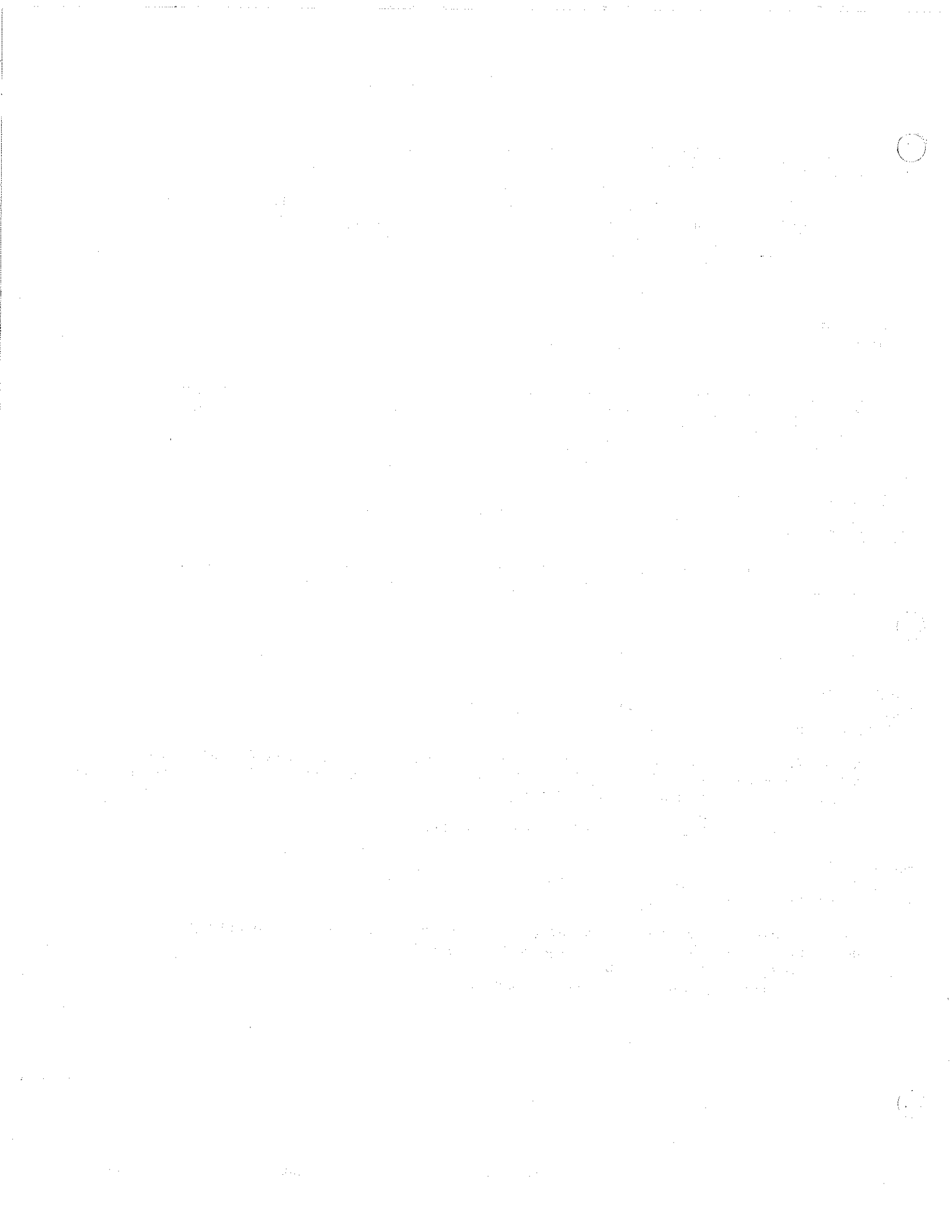
Indicates that the Check Engine Light (CEL) circuit is open or shorted to ground. This diagnostic condition is detected when the check engine light is OFF and the DDEC III ECM measures a low voltage on the check engine light circuit output. This diagnostic code is typically:

- (1) failed open CEL light bulb
- (2) CEL wire in vehicle harness is open or shorted to ground

FLASH CODE: 33
DDR DISPLAY: TURBO BOOST SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 102 FMI: 3

Indicates that the engine Turbo Boost Sensor (TBS) input to the ECM has exceeded 85% (normally > 4.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 34
DDR DISPLAY: TURBO BOOST SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 102 FMI: 4

Indicates that the engine Turbo Boost Sensor (TBS) input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor +5 volt supply circuit
- (3) sensor signal is shorted to the sensor return circuit or to ground
- (4) sensor +5 volt supply is shorted to sensor return circuit

FLASH CODE: 35
DDR DISPLAY: OIL PRESSURE SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 100 FMI: 3

Indicates that the engine Oil Pressure Sensor (OPS) input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 36
DDR DISPLAY: OIL PRESSURE SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 100 FMI: 4

Indicates that the engine Oil Pressure Sensor (OPS) input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor +5 volt supply circuit
- (3) sensor signal is shorted to the sensor return circuit or to ground
- (4) sensor +5 volt supply is shorted to sensor return circuit

FLASH CODE: 37
DDR DISPLAY: FUEL PRESSURE SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 94 FMI: 3

Indicates that the engine Fuel Pressure Sensor (FPS) input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 38
DDR DISPLAY: FUEL PRESSURE SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 94 FMI: 4

Indicates that the engine Fuel Pressure Sensor (FPS) input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor +5 volt supply circuit
- (3) sensor signal is shorted to the sensor return circuit or to ground
- (4) sensor +5 volt supply is shorted to sensor return circuit



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 41
DDR DISPLAY: TOO MANY SRS (MISSING TRS)
SAE J1587 CODE: PID: 21 FMI: 0

Indicates that the Synchronous Reference Sensor (SRS) has detected extra pulses, or the Timing Reference Sensor (TRS) has detected missing pulses.

FLASH CODE: 42
DDR DISPLAY: TOO FEW SRS (MISSING SRS)
SAE J1587 CODE: PID: 21 FMI: 1

Indicates that the Synchronous Reference Sensor (SRS) has detected missing pulses, or the Timing Reference Sensor (TRS) has detected extra pulses.

FLASH CODE: 43
DDR DISPLAY: COOLANT LEVEL LOW
SAE J1587 CODE: PID: 111 FMI: 1

Indicates that the Coolant Level Sensor (CLS) has detected that the engine coolant level has dropped below the recommended safe operating range.

FLASH CODE: 44
DDR DISPLAY: COOLANT TEMPERATURE HIGH
SAE J1587 CODE: PID: 110 FMI: 0

Indicates that the Coolant Temperature Sensor (CTS) has detected that the engine coolant temperature has exceeded the recommended safe operating range.

FLASH CODE: 44
DDR DISPLAY: OIL TEMPERATURE HIGH
SAE J1587 CODE: PID: 175 FMI: 0

Indicates that the Oil Temperature Sensor (OTS) has detected that the engine oil temperature has exceeded the recommended safe operating range.

