FOREWORD

The PRÉVOST *Motorcoach Owner's Manual* has been prepared to thoroughly acquaint you, the owner, with vehicle equipment and features in order to fully appreciate and safely enjoy your vehicle. Of course, you are anxious to drive your new private motorcoach and test its features, but first please read this publication carefully to help ensure enjoyable and trouble free operation. This book should be kept inside the vehicle at all times for convenient reference. It is also suggested that it remains with the vehicle at the time of resale. Please notify PRÉVOST CAR INC. when the vehicle's ownership is transferred so that our records can be kept up to date. Do this by filling out the appropriate form at the end of this manual.

The specifications, descriptions and figures given are based on the latest information available at printing time. And because at PRÉVOST we are constantly striving to improve our products, we reserve the right to make changes at any time without notice and/or obligation on our part.

Please note that this publication applies to factory-prepared, conversion-ready luxury motorcoaches, manufactured by PRÉVOST CAR INC. It describes and explains the equipment and options available for installation in our factory. Therefore, there may be equipment described herein that is not installed on your vehicle. This publication also does not cover equipment installed by your interior designer or system manufacturer.

The following words are used to emphasize particularly important information:

Warning : *Identifies instructions which, if not followed, could result in serious personal injury or loss of life.*

Caution : *Denotes instructions which, if not followed, could cause serious damage to vehicle components.*

Note : *Indicates supplementary information needed to fully understand and complete an instruction.*

For your own safety and to ensure prolonged service life of your private motorcoach, heed our cautions, warnings and notes. Ignoring them could result in extensive damage and/or serious personal injury.

Caution : *Prior to working on a system inside vehicle, make sure to cut electrical power and air supply. A component could be supplied with electricity even if battery master switch is set to the* OFF *position and/or a component could be pressurized even if air tanks are emptied. Always refer to the appropriate wiring and pneumatic diagrams prior to working on electrical and/or pneumatic systems.*

Prior to welding or soldering on the vehicle, disconnect all electronic modules. If these modules (ECM, ECU, ABS) are not disconnected, electronic components (EPROM, CHIPS) could be permanently damaged.

Refer to your maintenance manual for all related procedures.

TABLE OF CONTENTS

SAFETY PRECAUTIONS

To ensure safe and reliable operation, take note of the safety precautions as follows:

a) Operation and maintenance of the motorcoach must be performed only by qualified personnel.

b) Before driving, conduct a walkaround inspection to check for security of all baggage compartment doors and equipment access doors.

c) Make sure good visibility is maintained at all times. Keep windshields clean and free of obstructions.

d) Adjust the driver's seat so that all controls can be reached easily.

e) Always wear the safety belt when driving.

f) Check the instrument panel frequently. Do not operate the motorcoach when dials or indicators are not in the normal operating condition.

g) Always pay attention to pedestrians passing in front and behind the vehicle. Always yield to pedestrians at pedestrian walkways.

h) Do not drive over obstacles on the road. Empty cartons, piles of leaves, and snowdrifts could conceal hidden dangers that could damage the motorcoach suspension and underbody.

i) When turning or changing lanes, signal your intention well in advance.

j) When approaching to make a right turn, reduce the space between the motorcoach and the curb to make sure another vehicle cannot pass on the right. Since the motorcoach makes wide turns, allow enough space to make safe turns.

k) Switch from high beams to low beams when meeting or following other vehicles within 500 feet (150 meters).

l) Never leave the motorcoach unattended with the engine running, or with the key in the ignition. Turn off the engine, remove keys and apply the parking brake before leaving the vehicle.

m) Shut-off the engine before refueling, adding oil or performing maintenance or servicing tasks, unless stated otherwise.

n) Fuel is highly flammable and explosive. Do not smoke when refueling. Keep away from open flames or sparks.

o) Do not run the engine or HVAC system with access doors left open. Close compartment doors before operating any equipment.

p) Do not remove the surge tank filler cap or the cooling system pressure cap when the engine is hot. Let the engine cool down before removing filler caps.

q) Do not attempt to push or pull-start a motorcoach equipped with an automatic transmission.

r) The service life of the motorcoach depends on the kind of maintenance it receives. Always record any problems and report them immediately to maintenance personnel.

s) Do not use the trailer hitch before reading the safety, technical and operational requirements on page 1-9 of this manual.

t) For additional information about safe driving practices, contact the local department of motor vehicles authority.

Defensive driving

a) For city driving, allow a four to six second travel interval between the motorcoach and the vehicle ahead. Increase this travel interval to six to eight seconds for highway driving. Use increased travel interval for night driving and in bad weather.

b) Be prepared to stop when approaching an intersection. The stopping distance of the motorcoach increases with the weight and speed of the vehicle.

c) Establish eye-to-eye contact with other drivers and with pedestrians. Use headlights, high beams and low beams, turn signals and horn as needed.

d) On highway, don't stare at the road ahead. Keep your eyes moving. Check all mirrors and dashboard instruments frequently.

e) To keep the motorcoach from drifting across lanes during highway driving, always look over the horizon on the road ahead.

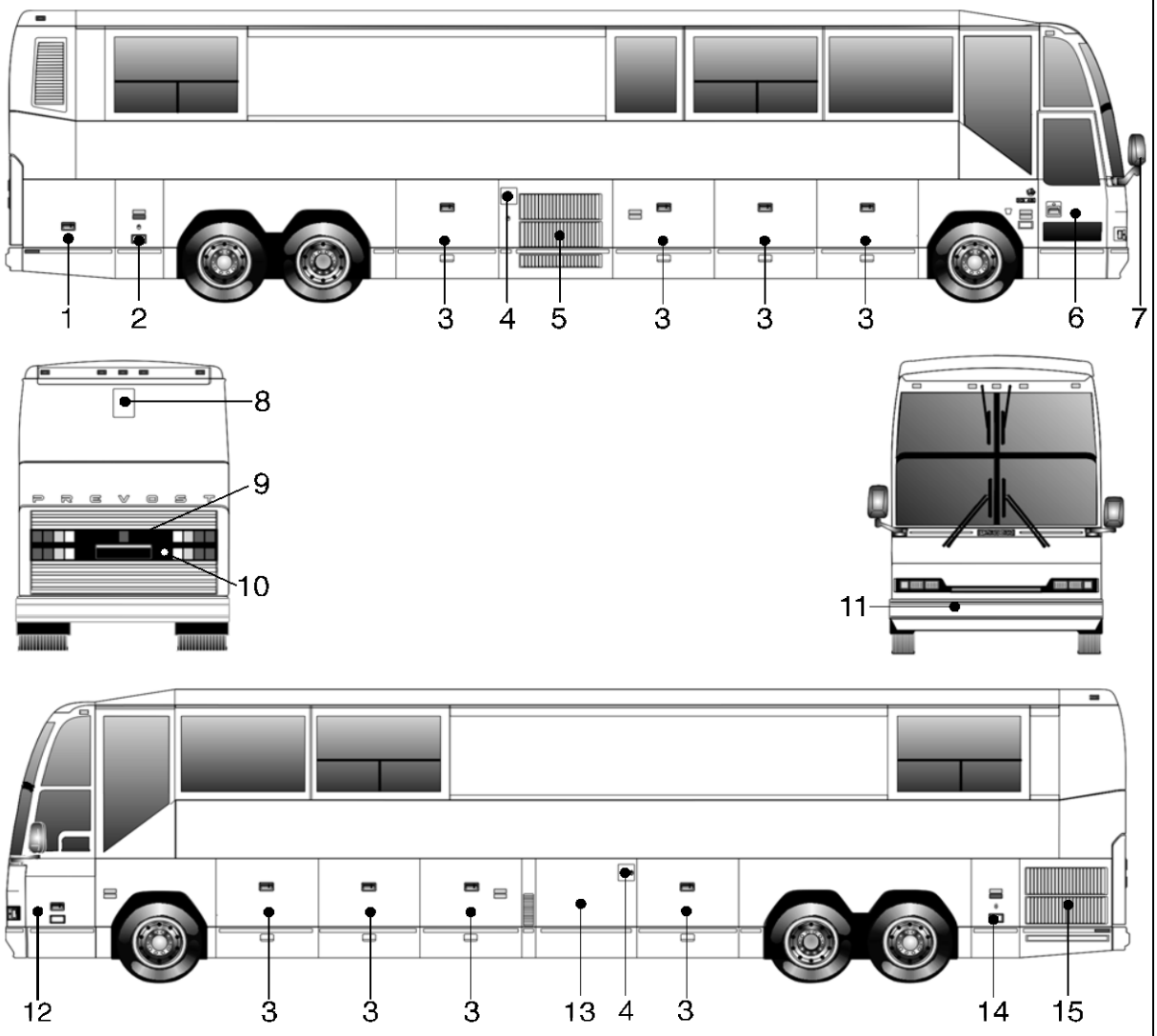
f) Adjust your speed according to the road conditions, traffic and visibility. Never exceed the posted speed limits.

g) Reduce your speed if another vehicle is following too close behind to let the vehicle pass.

h) For additional information about defensive driving practices, contact the local department of motor vehicles authority.

CHAPTER 1 : MOTORCOACH EXTERIOR

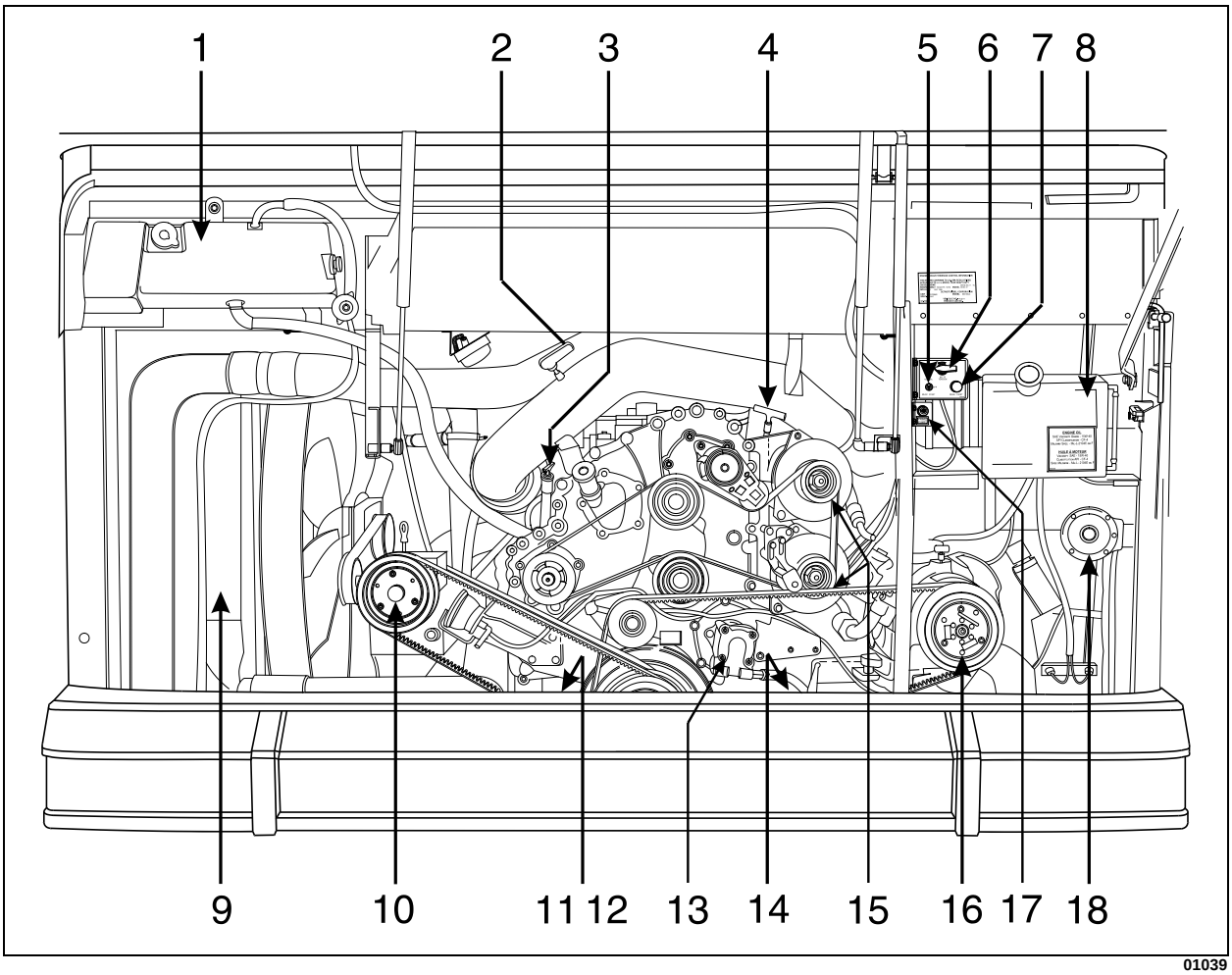
H3-45 MOTORCOACH



1. Engine Compartment R.H. Side door
2. Main Power Compartment
3. Baggage Compartment
4. Fuel Filler Door
5. A/C Condenser (optional)
6. Entrance Door
7. Exterior Rear-View Mirrors
8. Retractable Back-Up Camera (optional)
9. Engine Compartment Rear Door
10. 110-120 Volt Connector
11. Reclining Bumper Compartment
12. Front Service and Electric Compartment
13. HVAC Compartment
14. Rear Electrical Compartment
15. Engine Radiator Door

H3-45 MOTORCOACH EXTERIOR VIEW

ENGINE COMPARTMENT COMPONENTS



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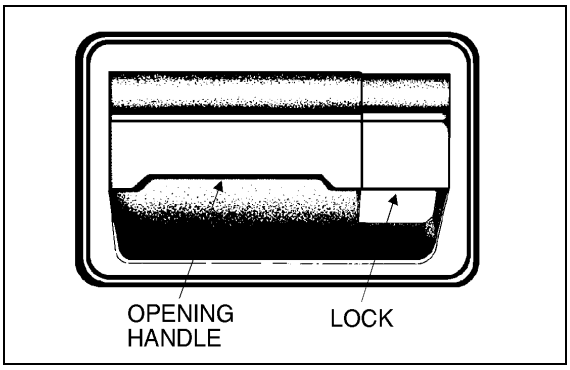
1. Coolant surge tank
2. Air cleaner restriction indicator
3. Transmission oil dipstick
4. Engine oil dipstick
5. Starter selector switch
6. Belt tensioner control valve
7. Rear start push-button switch
8. Engine oil reserve tank
9. Radiator
10. Radiator fan gearbox
11. Engine coolant filter/conditioner
12. Engine oil filters
13. Steering pump
14. Primary and secondary fuel filters
15. Alternators
16. A/C compressor
17. Prime pump switch
18. Back-up alarm

ENGINE COMPARTMENT R.H. SIDE DOOR

The engine compartment R.H. side door provides access to the following:

- Engine compartment rear door release lever;
- Fuel filter/water separator (if applicable);
- Power steering fluid reservoir;
- Wet (main) air tank drain valve;
- External air supply fill valve;
- Cold weather starting fluid bottle;
- A/C Compressor.

This door can be locked/unlocked using the exterior compartment key. Lift up protector cover to gain access to the lock. Pull up the door handle to release the latch, then pull the door open. To keep the door open, engage the safety catch on top of the door. Release the safety catch before closing the door.



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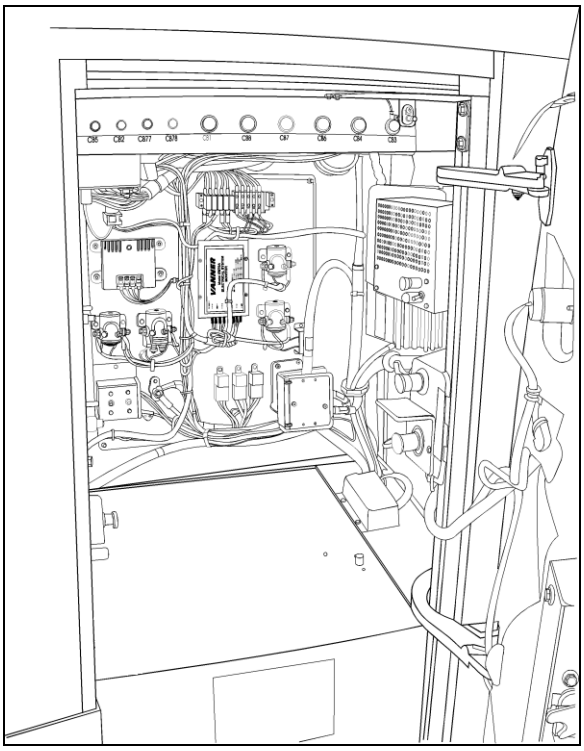
The lighting in the engine compartment turns *ON* automatically when the door is opened. If the compartment door is open, a telltale light will illuminate on the central dashboard.

Warning: *Do not run the engine when the engine R.H. side compartment door is open. Close engine R.H. side compartment door before starting engine.*

MAIN POWER COMPARTMENT

The main power compartment provides access to the following:

- Battery voltage equalizer;
- Battery voltage equalizer monitor;
- Four (4) 12 volts batteries;
- Main breakers for the 12 volt and 24 volt electrical systems;
- Main power cut-off relay;
- Booster posts.



MAIN POWER COMPARTMENT

The compartment door can be locked/unlocked using the exterior compartment key. Turn the key in the lock to remove.

The lighting in the compartment turns *ON* automatically when the door is opened. If the main power compartment door is open, a telltale light will illuminate on the central dashboard.

BAGGAGE COMPARTMENT

The baggage compartment doors can be locked/ unlocked using the exterior compartment key. Lift up the cover to gain access to the lock. Pull up door handle to release the latch, then pull the door open. Refer to the illustration under "Engine Compartment R.H. Side Door" in this chapter. Pressurized cylinders assist the opening and closing of the baggage compartment doors and hold the doors open.

The lighting in the baggage compartment turns *ON* automatically when the door is opened. If the baggage compartment door is open, an indicator light will illuminate on the central dashboard.

Warning : *To avoid injury, keep hands clear of baggage compartment door edge and door frame when closing.*

Note : *To prevent theft and vandalism, always lock the baggage compartment doors before leaving the motorcoach unattended.*

Note : *The baggage compartment doors can be locked/unlocked from the driver's position by an optional central locking system on the L.H. control panel. Refer to "Controls & Instruments" chapter.*

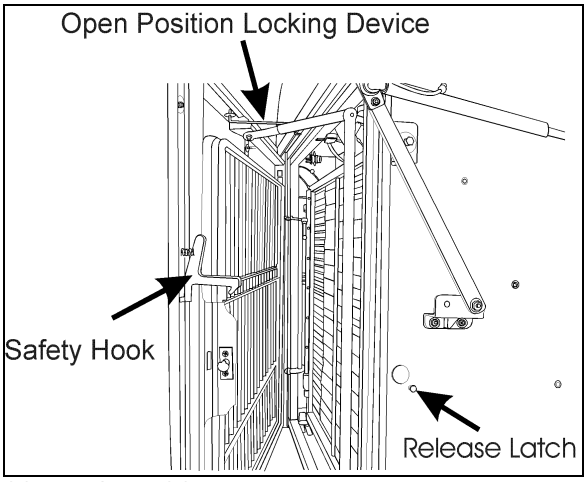
FUEL FILLER DOOR

Both fuel filler doors can be locked/unlocked using the exterior compartment key. Turn the key in the lock to remove.

Note : *The L.H. fuel filler door lock must be in the unlocked position before closing.*

A/C CONDENSER DOOR

Pull the A/C condenser door release latch located inside the adjacent baggage compartment to partly open the condenser door. Push on the safety hook, accessible through the opening, to open the door.

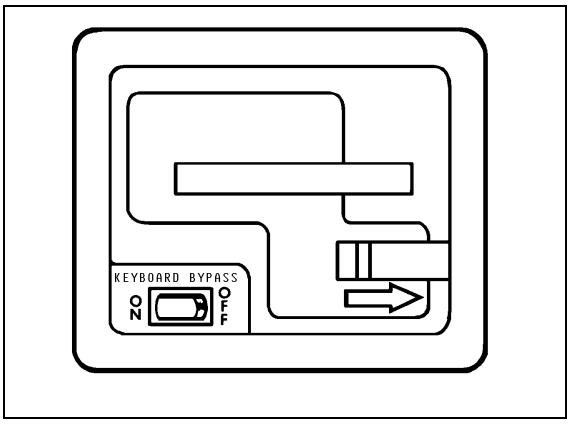


CONDENSER DOOR

ENTRANCE DOOR

Inside Operation

There are two ways of unlocking the entrance door from the inside. The first consists in actuating the rocker switch on the lower R.H. control panel. This operation will also unlock the baggage compartment. Also, you can unlock the entrance door by sliding its lock lever to the left. If the orange tab on the door lock lever is visible, the door is unlocked.



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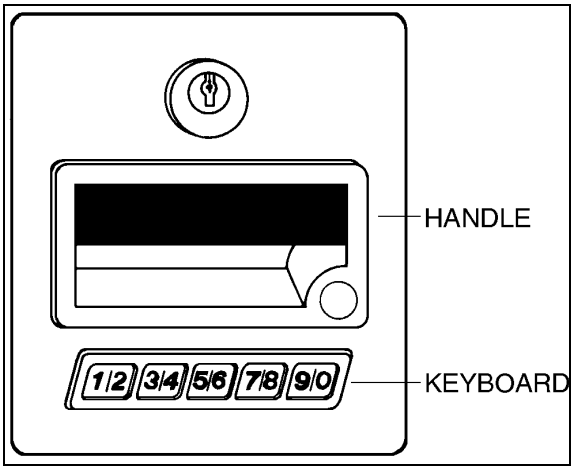
Outside Operation

The first way of locking/unlocking the entrance door from the outside is the front entrance door lock key provided with the vehicle. Turn key to the left to lock or to the right to unlock the entrance door.



18188

Keyless Entry System

By this system, you can lock or unlock the entrance door and the baggage and service compartment doors. The keyboard is located below the outside entrance door handle. The microprocessor/relay module is pre-programmed by the manufacturer and this code can not be deleted. Moreover, you can program your own entry code (e.g. a birthday or part of a social security number).

The manufacturer's code is:

- On your owner's wallet card;
- Taped to the microprocessor/relay module in driver's A/C compartment;
- Three stickers are joint to your owner's wallet card.

When you use the keyless entry system, the keyboard and stepwell lights illuminate. Do not push the buttons with a key, pencil or any other hard object as it could damage the buttons. Although each button is provided with two digits separated by a vertical line, there is only one contact per button. Press in centre of button, i.e. between the two digits where there is the vertical line.

You must unlock the entrance door before you unlock any other baggage or service compartment door. If you let more than five seconds pass between the numbers you press, the system shuts down, and you have to enter your code again. If the keyless entry system does not work properly, use the key to lock or unlock entrance or compartment doors.

Keyless Operating Instructions

1) To unlock the entrance door, enter the five numbers of the code. After pressing the fifth number, the door will unlock. During the night, press any button to illuminate the keyboard, then enter the code.

   When pressing any button, the keyboard lights up for five seconds and the stepwell lights for twenty-five seconds.

2) To unlock the baggage and service compartment doors, press button 3/4 within five seconds after the code that unlocks the entrance door.

3) To lock entrance door and compartments all at the same time, press the buttons 7/8 and 9/0 at the same time.

Programming Your Personal Code

Note : *To avoid erasing code from the system memory, you should connect keyless entry system to house batteries, otherwise code will be erased each time battery main disconnect switches are set to the OFF position.*

You can program a personal code to unlock entrance door and compartments. This code does not replace the permanent code that is programmed into the system. Use your personal code in the same manner that you would use the original code.

Do not choose a code that presents the numbers in sequential order, such as 1/2, 3/4, 5/6, 7/8, 9/0. Studies show that people who idly press the buttons usually press a sequential pattern. Also, do not select a code that uses the same button five times. Thieves can easily figure out these types of codes.

1) Choose and memorize your personal code.

2) Enter the original code, and within five seconds, press button 1/2.

3) Within five seconds of pressing button 1/2, enter your personal code, pressing each button within five seconds of the previous digit. The keyboard light will immediately turn *OFF* if code is correctly entered.

The keyless entry system registers your personal code. To unlock entrance door, you can use either code.

4) To erase your personal code, enter the original code, press button 1/2, then wait six seconds.

EXTERIOR REAR VIEW MIRRORS

The coach is equipped with flat-type and convex-type rear-view mirrors. Convex mirrors give a wide angle view. Objects viewed in convex-type rear-view mirrors appear smaller and are actually closer than they appear.

To provide good visibility in cold weather, the mirrors are equipped with heating elements that are activated by a rocker switch located on the dashboard. Refer to "Controls & Instruments" chapter. Thermostats are used to prevent continuous operation of the heating elements.

Caution : *Do not attach stick-on type convex mirror accessories to the heated mirror glass. This could impede uniform heat distribution on the mirror surface which could break the mirror.*

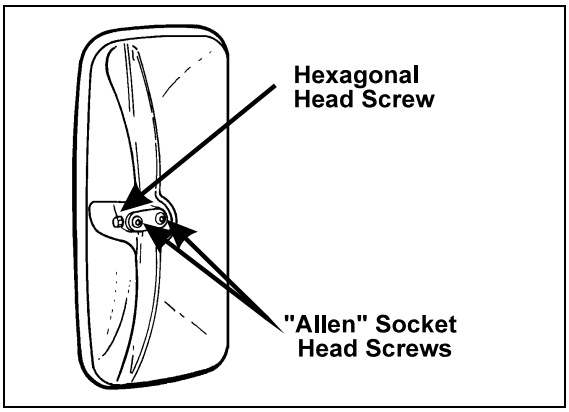
Electrically Adjusted Mirror (Ramco and Spartan)

Electrically adjusted mirrors are adjusted by the outside mirror controls located on the L.H. control panel. Refer to "Controls & Instruments" chapter. Manual adjustment is also possible.

Manual Adjustment

Adjust the side-view mirrors until the side of the motorcoach is visible. Adjust the flat-type mirror until the highway is in full view.

Manually Adjusted Mirror (Spartan)



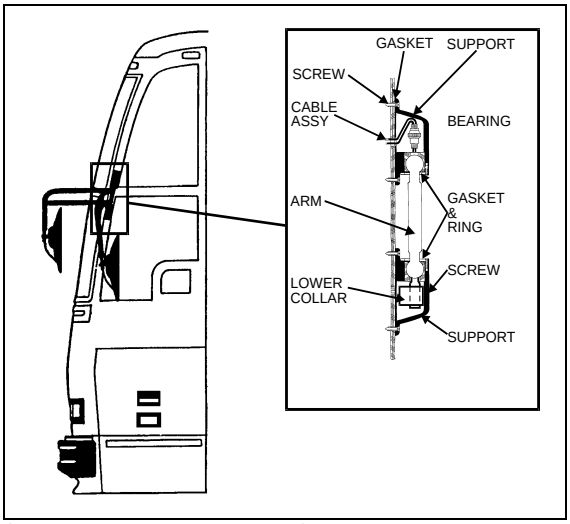
MIRRORS ADJUSTMENT SCREWS OEH3B120

Horizontal And Vertical Adjustment

Loosen the two Allen screws at the rear of the mirror body. Adjust the mirror to the desired angle, then tighten the screws.

Vertical Adjustment

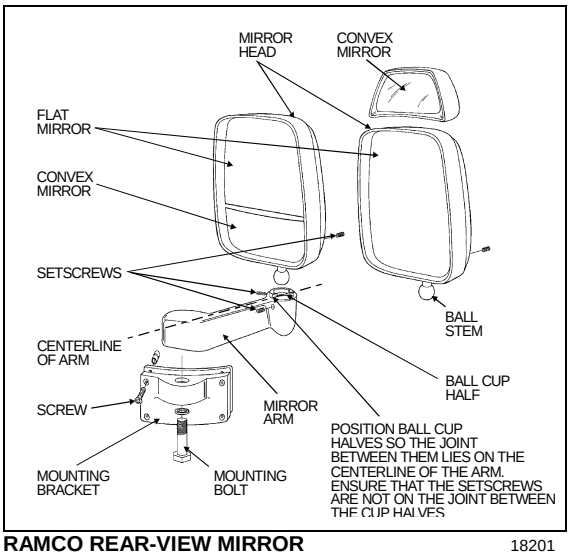
Loosen the hexagonal head screw at the rear of the mirror body. Adjust the mirror to the desired angle, then tighten screw.



SPARTAN REAR-VIEW MIRROR 18202

Caution : *Do not over tighten the screws. Tighten until snug.*

Manually Adjusted Mirror (Ramco)



RAMCO REAR-VIEW MIRROR 18201

Adjustment

Loosen the bolt on the bracket of the mirror body. Adjust the mirror to the desired angle, then tighten bolt.

Head Mirror Adjustment

Loosen the fixing screws. Adjust the head of the mirror, then tighten fixing screws.

Caution : *Do not over tighten the screws. Tighten until snug.*

RETRACTABLE BACK-UP CAMERA

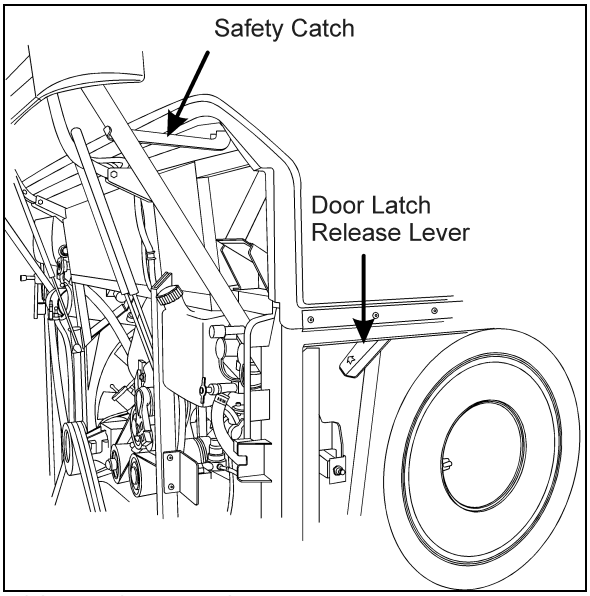
An optional back-up camera is available which provides the driver with visual assistance when backing-up. The back-up camera is mounted in a retractable housing. For additional information, refer to "Controls & Instruments" and 'Care and maintenance' chapters.

Note : *A switch located in the rear electric compartment is used to retract the back-up camera for cleaning or maintenance.*

ENGINE COMPARTMENT REAR DOOR

The engine compartment rear door provides access to the following:

- Engine starting selector;
- Engine coolant surge tank;
- Air cleaner restriction indicator;
- Engine oil dipstick;
- Engine oil reserve tank;
- Automatic transmission oil dipstick;
- Engine coolant filler cap.



DOOR LATCH RELEASE LEVER

The engine compartment rear door latch release lever is located in the upper rear section of the engine compartment R.H. side door. Push up release lever, then place hand on the upper right of the rear door and pull rearward. The door will open automatically.

Always engage the safety catch when the engine compartment rear door is open. Release the catch before closing the door.

The lighting in the engine compartment rear door turns *ON* automatically when the door is opened. If the door is open, a telltale light will illuminate on the central dashboard.

Warning : *Pressurized cylinders assist the engine compartment rear door opening. To avoid injury when opening, do not stand at the rear of the coach. Stand clear when opening the engine compartment rear door.*

Warning : *Do not run engine when the engine compartment rear door is open. Close the engine compartment rear door before starting the engine.*

110-120 VOLT CONNECTOR

This connector is used with a 110-120 volt supply and is connected to the engine block heater. Refer to "Other Features" chapter.

RECLINING BUMPER COMPARTMENT

The “reclining type” front bumper can be opened for maintenance purpose.

Warning : *The compartment behind the bumper is not designed for storage. Never store loose objects in this compartment since they can interfere with the steering linkage mechanism.*

FRONT ELECTRIC & SERVICE COMPARTMENT

The front electric and service compartment provides access to the following:

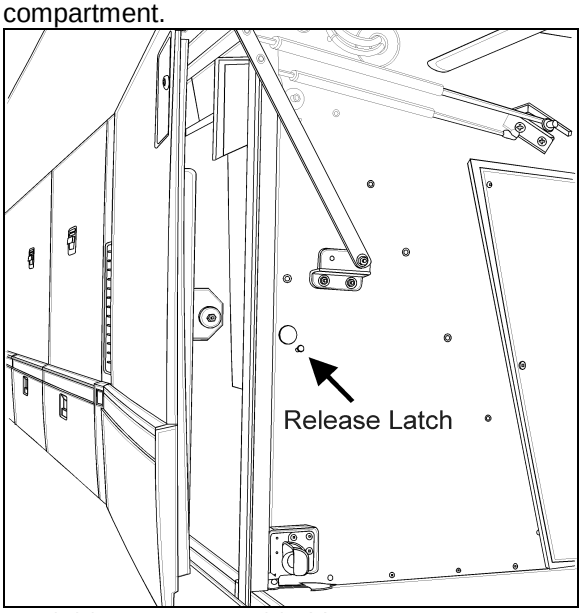
- Front junction box;
- Windshield washer reservoir;
- Accessory air tank drain valve;
- Accessory system fill valve.

The front electric & service compartment door can be locked/unlocked with the exterior compartment key. Lift protector cover to access the lock. Pull up door handle to release the latch then pull the door open. Refer to the illustration in "Engine Compartment R.H. Side Door" section.

The lighting in the front electric & service compartment turns *ON* automatically when the door is opened.

HVAC COMPARTMENT

The HVAC (Heating, Ventilating and Air-Conditioning) humidistat control is found in this compartment.



HVAC COMPARTMENT ACCESS

The HVAC compartment door release latch is located on the left side of the baggage compartment and to the right of the HVAC compartment door. Pull the release latch then pull the HVAC compartment door open.

REAR ELECTRIC COMPARTMENT

The rear electric compartment provides access to the following:

- Rear junction box;
- Electronic Control Unit (ECU);
- Vehicle Interface Module (VIM);
- Coolant heater system.

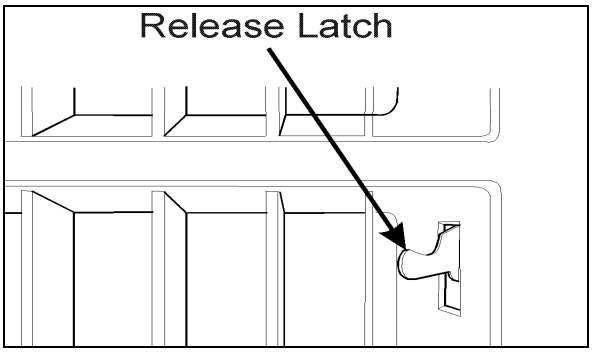
The rear electric compartment door can be locked/unlocked using the exterior compartment key. Turn the key in the compartment door lock to remove.

The lighting in the compartment turns *ON* automatically when the door is opened. If the

door is open, a telltale light on the central dashboard will illuminate.

ENGINE RADIATOR DOOR

Open the engine radiator door by pushing down the release latch.

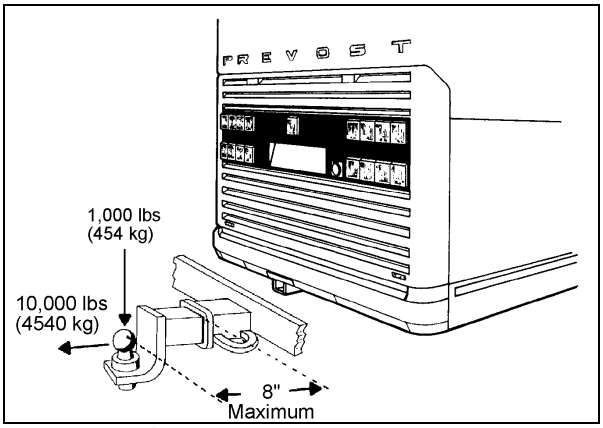


RADIATOR DOOR

TRAILER HITCH

10 000 lbs max. gross trailer weight capacity (standard)

Your vehicle is equipped with a factory installed trailer hitch which has been designed to meet SAE, class 4 specifications.



TRAILER HITCH 18186

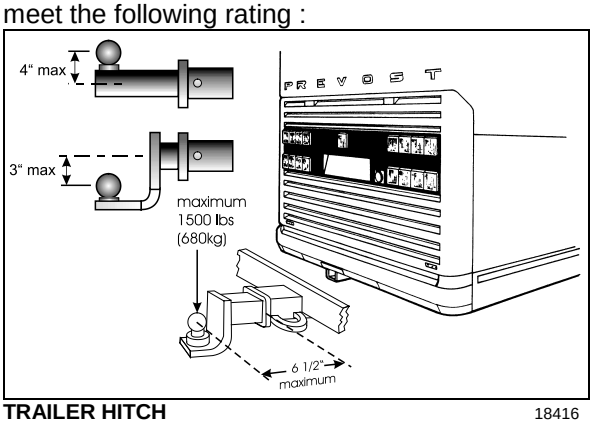
- **Maximum gross trailer weight: 10 000 lbs (4 540 kg)**
- **Maximum tongue weight at 8 inches (200 mm) or less from coupling receiver : 1 000 lbs (454 kg)**

Warning : *Pulling a trailer weighing more than the recommended maximum gross weight may cause engine and transmission overheating, and also possible hitch failure.*

Note : *Pulling a trailer over long distances is considered as a "severe operating condition" for the vehicle and therefore, power plant requires more frequent servicing.*

20 000 lbs max. gross trailer weight capacity (optional)

Your vehicle may be equipped with a factory installed trailer hitch which has been designed to meet the following rating :



TRAILER HITCH 18416

- **Maximum gross trailer weight: 20,000 lbs (9072 kg)**
- **Maximum tongue weight at 6 ½ inches (165 mm) or less from coupling receiver : 1,500 lbs (680 kg)**

Warning: *The draw bar and the ball used for towing the trailer should be rated for 20,000 lbs capacity or more.*

Warning : *Pulling a trailer weighing more than the recommended maximum gross weight may cause engine and transmission overheating, and also possible hitch failure.*

Note : *Pulling a trailer over long distances is considered as a "severe operating condition" for the vehicle and therefore, power plant requires more frequent servicing.*

Note: *The minimum requirement for a trailer weighing up to 20,000 lbs when coupled to a 20,000 lb Prévost Trailer Hitch is as per the following :*

*A) Trailer must comply with **Federal Motor Carrier Safety Regulations 393.52** regarding trailer breaking capability.*

B) The trailer coupling attachments meet the following minimum static test load requirements :

- *Longitudinal tension and compression : (1.5 x GVWR of trailer)*
- *Transverse thrust : (0.5 x GVWR of trailer)*
- *Vertical tension and compression: (0.5 x GVWR of trailer)*

Loads indicated must be applied without incurring loss of attachments or distortion or failure which could affect the safe towing of trailer.

C) The ball and trailer coupling should meet the following minimum test load requirements without incurring failure :

- *Longitudinal tension and compression : (Gross Trailer Weight of trailer x 3)*
- *Transverse thrust : (Gross Trailer Weight of trailer x 1)*
- *Vertical tension and compression : (Gross Trailer Weight of trailer x 1.3)*

In this case, failure is identified as the point at which the coupling or ball will accept no additional test load without separation of the ball from the coupling ball socket, or the occurrence of a metal fracture of either coupling ball or coupling assembly, which results in separation of the ball from the coupling ball socket.

D) Two lengths of safety chain shall be used. The strength rating (minimum breaking force) of each individual chain and its connecting means shall be equal to, or exceed the trailer GVWR.

E) Towing vehicle must be equipped with engine or transmission retarder. The engine or the transmission retarder on the vehicle must be functional at all time (to be inspected frequently).

F) This hitch must be used for recreational use only.

CHAPTER 2 : MOTORCOACH INTERIOR

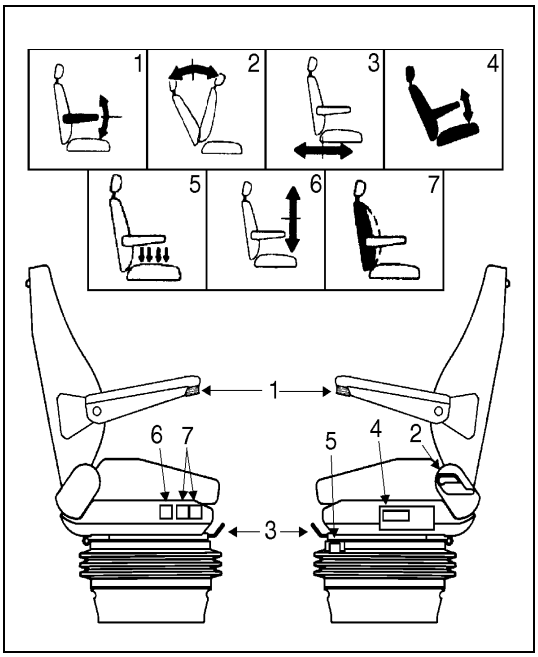
SEATS

Driver's Seat - "Delivery"

The driver's "delivery" seat is standard and legal only for driving the vehicle on its initial delivery. It is a conventional van seat equipped with tracks for fore and aft adjustments.

Driver's And Co-pilot's Seats - *ISRI* (optional)

Two distinct *ISRI* model driver's and co-pilot's seats may be supplied with your vehicle: both with a sophisticated air suspension system, one being manually operated, while the other is electrically operated. Both seats may be equipped with lumbar supports, heated cushions and adjustable armrests. Seats can be adjusted to the desired driving position by following the instructions listed below:



PNEUMATIC DRIVER'S SEAT 18026

Warning : *Never try to adjust seat while driving vehicle as this could result in loss of vehicle control.*

1. Armrest

Rotate control knob to select desired arm-resting angle. When not in use, raise armrest parallel with backrest.

2. Backrest

Lift lever to select proper adjustment angle of backrest.

3. Fore-and-aft *

Pull handle up and slide seat forwards or backwards to adjust distance between seat and dashboard.

4. Incline*

Pull handle up and adjust seat inclination.

* *If your vehicle has electric ISRI seats, controls 3 & 4 change. For description of electric controls, see* ***Electric ISRI Seats*** *on next page.*

Warning : *Before proceeding with seat cushion adjustments, lower seat belt retractor to avoid pinching fingers between retractor and control knobs.*

5. Suspension

For maximum suspension performance, push or pull knob until desired damping is reached.

6. Raise/Lower

Press on **+** or **-** to respectively raise or lower driver's seat.

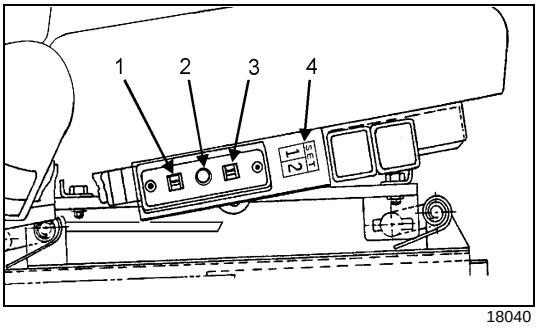
7. Lumbar Support

Push on upper section of rocker switches to inflate lumbar support bellows inside the seat backrest and push on lower section of rocker switches to deflate bellows.

Note : *Rear and front rocker switches are respectively for upper and lower lumbar support bellows.*

Electric ISRI Seats

Adjust electric seats as follows:



18040

1. Tilt (rear)

Pull switch up to raise rear section of seat. Push switch down to lower rear section of seat.

2. Fore-and-aft/Up-Down

Push switch towards dashboard to move seat forwards or back to move seat backwards. Pull switch up to raise seat or push switch down to lower seat.

3. Tilt (front)

Pull switch up to raise front section of seat. Push switch down to lower front section of seat.

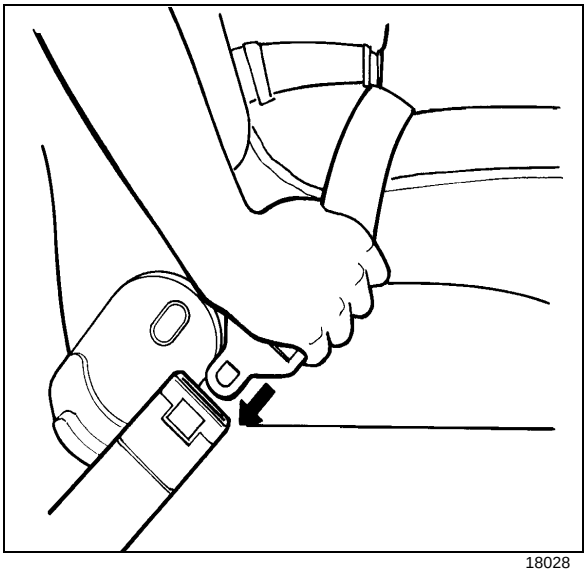
4. Memory

- Use switches (items 1, 2 & 3) to adjust the seat to the position desired by driver ***1***.
- Press the *SET* button and then the number ***1*** button. Memory position ***1*** is now set.
- To set the seat position for driver ***2***, repeat the two steps listed above except press the number ***2*** button in step 2. Memory position ***2*** is now set.
- To move the seat to either memory position, press and hold the desired button (***1*** or ***2***) for at least 2 seconds. If the seat does not move, the button was not held long enough or the seat is already in the desired position.
- To use the easy entry/exit feature, press and hold the number ***1*** and the number ***2*** buttons at the same time for at least 2 seconds. The seat will move to the full rear and full down position.
- To stop seat movement, push any control button (items 1 to 4).

Note : *The seat can, at any time, be positioned using items 1, 2 & 3 without affecting the two memory positions.*

Safety Belts

The driver's seat is equipped with a retractable safety belt as required by State, Provincial and Federal regulations. To fasten, pull seat belt out of the retractor and insert the latch plate into the buckle until it clicks. No special adjustment is required since the reel device is self-adjusting. If seat belt operation becomes defective, report to Manufacturer's Service Center.



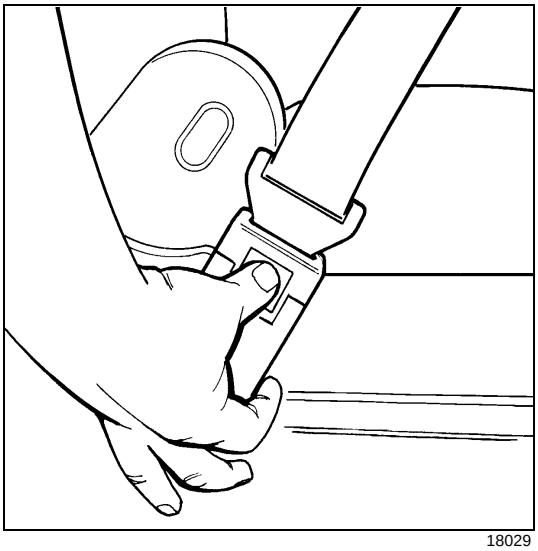
18028

Note : *The safety belt must be pulled out slowly and continuously, otherwise it will lock the reel before the latch plate reaches the buckle. If this happens, allow the belt to retract completely and repeat the procedure correctly.*

Warning : *A snug fit with the lap belt positioned low on the hips is necessary to ensure motorist's safety. The belt should not be worn twisted. Avoid pinching belt and/or belt hardware in seat mechanism. Do not wear belt over rigid or breakable objects, such as eyeglasses, pens or keys as these may cause injuries.*

Caution : *Never bleach or dry clean safety belt.*

To unfasten belt, press the red button in center of buckle and allow belt to retract. If the belt does not fully retract, pull it out and check for kinks or twists. Make sure that it remains untwisted as it retracts.



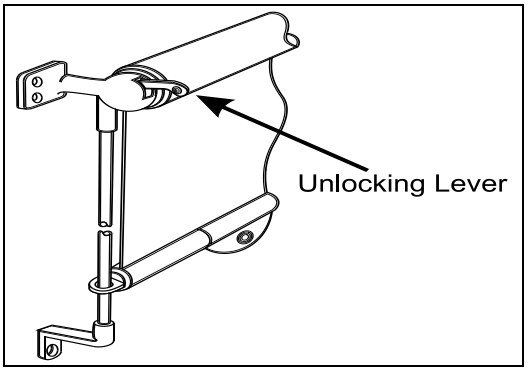
18029

Warning: *Safety belts should always be worn by motorists using seats supplied with belts since this is required by most State and Provincial laws.*

Sunshades (Blinds)

This vehicle is provided with two electrically operated sunshades which are installed on both sides of the windshield. Push up or down the appropriate switch to raise or lower the shade to the desired position.

Moreover, an optional spring release type sunshade is provided for the driver's window to protect him from side glare. To operate, pull down the shade by its hem to the appropriate position and release it. It will remain automatically in position. To lift, depress the unlocking lever.



SPRING RELEASE SUNSHADE

Inside Mirrors

Two mirrors are located in the driver's area. The left overhead mirror provides visibility in the critical area on the R.H. side of the motorcoach. Adjust the left overhead mirror to see through the front cabin windows. The central mirror allows the driver to see in the central cabin aisle.

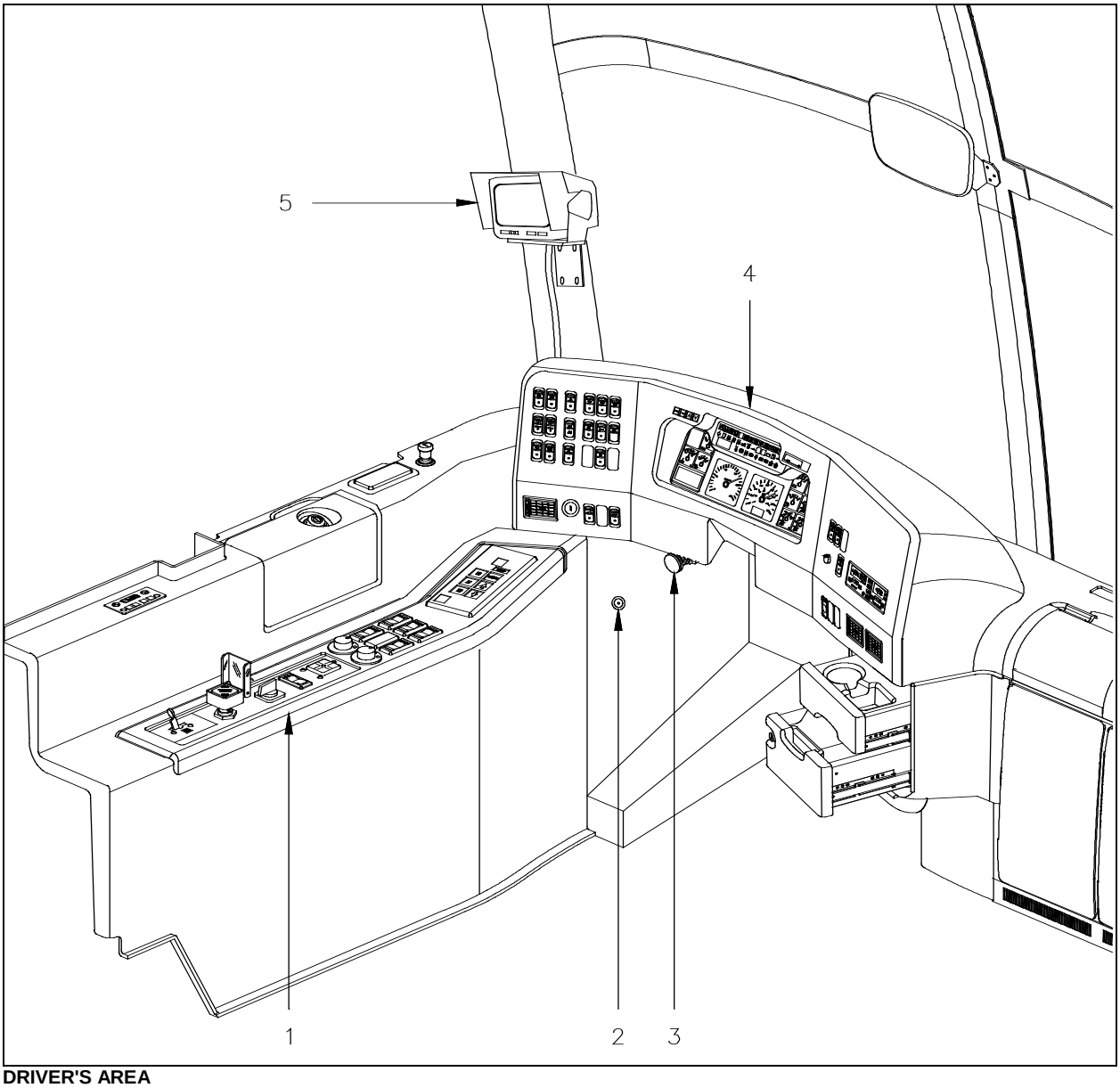
Adjustable HVAC Registers

The HVAC system has adjustable registers to control air flow. They are located on the dashboard, refer to "Controls & Instruments" chapter. The direction and volume of air flow are adjustable.

Driver's Power Window

The driver's area is equipped with a power window. The power window is controlled by using the rocker switch located on the L.H. control panel. Refer to "Controls & Instruments" chapter.

CHAPTER 3 : CONTROLS AND INSTRUMENTS



DRIVER'S AREA

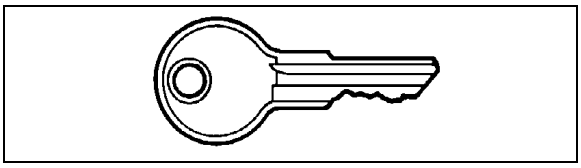
1. **L.H. Control Panel**
2. **Diagnostic Data Reader (DDR) Receptacle**
3. **Steering Wheel Adjustment Unlock Air Valve**
4. **Dashboard**
5. **Rear View TV Monitor**

GENERAL INFORMATION

KEYS

Three different key models are provided with the vehicle. They are used as described below.

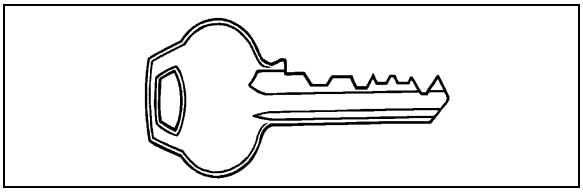
Ignition Switch



23056

Use this key to activate electrical circuit and/or to start engine.

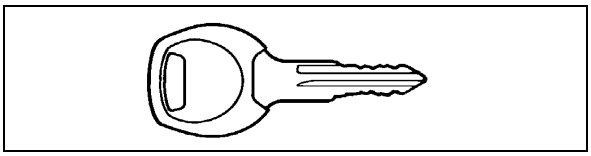
Front Entrance Door Lock



23057

Use this key to lock or unlock the entrance door from outside. It is also possible to lock or unlock the entrance door using the *Exterior compartment door lock*, the *Entrance door unlocking switch* or using the *Keyless entrance system*.

Exterior Compartments



23058

Use this key to lock or unlock any exterior compartment door, including the fuel tank filling access door and electrical or service compartment doors. It is also possible to lock or unlock the baggage compartment and front service compartment doors from the inside by means of a switch located in the driver's compartment.

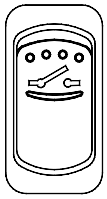
Note : *For your protection against theft:*

A) Record the key numbers and keep this information in a safe place. Do not keep these records inside vehicle.

B) It is also advisable to deposit a duplicate of each key in a safe place, so they can be obtained without difficulty in case of an emergency or loss.

BATTERY MASTER SWITCH

A master switch for electrical system is located on the L.H. control panel.



Caution : *When the vehicle is parked overnight or for an extended period of time, the battery master switch should be set to the* OFF *position.*

Note : *When the battery master switch is set to the* OFF *position, all electrical supply from the batteries is cut off, with the exception of battery equalizer check module, ECM ignition and power supply, ECU power (World Transmission), coolant heater electronic timer, coolant heater and water re-circulating pump, pro-driver, power-verter, keyless entry system and fire alarm.*

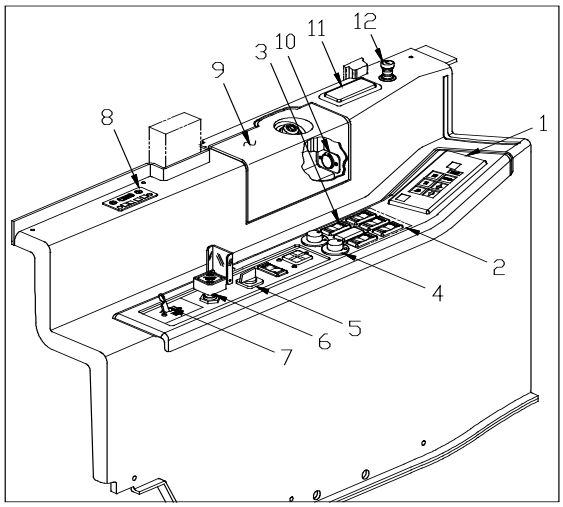
FUEL TANK FILLING

Both fuel filler doors can be unlocked with the exterior compartment key. The access door on L.H. side of the vehicle must be locked again when closing to remove key; as for the door beside the condenser, the key must be returned to its initial position before closing the door.

Note : *Provided the vehicle is parked on level ground, an automatic nozzle will automatically shut off when tank will be approximately 95% full.*

Caution : *Do not fill to more than 95% of the tank capacity. Do not "top off" the tank, doing so may result in fuel spillage when the fuel expands.*

L.H. CONTROL PANEL



1. **Transmission Display**
2. **Cruise Control Switches**
3. **Driver's Power Window Switch**
4. **Mirror Controls**
5. **Level Low Control Valve**
6. **Parking Brakes Control Valve**
7. **Tag Axle Control Valve**
8. **Pre-Heater Timer**
9. **Utility Compartment**
10. **12 Volt Power Outlet**
11. **Ashtray**
12. **Cigarette Lighter**

TRANSMISSION DISPLAY

The control pad for the Allison automatic transmission is located as shown. Refer to "Automatic Transmission" in this chapter for operating instructions and more information.

CRUISE CONTROL

The cruise control is part of the DDEC IV control that will maintain a set speed when the vehicle is traveling above 20 mph (32 km/h).

Warning : *Do not use the cruise control when driving speed must be constantly adjusted, such as in heavy traffic or on winding, icy, snow-covered or slippery roads, or on gravel roads.*

Warning : *Do not put the transmission in the neutral (N) position while driving with cruise control. This will cause the engine to over-speed and may result in a loss of driving control.*

Setting Coach Speed

Depress the CRUISE rocker switch and accelerate the motorcoach to the desired cruising speed. Depress and release the **SET** switch then remove foot from the accelerator pedal. This will set the vehicle cruise speed and store it in memory.

Note : *The CRUISE CONTROL and RESUME switch do not operate at speeds below 20 mph (32 km/h).*

Increasing Set Speed

The motorcoach cruise speed setting can be increased by one of the following methods:

a) With the accelerator pedal and the SET switch, accelerate the motorcoach using the accelerator pedal until the desired cruising speed is reached. Depress and release the SET switch.

b) Depress and hold the RESUME switch until the desired cruising speed is reached. When the RESUME switch is released, the new cruising speed will be stored in the cruise control memory. The RESUME switch does not operate at speeds below 20 mph (32 km/h).

Note : *When driving with cruise control, the vehicle can still be accelerated by depressing the accelerator pedal in the usual manner. Once the accelerator pedal is released, the motorcoach will return to the previously set cruising speed.*

Decreasing Set Speed

The motorcoach cruise speed setting can be decreased by one of the following methods:

a) Depress and hold the SET switch until the desired cruising speed is reached. When the SET switch is released, the new cruising speed will be stored in the cruise control memory.

b) With the DECEL switch, the cruise control can be disengaged without losing the preset cruise speed by either of the following methods:

- Slightly apply the service brake, or;
- Depress and release the DECEL switch.

After disengaging the cruise control, you can return to the preset cruising speed by pressing and releasing the RESUME switch providing that the motorcoach's speed is above 20 mph (32 km/h).

Note : *To avoid sudden vehicle hesitation, depress the accelerator pedal lightly before disengaging the cruise control.*

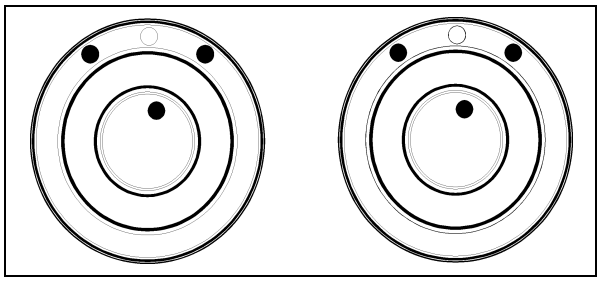
Note : *When the CRUISE rocker switch is turned off, the cruise control is completely shut off and the cruise speed setting is cleared from the cruise control memory.*

Warning : *It is important to know that toggling the SET or the RESUME switch will result in a decrease or increase in speed (respectively) of 0.6 mph (1.0 km/h) for every touch.*

DRIVER'S POWER WINDOW SWITCH

Use the rocker switch to open or close the driver's power window as needed.

MIRROR CONTROLS (OPTIONAL)

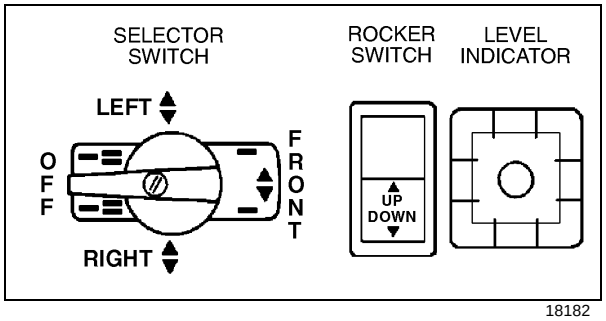


MIRROR CONTROLS

Turn left pointer knob counterclockwise for outside mirror head adjustments and to the right for convex mirror adjustments, then use the joystick control to adjust the selected mirror's viewing angle. Adjust the right outside mirror similarly but by using the right side control.

Note : *If the mirror assemblies on your vehicle do not include convex mirrors, only one (1) Mirror Control will be installed for both mirrors. To operate, turn pointer knob to the left for L.H. mirror adjustments and to the right for R.H. mirror adjustments, then use the joystick control to adjust the selected mirror's viewing angle.*

LEVEL LOW SYSTEM



18182

During driving, the conventional air leveling system of the vehicle controls the height at three points: the front, the left rear and the right rear. Your vehicle is equipped with a suspension system that consists of air springs (pressurized air bellows) located near each wheel. The amount of air in each air spring (and thus the vehicle height) is controlled by automatic leveling valves that operate between the chassis and the axles of the vehicle.

The three leveling valves are located as follows: one at the front which controls the amount of air in both front air springs, one at the left rear which controls the left rear corner of the vehicle and one at the right rear which controls the right rear corner of the vehicle. During normal driving, these valves work automatically to maintain the chassis at the proper level above the axles, indifferent of road conditions or vehicle weight.

When parked, and **ONLY** when parked, the level of the vehicle can be manually adjusted within the range of travel of the air springs. Thus, if the vehicle is parked on uneven ground, the manual override leveling system can be used to level the chassis of the vehicle. With the ignition *ON* (engine running or not), turn the selector switch located on L.H. side control panel to the area of the vehicle requiring leveling, then press the rocker switch accordingly (up or down) to inflate or deflate the selected set of air springs. The front position raises or lowers the front only and does not tilt the vehicle to its sides. Each rear position raises or lowers its respective side, therefore, the rear positions can be used to tilt the vehicle to one side or the other, or they can be used to raise or lower the rear of the vehicle. When leveling vehicle, it is often necessary to run the engine in order to get an adequate air supply.

Note : *It is always better to first level the rear of the vehicle (right to left) before raising or lowering the front. After adjusting the rear, watch the level as you adjust the front. If the level shows that the vehicle is starting to tilt to either side, then stop adjusting the front as one of the air springs has come to the end of its travel range.*

After manual leveling, turn *OFF* the engine. The vehicle will stay in the leveled position (the air is *"locked"* in the air springs) as long as there are no air leaks. The vehicle will hold this position for several days. When engine is restarted and air pressure is adequate, the vehicle will automatically level itself for driving conditions.

Warning *: Do not drive the vehicle with the level low selector switch in any position other than* OFF*, as this may render the vehicle unsafe and uncontrollable. If this is the case, the Level Low warning telltale light in dashboard will flash, reminding you that the selector is not in the* OFF *position.*

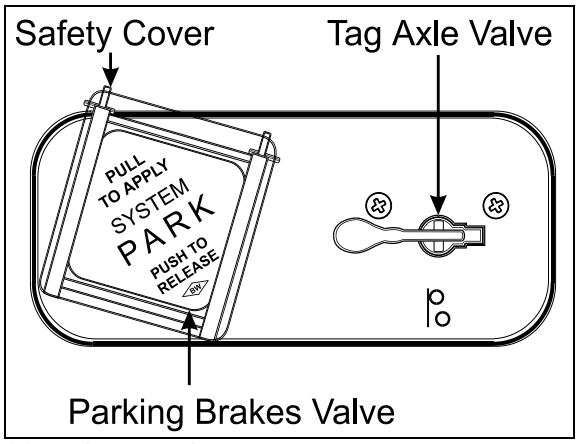
Note : *If, for any reason, you wish to start the engine without moving vehicle (to warm up engine for instance) while keeping the vehicle in the manually leveled position, place selector switch in any position except* OFF*. When ignition switch is turned to the* OFF *position, reset the selector switch to the* OFF *position.*

PARKING BRAKES CONTROL VALVE

Spring-loaded parking brakes are applied by pulling up the control valve knob and protector assembly. Lift the safety cover and push down to release brakes. Refer to "Emergency and Parking Brakes" in "Emergency Features And Safety Equipment" chapter 6.