FLASH CODE: 44
DDR DISPLAY: INTERCOOLER TEMP HIGH
SAE J1587 CODE: PID: 052 FMI: 0

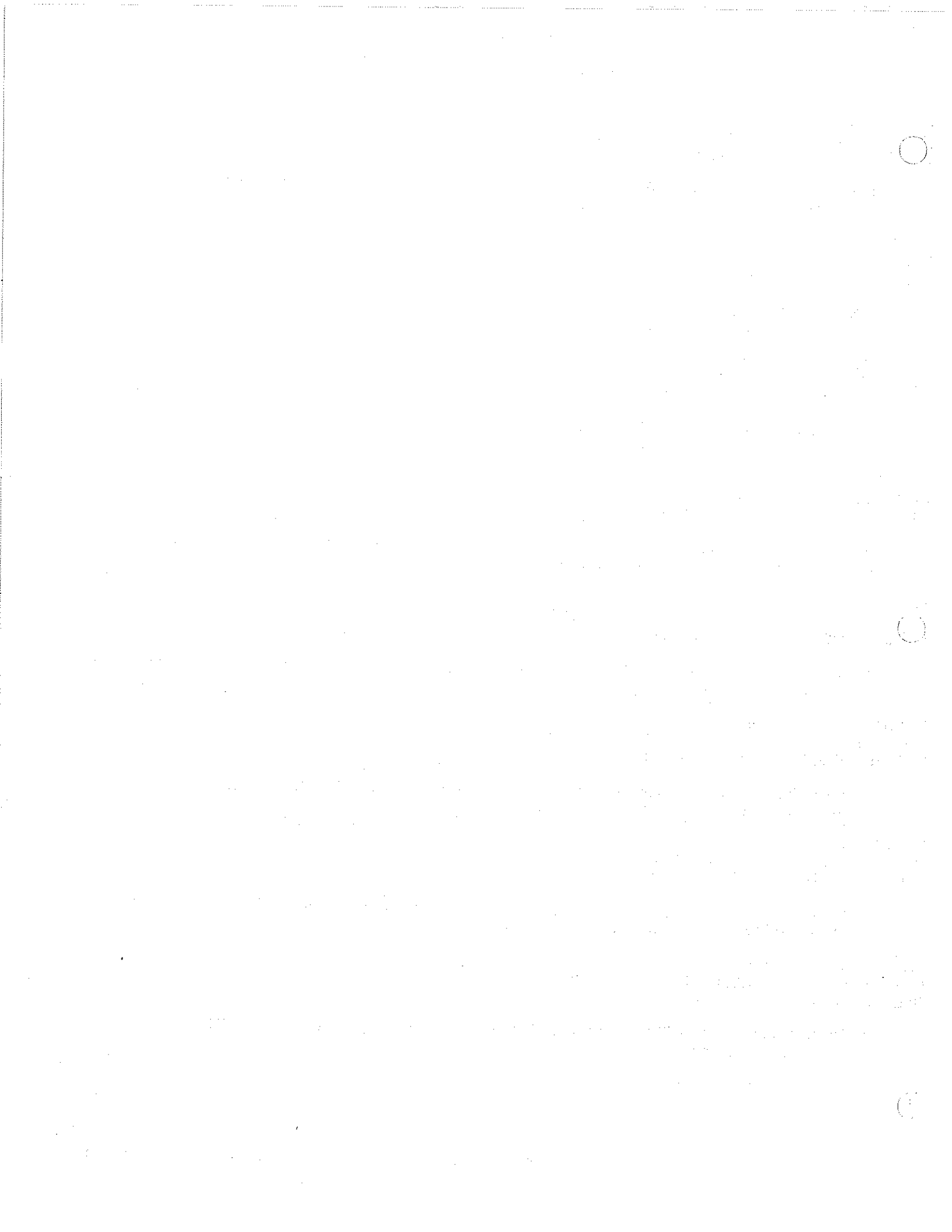
Indicates that the Intercooler Temperature Sensor has detected that the engine intercooler temperature has exceeded the recommended safe operating range.

FLASH CODE: 45
DDR DISPLAY: OIL PRESSURE LOW
SAE J1587 CODE: PID: 100 FMI: 1

Indicates that the Oil Pressure Sensor (OPS) has detected that the engine oil pressure has dropped below the recommended safe operating range.

FLASH CODE: 46
DDR DISPLAY: ECM BATTERY VOLTAGE LOW
SAE J1587 CODE: PID: 168 FMI: 1

Indicates that the DDEC III ECM has detected that the main battery supply voltage to the ECM has dropped below the recommended operating range.



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 47
DDR DISPLAY: FUEL PRESSURE HIGH
SAE J1587 CODE: PID: 94 FMI: 0

Indicates that the Fuel Pressure Sensor (FPS) has detected that the engine fuel supply pressure has exceeded the recommended safe operating range.

FLASH CODE: 48
DDR DISPLAY: FUEL PRESSURE LOW
SAE J1587 CODE: PID: 94 FMI: 1

Indicates that the Fuel Pressure Sensor (FPS) has detected that the engine fuel supply pressure has dropped below the recommended safe operating range.

FLASH CODE: 52
DDR DISPLAY: ECM A/D CONVERSION FAILURE
SAE J1587 CODE: SID: 254 FMI: 12

Indicates that the DDEC III ECMs internal Analog to Digital (A/D) Converter device has malfunctioned. Intermittant diagnostic conditions of this type can be caused by faulty external electrical system.

FLASH CODE: 53
DDR DISPLAY: NONVOLATILE MEMORY DATA INCORRECT
SAE J1587 CODE: SID: 253 FMI: 2

Indicates that the ECM upon startup has been unable to read a valid copy of a engine data record (calibration, faults, or accumulators) stored in nonvolatile memory.

FLASH CODE: 53
DDR DISPLAY: NONVOLATILE MEMORY FAILURE
SAE J1587 CODE: SID: 253 FMI: 12

Indicates that the ECM was unable to update an engine data record (calibration, faults, or accumulators) stored in nonvolatile memory.

FLASH CODE: 54
DDR DISPLAY: VEHICLE SPEED SENSOR FAILURE
SAE J1587 CODE: SID: 084 FMI: 12

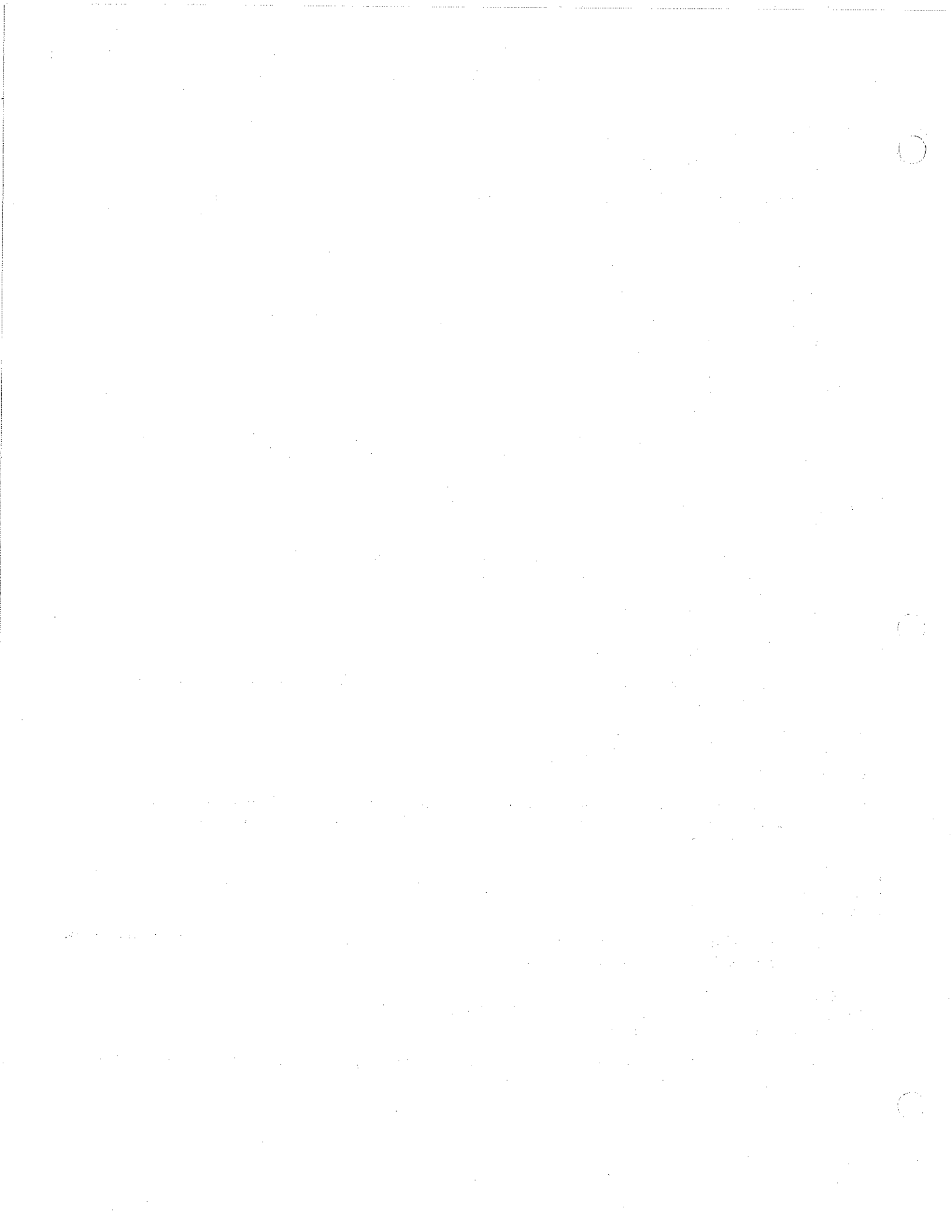
Indicates that during an ignition cycle the vehicle speed that is measured by the Vehicle Speed Sensor (VSS) is less than the expected value for the current engine RPM. This diagnostic condition is typically:
(1) open sensor signal circuit

FLASH CODE: 55
DDR DISPLAY: PROPRIETARY DATA LINK FAIL (MASTER)
SAE J1587 CODE: SID: 248 FMI: 8

Indicates that the Master ECM of a multi-ECM configuration (12, 16, or 20 cylinder engine) has stopped receiving status information from one or both receiver ECMs.

FLASH CODE: 55
DDR DISPLAY: PROPRIETARY DATA LINK FAIL (RECEIVER)
SAE J1587 CODE: SID: 248 FMI: 9

Indicates that the Receiver ECM of a multi-ECM configuration (12, 16, or 20 cylinder engine) has stopped receiving fueling information from the Mater ECM.



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 55
DDR DISPLAY: J1939 DATA LINK FAILURE
SAE J1587 CODE: SID: 232 FMI: 12

Indicates that the J1939 (High Speed Powertrain) data link is no longer allowing the ECM to transmit data. This diagnostic code is typically:

- (1) No other J1939 device is connected and/or powered up on the communications network.
- (2) Either or both of the data link circuits are open at some point in the network.
- (3) Either or both of the data link circuits are shorted to ground at some point in the network.
- (4) Either or both of the data link circuits are shorted to battery (+) at some point in the network.
- (5) The pair of data link circuits are shorted together.
- (6) One or both of the network termination resistors are not connected.

FLASH CODE: 56
DDR DISPLAY: J1587 DATA LINK FAILURE
SAE J1587 CODE: SID: 250 FMI: 12

Indicates that the J1587 (diagnostic) data link is no longer allowing the ECM to transmit data. This diagnostic condition is typically:

- (1) Either or both of the data link circuits are open at some point in the network.
- (2) Either or both of the data link circuits are shorted to ground at some point in the network.
- (3) Either or both of the data link circuits are shorted to battery (+) at some point in the network.
- (4) The pair of data link circuits are shorted together.

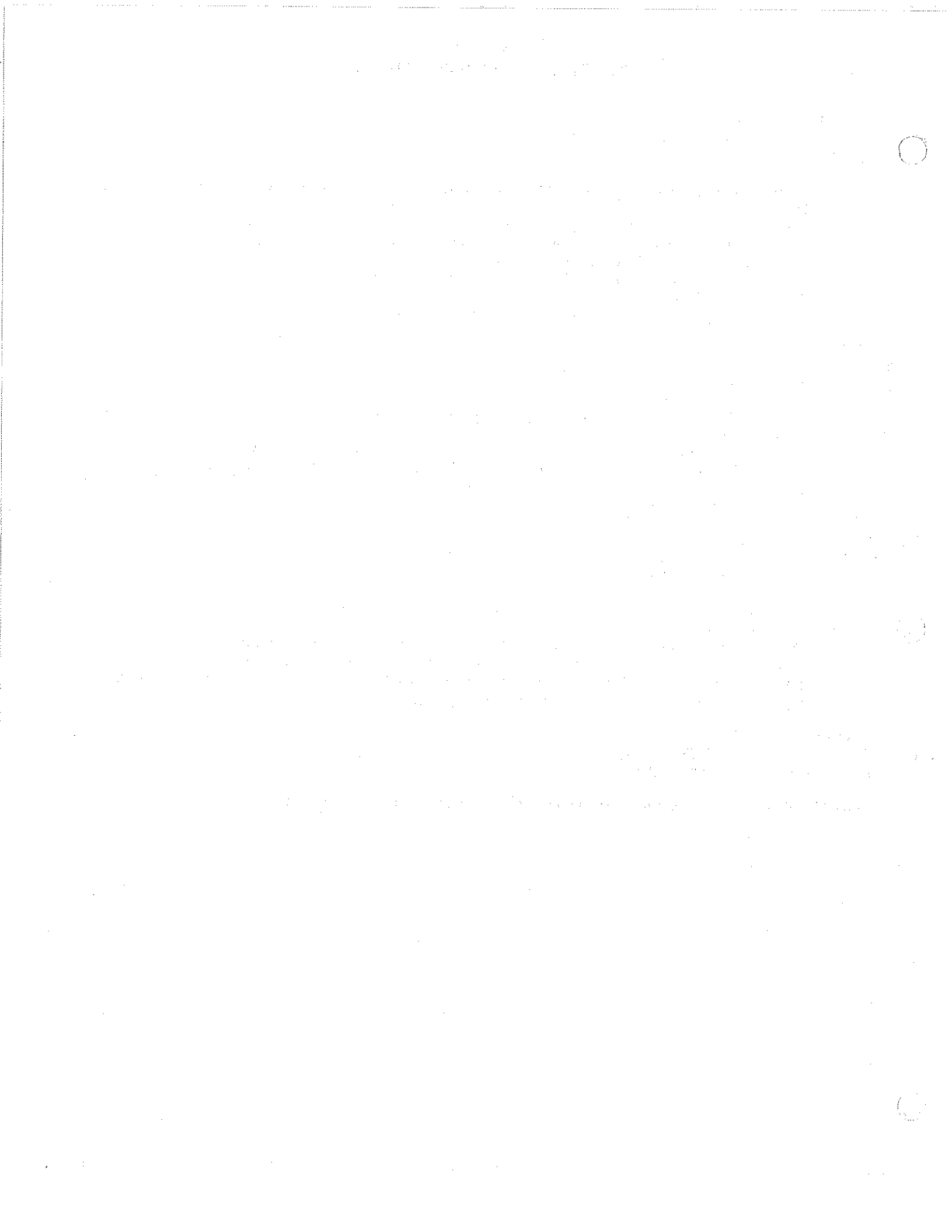
FLASH CODE: 57
DDR DISPLAY: J1922 DATA LINK FAILURE
SAE J1587 CODE: SID: 249 FMI: 12

Indicates that the J1922 (Low Speed Powertrain) data link is no longer allowing the ECM to transmit data. This diagnostic condition is typically:

- (1) Either or both of the data link circuits are open at some point in the network.
- (2) Either or both of the data link circuits are shorted to ground at some point in the network.
- (3) Either or both of the data link circuits are shorted to battery (+) at some point in the network.
- (4) The pair of data link circuits are shorted together.

FLASH CODE: 58
DDR DISPLAY: TORQUE OVERLOAD
SAE J1587 CODE: PID: 092 FMI: 0

Indicates that the engine operating torque has exceeded a calibratable maximum limit.



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 61
DDR DISPLAY: XXX INJECTOR RESPONSE TIME LONG
SAE J1587 CODE: SID: XX FMI: 0

Indicates that the time it takes from when the DDEC III ECM requests an injector be turned on to when the injector solenoid valve actually closes is longer than the high limit of the expected range. This diagnostic condition is typically:

- (1) bad injector harness/connection (high resistance)
- (2) blown fuses in the ECM battery (+) voltage supply harness
- (3) sticky solenoid valve

NOTE: The injector diagnostic SID (Subsystem Identifier) indicates which cylinder number has an injector with a long response time. The injector number describes the cylinder and/or bank which has the injector with a long response time. The DDR will display the injector text description in the table **DDEC III Injector Numbering** on page 364.

Injector response times generally increase with low battery supply voltage and decrease with high battery supply voltage. Although injector response times vary from injector to injector at a given RPM, each individual injector response time should remain relatively consistent from one firing to the next. Wide variations in response time (typically +/- 0.2 msec) for one injector at a steady engine RPM may indicate an electrical problem (faulty alternator or voltage regulator, poor or broken ground cables, etc.).

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #1) SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 026 FMI: 3

Indicates that the function assigned to the Auxiliary Output #1 circuit output is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning ON the configurable function.

NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #1.

The DDEC III ECM supplies a switched ground to the AUXILIARY OUTPUT #1 circuit to turn ON the function assigned.

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #1) OPEN CIRCUIT
SAE J1587 CODE: SID: 026 FMI: 4

Indicates that the function assigned to the Auxiliary Output #1 circuit output is open or is shorted to ground. This diagnostic condition is detected when the Auxiliary Output #1 function is OFF and the DDEC III ECM measures a low voltage on the circuit output.

NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #1.



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #2) SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 040 FMI: 3

Indicates that the function assigned to the Auxiliary Output #2 circuit output is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning **ON** the configurable function.

NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #2.

The DDEC III ECM supplies a switched ground to the AUXILIARY OUTPUT #2 circuit to turn **ON** the function assigned.

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #2) OPEN CIRCUIT
SAE J1587 CODE: SID: 040 FMI: 4

Indicates that the function assigned to the Auxiliary Output #2 circuit output is open or is shorted to ground. This diagnostic condition is detected when the Auxiliary Output #2 function is **OFF** and the DDEC III ECM measures a low voltage on the circuit output.

NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #2.

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #5) SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 053 FMI: 3

Indicates that the function assigned to the Auxiliary Output #5 circuit output is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning **ON** the configurable function.