TAG AXLE CONTROL VALVE

Unload (or raise) the tag axle by pushing the lever forward. Pulling the lever back will load (or lower) the tag axle. Refer to "Other Features" in chapter 4 for additional information.



CONTROL VALVES

COOLANT HEATER TIMER

Use to program the start time of the optional engine coolant heater. Refer to "Other Features" chapter 4 for additional information.

UTILITY COMPARTMENT

The lockable free space utility compartment also includes a 12 volt appliance socket.

CIGARETTE LIGHTER

Push lighter in to activate. When ready to use, it will spring out automatically. Replace lighter in non-activated position. The cigarette lighter socket can be used to power 12-volt appliances (eg. flashlight, vacuum cleaner). The maximum power consumption allowed for appliances plugged in this socket is 130 watts. Make sure the appliances are equipped with suitable plugs that will not damage the socket.

Note : *The cigarette lighter can still be used after the ignition key has been removed.*

ASHTRAY

To open the ashtray, push slightly on the cover's side. The ashtray can be removed for cleaning by pulling it out.

Warning *: To prevent a fire, never put paper or plastic wrappers in the ashtray. Empty ashtray often.*

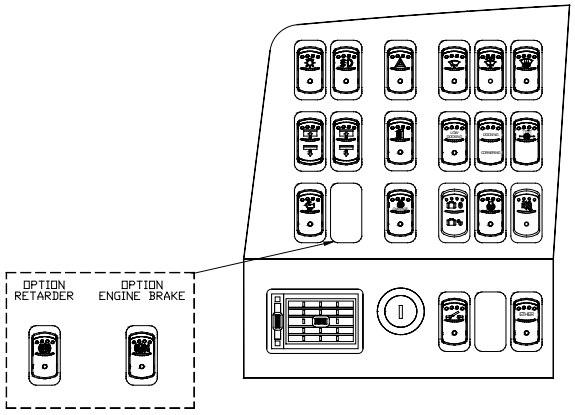
DIAGNOSTIC DATA READER (DDR) RECEPTACLE

To facilitate troubleshooting of the DDEC, WT and ABS systems and to obtain data logged in the ECM (Electronic Control Module) memory, a Diagnostic Data Reader (DDR) (not supplied) can be connected through the DDR receptacle. A user's manual is supplied with the optional DDR.

The DDR receptacle is located inside the footwell, on the upper left side wall.

DASHBOARD

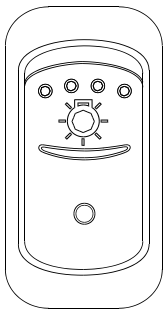
L.H. DASHBOARD PANEL



Control Switches

High quality laser-engraved switches are used to control many of the features of the coach. Many switches have an embedded witness LED to inform the driver at a glance which features are active. Some switches' LED will turn *OFF* after a short while when the engine is running. This is normal and is designed to reduce glare when driving. The functions still operate even if the LED is *OFF*. If the switches are still *ON* when the engine is turned *OFF*, the LEDs will illuminate to warn the driver to turn them *OFF*.

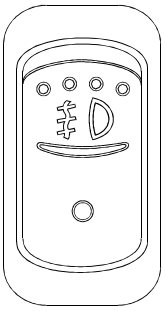
Headlights



Push down rocker switch to the first position to activate clearance, tail and marker lights. Push down fully to turn *ON* both the clearance and marker lights and the headlights. The controls and instrument lights will illuminate.

Note : *Daytime running lights will be automatically cancelled when the exterior lighting switch is fully depressed.*

Fog Lights

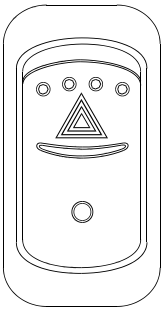


Optional halogen fog lights provide better visibility in fog and precipitation. They improve close range visibility and provide added safety. Remove protective covers from fog lights before use.

Warning : *Turn* OFF *engine and apply parking brake before removing fog light covers.*

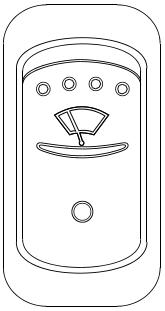
Note : *Some states and provinces restrict the use of fog lights. Verify local state or provincial regulations before using.*

Hazard Warning Flashers



Depress the rocker switch to make all turn signal lights flash at once. The dashboard telltale lights will flash when the hazard warning flashers are *ON*.

Upper Windshield Wipers

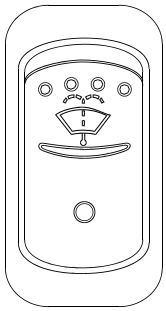


Depress the wiper rocker switch to the first position for intermittent wiping. For continuous wiping, depress switch fully.

Note : *The lower windshield wipers are operated via the multi-function lever. Refer to "Steering Column Controls" in this chapter.*

Caution : *To avoid damaging the wiper blades or scratching the windshield, do not operate the wipers when the windshield is dry. Loosen frozen blades on windshield before operating.*

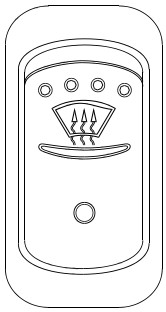
Upper Windshield Washers



Hold down rocker switch to spray windshield washer fluid.

Caution *: Do not operate when windshield washer reservoir is empty. Doing so may damage the washer pump or motor.*

Upper Windshield Defogger

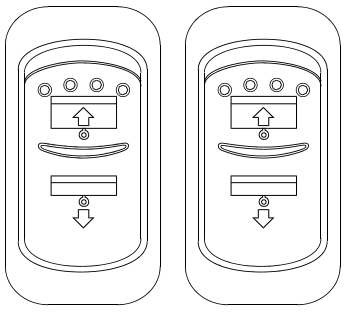


Depress this switch to the first position to operate the defogger blower at low speed, press down fully to operate the blower at high speed.

The motorcoach may be equipped with an optional electric heating element.

If your motorcoach is equipped as such, depress the rocker switch momentarily to turn *ON* the heating element and clear fog, frost or thin ice from both sides of upper windshield. The heater elements automatically turn *OFF* after 10 minutes.

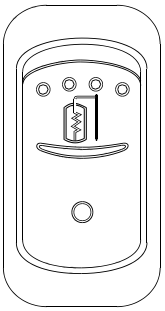
Left And Right Sunshades



Press and hold to lower or raise left or right sun shade.

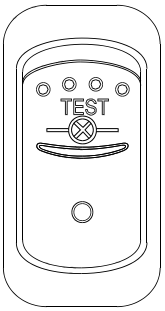
Caution *: Do not attempt to raise or lower these shades manually. Damage to electric motor or roller mechanism could result.*

Outside Mirror Heat (Optional)



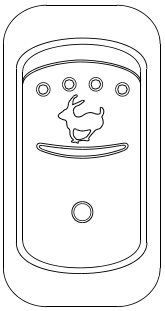
Turn *ON* to clear fog, frost or thin ice from outside mirrors.

Telltale Light Test



Press this switch while ignition is in the *ON* position to illuminate the telltale light cluster. Perform this test to verify indicator light functionality. Telltale lights will extinguish automatically after about ten seconds.

Fast Idle

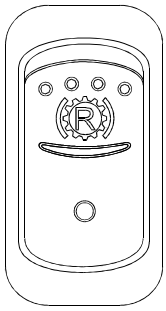


For extended idling periods, run the engine at fast idle. Press down the rocker switch to engage fast idle. This increases the engine speed to approximately 1,000 rpm.

Note : *If the parking brake is released and/or the transmission is engaged with the engine running at fast idle, the engine will return to low idle and remain there as long as the parking brake is not applied and/or transmission is not placed in neutral (N).*

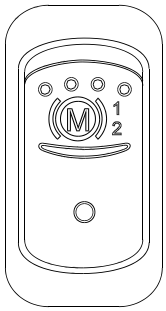
Caution : *Reduce the engine to low idle before shutting the engine* OFF.

Transmission Retarder (Optional)



Press down rocker switch to actuate transmission retarder. Refer to "Steering Column Controls" in this chapter.

JACOBS Engine Retarder (Optional)

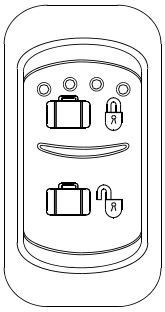


Press down rocker switch to the first position to actuate system to 2/3 engine brake and press to the second position for a full application of engine brake. Refer to "Other Features" chapter 4.

Warning : *Engine brake must be used on dry road only. Never use the engine brake on slippery roads; loss of control could result.*

Note : *Engine brake is activated when accelerator pedal is released and the engine speed is higher than 750 rev/minutes. Stop lights turn* ON *when the engine brake is used.*

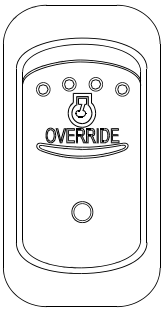
Baggage Compartment Central Locking System



This optional system enables locking all baggage compartment doors by pressing down on the upper portion of the switch. To unlock all compartments, press down on the lower portion of the switch.

Note : *Service panels are not linked to the central locking system.*

Engine Stop Override



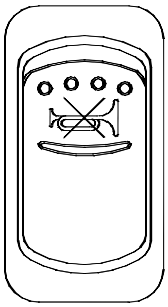
Press down this switch and release to override emergency engine shut down protection. Engine emergency shut down will be turned *OFF* for 30 seconds. This procedure can be repeated if done before the 30 seconds are up.

Caution : *Use sparingly and in order to move coach to a safe parking place only. Excessive use can cause severe engine damage.*

DDEC Diagnostic Request

With the engine at idle or *OFF* and with the ignition switch in the *ON* position, press and release the Engine Stop Override rocker switch. Active codes will be flashed on the " Stop Engine " and inactive codes on the " Check Engine " telltale lights alternately. The first digit of the diagnostic code is determined by the number of flashes before a short pause. The second number of the diagnostic code is then flashed in the same manner. As an example, code " 25 " (everything O.K.) consists of two flashes, followed by a short pause, then five flashes. Refer to the "Technical Information" chapter 8 under "DDEC IV Diagnostic Codes".

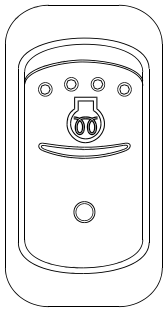
Back-Up Alarm Cancel Switch



Press down this switch to cancel the Back-Up Alarm

Note : *After use, return to normal operation.*

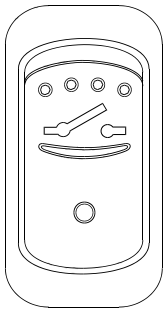
Coolant Heater (Optional)



Push down rocker switch to turn the coolant heating system *ON*, supplementing the central heating system when required. The coolant heater will turn *ON* or *OFF* automatically depending on coolant temperature.

Warning : *The coolant heating system uses the same fuel as the engine. Do not operate in a closed building or while refueling. Operate only in a well ventilated area.*

Battery Master Switch

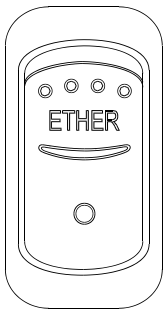


Both the 12-volt and 24-volt systems are activated by the master switch located on the L.H. lower control panel. A telltale light on the L.H. dashboard will illuminate when the ignition key is in the *OFF* position.

Caution : *When parking the coach overnight, or for an extended period of time, place the battery master switch to the* OFF *position.*

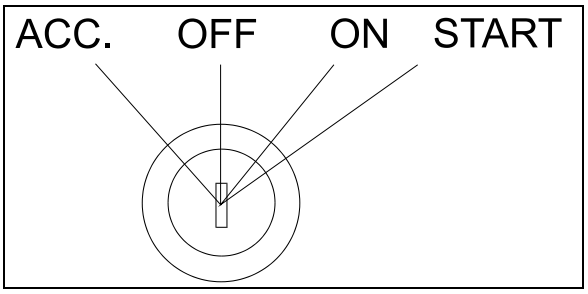
Note : *When the battery master switch is placed in the* OFF *position, all electrical equipment connected to the batteries is cut off, with the exception of the battery equalizers and monitor, World Transmission (WT), Electronic Control Unit (ECU) memory, Vehicle Interface Module (VIM), coolant heating system, keyless entry system and refrigerator power supply.*

Ether Start Control (Optional)



Activates the engine cold starting aid. Refer to "Starting and Stopping Procedures" chapter 5.

Ignition Switch



The ignition switch has four positions:

ACCESSORIES

To operate the accessories only, turn the ignition key counterclockwise. The key cannot be removed in this position.

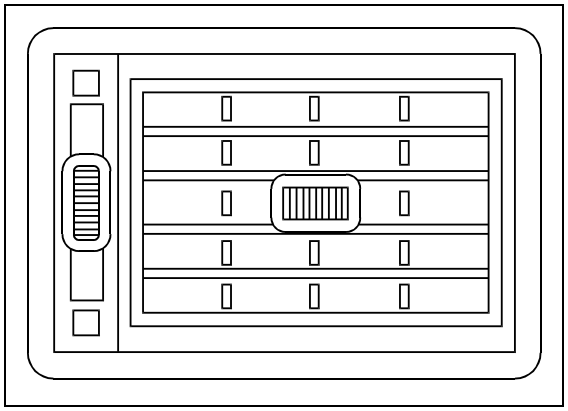
OFF
In *OFF* position, ignition cannot take place. The key can be removed in this position.

ON
To place ignition switch to *ON*, turn the key clockwise to the first position. The key cannot be removed in this position.

START
Turn the key clockwise to the second position and release as soon as the engine starts. The key will return to the *ON* position. If the engine did not start, return the ignition key to the *OFF* position before trying to restart the engine.

Caution : *To avoid overheating the starter, do not engage the starter for more than 15 seconds at a time. Allow the starter to cool before trying to restart the engine.*

Air Register



AIR REGISTER

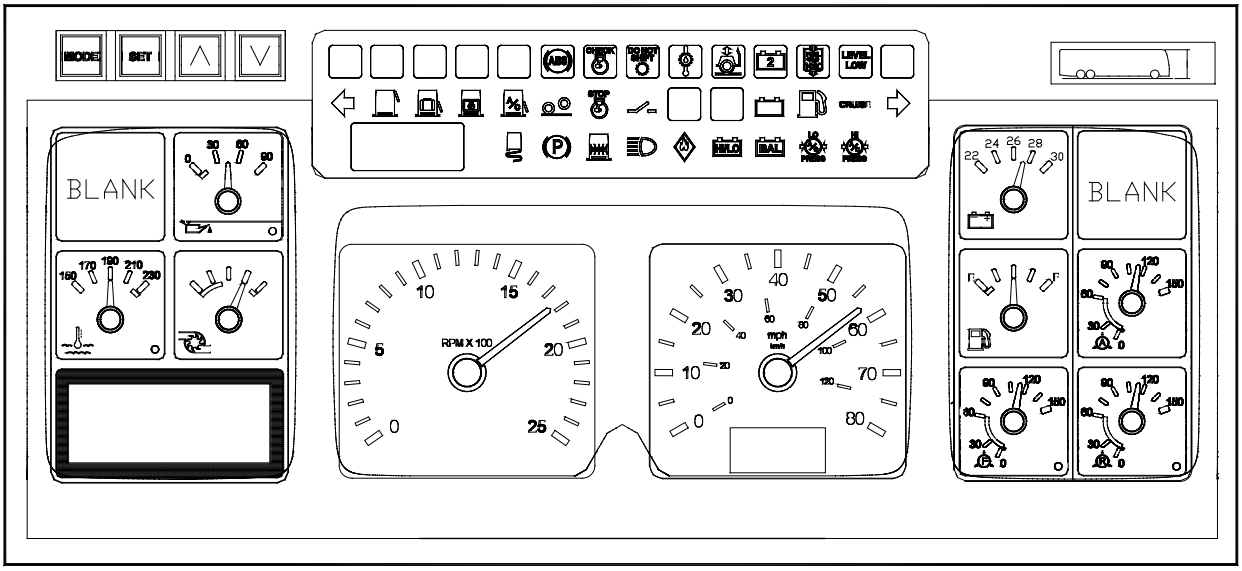
Three adjustable driver air registers feed air to the driver's compartment. Use HVAC control panel to set air temperature.

CENTER DASHBOARD PANEL

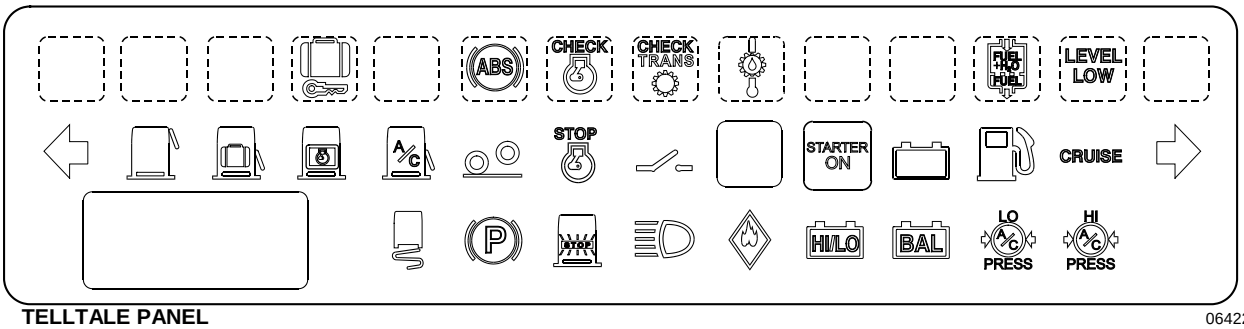
The Center Dashboard Panel comprises the Message Center Display, Telltale Panel, the Gauges and the Vehicle Clearance Display.

Message Center Display (MCD)

This standard feature gathers, stores and displays important information about the vehicle's operation on a display screen on the lower middle portion of the dashboard. Refer to "Message Center Display" heading in "Other Features" chapter 4 for a description of how to set-up and operate the display.



CENTER DASHBOARD PANEL



TELLTALE PANEL 06422

Telltale Panel

ABS Brake System

Illuminates when the ABS is not available or when the ABS is malfunctioning. Since the ABS system does not operate under 4 mph (7 km/h), the indicator will remain illuminated until the coach reaches that speed. Refer to "Other Features" chapter 4.

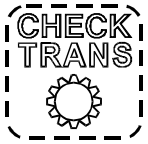
Check Engine Indicator

Illuminates when the ignition switch is *ON* as a light bulb check. The light should turn *OFF* after five seconds. If the indicator remains *ON* after five seconds or comes *ON* sometime after starting the engine, the Detroit Diesel Electronic Control (DDEC) system has detected a minor problem.

The indicator will remain *ON* until the malfunction has been corrected.

A diagnostic code will be stored in the memory and the indicator can be used to identify the problem. Refer to the "Technical Information" chapter under "DDEC IV Diagnostic Codes", chapter 8.

Check Transmission Indicator



Illuminates briefly when the ignition is switched *ON* as a light test. The indicator light should go out after two seconds.

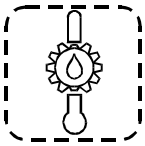
When the "CHECK TRANS" indicator is illuminated and the shift selector emits short beeps for 8 seconds, the ECU is restricting transmission shifting because special or abnormal conditions are detected. The SELECT digit on the display will be blank.

If this happens, drive the coach to the next available service station to receive assistance. The ECU will not respond to shift selector requests since operating limitations are being placed on the transmission (i.e. upshifts and downshifts may be restricted). Direction changes and shifts to and from neutral (N) will not occur.

Any time the CHECK TRANS telltale light illuminates, the ECU will register a diagnostic code. It may be identified on the display or using a diagnostic tool. Refer to "Technical Information" chapter under "World Transmission (WT) Diagnostic Codes", chapter 8.

Note : *The CHECK TRANS indicator may also illuminate when starting the engine in extreme cold weather. Refer to "Starting and Stopping Procedures" under "World Transmission (WT) Warm-up", chapter 5.*

Retarder Oil High Temperature Indicator



Illuminates when the transmission oil temperature is too high. Disengage the retarder to allow the oil temperature to cool down.

Starter On Indicator

Illuminates when the engine starter is on.

Warning: *If the STARTER ON indicator light remains on after releasing the ignition switch, stop the engine immediately and set the battery master switch to the OFF position. Have the starter checked immediately.*

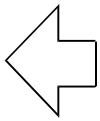
Fuel/Water Separator Indicator

Illuminates when accumulated water in the fuel filter/water separator needs to be drained. Refer to "Care and Maintenance" chapter 7.

Level Low System Indicator

Illuminates when Level Low System is operating.

Left Turn Signal Indicator



Flashes when the left turn signals are turned *ON*. Right and left turn signals are selected by operating the multi-function lever. Refer to "Steering Column Controls" in this chapter.

Window Open Indicator

Illuminates when a window is open (hinged window only).

Baggage Compartment Door Ajar

Illuminates when one or more baggage compartment doors are open.

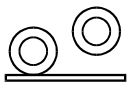
Engine Door Ajar Indicator

Illuminates when the engine compartment door or the R.H. engine compartment door is open.

A/C - Heating Compartment Door Ajar Indicator

Illuminates when the A/C - heating compartment door is open.

Retracted Tag Axle Indicator



Illuminates when the tag axle is retracted or unloaded. When the tag axle is retracted, an alarm will sound to warn the driver. The control valve is located on the L.H. lateral console.

STOP Engine Indicator

Illuminates when the ignition switch is *ON* as a light bulb and DDEC system check. The indicator should go *OFF* after five seconds.

If the indicator remains illuminated after five seconds or comes *ON* sometime after starting the engine, the DDEC system has detected a major problem.

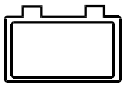
When a problem is detected, the engine power will automatically begin to decrease gradually, followed by full shutdown after 30 seconds.

The engine emergency shutdown may be bypassed by using the " Engine Stop Override " switch on the L.H. lower control panel.

Note : *Once the engine is stopped, it cannot be restarted until the problem has been corrected. A diagnostic code will be stored in memory. The STOP engine indicator can be used to identify the problem. Refer to "Technical Information" chapter 8 under "DDEC IV Diagnostic Codes".*

Electrical Systems Indicator

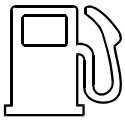
Illuminates when the ignition switch is *OFF* and the 12-volt and 24-volt electrical systems are activated by pressing down the battery master switch.



Primary Charge System Indicator

Illuminates when the alternator is not charging the batteries.

Low Fuel Level Indicator



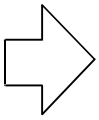
Illuminates when approximately 12 US gallons (45 liters) of fuel remain in the tank. After the light comes *ON*, the remaining fuel will provide less than 60 miles (100 km) of travel. Do not exceed this distance.

Note : *Refuel as soon as possible.*

Cruise Control Indicator

CRUISE Illuminates when cruise control is activated.

Right Turn Signal Indicator



Flashes when the right turn signals are activated. Right and left turn signals are selected by operating the multi-function lever. Refer to "Steering Column Controls" heading in this chapter.

Freezing Indicator

Flashes for about 10 seconds when the outside temperature drops from 2°C to 1°C (35°F to 34°F).

Emergency/Parking Brake Indicator

Illuminates when the emergency/parking brake is applied. The control valve is located on the L.H. control panel. A buzzer will sound if ignition is turned to *OFF* and the parking brake is not engaged.

Stoplight Indicator

Illuminates when rear stop lights illuminate. This occurs when either cruise control DECEL switch, service brakes, parking brakes, engine retarder or transmission retarder is applied.

High Beam Indicator

Illuminates when high beams are selected. High and low beams are selected by operating the multi-function lever. Refer to "Steering Column Controls" heading in this chapter.

Fire Indicator (Engine Compartment)

Illuminates if a fire is detected in the engine compartment.

Note : *For extinguisher's location, refer to "Emergency Features And Safety Equipment" chapter 6.*

High/Low Battery Voltage Indicators

Illuminates when the battery voltage exceeds 30 volts or drops below 24 volts.

Note : *The high/low battery voltage indicator will illuminate for a few seconds after the engine is started because of the voltage drop when the starter is engaged.*

Battery Equalizer Indicator

Illuminates when the battery voltage is not equalized.

Note : *If the battery equalizer indicator illuminates, make sure that the battery equalizer circuit breakers are reset before requesting breakdown assistance. Wait 15 minutes after setting breakers to allow batteries to equalize. The breakers are located in the main power compartment.*

Low Air Conditioning (A/C) Pressure Indicator

Illuminates when the A/C system pressure is too low. If the A/C pressure is too low, the compressor clutch is disengaged and the fan is turned *OFF*.

Note : *In cold weather, the low A/C pressure indicator may light up. This is not an abnormal condition.*

High A/C Pressure Indicator

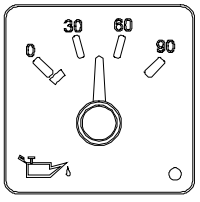
Illuminates when the A/C system pressure is too high. If the A/C pressure is too high, the compressor clutch is disengaged, but the fan remains activated.

Note : *In hot weather, the high A/C pressure indicator may light up. This is not an abnormal condition.*

Gauges

Note : *Do not refer to dashboard instruments during adjustment procedures. Use calibrated gauges.*

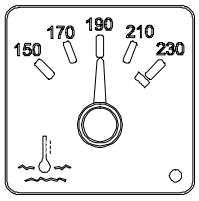
Engine Oil Pressure Gauge



Indicates engine oil pressure. The normal reading should be between 50 and 70 psi (345 - 480 kPa) at 55 mph (90 km/h). A low oil pressure indicator LED (bottom right corner) illuminates when the oil pressure drops below 50 psi (345 kPa).

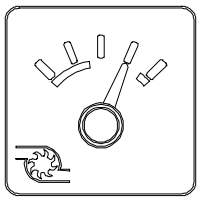
Caution : *Loss of oil pressure may cause severe engine damage. If low-oil pressure LED illuminates, park the vehicle safely and stop the engine immediately. Request service assistance.*

Engine Coolant Temperature Gauge



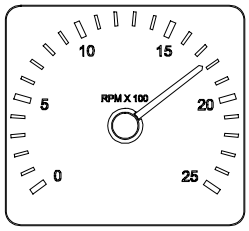
Indicates the operating temperature of the engine coolant. The normal reading should be between 190°F and 215°F (88°C to 102°C).

Turbo Boost Pressure Gauge



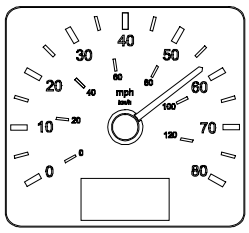
Indicates turbo boost pressure in psi. Reading depends on engine rpm and load conditions.

Tachometer



Indicates the operating speed of the engine in hundreds of revolutions per minute (rpm x 100). The tachometer serves as a guide for gear shifting and helps to prevent engine over-speeding when driving downhill with the JACOBS engine brake operating. The maximum allowable engine speed is 2,450 rpm.

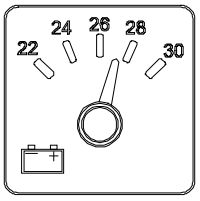
Speedometer



Indicates the motorcoach speed in miles per hour (mph) and kilometers per hour (km/h).

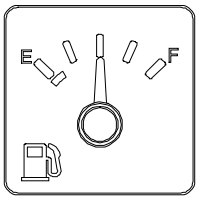
The digital odometer registers the distance traveled in miles or in kilometers (units are driver selectable).

Voltmeter (24-Volt System)



Indicates the condition of the 24-volt electrical system. With the engine running, the normal reading should be between 26.5 and 28.0 volts.

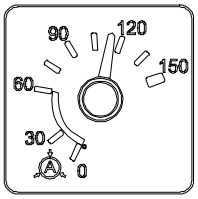
Fuel Gauge



Indicates the amount of fuel remaining in the fuel tank.

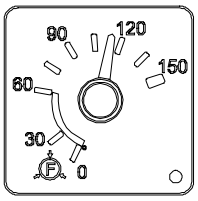
Caution : *Operating the motorcoach when the reading is below 1/8 full is not recommended.*

Air Pressure Gauge (Accessories)



Indicates the accessories air system pressure. The normal operating pressure is from 95 to 125 psi (655 to 860 kPa).

Air Pressure Gauge (Primary System)

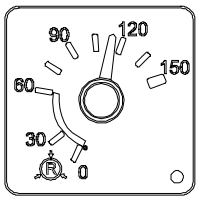


Indicates the primary air system pressure. The normal operating pressure is from 95 to 125 psi (655 to 860 kPa).

A low air pressure indicator LED (bottom right corner) illuminates when the primary air system pressure drops below 66 psi (455 kPa).

Warning : *Do not drive the coach when air pressure is low.*

Air Pressure Gauge (Secondary System)

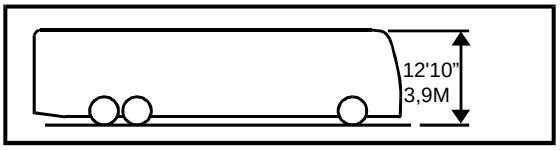


Indicates the secondary air system pressure. The normal operating pressure is from 95 to 125 psi (655 to 860 kPa).

A low air pressure indicator LED (bottom right corner) illuminates when the secondary air system pressure drops below 66 psi (455 kPa).

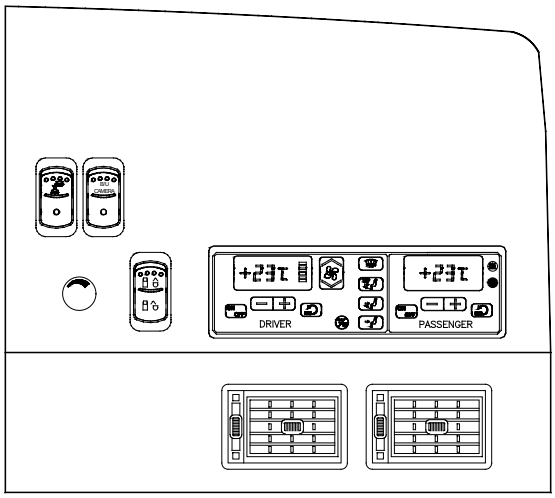
Warning : *Do not drive the coach when air pressure is low.*

Vehicle Clearance Information



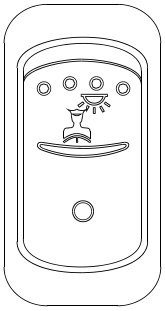
Normal vehicle clearance is 12'-10" (3,9 m).

R.H. DASHBOARD PANEL



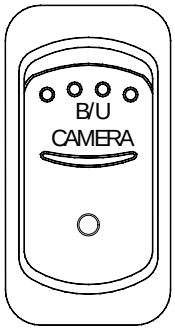
Control Switches

Driver's Area Lighting



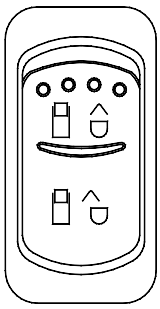
Press down the rocker switch to illuminate the ceiling lights in the driver's area as needed.

Back-Up Camera Switch



Press down this switch to turn *ON* the Back-Up Camera's monitor when the transmission of the motorcoach is not in the reverse gear.

Door Entrance Switch



Use this rocker switch located on the dashboard's R.H. side panel for locking or unlocking the entrance door from the inside.

Warning : *The mechanism automatically completes door closing when the door is almost shut. Be careful to keep fingers or hands away from door edges when closing.*

Brightness Control

Adjusts the brightness of the dashboard instruments and switches.

HVAC Control Unit

The motorcoach is pressurized by the central A/C - heating system. Air flow and controls divide the motorcoach into two areas:

- driver area with defroster;
- cabin area.

Pressurization of the motorcoach helps prevent dust and moisture from entering.

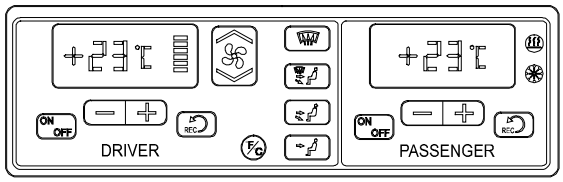
Fresh air is fed in each area and has a separate return air and discharge air duct.

Warning : *Do not let temperature in the driver's area rise above 72°F (22°C). Warm temperatures may cause drowsiness and affect alertness while driving. Keep temperature between 68°F to 72°F (20°C to 22°C).*

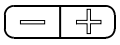
Note : *To operate the air conditioning system when the motorcoach is stationary, run engine at fast idle. When the A/C system is running, keep windows and door closed.*

To prevent battery run-down, the A/C and heating systems will not operate if the charging system is not working properly.

When the A/C system is running, park the motorcoach at least 4 feet (1,5 m) from other vehicles or buildings to allow sufficient air flow through the condenser core.



Separate driver and cabin heating, ventilation and air conditioning controls are located on this panel. To operate, the motorcoach's engine must be running.

The driver's or the cabin's units may be turned *ON* by pressing  or  or  buttons.

All parameters set before turn *OFF* will be kept in memory for the next power *ON*.