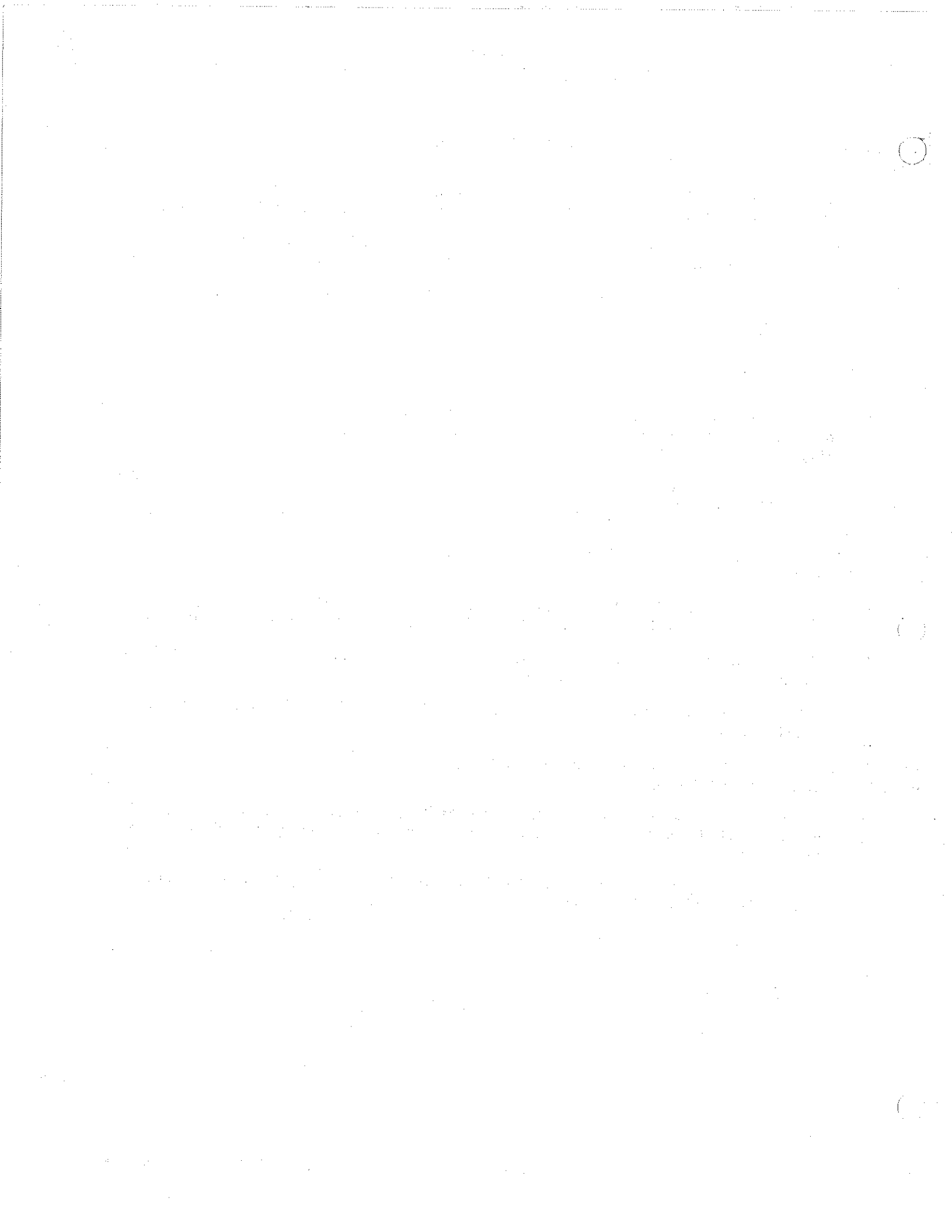
NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #5.

The DDEC III ECM supplies a switched ground to the AUXILIARY OUTPUT #5 circuit to turn **ON** the function assigned.

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #5) OPEN CIRCUIT
SAE J1587 CODE: SID: 053 FMI: 4

Indicates that the function assigned to the Auxiliary Output #1 circuit output is open or is shorted to ground. This diagnostic condition is detected when the Auxiliary Output #5 function is **OFF** and the DDEC III ECM measures a low voltage on the circuit output.

NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #5.



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #6) SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 054 FMI: 3

Indicates that the function assigned to the Auxiliary Output #6 circuit output is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning **ON** the configurable function.

NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #6.

The DDEC III ECM supplies a switched ground to the AUXILIARY OUTPUT #6 circuit to turn **ON** the function assigned.

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #6) OPEN CIRCUIT
SAE J1587 CODE: SID: 054 FMI: 4

Indicates that the function assigned to the Auxiliary Output #1 circuit output is open or is shorted to ground. This diagnostic condition is detected when the Auxiliary Output #6 function is **OFF** and the DDEC III ECM measures a low voltage on the circuit output.

NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #6.

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #7) SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 055 FMI: 3

Indicates that the function assigned to the Auxiliary Output #7 circuit output is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning **ON** the configurable function.

NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #7.

The DDEC III ECM supplies a switched ground to the AUXILIARY OUTPUT #7 circuit to turn **ON** the function assigned.

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #7) OPEN CIRCUIT
SAE J1587 CODE: SID: 055 FMI: 4

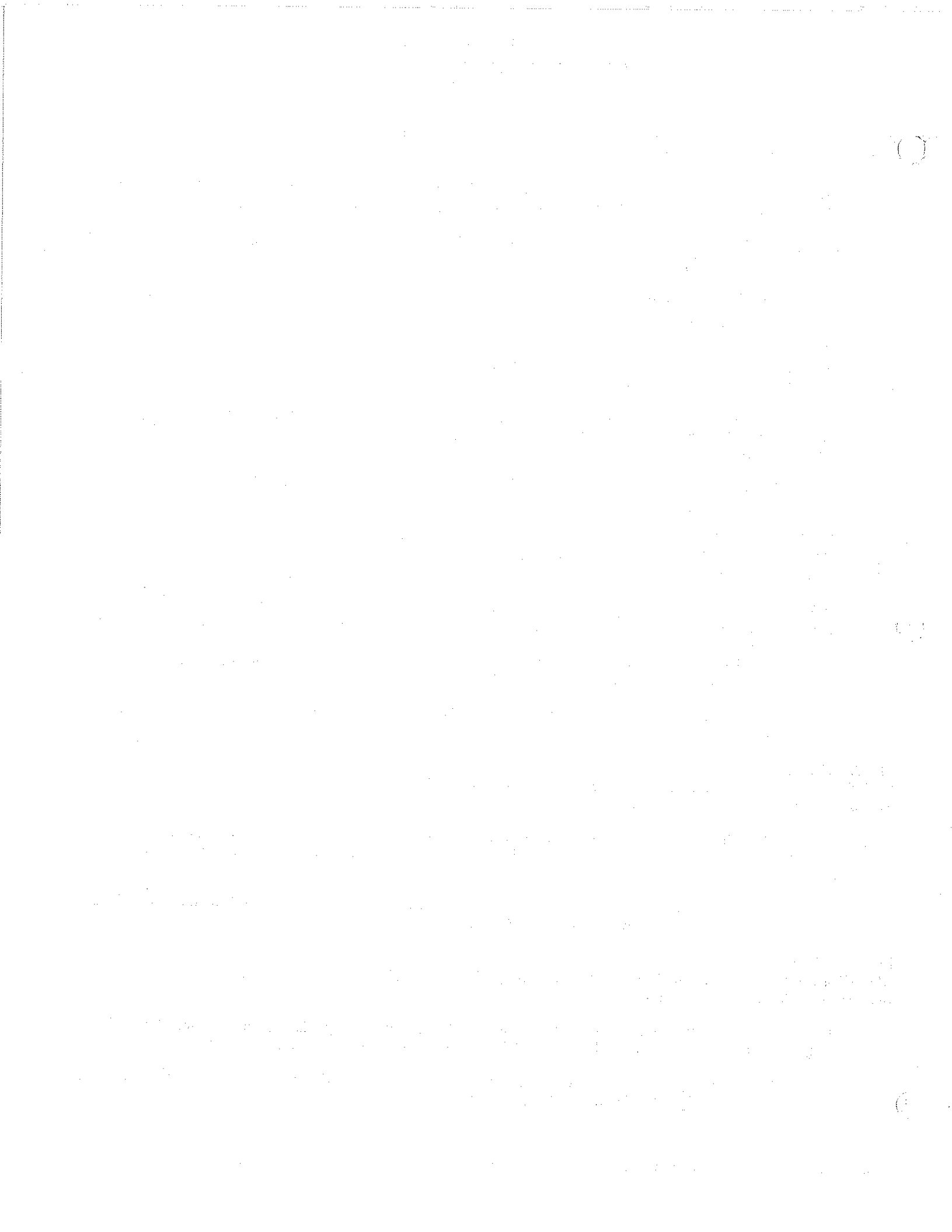
Indicates that the function assigned to the Auxiliary Output #1 circuit output is open or is shorted to ground. This diagnostic condition is detected when the Auxiliary Output #7 function is **OFF** and the DDEC III ECM measures a low voltage on the circuit output.

NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #7.

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #8) SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 056 FMI: 3

Indicates that the function assigned to the Auxiliary Output #8 circuit output is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning **ON** the configurable function.

NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #8.



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 62
DDR DISPLAY: (AUXILIARY OUTPUT #8) OPEN CIRCUIT
SAE J1587 CODE: SID: 056 FMI: 4

Indicates that the function assigned to the Auxiliary Output #1 circuit input is open or is shorted to ground. This diagnostic condition is detected when the Auxiliary Output #8 function is OFF and the DDEC III ECM measures a low voltage on the circuit output.

NOTE: The DDR will display the parameter text description in TABLE 2 (ECM Output Options) to identify the function assigned to AUXILIARY OUTPUT #8.

FLASH CODE: 63
DDR DISPLAY: PWM DRIVER #1 SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 057 FMI: 3

Indicates that the PWM DRIVER #1 circuit output is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning ON the circuit function.

NOTE: The DDEC III ECM supplies a switched ground to the PWM DRIVER #1 circuit to turn ON the circuit function.

FLASH CODE: 63
DDR DISPLAY: PWM DRIVER #1 OPEN CIRCUIT
SAE J1587 CODE: SID: 057 FMI: 4

Indicates that the PWM DRIVER #1 circuit output is open or is shorted to ground. This diagnostic condition is detected when the PWM Driver #1 function is OFF and the DDEC III ECM measures a low voltage on the circuit output.

FLASH CODE: 63
DDR DISPLAY: PWM DRIVER #2 SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 058 FMI: 3

Indicates that the PWM DRIVER #2 circuit output is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning ON the circuit function.

NOTE: The DDEC III ECM supplies a switched ground to the PWM DRIVER #2 circuit to turn ON the circuit function.

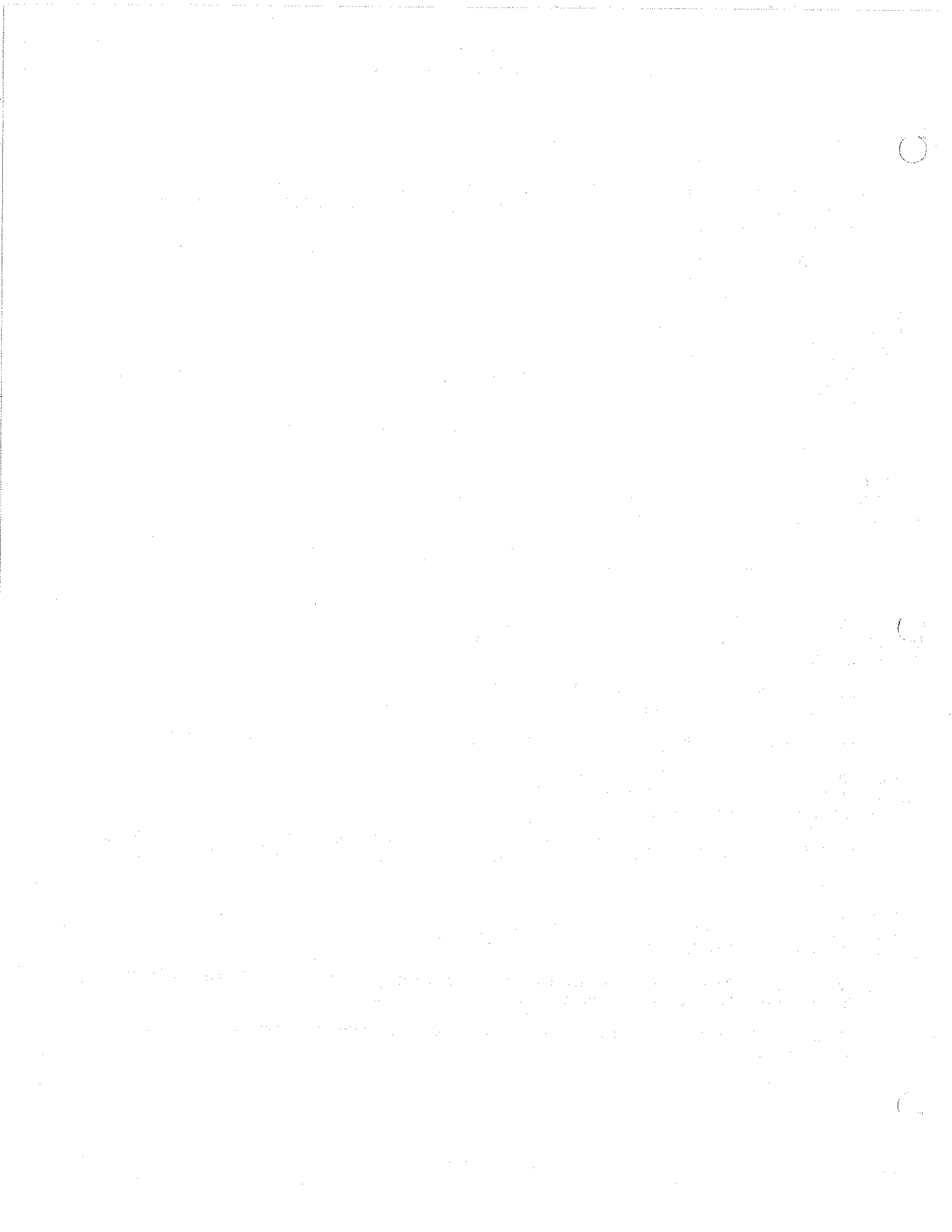
FLASH CODE: 63
DDR DISPLAY: PWM DRIVER #2 OPEN CIRCUIT
SAE J1587 CODE: SID: 058 FMI: 4

Indicates that the PWM DRIVER #2 circuit output is open or is shorted to ground. This diagnostic condition is detected when the PWM Driver #2 function is OFF and the DDEC III ECM measures a low voltage on the circuit output.

FLASH CODE: 63
DDR DISPLAY: PWM DRIVER #3 SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 059 FMI: 3

Indicates that the PWM DRIVER #3 circuit output is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning ON the circuit function.

NOTE: The DDEC III ECM supplies a switched ground to the PWM DRIVER #3 circuit to turn ON the circuit function.



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 63
DDR DISPLAY: PWM DRIVER #3 OPEN CIRCUIT
SAE J1587 CODE: SID: 059 FMI: 4

Indicates that the PWM DRIVER #3 circuit output is open or is shorted to ground. This diagnostic condition is detected when the PWM Driver #3 function is OFF and the DDEC III ECM measures a low voltage on the circuit output.

FLASH CODE: 63
DDR DISPLAY: PWM DRIVER #4 SHORT TO BATTERY (+)
SAE J1587 CODE: SID: 060 FMI: 3

Indicates that the PWM DRIVER #4 circuit output is shorted to battery (+). This diagnostic condition is detected when the DDEC III ECM is unsuccessful in turning ON the circuit function.

NOTE: The DDEC III ECM supplies a switched ground to the PWM DRIVER #4 circuit to turn ON the circuit assigned.

FLASH CODE: 63
DDR DISPLAY: PWM DRIVER #4 OPEN CIRCUIT
SAE J1587 CODE: SID: 060 FMI: 4

Indicates that the PWM DRIVER #4 circuit output is open or is shorted to ground. This diagnostic condition is detected when the PWM Driver #4 function is OFF and the DDEC III ECM measures a low voltage on the circuit output.

FLASH CODE: 64
DDR DISPLAY: TURBO SPEED SENSOR INPUT FAILURE
SAE J1587 CODE: PID: 103 FMI: 8

Indicates that the DDEC III Auxiliary Timed input port has not received an expected frequency signal from the Turbo Speed Sensor.

FLASH CODE: 67
DDR DISPLAY: COOLANT PRESS SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 109 FMI: 3

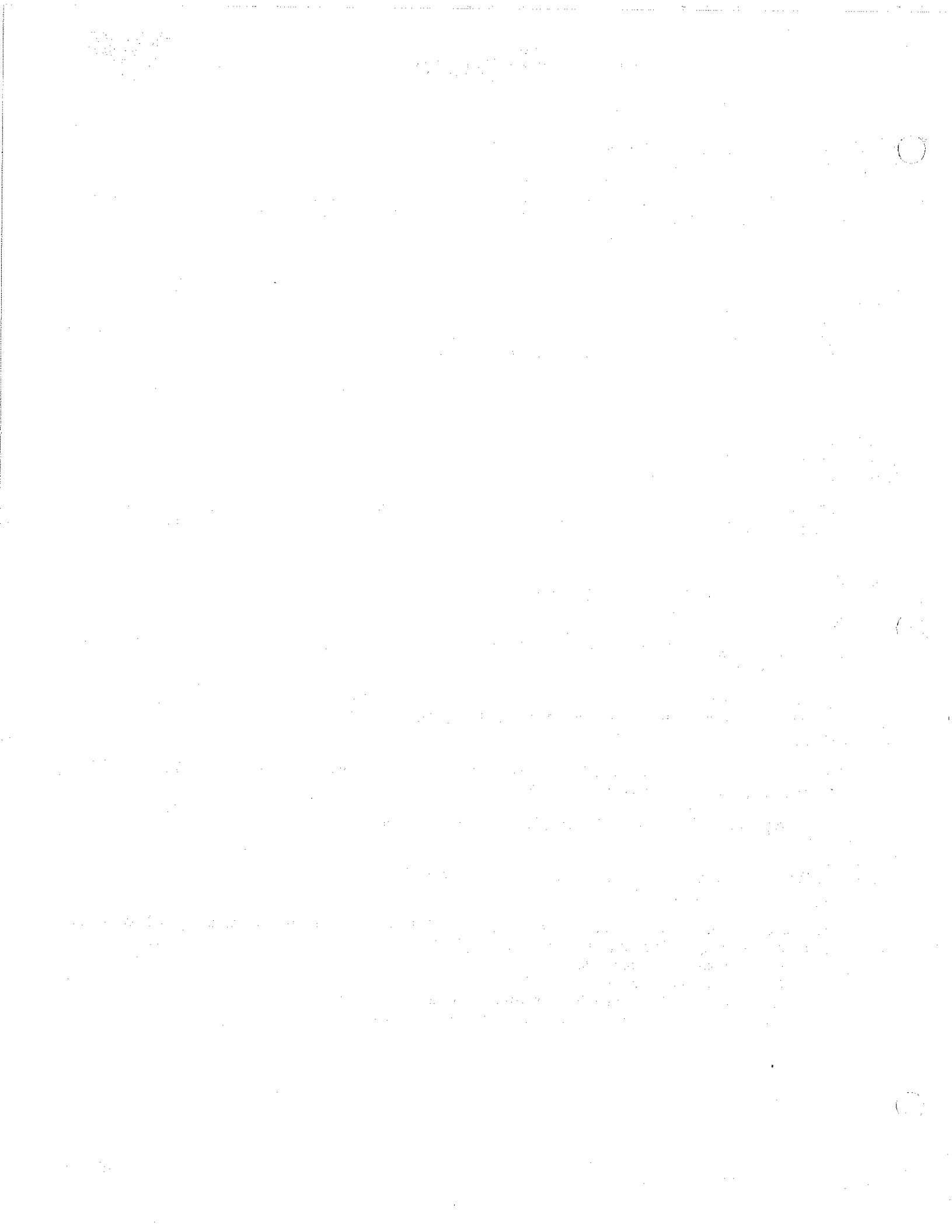
Indicates that the Coolant Pressure Sensor input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 67
DDR DISPLAY: COOLANT PRESS SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 109 FMI: 4

Indicates that the Coolant Pressure Sensor input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor +5 volt supply circuit
- (3) sensor signal is shorted to the sensor return circuit or to ground
- (4) sensor +5 volt supply is shorted to sensor return circuit



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 68
DDR DISPLAY: TPS IDLE VALIDATION SWITCH OPEN CIRCUIT
SAE J1587 CODE: PID: 230 FMI: 5

Indicates that the Throttle Position Sensor (TPS) Idle Validation Switch (IVS) input to the ECM is NOT grounded when the TPS input demand is less than 11.8% (120 counts).

FLASH CODE: 68
DDR DISPLAY: TPS IDLE VALIDATION SWITCH GROUNDED CIRCUIT
SAE J1587 CODE: PID: 230 FMI: 6

Indicates that the Throttle Position Sensor (TPS) Idle Validation Switch (IVS) input to the ECM IS grounded when the TPS input demand is greater than 27.5% (282 counts).

FLASH CODE: 71
DDR DISPLAY: XXX INJECTOR RESPONSE TIME SHORT
SAE J1587 CODE: SID: XX FMI: 1

Indicates that the time it takes from when the DDEC III ECM requests an injector be turned on to when the injector solenoid valve actually closes is shorter than the lower limit of the expected range. This diagnostic condition is typically:

- (1) aerated fuel system
- (2) high system battery (+) supply voltage
- (3) failed solenoid valve

NOTE: The injector diagnostic SID (Subsystem IDentifer) indicates which cylinder number has an injector with a short response time. The injector number describes the cylinder and/or bank which has the injector with a short response time. The DDR will display the injector text description in the table **DDEC III Injector Numbering** on page 342.

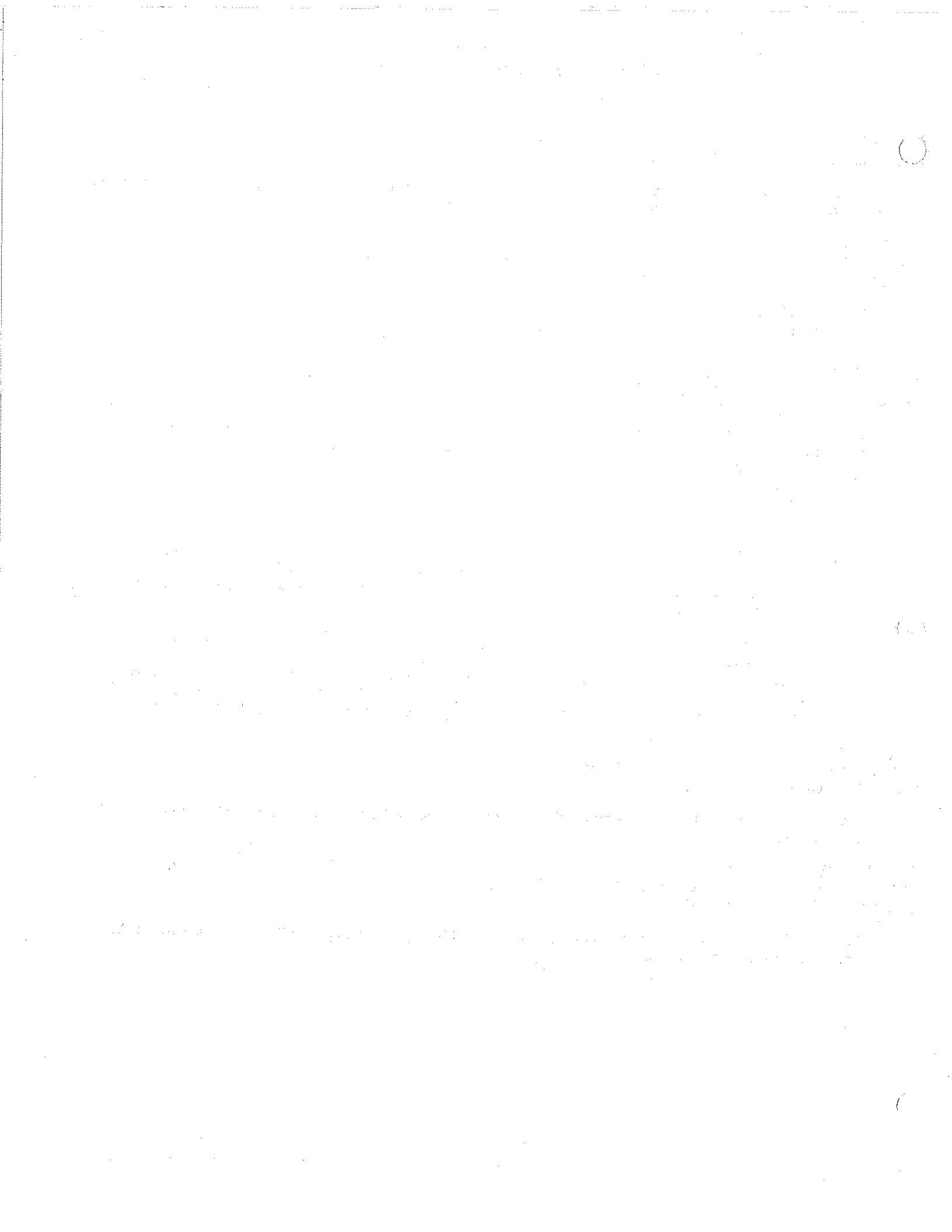
Injector response times generally increase with low battery supply voltage and decrease with high battery supply voltage. Although injector response times vary from injector to injector at a given RPM, each individual injector response time should remain relatively consistent from one firing to the next. Wide variations in response time (typically +/- 0.2 msec) for one injector at a steady engine RPM may indicate an electrical problem (faulty alternator or voltage regulator, poor or broken ground cables, etc.).