The HVAC module performs a self diagnostic every time it is turned *ON*. Codes are shown on displays or flashed on control buttons. Refer to "Maintenance Manual" for more information on the diagnostic codes.

Heating Mode Indicator

Illuminates when system is heating.

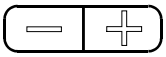
Cooling Mode Indicator

Illuminates when system is cooling.

Fan Speed

The driver's fan has six speeds. Increase speed by pressing on the upper portion of the button, decrease by pressing on the lower portion.

Temperature Set Button



The driver's side and the cabin's side have independent temperature controls. To increase the temperature, press on the " + " sign, to decrease the temperature, press on the " - " sign. Temperature range is between 55°F and 85°F (12°C to 28°C).

Re-circulate Button

Permits air re-circulation in the driver's or cabin's side of the motorcoach. A LED lights up when in operation.

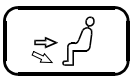
Windshield Defogger

Air is sent towards windshield when activated.

All Vents Open

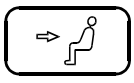
Air is sent to defogger vents as well as panel and footwell registers.

Panel And Footwell



Air is sent to panel and footwell registers only.

Panel

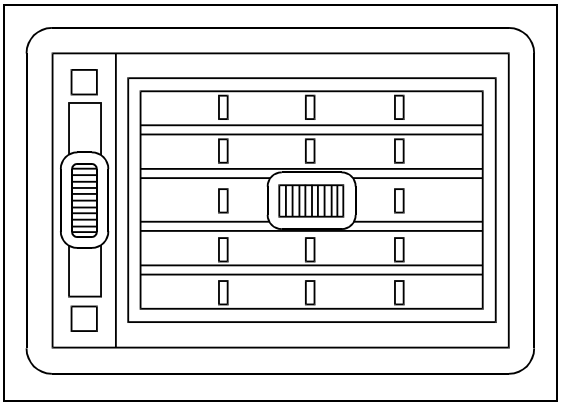


Air is sent to panel registers only.

Temperature Degree Selector

Toggles between Fahrenheit and Celsius units.

Air Registers



AIR REGISTER

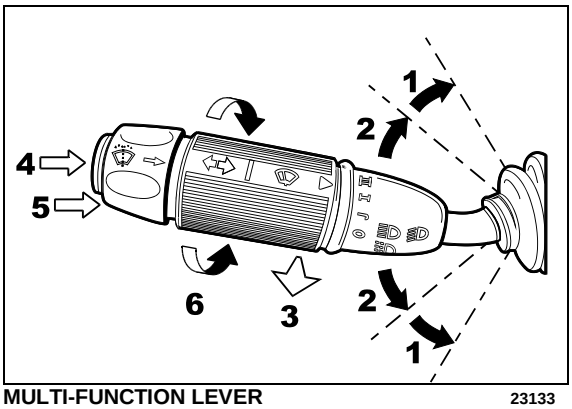
Three adjustable driver's air registers feed air to the driver's compartment. Use HVAC control panel to set air temperature. There is also an adjustable air register located on the motorcoach L.H. side close to the back of the driver's seat.

Dashboard Compartments

Two drawer-type driver compartments are standard issue. They are located under the R.H. side of the dashboard panel. They may be used to stow small items. The top compartment houses a cup/beverage holder. The lower, lockable compartment, is larger and outfitted with a 12-volt DC power outlet. Unclip the sliding rails to remove for cleaning.

STEERING COLUMN CONTROLS

MULTI-FUNCTION LEVER



MULTI-FUNCTION LEVER 23133

The multi-function lever is used to operate the following:

1. Turn Signal

Move the lever up to the second detent position to signal a right turn, down to the second detent position to signal a left turn. The lever automatically returns to the horizontal *OFF* position once the turn is completed.

2. Lane Change Signal

Move the lever part way to the first detent position and hold until the lane change maneuver is completed. The lever will spring back into the *OFF* position once released.

3. Headlight Beam Toggle Switch

Toggle between high and low beams by pulling the lever rearward. Pulling the lever rearward while the lights are *OFF* will flash the headlights.

4. Courtesy Blinkers

Clearance and parking lights can be flashed by pressing the button located on the lever tip.

5. Windshield Washer Control

Push the external ring at the end of the lever toward the steering column to activate the windshield washers. The wipers come *ON* and continue wiping for a few seconds after the ring is released.

Warning : *Before using the windshield washer in cold weather, heat the windshield with the defroster to prevent icing and reduced visibility.*

Caution : *To avoid damaging the pump mechanism, do not use the windshield washer when the fluid level is low.*

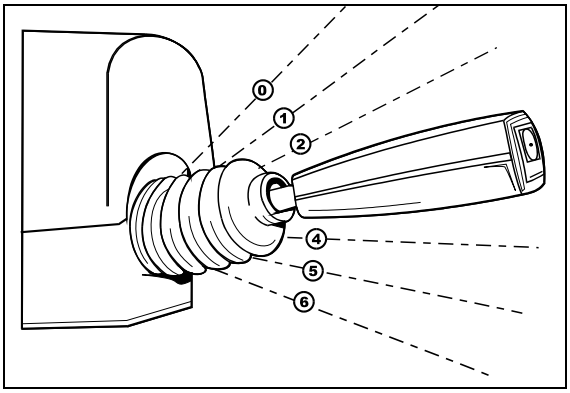
6. Lower Windshield Wipers

Turn the lever counterclockwise to activate the lower windshield washers. The first position activates the wipers intermittently. The second position is the slow speed and the third position is for high speed wiping.

Caution : *To avoid scratching the windshield, do not operate the wipers when the windshield is dry. To avoid damaging the wiper motor, loosen wiper blades that may be frozen to the windshield before operating the wipers.*

TRANSMISSION OUTPUT RETARDER (OPTIONAL)

Press down the rocker switch on the dashboard to actuate the optional transmission retarder. Refer to "Other Features" chapter 4.



RETARDER HAND LEVER 23132

Operating The Retarder Using The Hand Lever:

With the retarder activated (retarder switch depressed) and the accelerator pedal released, move the output retarder lever clockwise from the first to the sixth position. The efficiency for each position is as follows:

Position	Efficiency
Initial	0%
1st	16%
2nd	33%
3rd	49%
4th	71%
5th	89%
6th	100%

Note : *The output retarder lever is located on the right side of the steering column.*

Operating The Retarder Using The Brake Pedal:

With the retarder activated (retarder switch depressed), the accelerator pedal released and the output retarder lever in the initial position, apply the brake pedal as if using the service brakes. The further the break pedal is depressed, the more the output retarder is applied. Refer to "Other Features" chapter 4.

Note : *For motorcoaches equipped with the Anti-lock Braking System (ABS), if the wheels start to lock-up on slippery roads, the output retarder will automatically deactivate until the wheels turn freely.*

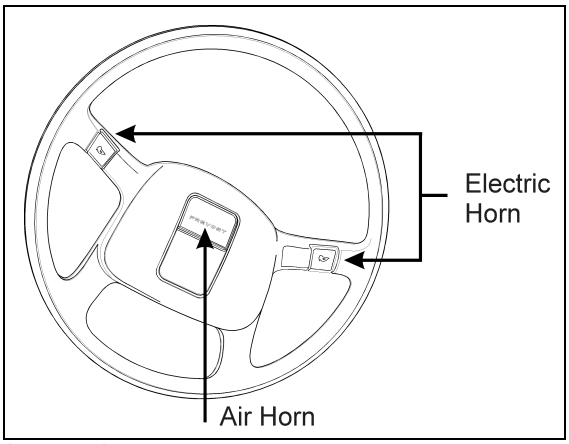
HORNS

Electric Horn

The electric horn buttons are on the steering wheel spokes. Use only the electric horn in urban areas.

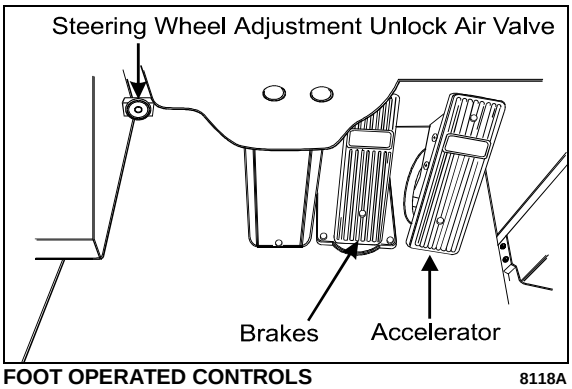
Air Horn

The air horn button is located on the center of the steering wheel. Use this horn only on the highway.



STEERING WHEEL

FOOT-OPERATED CONTROLS



FOOT OPERATED CONTROLS **8118A**

SERVICE BRAKES

The coach is equipped with a dual braking system. The front brakes operate differently from the drive and tag axle brakes.

The dual braking system becomes a modulated emergency system if a pressure drop occurs in the rear brake system.

Service brakes are applied by depressing the brake pedal. Braking increases with the amount of pressure applied to the foot pedal. Refer to "Other Features" chapter 4 under "Anti-lock Braking System". When the brake pedal is depressed, the brake lights turn *ON* automatically.

For safe and effective braking, the air system pressure should reach at least 95 psi (655 kPa) in both the primary and secondary circuits.

A warning light and a buzzer will sound when the air pressure in either the primary or secondary circuits drops below 70 psi (483 kPa). If this occurs, stop the coach, determine the cause of the pressure loss before proceeding.

Warning : *Immediately report any brake system problem to the maintenance service personnel.*

Warning : *Do not "fan" or "pump" the brake pedal. This practice does not increase brake system effectiveness but rather reduces system air pressure causing reduced braking effectiveness.*

Caution : *"Riding" the brake by resting one's foot on the brake pedal when not braking can cause abnormally high brake temperature, can damage and cause premature wear of brake components and reduce brake effectiveness.*

ACCELERATOR PEDAL

Controls engine RPM as needed.

Note : *The accelerator pedal will not operate when the front door is open.*

Caution : *Do not let the engine operate above 2,450 RPM.*

STEERING WHEEL ADJUSTMENT UNLOCK AIR VALVE

Push on the valve button with the left foot to unlock the steering wheel for tilt and telescopic adjustment.

Warning : *Do not adjust the steering wheel while the vehicle is moving. Loss of control could result. Park the motorcoach safely and apply parking brakes before adjusting the steering wheel.*

AUTOMATIC TRANSMISSION

The operation and driving of this vehicle with an automatic transmission is similar to that of an automobile equipped with an automatic transmission.

Proper ranges should be selected according to driving speeds to improve vehicle performance and control. The transmission is fully automatic. Speed ratio of power converter changes automatically as vehicle speed increases and direct-drive goes in and out as necessary, modulated by vehicle speed and accelerator position.

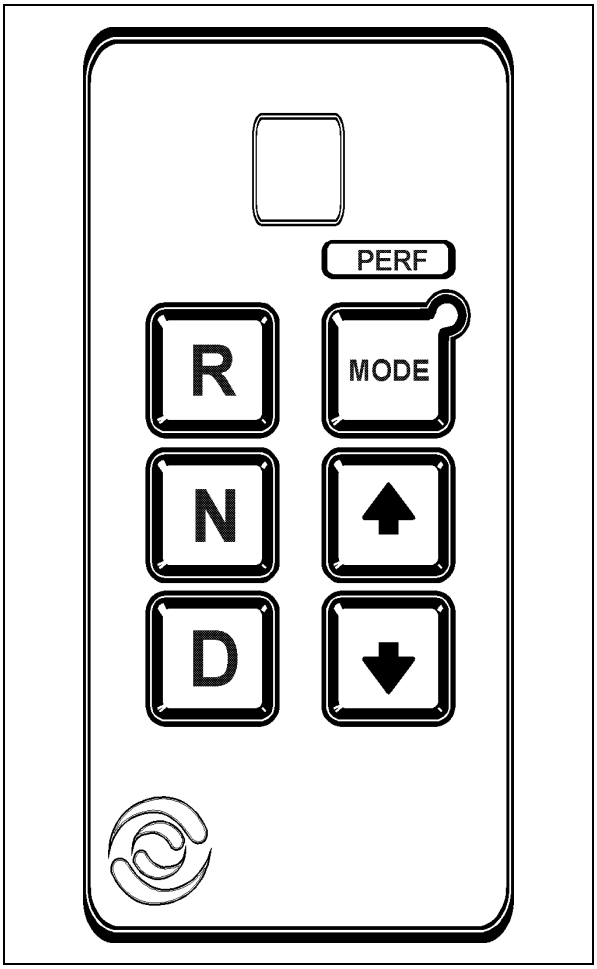
RANGE SELECTION – PUSH BUTTON SHIFTER

The push button shifter is used by the operator to select Neutral (N), Reverse gear (R) or a range of forward gears. When a forward gear range has been selected, the transmission starts in the lowest gear of the range and, as conditions permit, automatically upshifts until the highest gear in the selected range is in use.

The digital display indicates the current gear of transmission operation.

The function of each button is as follows:

- Select REVERSE gear by pressing "R".
- Select NEUTRAL by pressing "N". Note the raised edge around the "N" button so the driver can orient his hand to the push buttons by touch, without looking at the display. It is not necessary to press this button prior to starting the vehicle.
- Select DRIVE range by pressing "D". The highest forward gear will appear on the digital display and the transmission will shift to the starting gear (not indicated on the digital display).



CONTROL PAD

The "▲" and "▼" buttons are used to shift to a higher or lower range selected. One press changes gears by one range. If the button is held down, the selection will scroll up or down until the button is released or until the highest or lowest possible gear is selected. Protection mechanisms should inhibit selecting ranges that are not appropriate or which may damage driveline components.

Functions Of The Mode Button

This button is used to invoke a special function (mode) that has been programmed into the ECU. Both modes are equivalent from the first to the fourth gear as the transmission upshifts at around 2000 rpm.

- the default *"ECONOMY"* mode allows for upshifts in fifth and sixth gear at around 1700 rpm. This is a more efficient operation of the transmission and thereby helps improve fuel economy.

- the *"PERF"* (performance) mode keeps upshifts at 2000 rpm in fifth and sixth gears. This makes for better performance than the economy mode but with a higher fuel consumption. It is recommended this mode be selected while driving up or down grades. The mode status will be indicated on the digital display by a red LED illuminating in the upper right corner of the MODE button when selected.

OIL LEVEL DISPLAY MODE (OPTIONAL)

Select oil level display mode by pressing simultaneously on the "▲" and "▼" keys. A first press will indicate the transmission oil level after a two-minute wait if the following conditions are met:

- the vehicle is parked;
- the engine is in slow idle;
- normal operating temperature is attained;
- transmission is in NEUTRAL;
- the sender unit is present and working.

A code will be displayed one digit at a time:

- O L - O K (oil level is correct);
- L O - 0 1 (one quart low);
- L O - 0 2 (two quarts low);
- H I - 0 1 (one quart high);
- H I - 0 2 (two quart high).

Note : *If one or more conditions are not met, an error code will be displayed:*

- O L - 5 0 (engine RPM too low);
- O L - 5 9 (engine RPM too high);
- O L - 6 5 (transmission not at NEUTRAL);
- O L - 7 0 (sump oil temperature too low);
- O L - 7 9 (sump oil temperature too high);
- O L - 8 9 (output shaft rotation);
- O L - 9 5 (sender unit defective).

To exit, press either D, R, or N button.

Diagnostic Display Mode

Pressing a second time (or a first time if oil level option not present) on the "▲" and "▼" keys will select diagnostic display mode. Refer to "Technical Information" chapter for more information about the WT diagnostic codes. To exit diagnostic display mode, press either D, R, N button, or up and down arrow keys at the same time.

OPERATION

When a button is depressed, the corresponding letter or number is displayed indicating the transmission is ready to operate in the selected range. When the electronic control system detects a serious problem in the transmission, a buzzing tone sounds for 5 seconds and the *"CHECK TRANS"* light on the dashboard illuminates to warn the driver that the transmission is held in gear. If another is depressed, the buzzing sound will continue until the original range is selected.

Note : *As a light bulb and systems check, the "CHECK TRANS" light will illuminate when the ignition switch is turned to O*N*. After about two seconds the light will turn off. If the "CHECK TRANS" light remains on, the self-diagnostic system has detected a problem. If the problem disappears, the light will go out, but a trouble code will remain stored in the ECU.*

Reverse (R)

Use this position to back-up the vehicle. Stop completely before shifting from forward to reverse or from reverse to forward. Touch the reverse (R) button, ''R'' will be displayed and the reverse warning signal will be activated.

Neutral (N)

Use this position to start engine. Select neutral (N) when checking vehicle accessories and for extended periods of engine idle operation; parking brake must then be applied. The push-button shifter will automatically select neutral when the master switch is turned *ON*.

Note : *The automatic transmission does not have a park (P) position. Select neutral (N) and apply parking brake when the vehicle is left unattended. A warning buzzer will sound if the engine is stopped and the parking brake has not been applied when foot pressure is removed from the brake pedal.*

Caution : *Detroit Diesel engines should not be idled for extended periods at "slow" idle. For extended idling, engine should run at "fast" idle.*

Warning : *Always apply parking brake before leaving driver's seat.*

Caution : *Do not allow your vehicle to "coast" in neutral. This practice can result in transmission damage. Also, no engine braking is available in neutral.*

Drive (D)

Use this position for all normal driving conditions. After touching this pad, the vehicle will start in first or second range and will automatically upshift to a higher range as output speed increases. As the vehicle slows down, output speed decreases, the transmission automatically downshifts to the correct range. If a locked brake or a slick surface condition should occur, the ECU (Electronic Control Unit) will command converter operation (disconnect lockup) and inhibit downshifts for a period of time or until normal wheel speed has been restored.

Note : *The transmission should normally be allowed to shift itself, but manual shifting can be used as described below.*

Fourth (4) And Third (3) Ranges

Select these ranges when driving on moderate grades or when load and traffic conditions require the use of limited speed.

Second (2) Range

Select this range when operating in heavy and congested traffic. The transmission will start in first and automatically upshift to second. When slowing, the transmission will automatically downshift to first range. Low ranges provide progressively greater engine and retarder braking power (the lower the range, the greater the engine and retarder braking effect).

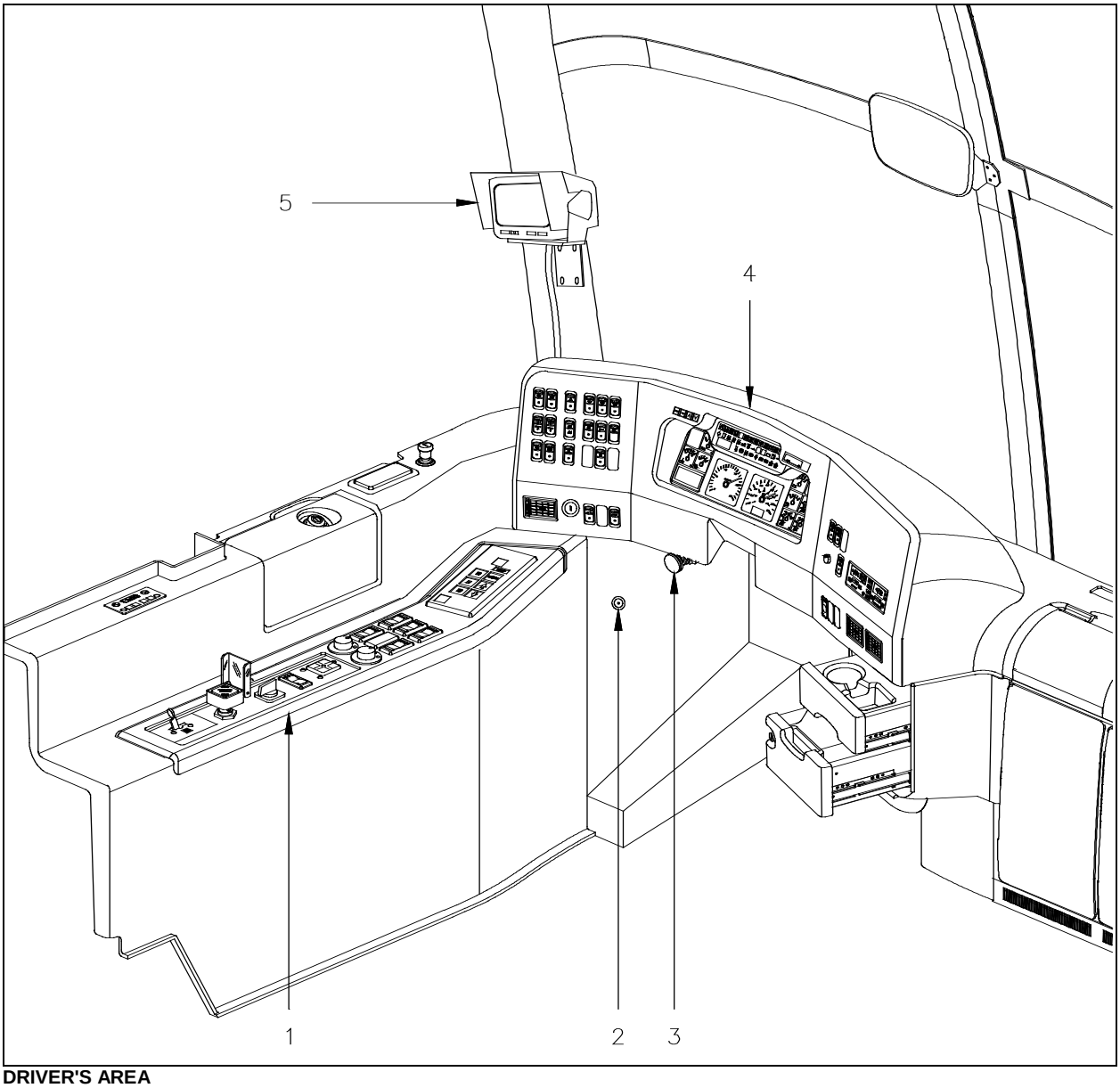
First (1) Range

Select this range when pulling through mud and snow or when speed control is needed for driving up steep grades. This range also provides maximum engine braking power or retarder braking effect. In the lower ranges (1, 2, 3 and 4), transmission will not upshift above the highest gear selected unless recommended engine governed speed for that gear is exceeded.

Warning : *Service brakes should not be used to control the speed of vehicle on long, steep descents. Instead, lower transmission ranges should be used (in conjunction with output retarder. Refer to "JACOBS Engine Brake" and "Transmission Retarder" headings in "Technical Information" chapter 4 for details regarding both systems. This procedure keeps service brakes cool and ready for emergency stopping.*

Caution : *When descending in lower ranges, care must be taken that engine speed does not exceed 2,450 rpm.*

CHAPTER 3 : CONTROLS AND INSTRUMENTS



DRIVER'S AREA

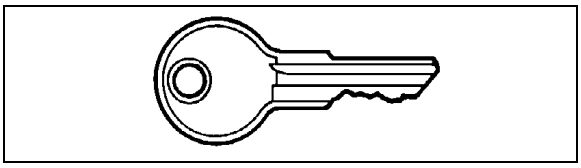
1. **L.H. Control Panel**
2. **Diagnostic Data Reader (DDR) Receptacle**
3. **Steering Wheel Adjustment Unlock Air Valve**
4. **Dashboard**
5. **Rear View TV Monitor**

GENERAL INFORMATION

KEYS

Three different key models are provided with the vehicle. They are used as described below.

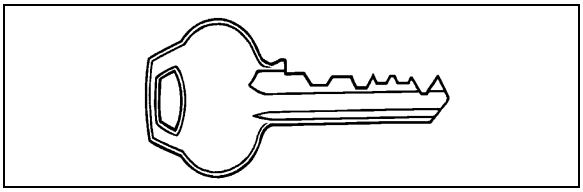
Ignition Switch



23056

Use this key to activate electrical circuit and/or to start engine.

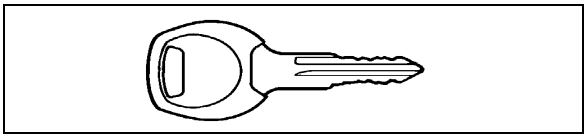
Front Entrance Door Lock



23057

Use this key to lock or unlock the entrance door from outside. It is also possible to lock or unlock the entrance door using the *Exterior compartment door lock*, the *Entrance door unlocking switch* or using the *Keyless entrance system*.

Exterior Compartments



23058

Use this key to lock or unlock any exterior compartment door, including the fuel tank filling access door and electrical or service compartment doors. It is also possible to lock or unlock the baggage compartment and front service compartment doors from the inside by means of a switch located in the driver's compartment.

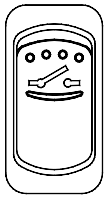
Note : *For your protection against theft:*

A) Record the key numbers and keep this information in a safe place. Do not keep these records inside vehicle.

B) It is also advisable to deposit a duplicate of each key in a safe place, so they can be obtained without difficulty in case of an emergency or loss.

BATTERY MASTER SWITCH

A master switch for electrical system is located on the L.H. control panel.



Caution : *When the vehicle is parked overnight or for an extended period of time, the battery master switch should be set to the* OFF *position.*

Note : *When the battery master switch is set to the* OFF *position, all electrical supply from the batteries is cut off, with the exception of battery equalizer check module, ECM ignition and power supply, ECU power (World Transmission), coolant heater electronic timer, coolant heater and water re-circulating pump, pro-driver, power-verter, keyless entry system and fire alarm.*

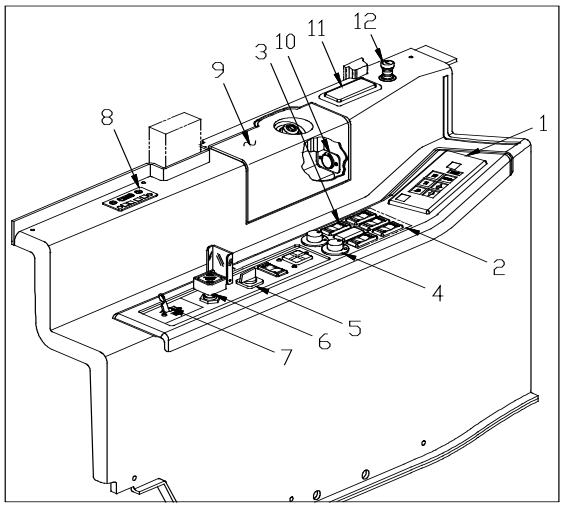
FUEL TANK FILLING

Both fuel filler doors can be unlocked with the key provided. The access door on L.H. side of the vehicle must be locked again when closing to remove key; as for the door beside the condenser, the key must be returned to its initial position before closing the door.

Note : *Provided the vehicle is parked on level ground, an automatic nozzle will automatically shut off when tank will be approximately 95% full.*

Caution : *Do not fill to more than 95% of the tank capacity. Do not "top off" the tank, doing so may result in fuel spillage when the fuel expands.*

L.H. CONTROL PANEL



1. **Transmission Display**
2. **Cruise Control Switches**
3. **Driver's Power Window Switch**
4. **Mirror Controls**
5. **Level Low Control Valve**
6. **Parking Brakes Control Valve**
7. **Tag Axle Control Valve**
8. **Pre-Heater Timer**
9. **Utility Compartment**
10. **12 Volt Power Outlet**
11. **Ashtray**
12. **Cigarette Lighter**

TRANSMISSION DISPLAY

The control pad for the Allison automatic transmission is located as shown. Refer to "Automatic Transmission" in this chapter for operating instructions and more information.

CRUISE CONTROL

The cruise control is part of the DDEC IV control that will maintain a set speed when the vehicle is traveling above 20 mph (32 km/h).

Warning : *Do not use the cruise control when driving speed must be constantly adjusted, such as in heavy traffic or on winding, icy, snow-covered or slippery roads, or on gravel roads.*

Warning : *Do not put the transmission in the neutral (N) position while driving with cruise control. This will cause the engine to over-speed and may result in a loss of driving control.*

Setting Coach Speed

Depress the CRUISE rocker switch and accelerate the motorcoach to the desired cruising speed. Depress and release the **SET** switch then remove foot from the accelerator pedal. This will set the vehicle cruise speed and store it in memory.

Note : *The CRUISE CONTROL and RESUME switch do not operate at speeds below 20 mph (32 km/h).*

Increasing Set Speed

The motorcoach cruise speed setting can be increased by one of the following methods:

a) With the accelerator pedal and the SET switch, accelerate the motorcoach using the accelerator pedal until the desired cruising speed is reached. Depress and release the SET switch.

b) Depress and hold the RESUME switch until the desired cruising speed is reached. When the RESUME switch is released, the new cruising speed will be stored in the cruise control memory. The RESUME switch does not operate at speeds below 20 mph (32 km/h).

Note : *When driving with cruise control, the vehicle can still be accelerated by depressing the accelerator pedal in the usual manner. Once the accelerator pedal is released, the motorcoach will return to the previously set cruising speed.*

Decreasing Set Speed

The motorcoach cruise speed setting can be decreased by one of the following methods:

a) Depress and hold the SET switch until the desired cruising speed is reached. When the SET switch is released, the new cruising speed will be stored in the cruise control memory.

b) With the DECEL switch, the cruise control can be disengaged without losing the preset cruise speed by either of the following methods:

- Slightly apply the service brake, or;
- Depress and release the DECEL switch.

After disengaging the cruise control, you can return to the preset cruising speed by pressing and releasing the RESUME switch providing that the motorcoach's speed is above 20 mph (32 km/h).

Note : *To avoid sudden vehicle hesitation, depress the accelerator pedal lightly before disengaging the cruise control.*

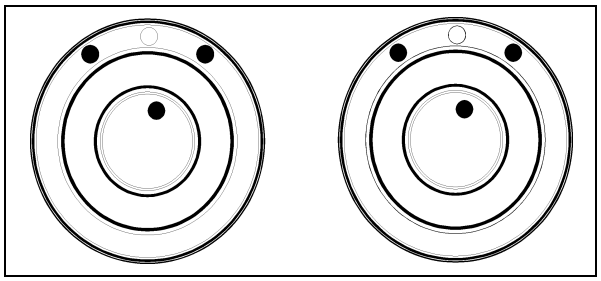
Note : *When the CRUISE rocker switch is turned off, the cruise control is completely shut off and the cruise speed setting is cleared from the cruise control memory.*

Warning : *It is important to know that toggling the SET or the RESUME switch will result in a decrease or increase in speed (respectively) of 0.6 mph (1.0 km/h) for every touch.*

DRIVER'S POWER WINDOW SWITCH

Use the rocker switch to open or close the driver's power window as needed.

MIRROR CONTROLS (OPTIONAL)

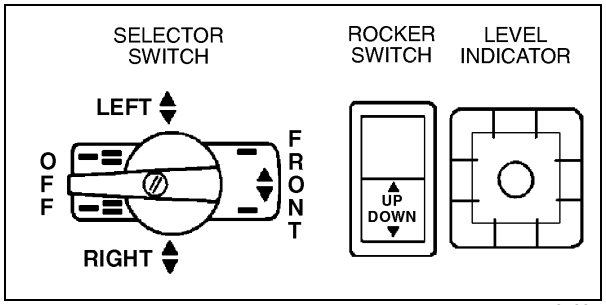


MIRROR CONTROLS

Turn left pointer knob counterclockwise for outside mirror head adjustments and to the right for convex mirror adjustments, then use the joystick control to adjust the selected mirror's viewing angle. Adjust the right outside mirror similarly but by using the right side control.

Note : *If the mirror assemblies on your vehicle do not include convex mirrors, only one (1) Mirror Control will be installed for both mirrors. To operate, turn pointer knob to the left for L.H. mirror adjustments and to the right for R.H. mirror adjustments, then use the joystick control to adjust the selected mirror's viewing angle.*

LEVEL LOW SYSTEM



18182

During driving, the conventional air leveling system of the vehicle controls the height at three points: the front, the left rear and the right rear. Your vehicle is equipped with a suspension system that consists of air springs (pressurized air bellows) located near each wheel. The amount of air in each air spring (and thus the vehicle height) is controlled by automatic leveling valves that operate between the chassis and the axles of the vehicle.

The three leveling valves are located as follows: one at the front which controls the amount of air in both front air springs, one at the left rear which controls the left rear corner of the vehicle and one at the right rear which controls the right rear corner of the vehicle. During normal driving, these valves work automatically to maintain the chassis at the proper level above the axles, indifferent of road conditions or vehicle weight.

When parked, and **ONLY** when parked, the level of the vehicle can be manually adjusted within the range of travel of the air springs. Thus, if the vehicle is parked on uneven ground, the manual override leveling system can be used to level the chassis of the vehicle. With the ignition *ON* (engine running or not), turn the selector switch located on L.H. side control panel to the area of the vehicle requiring leveling, then press the rocker switch accordingly (up or down) to inflate or deflate the selected set of air springs. The front position raises or lowers the front only and does not tilt the vehicle to its sides. Each rear position raises or lowers its respective side, therefore, the rear positions can be used to tilt the vehicle to one side or the other, or they can be used to raise or lower the rear of the vehicle. When leveling vehicle, it is often necessary to run the engine in order to get an adequate air supply.

Note : *It is always better to first level the rear of the vehicle (right to left) before raising or lowering the front. After adjusting the rear, watch the level as you adjust the front. If the level shows that the vehicle is starting to tilt to either side, then stop adjusting the front as one of the air springs has come to the end of its travel range.*

After manual leveling, turn *OFF* the engine. The vehicle will stay in the leveled position (the air is *"locked"* in the air springs) as long as there are no air leaks. The vehicle will hold this position for several days. When engine is restarted and air pressure is adequate, the vehicle will automatically level itself for driving conditions.

Warning *: Do not drive the vehicle with the level low selector switch in any position other than* OFF*, as this may render the vehicle unsafe and uncontrollable. If this is the case, the Level Low warning telltale light in dashboard will flash, reminding you that the selector is not in the* OFF *position.*

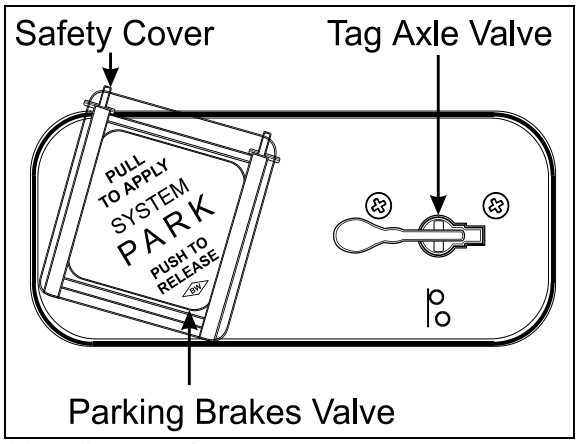
Note : *If, for any reason, you wish to start the engine without moving vehicle (to warm up engine for instance) while keeping the vehicle in the manually leveled position, place selector switch in any position except* OFF*. When ignition switch is turned to the* OFF *position, reset the selector switch to the* OFF *position.*

PARKING BRAKES CONTROL VALVE

Spring-loaded parking brakes are applied by pulling up the control valve knob and protector assembly. Lift the safety cover and push down to release brakes. Refer to "Emergency and Parking Brakes" in "Emergency Features And Safety Equipment" chapter 6.

TAG AXLE CONTROL VALVE

Unload (or raise) the tag axle by pushing the lever forward. Pulling the lever back will load (or lower) the tag axle. Refer to "Other Features" in chapter 4 for additional information.



CONTROL VALVES

COOLANT HEATER TIMER

Use to program the start time of the optional engine coolant heater. Refer to "Other Features" chapter 4 for additional information.

UTILITY COMPARTMENT

The lockable free space utility compartment also includes a 12 volt appliance socket.

CIGARETTE LIGHTER

Push lighter in to activate. When ready to use, it will spring out automatically. Replace lighter in non-activated position. The cigarette lighter socket can be used to power 12-volt appliances (eg. flashlight, vacuum cleaner). The maximum power consumption allowed for appliances plugged in this socket is 130 watts. Make sure the appliances are equipped with suitable plugs that will not damage the socket.

Note : *The cigarette lighter can still be used after the ignition key has been removed.*

ASHTRAY

To open the ashtray, push slightly on the cover's side. The ashtray can be removed for cleaning by pulling it out.

Warning *: To prevent a fire, never put paper or plastic wrappers in the ashtray. Empty ashtray often.*

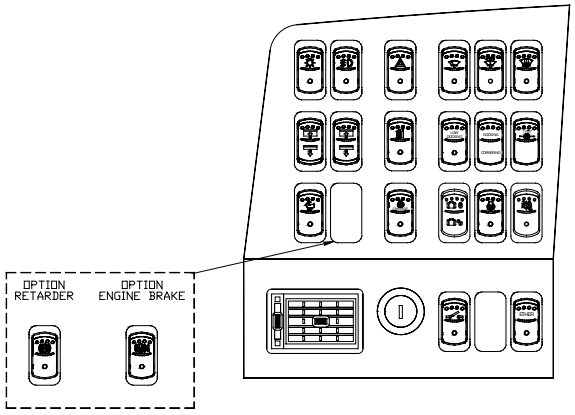
DIAGNOSTIC DATA READER (DDR) RECEPTACLE

To facilitate troubleshooting of the DDEC, WT and ABS systems and to obtain data logged in the ECM (Electronic Control Module) memory, a Diagnostic Data Reader (DDR) (not supplied) can be connected through the DDR receptacle. A user's manual is supplied with the optional DDR.

The DDR receptacle is located inside the footwell, on the upper left side wall.

DASHBOARD

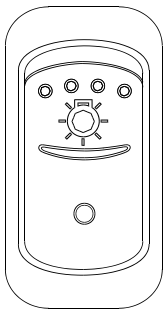
L.H. DASHBOARD PANEL



Control Switches

High quality laser-engraved switches are used to control many of the features of the coach. Many switches have an embedded witness LED to inform the driver at a glance which features are active. Some switches' LED will turn *OFF* after a short while when the engine is running. This is normal and is designed to reduce glare when driving. The functions still operate even if the LED is *OFF*. If the switches are still *ON* when the engine is turned *OFF*, the LEDs will illuminate to warn the driver to turn them *OFF*.

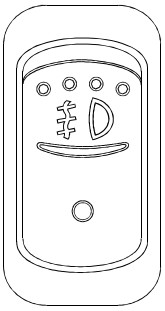
Headlights



Push down rocker switch to the first position to activate clearance, tail and marker lights. Push down fully to turn *ON* both the clearance and marker lights and the headlights. The controls and instrument lights will illuminate.

Note : *Daytime running lights will be automatically cancelled when the exterior lighting switch is fully depressed.*

Fog Lights

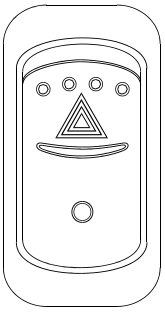


Optional halogen fog lights provide better visibility in fog and precipitation. They improve close range visibility and provide added safety. Remove protective covers from fog lights before use.

Warning : *Turn* OFF *engine and apply parking brake before removing fog light covers.*

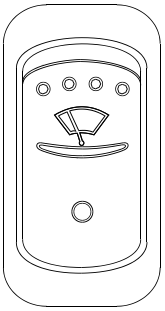
Note : *Some states and provinces restrict the use of fog lights. Verify local state or provincial regulations before using.*

Hazard Warning Flashers



Depress the rocker switch to make all turn signal lights flash at once. The dashboard telltale lights will flash when the hazard warning flashers are *ON*.

Upper Windshield Wipers

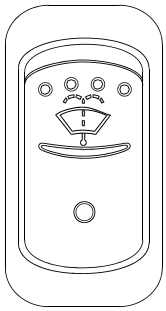


Depress the wiper rocker switch to the first position for intermittent wiping. For continuous wiping, depress switch fully.

Note : *The lower windshield wipers are operated via the multi-function lever. Refer to "Steering Column Controls" in this chapter.*

Caution : *To avoid damaging the wiper blades or scratching the windshield, do not operate the wipers when the windshield is dry. Loosen frozen blades on windshield before operating.*

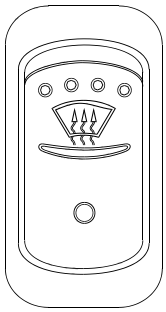
Upper Windshield Washers



Hold down rocker switch to spray windshield washer fluid.

Caution *: Do not operate when windshield washer reservoir is empty. Doing so may damage the washer pump or motor.*

Upper Windshield Defogger

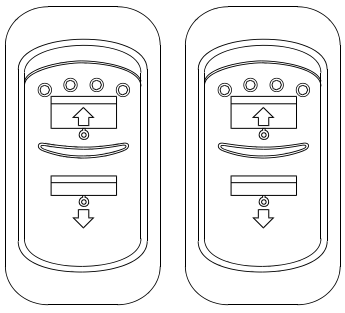


Depress this switch to the first position to operate the defogger blower at low speed, press down fully to operate the blower at high speed.

The motorcoach may be equipped with an optional electric heating element.

If your motorcoach is equipped as such, depress the rocker switch momentarily to turn *ON* the heating element and clear fog, frost or thin ice from both sides of upper windshield. The heater elements automatically turn *OFF* after 10 minutes.

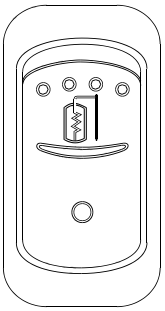
Left And Right Sunshades



Press and hold to lower or raise left or right sun shade.

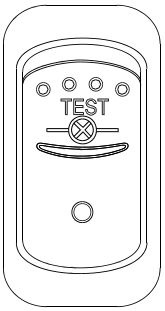
Caution *: Do not attempt to raise or lower these shades manually. Damage to electric motor or roller mechanism could result.*

Outside Mirror Heat (Optional)



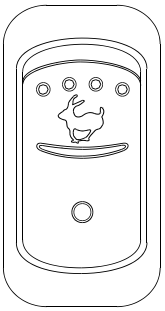
Turn *ON* to clear fog, frost or thin ice from outside mirrors.

Telltale Light Test



Press this switch while ignition is in the *ON* position to illuminate the telltale light cluster. Perform this test to verify indicator light functionality. Telltale lights will extinguish automatically after about ten seconds.

Fast Idle

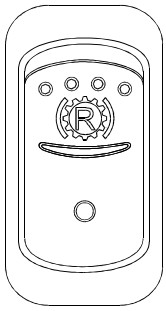


For extended idling periods, run the engine at fast idle. Press down the rocker switch to engage fast idle. This increases the engine speed to approximately 1,000 rpm.

Note : *If the parking brake is released and/or the transmission is engaged with the engine running at fast idle, the engine will return to low idle and remain there as long as the parking brake is not applied and/or transmission is not placed in neutral (N).*

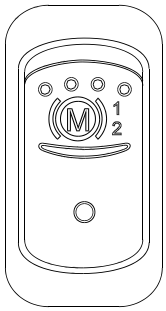
Caution : *Reduce the engine to low idle before shutting the engine* OFF.

Transmission Retarder (Optional)



Press down rocker switch to actuate transmission retarder. Refer to "Steering Column Controls" in this chapter.

JACOBS Engine Retarder (Optional)

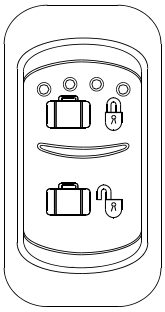


Press down rocker switch to the first position to actuate system to 2/3 engine brake and press to the second position for a full application of engine brake. Refer to "Other Features" chapter 4.

Warning : *Engine brake must be used on dry road only. Never use the engine brake on slippery roads; loss of control could result.*

Note : *Engine brake is activated when accelerator pedal is released and the engine speed is higher than 750 rev/minutes. Stop lights turn* ON *when the engine brake is used.*

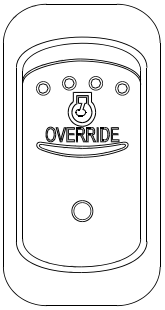
Baggage Compartment Central Locking System



This optional system enables locking all baggage compartment doors by pressing down on the upper portion of the switch. To unlock all compartments, press down on the lower portion of the switch.

Note : *Service panels are not linked to the central locking system.*

Engine Stop Override



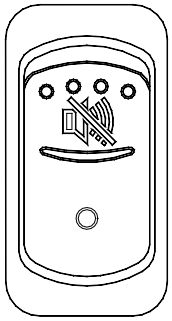
Press down this switch and release to override emergency engine shut down protection. Engine emergency shut down will be turned *OFF* for 30 seconds. This procedure can be repeated if done before the 30 seconds are up.

Caution : *Use sparingly and in order to move coach to a safe parking place only. Excessive use can cause severe engine damage.*

DDEC Diagnostic Request

With the engine at idle or *OFF* and with the ignition switch in the *ON* position, press and release the Engine Stop Override rocker switch. Active codes will be flashed on the " Stop Engine " and inactive codes on the " Check Engine " telltale lights alternately. The first digit of the diagnostic code is determined by the number of flashes before a short pause. The second number of the diagnostic code is then flashed in the same manner. As an example, code " 25 " (everything O.K.) consists of two flashes, followed by a short pause, then five flashes. Refer to the "Technical Information" chapter 8 under "DDEC IV Diagnostic Codes".

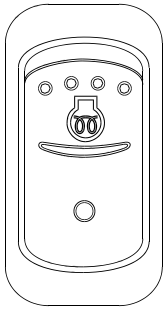
Back-Up Alarm Cancel Switch



Press down this switch to cancel the Back-Up Alarm

Note : *After use, return to normal operation.*

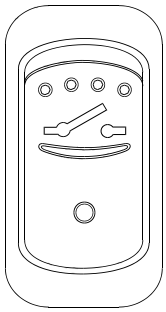
Coolant Heater (Optional)



Push down rocker switch to turn the coolant heating system *ON*, supplementing the central heating system when required. The coolant heater will turn *ON* or *OFF* automatically depending on coolant temperature.

Warning : *The coolant heating system uses the same fuel as the engine. Do not operate in a closed building or while refueling. Operate only in a well ventilated area.*

Battery Master Switch

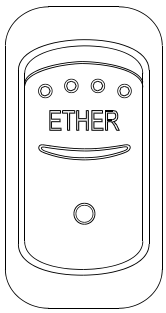


Both the 12-volt and 24-volt systems are activated by the master switch located on the L.H. lower control panel. A telltale light on the L.H. dashboard will illuminate when the ignition key is in the *OFF* position.

Caution : *When parking the coach overnight, or for an extended period of time, place the battery master switch to the* OFF *position.*

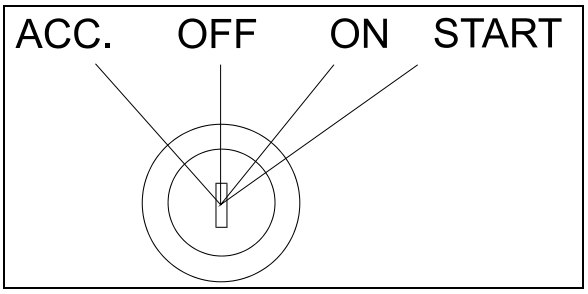
Note : *When the battery master switch is placed in the* OFF *position, all electrical equipment connected to the batteries is cut off, with the exception of the battery equalizers and monitor, World Transmission (WT), Electronic Control Unit (ECU) memory, Vehicle Interface Module (VIM), coolant heating system, keyless entry system and refrigerator power supply.*

Ether Start Control (Optional)



Activates the engine cold starting aid. Refer to "Starting and Stopping Procedures" chapter 5.

Ignition Switch



The ignition switch has four positions:

ACCESSORIES

To operate the accessories only, turn the ignition key counterclockwise. The key cannot be removed in this position.

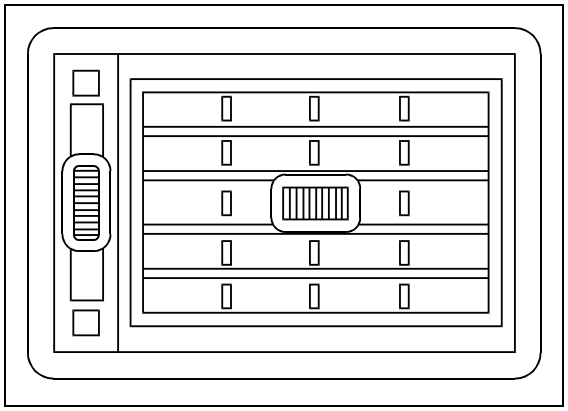
OFF
In *OFF* position, ignition cannot take place. The key can be removed in this position.

ON
To place ignition switch to *ON*, turn the key clockwise to the first position. The key cannot be removed in this position.

START
Turn the key clockwise to the second position and release as soon as the engine starts. The key will return to the *ON* position. If the engine did not start, return the ignition key to the *OFF* position before trying to restart the engine.

Caution : *To avoid overheating the starter, do not engage the starter for more than 15 seconds at a time. Allow the starter to cool before trying to restart the engine.*

Air Register



AIR REGISTER

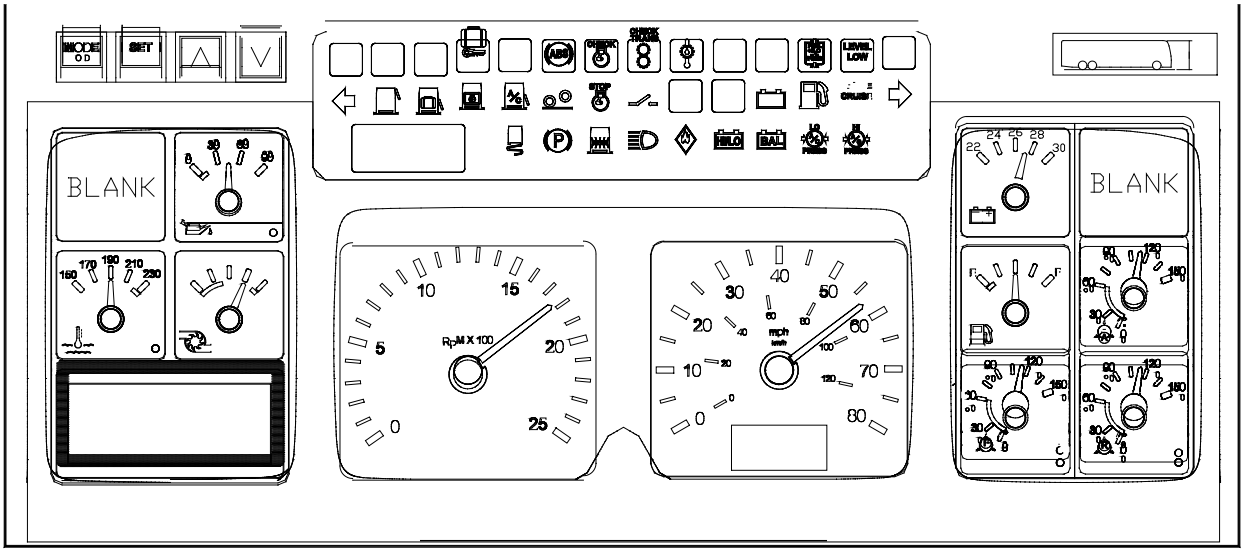
Three adjustable driver air registers feed air to the driver's compartment. Use HVAC control panel to set air temperature.

CENTER DASHBOARD PANEL

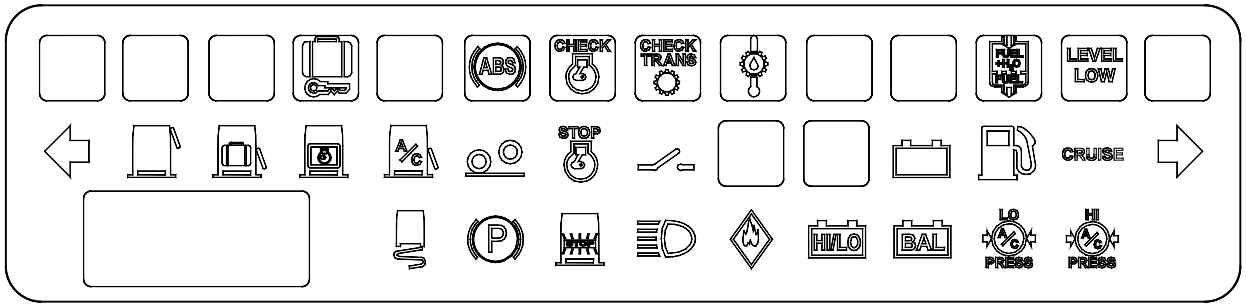
The Center Dashboard Panel comprises the Message Center Display, Telltale Panel, the Gauges and the Vehicle Clearance Display.

Message Center Display (MCD)

This standard feature gathers, stores and displays important information about the vehicle's operation on a display screen on the lower middle portion of the dashboard. Refer to "Message Center Display" heading in "Other Features" chapter 4 for a description of how to set-up and operate the display.



CENTER DASHBOARD PANEL



TELLTALE PANEL

Telltale Panel

ABS Brake System

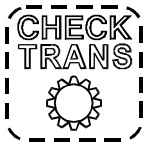
Illuminates when the ABS is not available or when the ABS is malfunctioning. Since the ABS system does not operate under 4 mph (7 km/h), the indicator will remain illuminated until the coach reaches that speed. Refer to "Other Features" chapter 4.

Check Engine Indicator

Illuminates when the ignition switch is *ON* as a light bulb check. The light should turn *OFF* after five seconds. If the indicator remains *ON* after five seconds or comes *ON* sometime after starting the engine, the Detroit Diesel Electronic Control (DDEC) system has detected a minor problem. The indicator will remain *ON* until the malfunction has been corrected.

A diagnostic code will be stored in the memory and the indicator can be used to identify the problem. Refer to the "Technical Information" chapter under "DDEC IV Diagnostic Codes", chapter 8.

Check Transmission Indicator



Illuminates briefly when the ignition is switched *ON* as a light test. The indicator light should go out after two seconds.

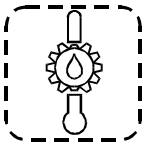
When the "CHECK TRANS" indicator is illuminated and the shift selector emits short beeps for 8 seconds, the ECU is restricting transmission shifting because special or abnormal conditions are detected. The SELECT digit on the display will be blank.

If this happens, drive the coach to the next available service station to receive assistance. The ECU will not respond to shift selector requests since operating limitations are being placed on the transmission (i.e. upshifts and downshifts may be restricted). Direction changes and shifts to and from neutral (N) will not occur.

Any time the CHECK TRANS telltale light illuminates, the ECU will register a diagnostic code. It may be identified on the display or using a diagnostic tool. Refer to "Technical Information" chapter under "World Transmission (WT) Diagnostic Codes", chapter 8.

Note : *The CHECK TRANS indicator may also illuminate when starting the engine in extreme cold weather. Refer to "Starting and Stopping Procedures" under "World Transmission (WT) Warm-up", chapter 5.*

Retarder Oil High Temperature Indicator



Illuminates when the transmission oil temperature is too high. Disengage the retarder to allow the oil temperature to cool down.

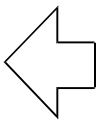
Fuel/Water Separator Indicator

Illuminates when accumulated water in the fuel filter/water separator needs to be drained. Refer to "Care and Maintenance" chapter 7.

Level Low System Indicator

Illuminates when Level Low System is operating.

Left Turn Signal Indicator



Flashes when the left turn signals are turned *ON*. Right and left turn signals are selected by operating the multi-function lever. Refer to "Steering Column Controls" in this chapter.

Window Open Indicator

Illuminates when a window is open (hinged window only).

Baggage Compartment Door Ajar

Illuminates when one or more baggage compartment doors are open.

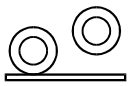
Engine Door Ajar Indicator

Illuminates when the engine compartment door or the R.H. engine compartment door is open.

A/C - Heating Compartment Door Ajar Indicator

Illuminates when the A/C - heating compartment door is open.

Retracted Tag Axle Indicator



Illuminates when the tag axle is retracted or unloaded. When the tag axle is retracted, an alarm will sound to warn the driver. The control valve is located on the L.H. lateral console.

STOP Engine Indicator

Illuminates when the ignition switch is *ON* as a light bulb and DDEC system check. The indicator should go *OFF* after five seconds.

If the indicator remains illuminated after five seconds or comes *ON* sometime after starting the engine, the DDEC system has detected a major problem.

When a problem is detected, the engine power will automatically begin to decrease gradually, followed by full shutdown after 30 seconds.

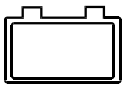
The engine emergency shutdown may be bypassed by using the " Engine Stop Override " switch on the L.H. lower control panel.

Note : *Once the engine is stopped, it cannot be restarted until the problem has been corrected. A diagnostic code will be stored in memory. The STOP engine indicator can be used to identify the problem. Refer to "Technical Information" chapter 8 under "DDEC IV Diagnostic Codes".*

Electrical Systems Indicator

Illuminates when the ignition switch is *OFF* and the 12-volt and 24-volt electrical systems are activated by pressing down the battery master switch.

Primary Charge System Indicator



Illuminates when the alternator is not charging the batteries.

Low Fuel Level Indicator

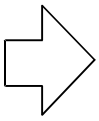
Illuminates when approximately 12 US gallons (45 liters) of fuel remain in the tank. After the light comes *ON*, the remaining fuel will provide less than 60 miles (100 km) of travel. Do not exceed this distance.

Note : *Refuel as soon as possible.*

Cruise Control Indicator

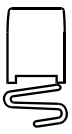
Illuminates when cruise control is activated.

Right Turn Signal Indicator



Flashes when the right turn signals are activated. Right and left turn signals are selected by operating the multi-function lever. Refer to "Steering Column Controls" heading in this chapter.

Freezing Indicator



Flashes for about 10 seconds when the outside temperature drops from 2°C to 1°C (35°F to 34°F).

Emergency/Parking Brake Indicator

Illuminates when the emergency/parking brake is applied. The control valve is located on the L.H. control panel. A buzzer will sound if ignition is turned to *OFF* and the parking brake is not engaged.

Stoplight Indicator

Illuminates when rear stop lights illuminate. This occurs when either cruise control DECEL switch, service brakes, parking brakes, engine retarder or transmission retarder is applied.

High Beam Indicator

Illuminates when high beams are selected. High and low beams are selected by operating the multi-function lever. Refer to "Steering Column Controls" heading in this chapter.

Fire Indicator (Engine Compartment)

Illuminates if a fire is detected in the engine compartment.

Note : *For extinguisher's location, refer to "Emergency Features And Safety Equipment" chapter 6.*

High/Low Battery Voltage Indicators

Illuminates when the battery voltage exceeds 30 volts or drops below 24 volts.

Note : *The high/low battery voltage indicator will illuminate for a few seconds after the engine is started because of the voltage drop when the starter is engaged.*

Battery Equalizer Indicator

Illuminates when the battery voltage is not equalized.

Note : *If the battery equalizer indicator illuminates, make sure that the battery equalizer circuit breakers are reset before requesting breakdown assistance. Wait 15 minutes after setting breakers to allow batteries to equalize. The breakers are located in the main power compartment.*

Low Air Conditioning (A/C) Pressure Indicator

Illuminates when the A/C system pressure is too low. If the A/C pressure is too low, the compressor clutch is disengaged and the fan is turned *OFF*.

Note : *In cold weather, the low A/C pressure indicator may light up. This is not an abnormal condition.*

High A/C Pressure Indicator

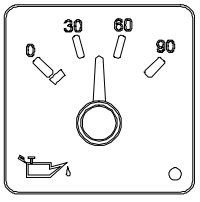
Illuminates when the A/C system pressure is too high. If the A/C pressure is too high, the compressor clutch is disengaged, but the fan remains activated.

Note : *In hot weather, the high A/C pressure indicator may light up. This is not an abnormal condition.*

Gauges

Note : *Do not refer to dashboard instruments during adjustment procedures. Use calibrated gauges.*

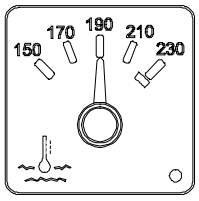
Engine Oil Pressure Gauge



Indicates engine oil pressure. The normal reading should be between 50 and 70 psi (345 - 480 kPa) at 55 mph (90 km/h). A low oil pressure indicator LED (bottom right corner) illuminates when the oil pressure drops below 50 psi (345 kPa).

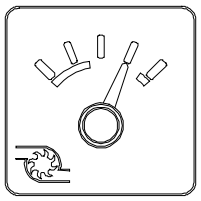
Caution : *Loss of oil pressure may cause severe engine damage. If low-oil pressure LED illuminates, park the vehicle safely and stop the engine immediately. Request service assistance.*

Engine Coolant Temperature Gauge



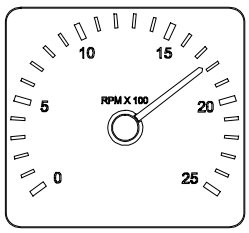
Indicates the operating temperature of the engine coolant. The normal reading should be between 190°F and 215°F (88°C to 102°C).

Turbo Boost Pressure Gauge



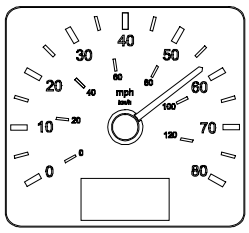
Indicates turbo boost pressure in psi. Reading depends on engine rpm and load conditions.

Tachometer



Indicates the operating speed of the engine in hundreds of revolutions per minute (rpm x 100). The tachometer serves as a guide for gear shifting and helps to prevent engine over-speeding when driving downhill with the JACOBS engine brake operating. The maximum allowable engine speed is 2,450 rpm.

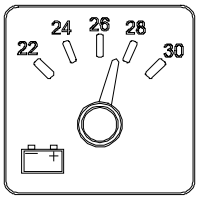
Speedometer



Indicates the motorcoach speed in miles per hour (mph) and kilometers per hour (km/h).

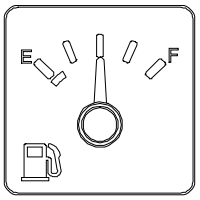
The digital odometer registers the distance traveled in miles or in kilometers (units are driver selectable).

Voltmeter (24-Volt System)



Indicates the condition of the 24-volt electrical system. With the engine running, the normal reading should be between 26.5 and 28.0 volts.

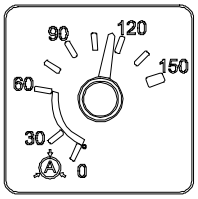
Fuel Gauge



Indicates the amount of fuel remaining in the fuel tank.

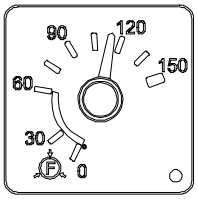
Caution : *Operating the motorcoach when the reading is below 1/8 full is not recommended.*

Air Pressure Gauge (Accessories)



Indicates the accessories air system pressure. The normal operating pressure is from 95 to 125 psi (655 to 860 kPa).

Air Pressure Gauge (Primary System)

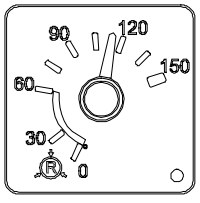


Indicates the primary air system pressure. The normal operating pressure is from 95 to 125 psi (655 to 860 kPa).

A low air pressure indicator LED (bottom right corner) illuminates when the primary air system pressure drops below 66 psi (455 kPa).

Warning : *Do not drive the coach when air pressure is low.*

Air Pressure Gauge (Secondary System)

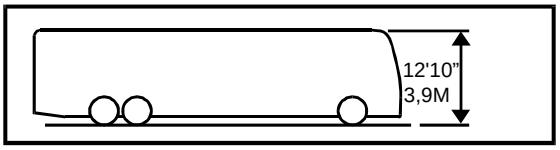


Indicates the secondary air system pressure. The normal operating pressure is from 95 to 125 psi (655 to 860 kPa).

A low air pressure indicator LED (bottom right corner) illuminates when the secondary air system pressure drops below 66 psi (455 kPa).

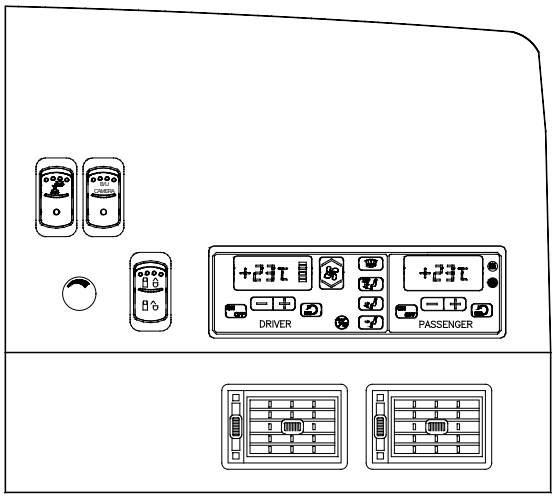
Warning : *Do not drive the coach when air pressure is low.*

Vehicle Clearance Information



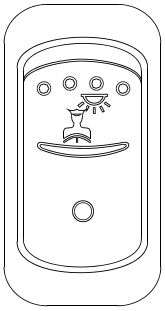
Normal vehicle clearance is 12'-10" (3,9 m).

R.H. DASHBOARD PANEL



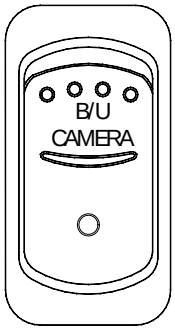
Control Switches

Driver's Area Lighting



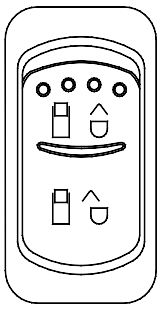
Press down the rocker switch to illuminate the ceiling lights in the driver's area as needed.

Back-Up Camera Switch



Press down this switch to turn *ON* the Back-Up Camera's monitor when the transmission of the motorcoach is not in the reverse gear.

Door Entrance Switch



Use this rocker switch located on the dashboard's R.H. side panel for locking or unlocking the entrance door from the inside.

Warning : *The mechanism automatically completes door closing when the door is almost shut. Be careful to keep fingers or hands away from door edges when closing.*

Brightness Control

Adjusts the brightness of the dashboard instruments and switches.