FLASH CODE: 72
DDR DISPLAY: VEHICLE OVERSPEED
SAE J1587 CODE: PID: 084 FMI: 0

Indicates that the vehicle (WITH fueling to the engine) has exceeded the vehicle speed limit that is defined in the ECM calibration.

FLASH CODE: 72
DDR DISPLAY: VEHICLE OVERSPEED (ABSOLUTE)
SAE J1587 CODE: PID: 084 FMI: 11

Indicates that the vehicle (WITHOUT fueling to the engine) has exceeded a secondary vehicle speed limit that is defined in the ECM calibration.



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 75
DDR DISPLAY: ECM BATTERY VOLTAGE HIGH
SAE J1587 CODE: PID: 168 FMI: 0

Indicates that the DDEC III ECM has detected that the main battery supply voltage to the ECM has exceeded the recommended operating range.

FLASH CODE: 76
DDR DISPLAY: ENGINE OVERSPEED WITH ENGINE BRAKE
SAE J1587 CODE: PID: 121 FMI: 0

Indicates that the engine RPM (while the engine brake is ON) has exceeded the recommended safe operating range.

FLASH CODE: 81
DDR DISPLAY: OIL LEVEL SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 098 FMI: 3

Indicates that the Oil Level Sensor (OLS) input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 81
DDR DISPLAY: CRNKCS PRESS SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 101 FMI: 3

Indicates that the Crankcase Pressure Sensor input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

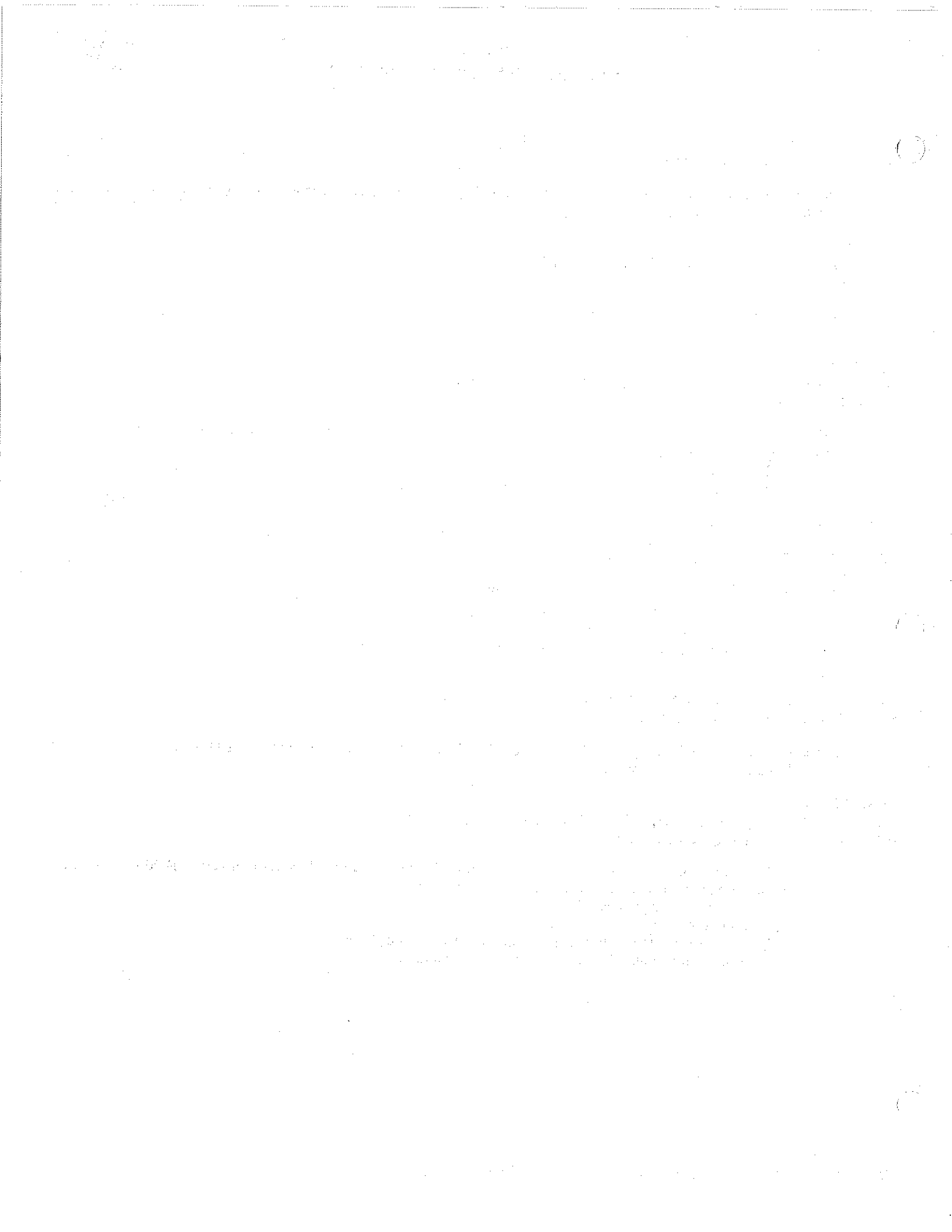
FLASH CODE: 81
DDR DISPLAY: DUAL FUEL BOI INPUT VOLTAGE HIGH
SAE J1587 CODE: SID: 020 FMI: 3

Indicates that the Dual Fuel (Diesel/Natural Gas) ECM BOI output control signal to the DDEC III ECM has exceeded the calibratable maximum level.

FLASH CODE: 82
DDR DISPLAY: OIL LEVEL SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 98 FMI: 4

Indicates that the Oil Level Sensor (OLS) input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor +5 volt supply circuit
- (3) sensor signal is shorted to the sensor return circuit or to ground
- (4) sensor +5 volt supply is shorted to sensor return circuit



Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 82
R DISPLAY: CRNKCS PRESS SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 101 FMI: 4

Indicates that the Crankcase Pressure Sensor input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor +5 volt supply circuit
- (3) sensor signal is shorted to the sensor return circuit or to ground
- (4) sensor +5 volt supply is shorted to sensor return circuit

FLASH CODE: 82
DDR DISPLAY: DUAL FUEL BOI INPUT VOLTAGE LOW
SAE J1587 CODE: SID: 020 FMI: 4

Indicates that the Dual Fuel (Diesel/Natural Gas) ECM BOI output control signal to the DDEC III ECM has dropped below the calibratable minimum level.

FLASH CODE: 83
DDR DISPLAY: OIL LEVEL HIGH
SAE J1587 CODE: PID: 098 FMI: 0

Indicates that the Oil Level Sensor has detected that the engine oil level has exceeded the recommended safe operating range.

FLASH CODE: 83
DDR DISPLAY: CRANKCASE PRESSURE HIGH
SAE J1587 CODE: PID: 101 FMI: 0

Indicates that the Crankcase Pressure Sensor has detected that the engine crankcase pressure has exceeded the recommended safe operating range.

FLASH CODE: 84
DDR DISPLAY: OIL LEVEL LOW
SAE J1587 CODE: PID: 098 FMI: 1

Indicates that the Oil Level Sensor has detected that the engine oil level has dropped below the recommended safe operating range.

FLASH CODE: 84
DDR DISPLAY: CRANKCASE PRESSURE LOW
SAE J1587 CODE: PID: 101 FMI: 1

Indicates that the Crankcase Pressure Sensor has detected that the engine crankcase pressure has dropped below the recommended safe operating range.

FLASH CODE: 85
DDR DISPLAY: ENGINE OVERSPEED
SAE J1587 CODE: PID: 190 FMI: 0

Indicates that the engine RPM has exceeded the recommended safe operating range.

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Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: 86
DDR DISPLAY: PUMP PRESS SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 073 FMI: 3

Indicates that the External Fire Truck Water Pressure Sensor input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 86
DDR DISPLAY: BARO PRESS SENSOR INPUT VOLTAGE HIGH
SAE J1587 CODE: PID: 108 FMI: 3

Indicates that the Barometric Pressure Sensor input to the ECM has exceeded 95% (normally > 4.75 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor return circuit
- (2) sensor signal circuit is shorted to the sensor +5 volt supply

FLASH CODE: 87
DDR DISPLAY: PUMP PRESS SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 073 FMI: 4

Indicates that the External Fire Truck Water Pressure Sensor input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor +5 volt supply circuit
- (3) sensor signal is shorted to the sensor return circuit or to ground
- (4) sensor +5 volt supply is shorted to sensor return circuit

FLASH CODE: 87
DDR DISPLAY: BARO PRESS SENSOR INPUT VOLTAGE LOW
SAE J1587 CODE: PID: 108 FMI: 4

Indicates that the Barometric Pressure Sensor input to the ECM has dropped below 5% (normally < 0.25 volts) of the sensor supply voltage. This diagnostic condition is typically:

- (1) open sensor signal circuit
- (2) open sensor +5 volt supply circuit
- (3) sensor signal is shorted to the sensor return circuit or ground
- (4) sensor +5 volt supply is shorted to sensor return circuit

FLASH CODE: 88
DDR DISPLAY: COOLANT PRESSURE LOW
SAE J1587 CODE: PID: 109 FMI: 1

Indicates that the Coolant Pressure Sensor has detected that the engine coolant pressure has dropped below the recommended safe operating range.