HVAC Control Unit

The motorcoach is pressurized by the central A/C - heating system. Air flow and controls divide the motorcoach into two areas:

- driver area with defroster;
- cabin area.

Pressurization of the motorcoach helps prevent dust and moisture from entering.

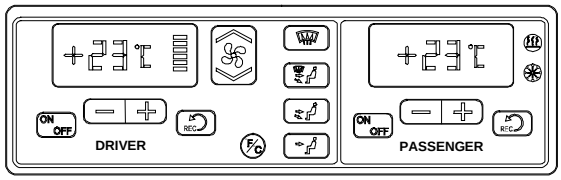
Fresh air is fed in each area and has a separate return air and discharge air duct.

Warning : *Do not let temperature in the driver's area rise above 72°F (22°C). Warm temperatures may cause drowsiness and affect alertness while driving. Keep temperature between 68°F to 72°F (20°C to 22°C).*

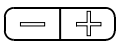
Note : *To operate the air conditioning system when the motorcoach is stationary, run engine at fast idle. When the A/C system is running, keep windows and door closed.*

To prevent battery run-down, the A/C and heating systems will not operate if the charging system is not working properly.

When the A/C system is running, park the motorcoach at least 4 feet (1,5 m) from other vehicles or buildings to allow sufficient air flow through the condenser core.



Separate driver and cabin heating, ventilation and air conditioning controls are located on this panel. To operate, the motorcoach's engine must be running.

The driver's or the cabin's units may be turned *ON* by pressing  or  or  buttons.

All parameters set before turn *OFF* will be kept in memory for the next power *ON*.

The HVAC module performs a self diagnostic every time it is turned *ON*. Codes are shown on displays or flashed on control buttons. Refer to "Maintenance Manual" for more information on the diagnostic codes.

Heating Mode Indicator

Illuminates when system is heating.

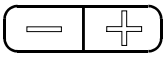
Cooling Mode Indicator

Illuminates when system is cooling.

Fan Speed

The driver's fan has six speeds. Increase speed by pressing on the upper portion of the button, decrease by pressing on the lower portion.

Temperature Set Button



The driver's side and the cabin's side have independent temperature controls. To increase the temperature, press on the " + " sign, to decrease the temperature, press on the " - " sign. Temperature range is between 55°F and 85°F (12°C to 28°C).

Re-circulate Button

Permits air re-circulation in the driver's or cabin's side of the motorcoach. A LED lights up when in operation.

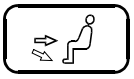
Windshield Defogger

Air is sent towards windshield when activated.

All Vents Open

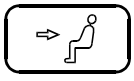
Air is sent to defogger vents as well as panel and footwell registers.

Panel And Footwell



Air is sent to panel and footwell registers only.

Panel

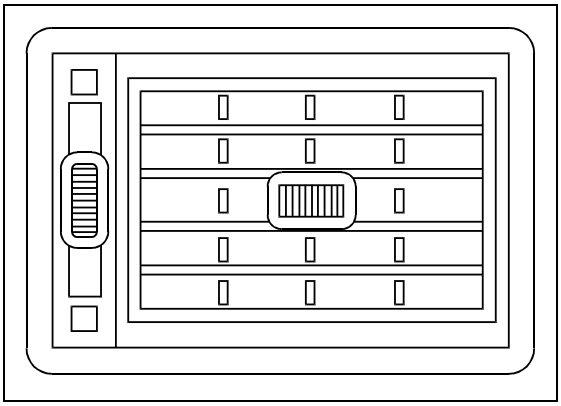


Air is sent to panel registers only.

Temperature Degree Selector

Toggles between Fahrenheit and Celsius units.

Air Registers



AIR REGISTER

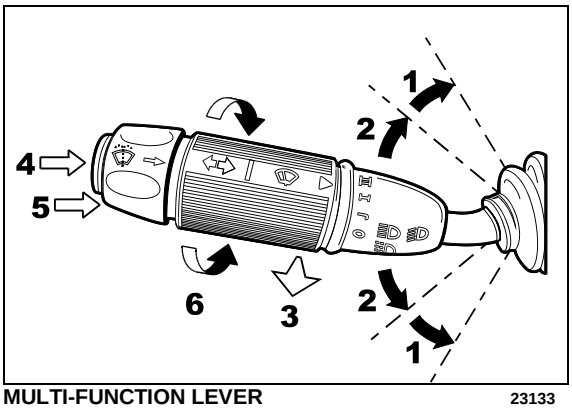
Three adjustable driver's air registers feed air to the driver's compartment. Use HVAC control panel to set air temperature. There is also an adjustable air register located on the motorcoach L.H. side close to the back of the driver's seat.

Dashboard Compartments

Two drawer-type driver compartments are standard issue. They are located under the R.H. side of the dashboard panel. They may be used to stow small items. The top compartment houses a cup/beverage holder. The lower, lockable compartment, is larger and outfitted with a 12-volt DC power outlet. Unclip the sliding rails to remove for cleaning.

STEERING COLUMN CONTROLS

MULTI-FUNCTION LEVER



MULTI-FUNCTION LEVER 23133

The multi-function lever is used to operate the following:

1. Turn Signal

Move the lever up to the second detent position to signal a right turn, down to the second detent position to signal a left turn. The lever automatically returns to the horizontal *OFF* position once the turn is completed.

2. Lane Change Signal

Move the lever part way to the first detent position and hold until the lane change maneuver is completed. The lever will spring back into the *OFF* position once released.

3. Headlight Beam Toggle Switch

Toggle between high and low beams by pulling the lever rearward. Pulling the lever rearward while the lights are *OFF* will flash the headlights.

4. Courtesy Blinkers

Clearance and parking lights can be flashed by pressing the button located on the lever tip.

5. Windshield Washer Control

Push the external ring at the end of the lever toward the steering column to activate the windshield washers. The wipers come *ON* and continue wiping for a few seconds after the ring is released.

Warning : *Before using the windshield washer in cold weather, heat the windshield with the defroster to prevent icing and reduced visibility.*

Caution : *To avoid damaging the pump mechanism, do not use the windshield washer when the fluid level is low.*

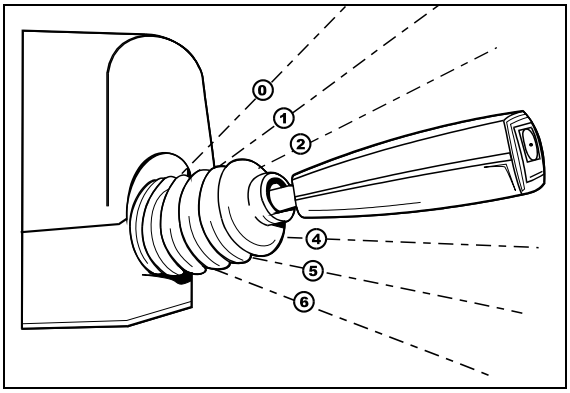
6. Lower Windshield Wipers

Turn the lever counterclockwise to activate the lower windshield washers. The first position activates the wipers intermittently. The second position is the slow speed and the third position is for high speed wiping.

Caution : *To avoid scratching the windshield, do not operate the wipers when the windshield is dry. To avoid damaging the wiper motor, loosen wiper blades that may be frozen to the windshield before operating the wipers.*

TRANSMISSION OUTPUT RETARDER (OPTIONAL)

Press down the rocker switch on the dashboard to actuate the optional transmission retarder. Refer to "Other Features" chapter 4.



RETARDER HAND LEVER 23132

Operating The Retarder Using The Hand Lever:

With the retarder activated (retarder switch depressed) and the accelerator pedal released, move the output retarder lever clockwise from the first to the sixth position. The efficiency for each position is as follows:

Position	Efficiency
Initial	0%
1st	16%
2nd	33%
3rd	49%
4th	71%
5th	89%
6th	100%

Note : *The output retarder lever is located on the right side of the steering column.*

Operating The Retarder Using The Brake Pedal:

With the retarder activated (retarder switch depressed), the accelerator pedal released and the output retarder lever in the initial position, apply the brake pedal as if using the service brakes. The further the break pedal is depressed, the more the output retarder is applied. Refer to "Other Features" chapter 4.

Note : *For motorcoaches equipped with the Anti-lock Braking System (ABS), if the wheels start to lock-up on slippery roads, the output retarder will automatically deactivate until the wheels turn freely.*

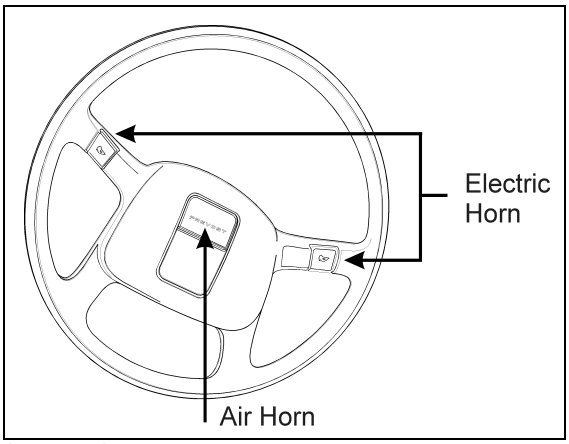
HORNS

Electric Horn

The electric horn buttons are on the steering wheel spokes. Use only the electric horn in urban areas.

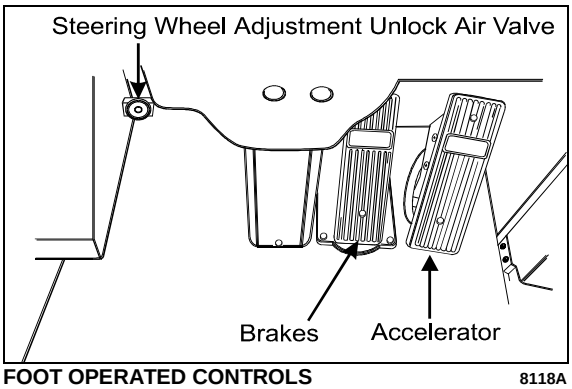
Air Horn

The air horn button is located on the center of the steering wheel. Use this horn only on the highway.



STEERING WHEEL

FOOT-OPERATED CONTROLS



FOOT OPERATED CONTROLS **8118A**

SERVICE BRAKES

The coach is equipped with a dual braking system. The front brakes operate differently from the drive and tag axle brakes.

The dual braking system becomes a modulated emergency system if a pressure drop occurs in the rear brake system.

Service brakes are applied by depressing the brake pedal. Braking increases with the amount of pressure applied to the foot pedal. Refer to "Other Features" chapter 4 under "Anti-lock Braking System". When the brake pedal is depressed, the brake lights turn *ON* automatically.

For safe and effective braking, the air system pressure should reach at least 95 psi (655 kPa) in both the primary and secondary circuits.

A warning light and a buzzer will sound when the air pressure in either the primary or secondary circuits drops below 70 psi (483 kPa). If this occurs, stop the coach, determine the cause of the pressure loss before proceeding.

Warning : *Immediately report any brake system problem to the maintenance service personnel.*

Warning : *Do not "fan" or "pump" the brake pedal. This practice does not increase brake system effectiveness but rather reduces system air pressure causing reduced braking effectiveness.*

Caution : *"Riding" the brake by resting one's foot on the brake pedal when not braking can cause abnormally high brake temperature, can damage and cause premature wear of brake components and reduce brake effectiveness.*

ACCELERATOR PEDAL

Controls engine RPM as needed.

Note : *The accelerator pedal will not operate when the front door is open.*

Caution : *Do not let the engine operate above 2,450 RPM.*

STEERING WHEEL ADJUSTMENT UNLOCK AIR VALVE

Push on the valve button with the left foot to unlock the steering wheel for tilt and telescopic adjustment.

Warning : *Do not adjust the steering wheel while the vehicle is moving. Loss of control could result. Park the motorcoach safely and apply parking brakes before adjusting the steering wheel.*

AUTOMATIC TRANSMISSION

The operation and driving of this vehicle with an automatic transmission is similar to that of an automobile equipped with an automatic transmission.

Proper ranges should be selected according to driving speeds to improve vehicle performance and control. The transmission is fully automatic. Speed ratio of power converter changes automatically as vehicle speed increases and direct-drive goes in and out as necessary, modulated by vehicle speed and accelerator position.

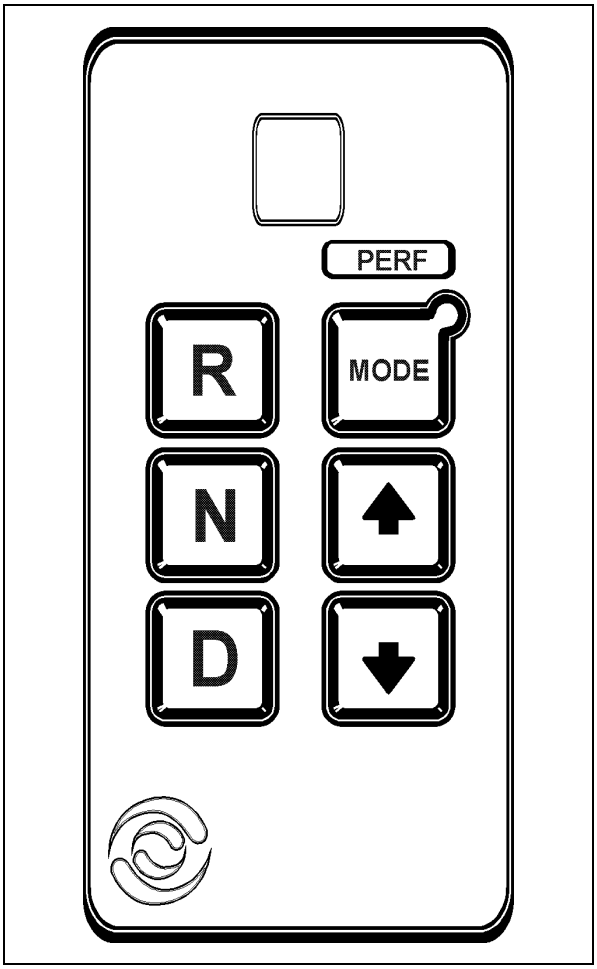
RANGE SELECTION – PUSH BUTTON SHIFTER

The push button shifter is used by the operator to select Neutral (N), Reverse gear (R) or a range of forward gears. When a forward gear range has been selected, the transmission starts in the lowest gear of the range and, as conditions permit, automatically upshifts until the highest gear in the selected range is in use.

The digital display indicates the current gear of transmission operation.

The function of each button is as follows:

- Select REVERSE gear by pressing "R".
- Select NEUTRAL by pressing "N". Note the raised edge around the "N" button so the driver can orient his hand to the push buttons by touch, without looking at the display. It is not necessary to press this button prior to starting the vehicle.
- Select DRIVE range by pressing "D". The highest forward gear will appear on the digital display and the transmission will shift to the starting gear (not indicated on the digital display).



CONTROL PAD

The "▲" and "▼" buttons are used to shift to a higher or lower range selected. One press changes gears by one range. If the button is held down, the selection will scroll up or down until the button is released or until the highest or lowest possible gear is selected. Protection mechanisms should inhibit selecting ranges that are not appropriate or which may damage driveline components.

Functions Of The Mode Button

This button is used to invoke a special function (mode) that has been programmed into the ECU. Both modes are equivalent from the first to the fourth gear as the transmission upshifts at around 2000 rpm.

- the default *"ECONOMY"* mode allows for upshifts in fifth and sixth gear at around 1700 rpm. This is a more efficient operation of the transmission and thereby helps improve fuel economy.

- the *"PERF"* (performance) mode keeps upshifts at 2000 rpm in fifth and sixth gears. This makes for better performance than the economy mode but with a higher fuel consumption. It is recommended this mode be selected while driving up or down grades. The mode status will be indicated on the digital display by a red LED illuminating in the upper right corner of the MODE button when selected.

OIL LEVEL DISPLAY MODE (OPTIONAL)

Select oil level display mode by pressing simultaneously on the "▲" and "▼" keys. A first press will indicate the transmission oil level after a two-minute wait if the following conditions are met:

- the vehicle is parked;
- the engine is in slow idle;
- normal operating temperature is attained;
- transmission is in NEUTRAL;
- the sender unit is present and working.

A code will be displayed one digit at a time:

- O L - O K (oil level is correct);
- L O - 0 1 (one quart low);
- L O - 0 2 (two quarts low);
- H I - 0 1 (one quart high);
- H I - 0 2 (two quart high).

Note : *If one or more conditions are not met, an error code will be displayed:*

- O L - 5 0 (engine RPM too low);
- O L - 5 9 (engine RPM too high);
- O L - 6 5 (transmission not at NEUTRAL);
- O L - 7 0 (sump oil temperature too low);
- O L - 7 9 (sump oil temperature too high);
- O L - 8 9 (output shaft rotation);
- O L - 9 5 (sender unit defective).

To exit, press either D, R, or N button.

Diagnostic Display Mode

Pressing a second time (or a first time if oil level option not present) on the "▲" and "▼" keys will select diagnostic display mode. Refer to "Technical Information" chapter for more information about the WT diagnostic codes. To exit diagnostic display mode, press either D, R, N button, or up and down arrow keys at the same time.

OPERATION

When a button is depressed, the corresponding letter or number is displayed indicating the transmission is ready to operate in the selected range. When the electronic control system detects a serious problem in the transmission, a buzzing tone sounds for 5 seconds and the *"CHECK TRANS"* light on the dashboard illuminates to warn the driver that the transmission is held in gear. If another is depressed, the buzzing sound will continue until the original range is selected.

Note : *As a light bulb and systems check, the "CHECK TRANS" light will illuminate when the ignition switch is turned to O*N*. After about two seconds the light will turn off. If the "CHECK TRANS" light remains on, the self-diagnostic system has detected a problem. If the problem disappears, the light will go out, but a trouble code will remain stored in the ECU.*

Reverse (R)

Use this position to back-up the vehicle. Stop completely before shifting from forward to reverse or from reverse to forward. Touch the reverse (R) button, ''R'' will be displayed and the reverse warning signal will be activated.

Neutral (N)

Use this position to start engine. Select neutral (N) when checking vehicle accessories and for extended periods of engine idle operation; parking brake must then be applied. The push-button shifter will automatically select neutral when the master switch is turned *ON*.

Note : *The automatic transmission does not have a park (P) position. Select neutral (N) and apply parking brake when the vehicle is left unattended. A warning buzzer will sound if the engine is stopped and the parking brake has not been applied when foot pressure is removed from the brake pedal.*

Caution : *Detroit Diesel engines should not be idled for extended periods at "slow" idle. For extended idling, engine should run at "fast" idle.*

Warning : *Always apply parking brake before leaving driver's seat.*

Caution : *Do not allow your vehicle to "coast" in neutral. This practice can result in transmission damage. Also, no engine braking is available in neutral.*

Drive (D)

Use this position for all normal driving conditions. After touching this pad, the vehicle will start in first or second range and will automatically upshift to a higher range as output speed increases. As the vehicle slows down, output speed decreases, the transmission automatically downshifts to the correct range. If a locked brake or a slick surface condition should occur, the ECU (Electronic Control Unit) will command converter operation (disconnect lockup) and inhibit downshifts for a period of time or until normal wheel speed has been restored.

Note : *The transmission should normally be allowed to shift itself, but manual shifting can be used as described below.*

Fourth (4) And Third (3) Ranges

Select these ranges when driving on moderate grades or when load and traffic conditions require the use of limited speed.

Second (2) Range

Select this range when operating in heavy and congested traffic. The transmission will start in first and automatically upshift to second. When slowing, the transmission will automatically downshift to first range. Low ranges provide progressively greater engine and retarder braking power (the lower the range, the greater the engine and retarder braking effect).

First (1) Range

Select this range when pulling through mud and snow or when speed control is needed for driving up steep grades. This range also provides maximum engine braking power or retarder braking effect. In the lower ranges (1, 2, 3 and 4), transmission will not upshift above the highest gear selected unless recommended engine governed speed for that gear is exceeded.

Warning : *Service brakes should not be used to control the speed of vehicle on long, steep descents. Instead, lower transmission ranges should be used (in conjunction with output retarder. Refer to "JACOBS Engine Brake" and "Transmission Retarder" headings in "Technical Information" chapter 4 for details regarding both systems. This procedure keeps service brakes cool and ready for emergency stopping.*

Caution : *When descending in lower ranges, care must be taken that engine speed does not exceed 2,450 rpm.*

CHAPTER 4 : OTHER FEATURES

DETROIT DIESEL ELECTRONIC CONTROL (DDEC) SYSTEM

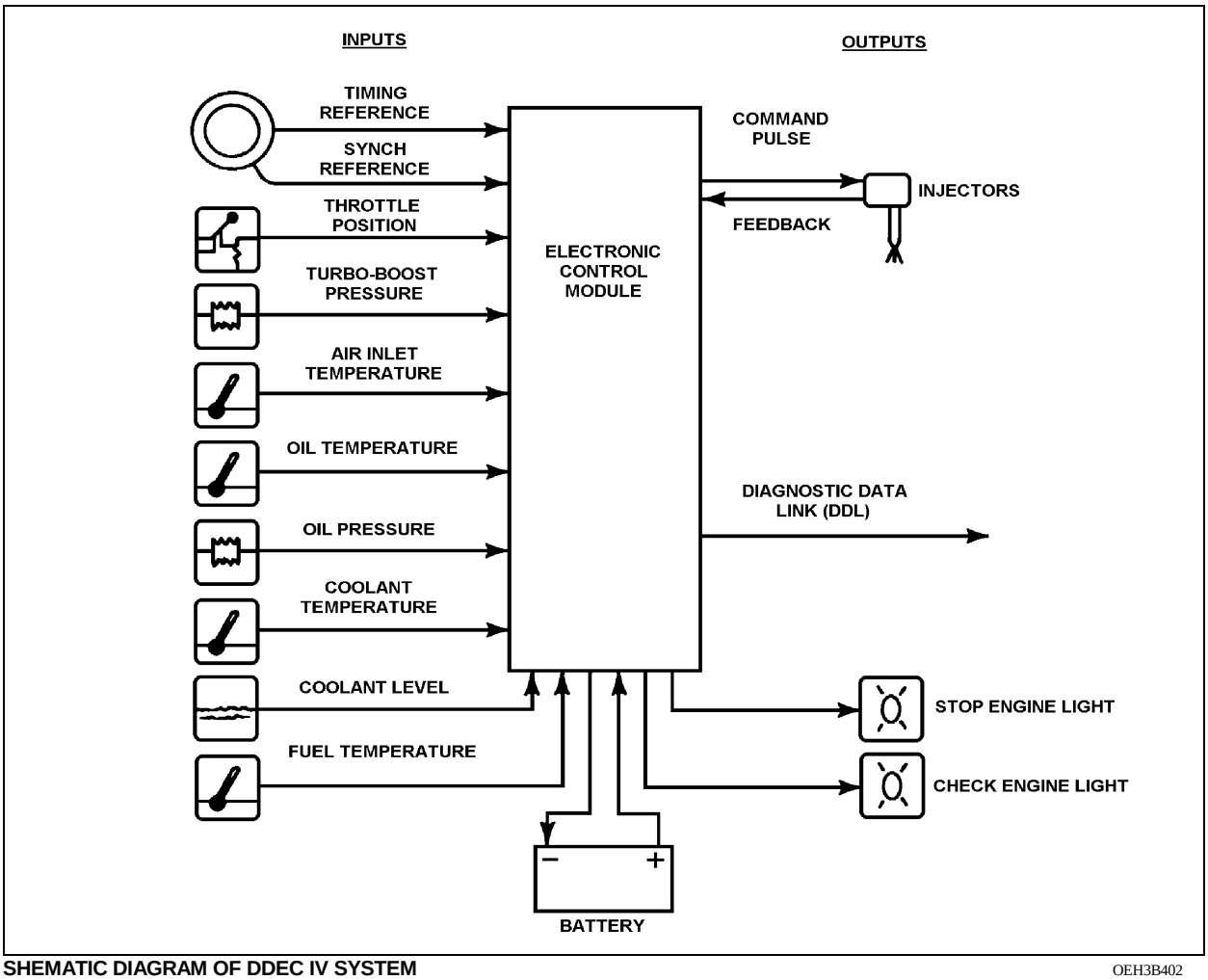
DDEC is an advanced-technology electronic fuel injection and control system for Detroit Diesel engines. As an integral part of the engine, the DDEC system provides a number of performance features and driver benefits; including improved fuel economy and performance, reduced cold smoke and reduced maintenance and repair costs. These advantages are obtained by optimizing control of the critical engine functions which affect fuel economy, engine reliability and the performance of the injectors.

Its major components include an Electronic Control Module (ECM), Electronic Unit Injectors (EUI), electronic throttle pedal and sensors. The ECM, which provides central processing and control of the DDEC system, contains the following:

- A microprocessor that continuously monitors and analyzes the engine's performance using sensors during engine operation;
- Flash Random Access Memory (FRAM) that stores ECM runtime software, which contains engine control instructions;
- Electrically Erasable, Programmable, Read-Only Memory (EEPROM) that provides instructions for basic engine control functions such as rated speed and power, engine governing, cold start logic and diagnostics and an engine protection system.

The Electronic Unit Injectors (EUI) operates on a principle similar to the mechanical unit injector system. However, a solenoid operated control valve performs the injection timing and metering functions which make injector timing much simpler and more precise.

DDEC provides the capability of quickly diagnosing system malfunctions with a self-diagnostic system. The self-diagnostic system monitors all engine sensors and electronic components and recognizes system faults and other engine-related problems by providing the technician with a diagnostic code. The DDEC system will illuminate the dashboard CHECK ENGINE and STOP ENGINE indicators which are integral parts of the electronic diagnostic system. These lights are designed to indicate a problem and transmit a coded signal to the technician to locate the defective component. To facilitate troubleshooting and obtain pertinent data logged in the ECM (Electronic Control Module) memory, a Diagnostic Data Reader (DDR) can be used (not supplied by manufacturer). Plug the DDR into the receptacle on the upper left wall in the driver's footwell. You can also momentarily depress the STOP ENGINE OVERRIDE switch on the L.H. lower control panel (refer to "Controls & Instruments" chapter 3). Active and inactive codes will flash respectively the STOP ENGINE and the CHECK ENGINE indicators. Refer to "Technical Information" chapter 8 under "DDEC IV Diagnostic Codes".



SHEMATIC DIAGRAM OF DDEC IV SYSTEM OEH3B402

DDEC IV ELECTRONIC CONTROL MODULE (ECM)

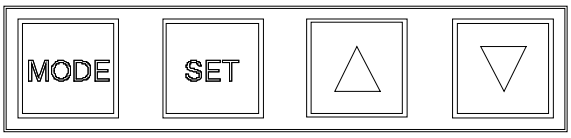
The simplest implementation of Data Hub does not require the addition of any hardware to the vehicle. Instead, basic Data Hub features built into the DDEC IV ECM are used. The ECM stores data such as miles, fuel used, idle time, PTO time, idle fuel, cruise time and cruise fuel on life-to-date, trip and daily basis. Daily recording is limited to a maximum of two days.

Selected parameters, such as oil pressure, are measured periodically under specified conditions. The measurements are analyzed over long time periods, which allows the system to detect degradation in performance and warn the user prior to component failure.

The average life span of up to ten components may be specified in terms of miles, fuel used, time, engine RPM and engine hours. The ECM tracks the specified factors and automatically alerts the user when the average life span of the component has been attained. An event log is also stored which indicates the vehicle status (e.g., off, idle, in motion) at 15 minute intervals.

Data stored in the DDEC IV ECM is extracted by connecting a cable from a PC to the vehicle's diagnostic connector via an RP1202 adapter module. Data extraction takes about 20 seconds.

MESSAGE CENTER DISPLAY (MCD)



MCD is a standard dashboard mounted graphic device that displays and records operational data transmitted by the Detroit Diesel Electronic Controls (DDEC) and other electronically controlled engines on the SAE J1708/1587 diagnostic data link. MCD uses a dashboard integrated liquid crystal display. It provides automated intensity control of the display, based on the dashboard instrument panel lights for improved driver convenience.

Many driver friendly features are designed into MCD to provide instantaneous feedback to the driver. This enables the driver to understand the effect of actions on engine and vehicle performance. Two display screens (automatically shown) offer real-time feedback based on the vehicle's activity. When in motion, the "Fuel Economy" screen displays fuel consumption versus the fleet's target. When stopped, "Idle Percentage" time versus fleet's target is indicated. Should an alert message be sent out by the ECM, the driver will be shown what is wrong and how engine power will change.

Five different modes are available for viewing on the screen:

- Multi-Function;
- Diagnostic;
- Set-Up;
- Gauge Display;
- Fuel Economy.

To change from one mode to another, press the MODE button. Each mode contains sub-displays with information related to the selected mode. These can be accessed using the UP/DOWN arrow buttons. If a display contains a value that can be changed, pressing the SET button enables the change and selects the digit to be changed. At this point, choosing a value is done with the UP/DOWN arrow buttons. To accept a change, press SET again.

Note : *Diagnostic and set up modes are not available when the vehicle is in motion. If such a mode is in use and the vehicle reaches a speed of 5 mph (8 km/h), the screen will automatically revert to clock display.*

Warning : *If the vehicle is in motion, reach around the steering wheel with the left hand to access the control buttons. Accessing the buttons through the steering wheel can result in injury or death due to loss of vehicle control.*

MULTI-FUNCTION MODE

The multi-function mode contains a clock, an alarm clock, two independent trip odometers and an engine hourmeter.

Clock Display

The clock displays the current time in either a 12-hour format (12:00:00 a.m. to 11:59:59 p.m.) or a 24-hour format (00:00:00 to 23:59:59). The choice is made in the Set-Up Menu.

To display the clock:

- Use the MODE button to select the Multi-Function Mode;
- Use the UP/DOWN arrow buttons to display the time.

To change the time display:

- When the clock time is displayed, press the SET button to select the hours digits. The hours digits will flash when selected. Use the UP/DOWN arrow buttons to select the desired hour;
- Press SET a second time to select the minutes digits. The minutes will flash when selected. Use the UP/DOWN arrow buttons to set the desired minute;
- To accept the displayed time and exit the time set function, press SET a third time.

Note : *The seconds digits cannot be selected.*

Alarm Clock Display

The alarm clock function permits the sounding of a reminder tone at any desired time.

To display the alarm clock:

- Use the MODE button to select the Multi-Function mode;
- Use the UP/DOWN arrow buttons to display ALARM.

To change the alarm time:

- When the alarm time is displayed, press the SET button to select the hours digits. The hours digits will flash when selected. Use the UP/DOWN arrow buttons to select the desired hour;
- Press SET a second time to select the minutes digits. The minutes will flash when selected. Use the UP/DOWN arrow buttons to set the desired minute;
- To accept the displayed time and exit the alarm time function, press SET a third time.

Note : *The seconds digits cannot be selected.*

To enable the reminder tone:

- Set the alarm time, or
- Press and hold the MODE button. The next mode display will appear once the reminder tone is enabled. The clock display with a bell will appear on screen.

To disable the reminder tone:

- When the bell symbol is displayed, press and hold the MODE button until the next mode display appears. The clock display will appear without the bell symbol.

To silence the reminder:

- Press any of the four buttons while the reminder is sounding.

Trip Odometer Display

Two independent trip odometers are available: Trip Odometer 1 and Trip Odometer 2. Each one displays the distance traveled since it was last reset.

To display a trip odometer:

- Use the MODE button to select the Multi-Function Mode;
- Use the UP/DOWN buttons to display either TRIP ODOMETER 1 or TRIP ODOMETER 2.

To reset a trip odometer:

- Display the trip odometer to reset (1 or 2);
- Press and hold the SET button for 1 second.

Hourmeter Display

The hourmeter display accumulates and displays the total time the engine has run. This display is not resettable by the driver.

To display the hourmeter:

- Use the MODE button to select the Multi-Function mode;
- Use the UP/DOWN buttons to display the hourmeter.

Diagnostics Mode

The diagnostics mode provides two functions:

1) Cluster Self Test Mode - Contains several tests to check the instrument cluster.

2) Diagnostics Messages - Reports the status of various vehicle sub-systems.

Cluster Self Test Mode

As an aid in troubleshooting the instrument cluster, the following tests are provided:

Note : *While in the cluster self test mode, the engine ECU data link is disconnected. Therefore, the gauges will not function until the cluster is out of the self test mode. To interrupt any test, cycle the ignition key off and on.*

Bulb Test - Turns *ON* all telltale lights and red warning LED's in the gauges which have them, for ten seconds.

Gauge Test - This test causes the pointers in the tachometer, speedometer, oil pressure, coolant temperature, fuel and turbo boost gauges to move from minimum scale to full scale and back, briefly stopping at mid-scale each way. This occurs three times. The air pressure and voltmeter gauges are excluded from the test.

Display Test - To help identify defects in the graphic display, the display alternates between all dark and all light for about ten seconds.

Buzzer Test - Sounds each of the three buzzer signals for ten seconds each.

To access the Cluster Self Test mode:

- Use the MODE button to access the DIAGNOSTICS mode;
- Scroll to the Cluster Self Test menu;
- Press the SET button to activate the Cluster Self Test;
- Use the UP/DOWN buttons to display the desired test (Bulb, Gauge, Display or Buzzer test);
- Activate the test by pressing the SET button. The test will end automatically.

Set-Up Mode

The set-up mode allows the driver to choose between US Standard or Metric units, between 12 or 24-hour time display, to set the screen and odometer brightness as well as the screen contrast. The fuel economy target value is also set in this mode.

Note : *Settings are retained when the ignition is off and also when the battery is disconnected. If battery power is lost when in the set-up mode, the instrument cluster will revert to its default values.*

Units

The units function configures the cluster to display data using US or Metric units.

US Standard - Distances are displayed in miles temperatures are displayed in Fahrenheit degrees and fuel consumption is displayed in miles per gallon.

Metric - Distances are displayed in kilometers, temperatures are displayed in Celsius degrees and fuel consumption is displayed in liters per hundred kilometers.

To configure the cluster for Metric or US units:

- Use the MODE button to display the Set-Up menu;
- Scroll to Units with the UP/DOWN buttons;
- Press the SET button to toggle between English and Metric.

Clock Mode

The clock mode configures the clock to display 12-hour (a.m./p.m.) or 24-hour time.

To change the clock format:

- Use the MODE button to display the Set-Up menu;
- Scroll to Clock using the UP/DOWN buttons;
- Use the SET button to toggle between the 12 and 24-hour time formats.

Contrast Adjust Function

This function adjusts the contrast of the screen. To adjust the screen contrast level:

- Use the MODE button to display the Set-Up menu;
- Scroll to Contrast Adjust using the UP/DOWN buttons;
- Press the SET button;
- Increase or decrease the contrast using the UP/DOWN buttons.
- Press SET when the contrast is at desired level.

Note : *Contrast will revert to original level once the ignition is turned off.*

Backlighting Adjust Function

This function allows the odometer and graphic display backlighting (brightness) to be adjusted independently of the gauge backlighting:

- Use the MODE button to display the Set-Up menu;
- Scroll to Backlighting Adjust using the UP/DOWN buttons;
- Press the SET button;
- Increase or decrease the backlighting using the UP/DOWN buttons;
- Press SET when backlighting is at the desired level.

Note : *Backlighting will revert to original level once the ignition is turned off.*

Fuel Economy Target Adjust Function

This function allows the setting of a fuel economy target:

- Use the MODE button to display the Set-Up menu;
- Scroll to Fuel Economy Target using the UP/DOWN buttons;
- Press the SET button;
- Increase or decrease the value using the UP/DOWN buttons;
- Press SET when the Fuel Economy Target is at the desired level.

Note : *Target will revert to original level once the ignition is turned off.*

Gauge Mode

The gauge mode provides additional gauge displays. A voltage display is standard. Engine and transmission oil temperature displays are optional. Gauge displays contain a symbol, a value (such as volts or degrees) and text messages when appropriate.

Voltmeter

This standard gauge display monitors the battery voltage. If the voltage exceeds 16 volts, "TOO HIGH" will be displayed.

Engine Oil Temperature

The range of this optional gauge display is 90^{o} to 310 ^{o}F. If the temperature exceeds the trip point, "TOO HIGH" will be displayed and the yellow caution telltale light will illuminate.

Transmission Oil Temperature

The range of this optional gauge display is 90^{o} to 310^{o}F. If the temperature exceeds the trip point, "TOO HIGH" will be displayed and the yellow caution telltale light will illuminate.

Preset Trip Points For Graphic Display Gauges

Each of the gauges in the graphic display has a preset trip point according to the engine manufacturer's specifications. A trip point represents a critical condition when reached. The engine oil temperature gauge display may have a trip point of 270^{o}F, for example. Should a trip point be reached, the screen will automatically show a symbol or message identifying the critical condition.

In some cases, the yellow CAUTION telltale or red STOP telltale light may illuminate and a buzzer may sound when a trip point is reached. These warnings will continue until the ignition is turned *OFF* or until the condition causing this warning no longer exists. The visual and audible warnings will return if the condition still exists when the ignition is turned back *ON*.

Note : *When a condition requiring attention occurs, the symbol identifying that condition will automatically replace the current display.*

To Choose A Gauge Display:

- Press the MODE button until a Gauge Display appears;
- Use the UP/DOWN buttons to display the desired gauge.

Fuel Economy Mode

The fuel economy mode allows the driver to see fuel consumption during a trip. Information is updated continually and presented in the form of a bargraph. Average fuel consumption rate during the trip (AVG) and the instantaneous fuel consumption rate can be seen at a glance, along with the target fuel consumption rate.

To Select The Trip Fuel Meter Or Bargraph Display:

- Use the MODE button to select the Fuel Economy mode;
- Use the UP/DOWN buttons to display the bargraph or Trip Fuel Meter.

Bargraph (AVG INST TARGET Display)

The bargraph display shows the vehicle's average, instantaneous and target fuel consumption. The range is 0 to 99.9 miles per gallon or 0 to 999 liters per 100 kilometers. The average consumption value can be reset by pressing the SET button while in this display (the Trip Fuel Meter value will also be reset).

Trip Fuel Meter

The Trip Fuel Meter displays the amount of fuel used since the last time it was reset. Its range is from 0 to 9999 gallons or liters (driver selectable). The Trip Fuel Meter value can be reset by pressing the SET button while in this display (the AVG fuel consumption value will also be reset).

PRODRIVER™

PRODRIVER™ is an optional graphic device similar to TDR but with added features. A summary of data displays available from PRODRIVER™ include:

- Instantaneous and average fuel consumption rate;
- Trip time, miles driven, fuel used, fuel consumption rate, average speed;
- Driving time, percentage, miles, fuel used, fuel consumption rate;
- Idle time, percentage and fuel used;
- Cruise time, percentage, miles cruised, fuel used, fuel consumption rate;
- Top gear time, percentage, miles driven, fuel used, fuel consumption rate;
- Overspeed time and percentage for two speed thresholds;
- Over-rev time and percentage;
- Maximum vehicle speed and RPM;
- Coasting time and percentage;
- Automated oil change interval tracking;
- Hard braking incident records;
- Driver initiated incident records;
- Stop and check engine code logs.

PRODRIVER™ has many additional features and benefits and can be combined with other members of Data Hub line of products from Detroit Diesel. This combination presents a powerful vehicle information management system and provides advanced communication business solutions for fleet operators.

WORLD TRANSMISSION ELECTRONIC CONTROL UNIT (ECU)

Works with the automatic transmission with push-button shift selector.

The World Transmission electronic controls comprises four major elements: Electronic Control Unit , Throttle Position Sensor (TPS), speed sensors and shift selector. Refer to "Controls & Instruments" chapter 3. These components work together to electronically control the transmission functions. The throttle sensor, speed sensors and shift selector transmit information to the ECU. The ECU processes this information and then sends signals to actuate specific solenoids located on the control valve body in the transmission. The action of the solenoids affect hydraulic circuits, which in turn control the upshifts, downshifts, and lock-up functions. In addition to controlling the operation of the transmission, the WT electronic controls monitor the system for abnormal conditions.

When one of these conditions is detected, WT electronic control system is programmed to automatically respond in a manner which is safe for the driver, the vehicle and the transmission. The WT electronic control system turns *ON* the

CHECK TRANS light on the dashboard, which serves as a fault indicator.

To enhance troubleshooting and to allow interrogation of the ECU for valuable service information, the shift selector display or a diagnostic tool (not supplied) can be used. For information about reading and interpreting diagnostic codes, refer to "Technical Information" chapter 8 under "World Transmission Diagnostic Codes".

TRANSMISSION RETARDER

The transmission retarder is an optional device that helps to reduce the speed of a vehicle. It improves vehicle control, increases driving safety and permits more economical operation. The retarder provides slowing power when it is most needed, such as when descending mountain roads, in stop-and-go traffic and on crowded freeways.

The retarder is provided with a switch on the dashboard and a lever on the steering column (refer to "Controls & Instruments" chapter 3).

Note : *Extended use will raise the transmission oil temperature.*

The retarder helps to reduce speed on grades without using the vehicle's conventional service braking system. This virtually eliminates brake overheating and reduces the risk of a runaway vehicle. A retarder greatly increases the service life of brake pads and discs, resulting in reduced brake maintenance costs.

Note : *Each time the transmission retarder system is in operation, the stoplights will automatically illuminate.*

Note : *For vehicles equipped with the Antilock Braking System (ABS), as the wheels start to lock-up on slippery roads, the output retarder automatically deactivates until the wheels roll freely.*

JACOBS ENGINE BRAKE

The JACOBS engine brake is an optional diesel engine retarder which uses engine compression to aid in slowing and controlling the motorcoach. When activated, (refer to "Controls & Instruments" chapter 3) the JACOBS brake alters the operation of the engine's exhaust valves so that the engine works as a power-absorbing air compressor. This provides a retarding action to the wheels.

The engine brake is a vehicle-slowing device, not a vehicle-stopping device. It is not a substitute for the service braking system. The motorcoach's service brakes must be used to bring the motorcoach to a complete stop.

Effectiveness of the engine brake system will vary according to the transmission range in use. The engine brake system is more effective in lower ranges and at higher engine speeds.

Warning : *When descending significant grades, use service brakes as little as possible. If engine does not slow vehicle to a safe speed, apply service brakes and shift to a lower range. Let the engine (and engine brake) slow the motorcoach. Keep brakes cool and ready for emergency stopping.*

Note : *Each time the engine brake system is in operation, the stoplights automatically illuminate.*

ANTI-LOCK BRAKING SYSTEM

The purpose of the Anti-lock Braking System (ABS) is to maintain vehicle stability and control during braking and to minimize the stopping distance in any road condition.

On slippery roads and more generally in emergency situations, over-braking frequently induces wheel locking. Wheel locking greatly increases breaking distance on any road surface, impedes directional control and causes severe tire abrasion. An anti-lock braking system provides maximum braking performance while maintaining adequate control on slippery roads.

The basis of ABS is constant monitoring of wheel parameters during braking. Sensors on each wheel of axles 1 and 2 constantly measure wheel speed during braking. This information is transmitted to a four-channel electronic processor which senses when any wheel is about to lock. Modulating valves quickly adjust brake pressure (up to 5 times per second) to prevent wheel lock. Each wheel is therefore controlled according to the available grip.

In this way, the coach is brought to a stop in the shortest possible time while remaining stable and under the driver's control.

Caution : *Vehicles following ABS-equipped motorcoaches may not be able to brake as fast on slippery roads. Whenever possible, warn other drivers by depressing the brake pedal lightly several times before braking.*

RETRACTABLE TAG AXLE

Optional tag axle retraction is controlled by a valve located on the left lateral console. The valve can be switched to either the WHEELS UP or WHEELS DOWN position. The axle will be automatically raised or lowered by air pressure according to the valve position. Refer to "Controls & Instruments" chapter 3.

The tag axle service brakes and parking brakes operate only when the tag axle is in the WHEELS DOWN position. Never lower the tag axle while the coach is moving. When the tag axle is in the WHEELS UP position, the corresponding indicator light will illuminate and a beep will sound to alert the driver of the tag axle's position. The tag axle can be raised in tight maneuvering areas like in a parking lot or to make it easier to turn a short corner. The tag axle shortens the wheelbase and allows tighter turning. Raising the tag axle transfers extra weight and additional traction to the drive wheels providing improved control on slippery roads.

Caution : *In order to prevent damage to the suspension, always raise the tag axle before lifting the motorcoach.*

Caution : *Never lower the tag axle while motorcoach is moving.*

TAG LOAD RELEASE SYSTEM (TLR)

This standard system allows automatic unloading of the tag axle air springs, without raising the axle, whenever coach speed drops to less than 8 mph (13 km/h) and steer angle exceeds 22.5° (1 1/4 turns of the steering wheel). The system automatically transfers the tag axle load to the drive axle. It reduces tag wheel shearing to convey shorter turning radii for tighter cornering and remarkable agility in close-quarter maneuvering, whether backing up or moving forward.

COOLANT HEATER

An optional coolant heater, the WEBASTO DBW 2020 rated at 80 000 Btu/h (23.3 Kw), is available.

This auxiliary heating system is used for preheating and retaining the heat of water-cooled engines. It can be used before startup to facilitate starting and to provide rapid operation of the interior heating system. It can also be used with the engine running to maintain coolant heat and interior temperature.

The heater operates independently of the engine. It is connected to the cooling system, heating circuits and to the motorcoach fuel and electrical system.

Warning : *The coolant heating system uses the same fuel as the engine. Do not operate in a closed building or while refueling. Operate only in a well ventilated area.*

SWITCHING THE HEATER ON

The pilot lamp turns *ON* when the heater is switched *ON*. Combustion air flows in to flush out the combustion chamber and the water circulation pump begins operating. The fuel metering pump delivers fuel in precise amounts to the combustion chamber, where fuel and combustion air form a combustible mixture which is ignited by the glow plug.

Once the flame sensor has signaled to the control unit that combustion has taken place, the glow plug and ignition coil are switched *OFF*.

Hot combustion gases are diverted at the end of the flame pipe and are then forced through the indirect heating surfaces of the heat exchanger. The heat exchanger transfers the heat to the coolant water passing through the heat exchanger.

The heater is thermostatically controlled and operates intermittently (i.e., the switched-on time of the burner varies depending on the heat requirement). The water temperature is controlled by the built-in water thermostat.

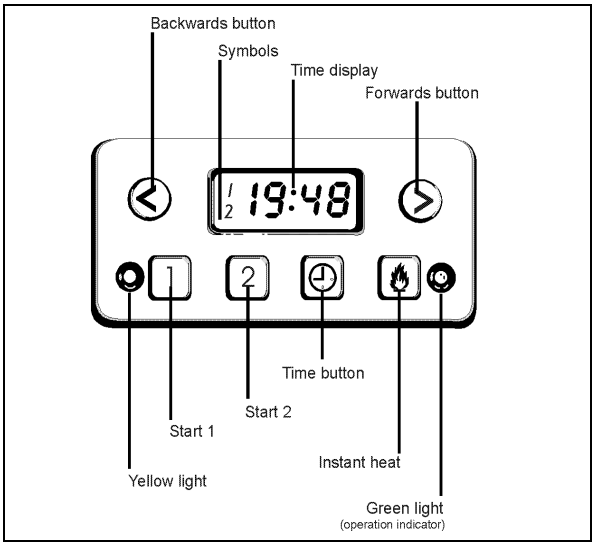
The water circulation pump remains in operation as long as the heater is operating; even during the regulated intervals and during the delayed cut-out of the switched *OFF* heater. The pump can also be operated independently of the heater by means of an appropriate circuit. The heater can be switched *ON* at any time (i.e., during the delayed cut-out period). Ignition takes place after the delayed cut-out time expires.

SWITCHING THE HEATER OFF

The fuel supply is interrupted when the heater is switched *OFF*. This causes the flame to go out and a delayed cut-out of 2.5 minutes begins. The circulating combustion air flushes the remaining combustion gases out of the chamber and cools off the heated parts on the exhaust side of the heat exchanger. The water circulation pump continues to transfer the latent heat present in the heat exchanger, thus preventing hot spots. Once the delayed cut-out time expires, both the combustion air blower and the water circulation pump switch *OFF* automatically. A cut-out will automatically take place in case of heater failure. Refer to "Technical Information" chapter 8 for more information.

COOLANT HEATER TIMER

Note : *Heater timer control pad may differ from the one described. Refer to your manufacturer's instruction booklet for detailed operating instructions.*



To Set The Clock

If the time display is wrong or if it flashes 8:88, hold and press either (backwards) or (forwards). The longer you hold the button down, the quicker the display changes. The last few minutes are set accurately by quick pushes. Adjust to get exact time. The display fades after 20 seconds.

Present Time Display

Press at any time. Present time appears on the screen.

Manual Heating Start-Up

Press to switch the heater *ON* or *OFF* immediately. The green light illuminates when the heater is *ON*.

Programming Heating Start Time

Press 1 and the display shows the time at which the heater will start. You can alter the starting time by pressing either ⟨ (backwards) or ⟩ (forwards) button. The longer you hold the button down, the faster the display changes. The last few minutes are set accurately by quick pushes. The display fades after 20 seconds. Start time 1 remains on the display, and the yellow light stays *ON*. Starting time #1 is now activated.

Button 2 allows you to program a second starting time. Press button 2 which de-activates starting time 1, then proceed as with 1. The activation of the second starting time is indicated by the symbol 2.

To Check (or activate) Start Time

Press button 1 or 2 briefly. The display shows the programmed starting time for 20 seconds. This also programs the timer to start the heater at the time shown.

To Cancel Heating Start Time

Press button 1 or 2 briefly. The appropriate number in the display goes out, together with the yellow light.

Caution : *To avoid running down the batteries, do not turn* ON *the preheating system for more than one hour before starting the engine.*

Warning : *The preheating system uses the same fuel as the engine. Do not operate in a building or while refueling. Operate only in a well ventilated area.*

110-120 VOLT CONNECTOR

(ENGINE BLOCK HEATER)

The 110-120 volt power connector is located on the engine compartment rear door. Refer to "Motorcoach Exterior" chapter 1. Connect the female extension cord plug to the male connector on the engine compartment rear door. Connect the plug at the other end of the cord to a 110-120 VAC outlet only.

The engine is equipped with an engine immersion-type electric block heater to assist cold weather starting.

The engine block heater should be used whenever the motorcoach is parked for extended periods in cold weather and whenever a suitable power source is available.

Caution : *Only use a 110-120 VAC power source. Use only a grounded type (three pronged) extension cord with a minimum rated current capacity of 15 amps. Disconnect the extension cord before starting or moving the vehicle.*

DETROIT DIESEL ELECTRONIC CONTROL (DDEC) SYSTEM

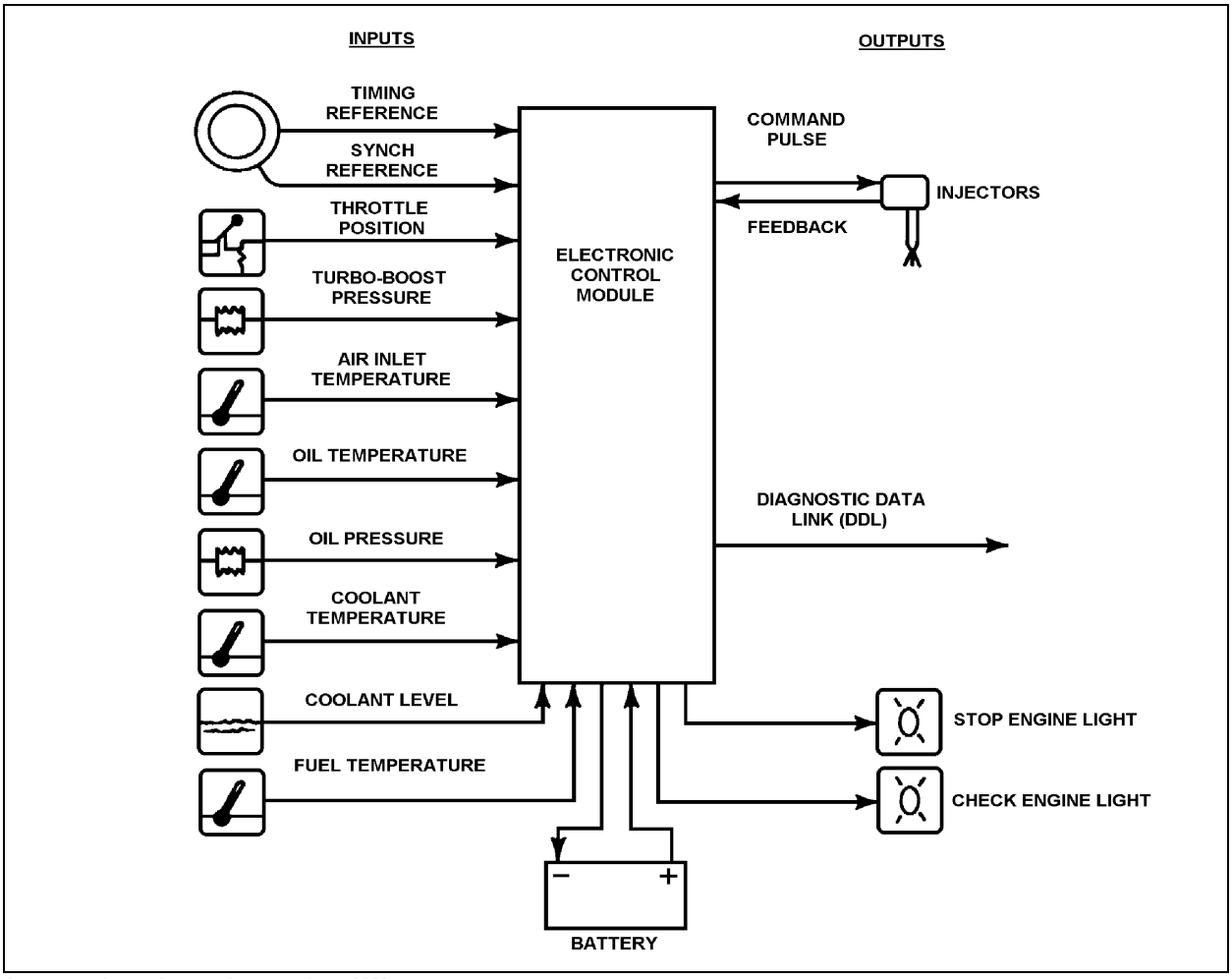
DDEC is an advanced-technology electronic fuel injection and control system for Detroit Diesel engines. As an integral part of the engine, the DDEC system provides a number of performance features and driver benefits including improved fuel economy and performance, reduced cold smoke and reduced maintenance and repair costs. These advantages are obtained by optimizing control of the critical engine functions which affect fuel economy, engine reliability and the performance of the injectors.

Its major components include an Electronic Control Module (ECM), Electronic Unit Injectors (EUI), electronic throttle pedal and sensors. The ECM, which provides central processing and control of the DDEC system, contains the following:

- A microprocessor that continuously monitors and analyzes the engine's performance using sensors during engine operation;
- Flash Random Access Memory (FRAM) that stores ECM runtime software, which contains engine control instructions;
- Electrically Erasable, Programmable, Read-Only Memory (EEPROM) that provides instructions for basic engine control functions such as rated speed and power, engine governing, cold start logic and iagnostics and an engine protection system.

The Electronic Unit Injectors (EUI) operates on a principle similar to the mechanical unit injector system. However, a solenoid operated control valve performs the injection timing and metering functions which make injector timing much simpler and more precise.

DDEC provides the capability of quickly diagnosing system malfunctions with a self-diagnostic system. The self-diagnostic system monitors all engine sensors and electronic components and recognizes system faults and other engine-related problems by providing the technician with a diagnostic code. The DDEC system will illuminate the dashboard CHECK ENGINE and STOP ENGINE indicators which are integral parts of the electronic diagnostic system. These lights are designed to indicate a problem and transmit a coded signal to the technician to locate the defective component. To facilitate troubleshooting and obtain pertinent data logged in the ECM (Electronic Control Module) memory, a Diagnostic Data Reader (DDR) can be used (not supplied by manufacturer). Plug the DDR into the receptacle on the upper left wall in the driver's footwell. You can also momentarily depress the STOP ENGINE OVERRIDE switch on the L.H. lower control panel (refer to "Controls & Instruments" chapter 3). Active and inactive codes will flash respectively the STOP ENGINE and the CHECK ENGINE indicators. Refer to "Technical Information" chapter 8 under "DDEC IV Diagnostic Codes".



SHEMATIC DIAGRAM OF DDEC IV SYSTEM OEH3B402

DDEC IV ELECTRONIC CONTROL MODULE (ECM)

The simplest implementation of Data Hub does not require the addition of any hardware to the vehicle. Instead, basic Data Hub features built into the DDEC IV ECM are used. The ECM stores data such as miles, fuel used, idle time, PTO time, idle fuel, cruise time and cruise fuel on life-to-date, trip and daily basis. Daily recording is limited to a maximum of two days.

Selected parameters, such as oil pressure, are measured periodically under specified conditions. The measurements are analyzed over long time periods, which allows the system to detect degradation in performance and warn the user prior to component failure.

The average life span of up to ten components may be specified in terms of miles, fuel used, time, engine RPM and engine hours. The ECM tracks the specified factors and automatically alerts the user when the average life span of the component has been attained. An event log is also stored which indicates the vehicle status (e.g., off, idle, in motion) at 15 minute intervals.

Data stored in the DDEC IV ECM is extracted by connecting a cable from a PC to the vehicle's diagnostic connector via an RP1202 adapter module. Data extraction takes about 20 seconds.

MESSAGE CENTER DISPLAY (MCD)

MCD is a standard dashboard mounted graphic device that displays and records operational data transmitted by the Detroit Diesel Electronic Controls (DDEC) and other electronically controlled components on the SAE J1708/1587 diagnostic data link.

The many functions of the MCD include vehicle operating status for the driver and diagnostics for the technician.

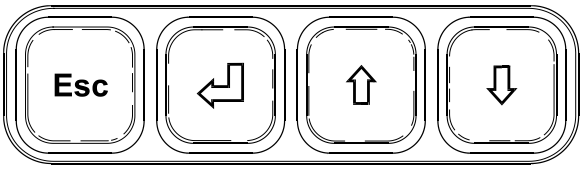
The MCD uses a dashboard integrated liquid crystal display. It provides automated intensity control of the display, based on the dashboard instrument panel lights for improved driver convenience.

Should an alert message be sent out by the ECM, the driver will be shown what is wrong via an error code. Symbols may be displayed on the screen when a condition occurs or as a reminder that a feature is enabled. These symbols include a bell when the reminder alarm is on, "PTO" when fast idle is activated or "CC" when cruise control is activated.

Note: *When a condition requiring attention occurs, the screen relating to that condition will automatically replace the current display.*

The MCD works with interactive menus in a series of cascading layers. The MCD allows access only to GAUGE MODE, FUEL ECONOMY and TIME/DIST menus when the vehicle is moving. Access to the remaining menus is granted when the vehicle is stopped.

The driver inputs commands and settings by using the keys on the MCD keypad.



06399

Use the up (↑) and down(↓) arrows to highlight a function or a setting. At any given level, small arrows may appear in the upper and lower right corner of the display. This means that more information is available by scrolling up or down with the arrow keys.

To change the setting of a feature, press enter key (↵). The first value to set is highlighted. Set the correct value with the arrow keys. Press the enter key when the correct value is displayed. The next value to set is highlighted. In some cases, the enter key will reset compiled data. In that situation, the MCD will prompt you to press the enter key for 1 second to prevent accidental resetting.

To return to the previous level, press Esc key any time. In most cases, the MCD will return to the previous level once a setting has been chosen.

To return to the main menu from any submenu, press Esc key a few times.

GAUGE MODE

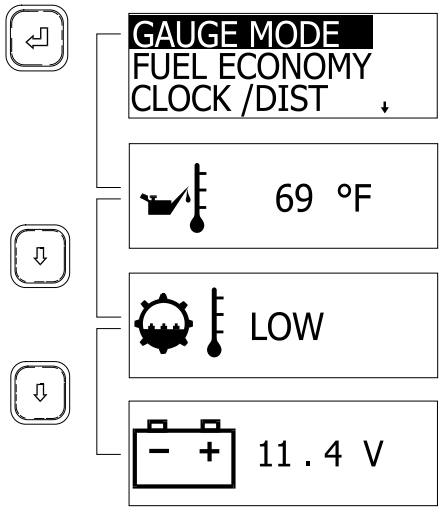
Transmission oil temperature, engine oil temperature and battery voltage can be displayed in this mode.

To display:

1. Highlight GAUGE MODE;
2. Press enter key (↵);
3. Choose a gauge using the up (↑) or down (↓) arrow keys.

To exit gauge mode, press Esc key.

Note: *When a condition requiring attention occurs, the screen relating to that condition will automatically replace the current display.*



06398

FUEL ECONOMY MODE

Check average and instantaneous fuel consumption, as well as distance until empty.

To display:

1. Highlight FUEL ECONOMY;
2. Press enter key;
3. Toggle between average/instantaneous fuel consumption or leg fuel consumption using the up and down arrows;

To exit FUEL ECONOMY mode, press Esc key any time.

4. To reset average and instantaneous fuel consumption, press enter key. The MCD will prompt you to press enter key for one second to reset;

If you do not wish to reset the fuel data, press Esc to return to previous menu.

CLOCK / DIST MODE

This mode gives access to the digital clock, the reminder alarm, two trip odometers and the average speed counter.

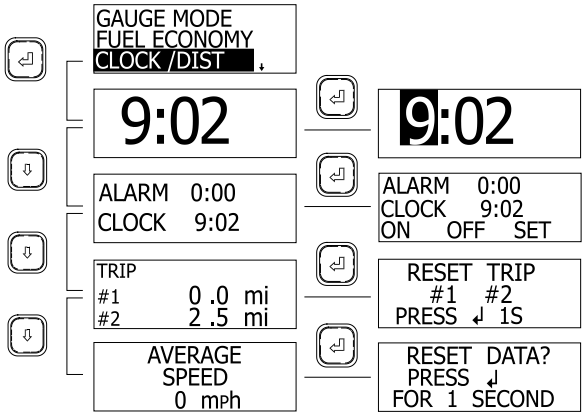
To display the digital clock:

1. Highlight CLOCK/DIST;
2. Press enter key;

The digital clock appears;

3. Use up down arrows to display the alarm and clock display, the trip odometer display or the average speed counter display.

To exit CLOCK/DIST mode, press Esc key.



Setting the Digital Clock

1. Display the clock;
2. Press the enter key (↲);

The first digit of the time is highlighted.

3. Set the correct value using the arrow keys;
4. Press enter key;

The next digit of the time is highlighted.

5. Set the correct time using the arrow keys and the enter key;

After pressing the enter key when the last digit is highlighted, the display reverts to clock mode.

Reminder Alarm

The alarm can be useful to remind the driver of a task to do at a given time.

To set the alarm:

1. Display the alarm and clock menu;
2. Press the enter key;
3. Using the arrow keys, highlight ON, to arm the alarm, OFF to disarm the alarm or SET to set the alarm time;
4. Press the enter key;

If you have chosen SET, set the time using the arrow keys and enter key.

To exit any menu and return to the previous menu, press Esc key.

A bell appears in the upper right corner on all MCD screens if the alarm is armed.

When armed, the alarm will sound at the set time even when the battery master switch is off.

To stop the alarm from sounding, press any key on the MCD keypad.

Trip Odometers

Two trip odometers are available for driver convenience.

To reset a trip odometer:

1. Display the trip odometers;
2. Press the enter key;
3. Using the arrow keys, highlight the trip odometer you wish to reset;
4. Press the enter key for 1 second.

To exit anytime, press Esc key.

Average Speed

The average speed display shows the average speed has been driven since the last reset.

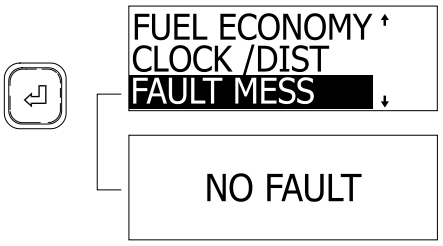
To reset:

1. Display the average speed;
2. Press the enter key;
3. When prompted, press the enter key for 1 second to reset data.

FAULT MESSAGES

To display logged fault messages:

1. Highlight FAULT MESS
2. Press the enter key
3. Fault messages are displayed (if any).



06393

SET-UP MODE

Set-up mode allows the driver to customize the MCD. Set up mode allows setting the language, units used (Metric or Standard), clock format, display contrast, backlight and night display.

If the correct password is entered, default language, fleet fuel target and passwords can also be set.

To configure the MCD, highlight SET-UP MODE using the arrow keys, then press the enter key.

Language Selection

If available, language may be selected. To select a language:

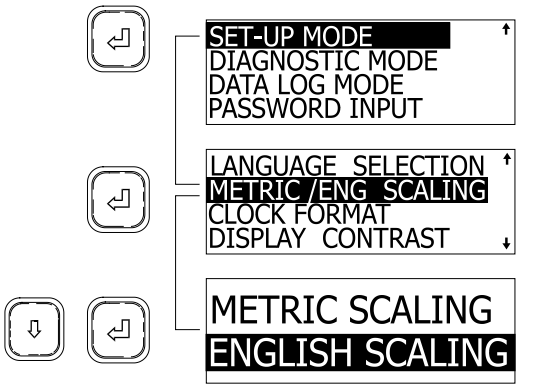
1. In SET-UP mode, highlight LANGUAGE SELECTION using the arrow keys;
2. Press the enter key;
3. Highlight the desired language using the arrow keys;
4. Press enter key to confirm the language choice.

The MCD returns to SET-UP mode.