FLASH CODE: ---
DDR DISPLAY: FRAM CHECKSUM INCORRECT
SAE J1587 CODE: SID: 240 FMI: 2

Indicates that the ECM system operation software has been corrupted and is unable to operate. This diagnostic condition is typically:

- (1) The ECM system programming operation failed to run to completion

The first part of the report deals with the general conditions of the country, and the second part with the details of the various districts. The first part is divided into two sections, the first of which deals with the general conditions of the country, and the second with the details of the various districts. The second part is divided into three sections, the first of which deals with the details of the various districts, the second with the details of the various districts, and the third with the details of the various districts.

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Section 4 TROUBLESHOOTING CHARTS

FLASH CODE: ---
DDR DISPLAY: INCOMPATIBLE CALIBRATION VERSION
SAE J1587 CODE: SID: 253 FMI: 13

Indicates that the current ECM system operation software is not compatible with the engine calibration loaded in the ECM. This diagnostic condition is typically:

- (1) The ECM programming process was performed in the incorrect order or did not run to completion.

FLASH CODE: ---
DDR DISPLAY: CALIBRATION CHECKSUM INCORRECT
SAE J1587 CODE: SID: 253 FMI: 2

Indicates that the engine calibration loaded in the ECM has been corrupted and is unable to operate. This diagnostic condition is typically:

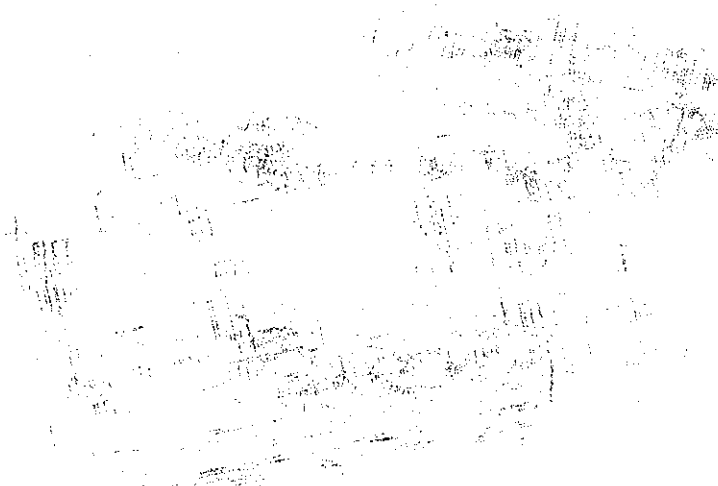
- (1) The engine calibration programming operation failed to run to completion.

FLASH CODE: ---
DDR DISPLAY: FAILED EXTERNAL RAM
SAE J1587 CODE: SID: 254 FMI: 0

Indicates that some or all of the memory circuitry that is external to the ECM microprocessor has failed and is unable to operate.

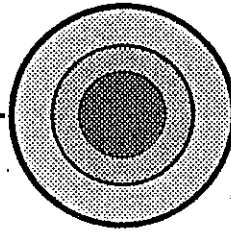
FLASH CODE: ---
DDR DISPLAY: FAILED INTERNAL RAM
SAE J1587 CODE: SID: 254 FMI: 1

Indicates that some or all of the memory circuitry that is internal to the ECM microprocessor has failed and is unable to operate.

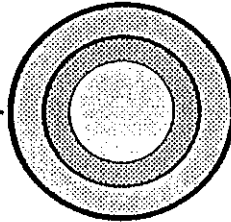
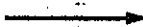


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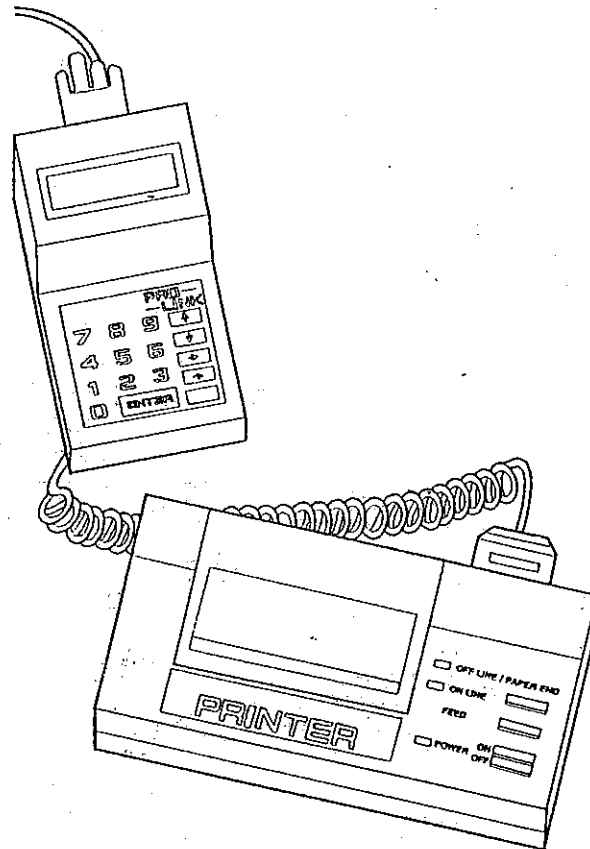
SEL



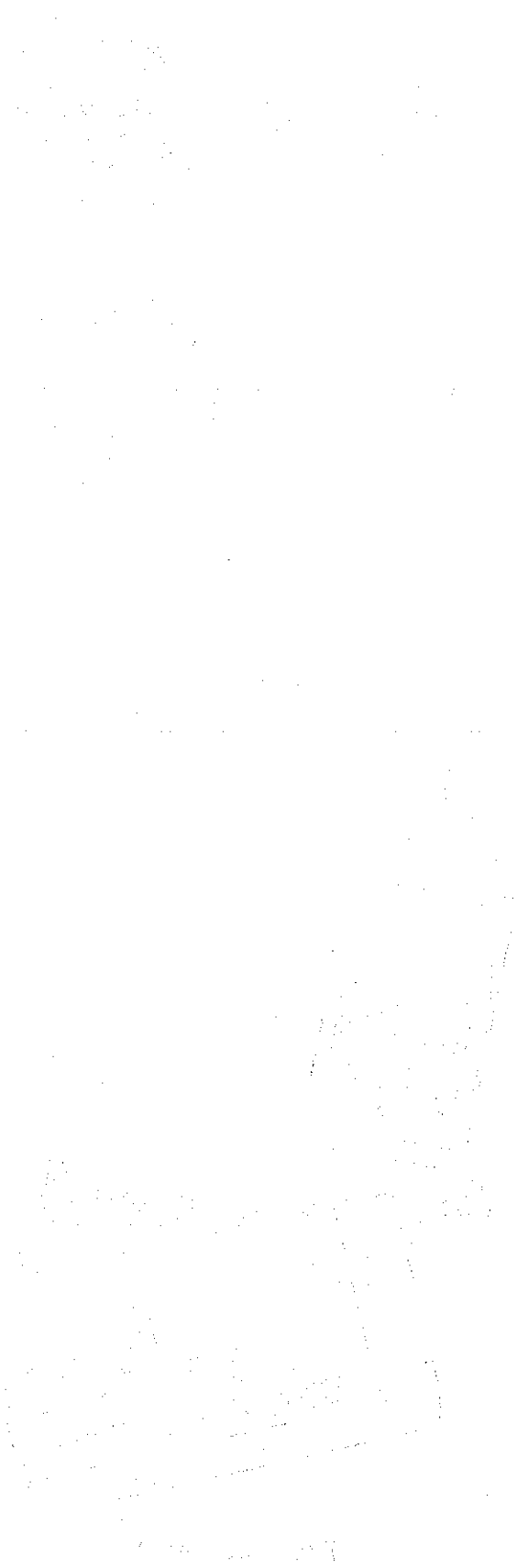
CEL



DASH LIGHTS



Pro-Link 9000



(1)

(2)

(3)