Metric or Standard Units

1. In SET-UP mode, highlight METRIC/ENG SCALING using the arrow keys;
2. Press the enter key;
3. Highlight the desired units using the arrow keys;
4. Press enter key to confirm.

The MCD returns to SET-UP mode.

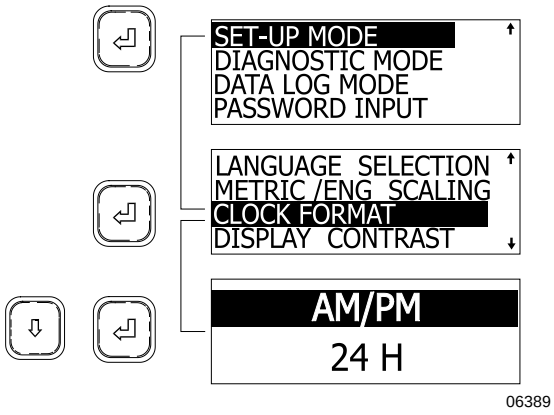


06384

Clock Format

1. In SET-UP mode, highlight CLOCK FORMAT using the arrow keys;
2. Press the enter key;
3. Highlight the desired format (AM/PM or 24 H) using the arrow keys;
4. Press enter key to confirm.

The MCD returns to SET-UP mode.

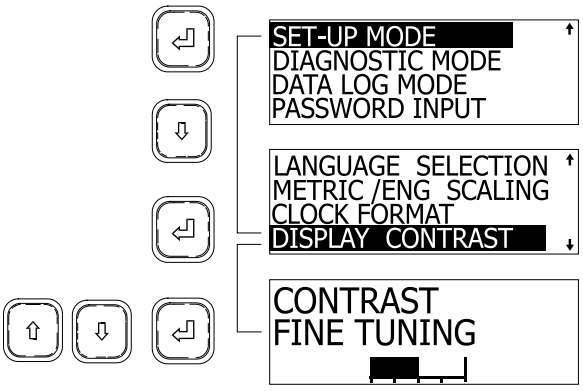


06389

Setting Contrast

1. In SET-UP mode, highlight DISPLAY CONTRAST using the arrow keys;
2. Press the enter key;
3. Using the arrow keys, set the desired contrast. A horizontal graphic shows state of contrast;
4. Press enter key to confirm.

The MCD returns to SET-UP mode.

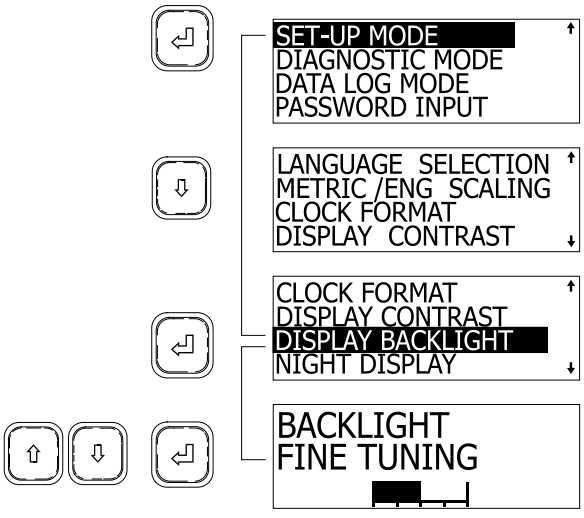


06395

Setting Backlight

1. In SET-UP mode, highlight DISPLAY BACKLIGHT using the arrow keys;
2. Press the enter key;
3. Using the arrow keys, set the desired backlight lighting. A horizontal graphic shows state of lighting;
4. Press enter key to confirm.

The MCD returns to SET-UP mode.



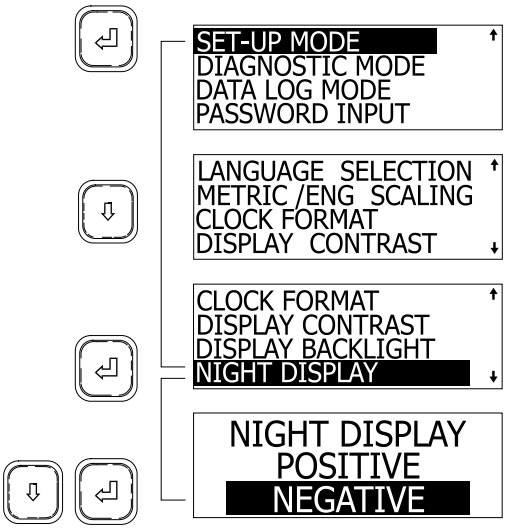
06386

Setting Night Display

Night display, when activated, shows all displays in negative when the headlights are ON.

1. In SET-UP mode, highlight NIGHT DISPLAY using the arrow keys;
2. Press the enter key;
3. Highlight the desired display using the arrow keys;
4. Press enter key to confirm.

The MCD returns to SET-UP mode.



06400

Setting Default Language

This feature is enabled when the correct password is entered (see PASSWORD INPUT).

1. In SET-UP mode, highlight DEFAULT LANGUAGE using the arrow keys;
2. Press the enter key;
3. Highlight the desired language using the arrow keys;
4. Press enter key to confirm.

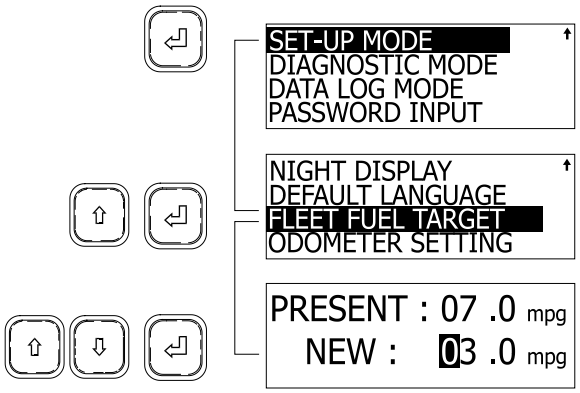
The MCD returns to SET-UP mode.

Setting Fleet Fuel Target

This feature is enabled when the correct password is entered (see PASSWORD INPUT).

1. In SET-UP mode, highlight FLEET FUEL TARGET using the arrow keys;
2. Press the enter key;
3. Using the arrow keys set the highlighted digit;
4. Press enter key to confirm, the following digit is highlighted. Set as in step three;
5. When last digit is set, press the enter key to confirm new target.

The MCD returns to SET-UP mode.



Setting the Odometer

This feature is disabled.

DIAGNOSTIC MODE

Diagnostic mode allows the driver to request diagnostics from the ECU's of components such as the engine, brakes and other instruments. The driver can also perform a cluster self test and read data about the ECU's

Enter diagnostic mode by using the arrow keys to highlight DIAGNOSTIC MODE, then pressing the enter key to confirm.

ECU Diagnostic

To request a diagnostic:

1. Highlight ECU DIAGNOSTIC with the arrow keys;
2. Press the enter key to confirm.
3. Highlight the component to request a diagnostic using the arrow keys;
4. Press the enter key

After showing a fault message (if any) the MCD returns to ECU Diagnostic screen.

To request a general diagnostic:

1. Highlight GENERAL REQUEST using the arrow keys;
2. Press the enter key

After showing a fault message (if any) the MCD returns to ECU Diagnostic screen.

To reset fault codes:

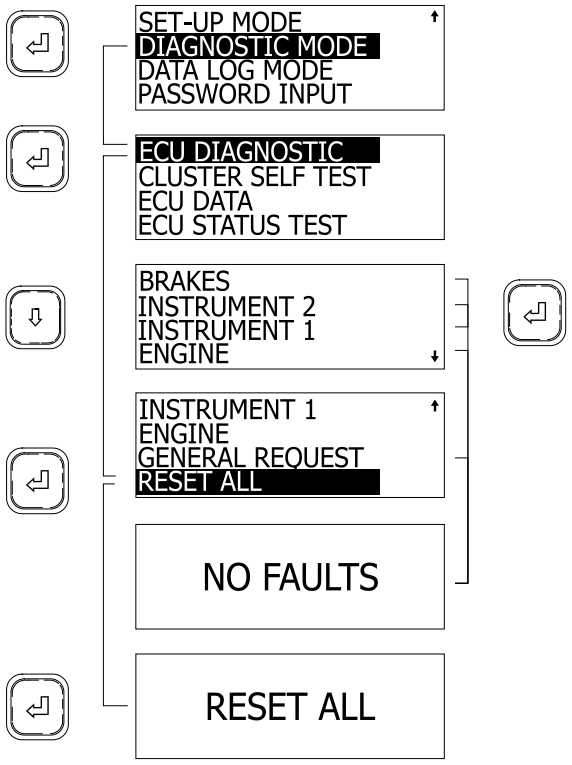
1. Highlight RESET ALL using the arrow keys;
2. Press the enter key

The MCD displays RESET ALL.

3. Press enter key to confirm.

After resetting the fault codes, the MCD returns to ECU Diagnostic screen.

Exit ECU Diagnostic and return to Diagnostic Mode using Esc key.



Cluster Self Test

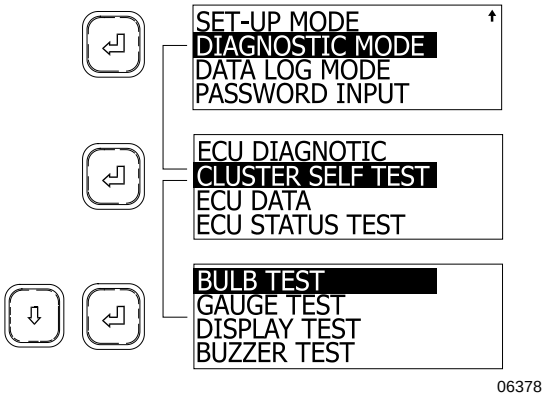
Tests cluster light bulbs, gauges, MCD display and buzzers.

To perform a self test:

1. In diagnostic mode, highlight CLUSTER SELF TEST using the arrow keys;
2. Press enter key to confirm;
3. Highlight the test to perform using the arrow keys;
4. Press enter key to confirm;

The test may normally take several seconds to perform. The MCD may explain the progression of the test as it runs. The display returns to cluster self test mode once finished.

Note: *While in the cluster self test mode, the engine ECU data link is disconnected. Therefore, the gauges will not function until the cluster is out of the self test mode. To interrupt any test, cycle the ignition key off and on.*



BULB TEST

Turns *ON* all telltale lights and red warning LED's in the gauges which have them, for ten seconds.

GAUGE TEST

This test causes the pointers in the tachometer, speedometer, oil pressure, coolant temperature, fuel and turbo boost gauges to move from minimum scale to full scale and back, briefly stopping at mid-scale each way. This occurs three times. The air pressure and voltmeter gauges are excluded from the test.

DISPLAY TEST

To help identify defects in the graphic display, the display goes from dark to bright in about ten seconds.

BUZZER TEST

Sounds each of the buzzer signals for ten seconds each. The name of the buzzer is written on the display as the test runs.

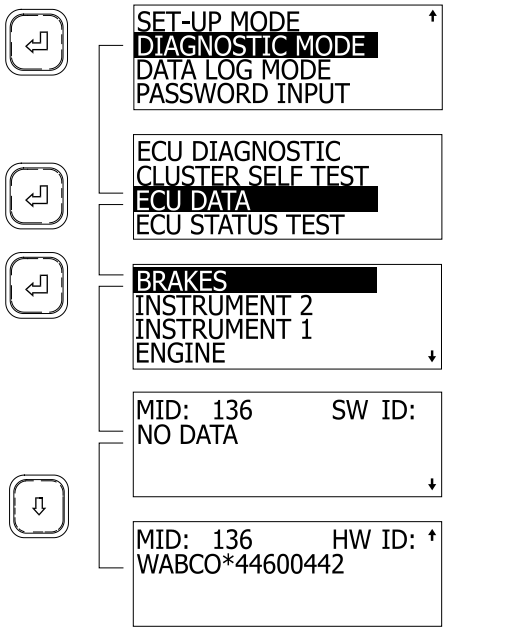
ECU Data

This feature requests information from the available components. This information includes the component's SAE message identifier (MID), its software ID (SW ID) and hardware ID (HW ID) if available.

To access ECU Data:

1. When in DIAGNOSTIC MODE, highlight ECU DATA using the arrow keys;
2. Press enter key;
3. Highlight the desired component;
4. Press enter key.

The MCD displays the information on two screens. Toggle between screens using the arrow keys.



ECU Status Test

This feature allows testing the response of vehicle systems. This can be useful when troubleshooting or checking the proper working order of senders and other components.

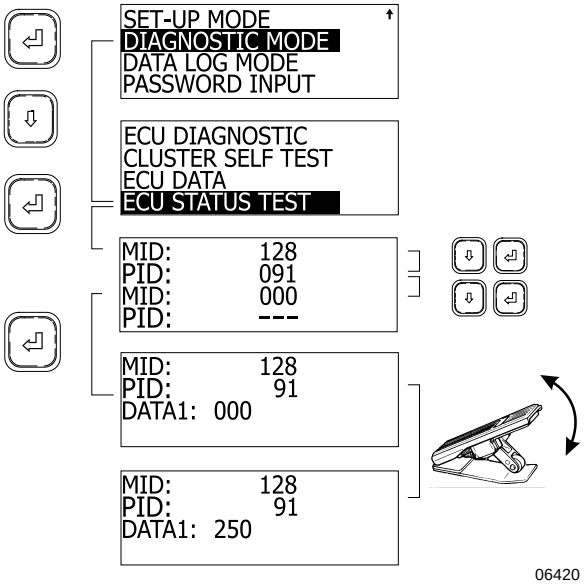
In ECU Status Test mode, the MCD will monitor the system and display the data on the screen. Up to two components can be monitored at once.

To perform a status test:

1. When in DIAGNOSTIC MODE, highlight ECU STATUS TEST using the arrow keys;
2. Press enter key;
3. Using the arrow and enter keys, enter a MID and PID (or PPID);
4. Press enter key;

The MCD now displays in real time the value of the component. The example below shows how changing the throttle position will be displayed on the MCD. That way one can verify if any identifiable sender unit is working properly or whether the link is OK.

5. Press Esc key to exit.



In this example, a throttle pedal in good working order will send a linear and continuous (no jumps) signal to the ECU, appearing as DATA value on the MCD screen. Full pedal movement will display values from 000 (no throttle) to 250 (maximum throttle).

Note: *The MCD can perform a status test on as many as two components simultaneously. To do so, when setting MID and PID codes, set a second (non zero) MID and PID code.*

DATA LOG MODE

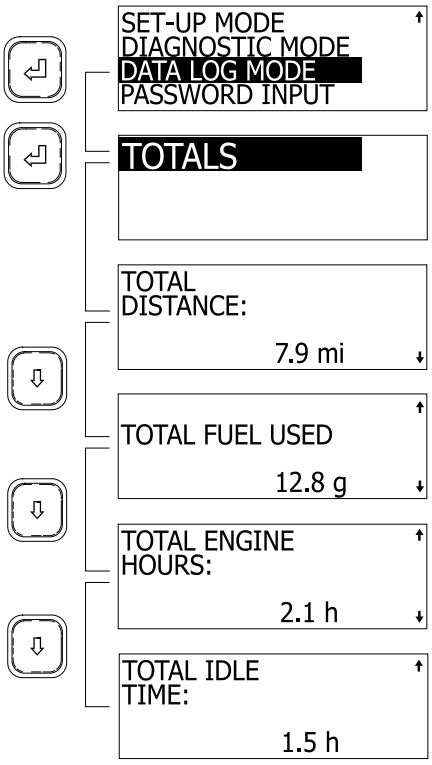
This feature shows total accumulated distance, fuel used engine hours and idle time.

1. To access data log:
2. Highlight DATA LOG MODE using the arrow keys;
3. Press enter key to confirm;

The screen shows TOTALS highlighted.

4. Press enter key;
5. View totals using the arrow keys.

Exit by pressing the Esc key.



PASSWORDS

The MCD recognizes two passwords: a mechanic's password and an owner's password. The mechanic's password allows setting DEFAULT LANGUAGE, FLEET FUEL TARGET, performing a STATUS TEST and using the RESET ALL function. The owners password gives access to all the above and allows changing both passwords.

The mechanic's password is initially set to "0000".

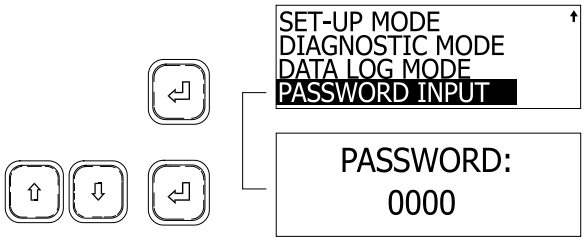
The owner's password is initially set to "1234".

Password Input

To enter either password and have access to restricted functions of the MCD:

1. Use the arrow keys to highlight PASSWORD INPUT;
2. Press enter key to confirm;
3. Use the arrow keys to set the first digit of the password;
4. Press enter to highlight the next digit;
5. Pressing enter key on last digit will confirm the password.

If the entered password is correct, the MCD will revert to the previous screen. Access to restricted screens is allowed.



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Changing passwords

To change any password, owner's password must be entered first.

To change passwords:

1. Using the arrow keys, highlight SET UP MODE;
2. Press enter key to confirm;
3. Using the arrow keys, highlight PASSWORD CONFIG;
4. Press enter key to confirm;
5. Using the arrow keys, select MECHANIC or OWNER;
6. Press enter key to confirm;
7. Set new password.

PRODRIVER™

PRODRIVER™ is an optional graphic device similar to MCD but with added features. A summary of data displays available from PRODRIVER™ include:

- Instantaneous and average fuel consumption rate;
- Trip time, miles driven, fuel used, , average speed;
- Driving time, percentage, miles, fuel used, fuel consumption rate;
- Idle time, percentage and fuel used;
- Cruise time, percentage, miles cruised, fuel used, fuel consumption rate;
- Top gear time, percentage, miles driven, fuel used, fuel consumption rate;
- Overspeed time and percentage for two speed thresholds;
- Over-rev time and percentage;
- Maximum vehicle speed and RPM;
- Coasting time and percentage;
- Automated oil change interval tracking;
- Hard braking incident record;
- Driver initiated incident record;
- Stop Engine and Check Engine code log.

PRODRIVER™ has many additional features and benefits and can be combined with other members of Data Hub line of products from Detroit Diesel. This combination presents a powerful vehicle information management system.

WORLD TRANSMISSION ELECTRONIC CONTROL UNIT (ECU)

Works with the automatic transmission with the push-button shift selector.

The World Transmission electronic controls has four major elements: The Electronic Control Unit (ECU), the Throttle Position Sensor (TPS), speed sensors and the transmission shift selector control pad. Refer to "Controls & Instruments" chapter 3. These components work together to electronically control the functions of the transmission. The throttle sensor, speed sensors and shift selector transmit information to the ECU. The ECU processes this information and then sends signals to actuate specific solenoids located on the control valve body in the transmission. The action of the solenoids affects hydraulic circuits, which in turn control the upshifts, downshifts, and lock-up functions. In addition to controlling the operation of the transmission, the WT electronic controls monitor the system for abnormal conditions.

When one of these conditions is detected, the WT electronic control system is programmed to automatically respond in a manner which is safe for the driver, the vehicle and the transmission. The WT electronic control system turns *ON* the CHECK TRANS light on the dashboard, which serves as a fault indicator.

To enhance troubleshooting and to allow interrogation of the ECU for valuable service information, the shift selector display on the transmission control pad or an optional diagnostic tool can be used. For information

about reading and interpreting diagnostic codes, refer to chapter 8, "Technical Information" under "World Transmission Diagnostic Codes".

TRANSMISSION RETARDER

The transmission retarder is an optional device that helps to reduce the speed of a vehicle. It improves vehicle control, increases driving safety and permits more economical operation. The retarder provides slowing power when it is most needed, such as when descending mountain roads, in stop-and-go traffic and on crowded freeways.

The retarder is provided with a switch on the dashboard and a lever on the steering column (refer to "Controls & Instruments" chapter 3).

Note: *Extended use will raise the temperature of the transmission oil.*

The retarder helps to reduce speed on grades without using the vehicle's conventional service braking system. This virtually eliminates brake overheating and reduces the risk of a runaway vehicle. A retarder greatly increases the service life of brake pads and discs, resulting in reduced brake maintenance costs.

Note: *Each time the transmission retarder system is in operation, the stoplights automatically illuminate.*

Note: *For vehicles equipped with the Antilock Braking System (ABS), as the wheels start to lock-up on slippery roads, the output retarder automatically deactivates until the wheels roll freely.*

JACOBS ENGINE BRAKE

The JACOBS engine brake is an optional diesel engine retarder which uses engine compression to aid in slowing and controlling the vehicle. When activated, (refer to "Controls & Instruments" chapter 3) the JACOBS brake alters the operation of the engine's exhaust valves so that the engine works as a power-absorbing air compressor. This provides a retarding action to the wheels.

The engine brake is a vehicle-slowing device, not a vehicle-stopping device. It is not a substitute for the service braking system. The service brakes must be used to bring the vehicle to a complete stop.

Effectiveness of the engine brake system will vary according to the transmission range in use. The engine brake system is more effective in lower ranges and at higher engine speeds.

Warning: *When descending significant grades, use the service brakes as little as possible. If the engine does not slow the vehicle to a safe speed, apply service brakes and shift to a lower range. Let the engine (and engine brake) slow the vehicle. Keep brakes cool and ready for emergency stopping.*

Note: *Each time the engine brake system is in operation, the stoplights automatically illuminate.*

ANTI-LOCK BRAKING SYSTEM

The purpose of the Anti-lock Braking System (ABS) is to maintain vehicle stability and control during braking and to minimize the stopping distance in any road condition.

On slippery roads and more generally in emergency situations, over-braking frequently induces wheel locking. Wheel locking greatly increases breaking distance on any road surface. Locked wheels also impede directional control and cause severe tire abrasion. An anti-lock braking system provides maximum braking performance while maintaining adequate control on slippery roads.

The basis of ABS is constant monitoring of wheel parameters during braking. Sensors on each wheel of the front and drive axles constantly measure wheel speed during braking. This information is transmitted to a four-channel electronic processor which senses when any wheel is about to lock. Modulating valves quickly adjust brake pressure (up to 5 times every second) to prevent wheel lock. Each wheel is therefore controlled according to the available grip.

In this way, the vehicle is brought to a stop in the shortest possible time while remaining stable and under the driver's control.

Caution: *Vehicles following ABS-equipped vehicles may not be able to brake as fast on slippery roads. Whenever possible, warn other drivers by depressing the brake pedal lightly several times before braking.*

RETRACTABLE TAG AXLE

The optional lifting of the tag axle is controlled by a valve located on the left lateral console. The valve can be switched to either the WHEELS UP or WHEELS DOWN position. The axle will be automatically raised or lowered by air pressure according to the position of the valve switch. Refer to "Controls & Instruments" chapter 3.

The tag axle service brakes and parking brakes operate only when the tag axle is in the WHEELS DOWN position. Never lower the tag axle while the coach is moving. When the tag axle is in the WHEELS UP position, the corresponding indicator light will illuminate and a beep will sound to alert the driver of the tag axle's position. Lifting the tag axle shortens the wheelbase and allows tighter turning. This is very useful in tight maneuvering areas like in a parking lot or when negotiating a tight corner. Raising the tag axle transfers extra weight and additional traction to the drive wheels providing improved control on slippery roads.

Caution: *In order to prevent damage to the suspension, always raise the tag axle before lifting the vehicle.*

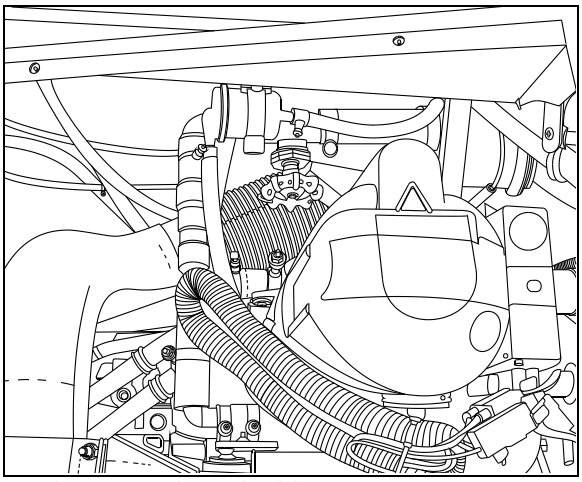
Caution: *Never lower the tag axle while vehicle is moving.*

TAG LOAD RELEASE SYSTEM (TLR)

This standard system allows for automatic unloading of the tag axle air springs (without raising the axle), whenever speed drops to less than 8 mph (13 km/h) and steer angle exceeds 22.5° (1 1/4 turns of the steering wheel). The system automatically transfers the tag axle load to the drive axle. This reduces tag wheel shearing to enable shorter turning radii for tighter cornering and remarkable agility in close-quarter maneuvering, whether backing up or moving forward.

COOLANT HEATER

This optional auxiliary heating system is used for preheating and retaining the heat of water-cooled engines. It can be used before startup to ease starting and to provide rapid operation of the interior heating system. It can also be used with the engine running to maintain coolant heat and interior temperature.



L.H. SIDE REAR SERVICE COMPARTMENT 05058

The heater operates independently of the engine. It is connected to the cooling system, heating circuits and to the vehicle fuel and electrical system.

Warning: *The coolant heating system uses the same fuel as the engine. Do not operate in a closed building or while refueling. Operate only in a well ventilated area.*

SWITCHING THE HEATER ON

The pilot lamp illuminates when the heater is switched *ON*. Combustion air flows in to flush out the combustion chamber and the water circulation pump begins operating. The fuel metering pump delivers fuel in precise amounts to the combustion chamber, where fuel and combustion air form a combustible mixture which is ignited by the glow plug.

Once the flame sensor has signaled to the control unit that combustion has taken place, the glow plug and ignition coil are switched *OFF.*

Hot combustion gases are diverted at the end of the flame pipe and are then forced through the indirect heating surfaces of the heat exchanger. The heat exchanger transfers the heat to the coolant water passing through the heat exchanger.

The heater is thermostatically controlled and operates intermittently (i.e., the switched-on time of the burner varies depending on the heat requirement). The water temperature is controlled by the built-in water thermostat.

The water circulation pump remains in operation as long as the heater is operating, even during the regulated intervals and during the delayed cut-out of the heater. The pump can also be

operated independently of the heater by means of an appropriate circuit. The heater can be switched *ON* at any time (i.e., during the delayed cut-out period). Ignition takes place after the delayed cut-out time expires.

SWITCHING THE HEATER OFF

The fuel supply is interrupted when the heater is switched *OFF*. This causes the flame to go out and a delayed cut-out of 2.5 minutes begins. The circulating combustion air flushes the remaining combustion gases out of the chamber and cools off the heated parts on the exhaust side of the heat exchanger. The water circulation pump continues to transfer the latent heat present in the heat exchanger, thus preventing hot spots. Once the delayed cut-out time expires, both the combustion air blower and the water circulation pump switch *OFF* automatically. A cut-out will automatically take place in case of heater failure. Refer to chapter 8, "Technical Information" for more information.

COOLANT HEATER TIMER

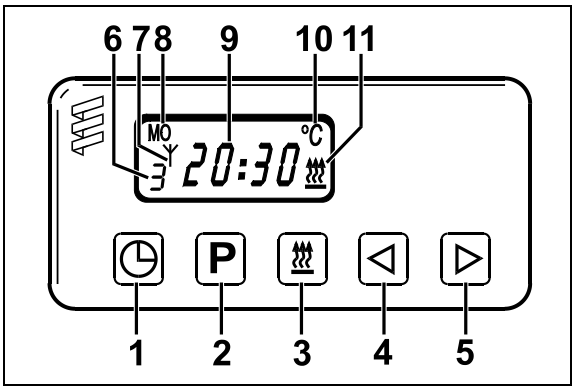
The timer, located on L.H. lateral console is used to program the starting and stopping time of the preheating system. One of three possible timers may be installed in your vehicle (refer to the three following images). The system indicator light, located on the timer, illuminates when the system is functional.

Caution: *The preheating system should not operate for more than one hour before starting engine as this could discharge batteries.*

Warning: *Preheating system must not operate when vehicle is parked inside or during fuel fill stops.*

Note: *Preheating system uses the same fuel as the engine.*

Timer Operating Instructions (Espar)



ESPAR 18326

These Instructions refer to the ESPAR timer illustrated above.

1. Time
2. Program
3. Heating ON
4. Backwards
5. Forwards
6. Memory indicator
7. Symbol for remote control
8. Weekday/program day
9. Current time/program time
10. Temperature display
11. Status display

When the power supply has been connected, all the elements in the display flash -the time must be set. Heating cannot start until the time is set.

Setting Time and Weekday for the First Time

Briefly press (1). The time display 12:00 flashes.

Set the current time using (4) or (5). When the time display stops flashing, the time has been stored.

The weekday begins to flash. Set the current weekday using (4) or (5). When the weekday stops flashing, the weekday has been stored.

If the ignition is “ON”, the display continues to be displayed.

If the ignition is “OFF”, the display disappears after 10 seconds.

Changing Time and Weekday

Press and hold (1) until the time flashes.

Proceed as per instructions for setting time and day for the first time.

If only the time is to be set, you may skip setting the weekday by pressing (1) twice.

When the weekday has been set, press (1) to stop the display from flashing and to store the time and day.

Heating Without Programming (Ignition "Off")

Press (3). The status display (11) will show heating symbol.

The default heating time is set to 120 minutes. It can be changed temporarily or permanently.

Temporarily Setting Heating Time

With heater on, press (4) to decrease time (minimum 1 minute) or (5) to increase time (maximum 120 minutes).

Permanently Setting Heating Time

With heater "OFF" (do not press (3), press and hold (4) (approx. 3 seconds), until display appears and flashes.

Set heating time (from 10 to 120 minutes) using (4) or (5).

When display disappears, the new heating time has been stored.

Switching Off Heating

Briefly press (3).

The heating symbol will disappear from status display (11).

System switches to automatic after-run for cooling.

Heating Without Programming (Ignition "On')

To switch heating "ON", press (3). The status display (11) will show heating symbol, as well as time and weekday.

Heating will remain "ON" until ignition is switched "OFF".

If the ignition is switched "OFF", the heating remains switched on for 15 minutes.

This time can be increased (max. 120 minutes) by pressing (5) or decreased (min. 1 minute) by pressing (4).

Switching Off Heating

Briefly press (3).

The heating symbol will disappear from status display (11).

System switches to automatic after-run for cooling.

Programming Start Of Heating

3 switch-on times within the following 24 hours or one switch-on time in 7 days can be programmed. Only one switch-on time can be activated at one time.

Selecting and activating memory:
(starting from neutral status with display visible)

First memory – press (2) once.

Memory display: 1 (default time setting 12:00)

Second memory – press (2) twice.

Memory display: 2 (default time setting 12:00)

Third memory – press (2) three times.

Memory display: 3 (default time setting 12:00)

Neutral status (no memory activated) – press (2) repeatedly until memory display disappears.

Start of heating within 24 hours

Set the starting time:

1. Press (2) repeatedly until the desired memory display (1, 2 or 3) flashes.
2. Briefly press and release either (4) or (5). The program time flashes.
3. Set the heating start time using (4) or (5) (Setting is only possible if the program time is flashing).

To select another memory, press (2).

Start of heating after 24 hours (max. 7 days)

Set the starting time:

1. Press (2) repeatedly until the desired memory display (1, 2 or 3) flashes.
2. Briefly press and release either (4) or (5). The program time flashes.
3. Set the heating start time using (4) or (5) (Setting is only possible if the program time is flashing).

Set the program day:

4. The program day begins to flash approximately 5 seconds after the time has been set.
5. Set the heating day using (4) or (5).

6. The program time and day are stored when the time display disappears or when the current time appears.
7. The memory display indicates the activated memory. The flashing “heat-on” symbol (11) also indicates that a memorized start time is activated.

Checking activated memory

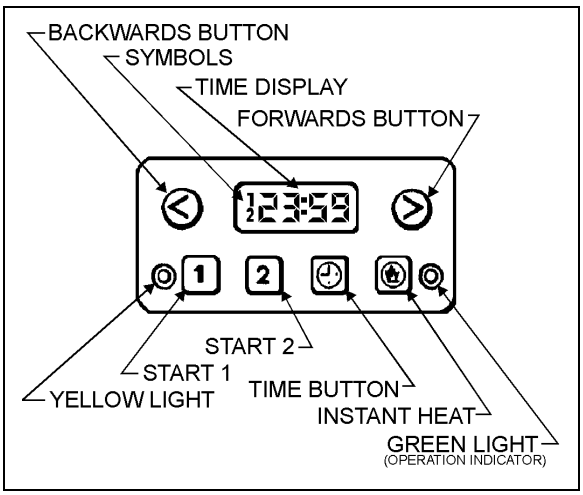
The program time of the displayed memory is displayed for about 5 seconds. The display then disappears or then switches to current time (if the ignition is “ON”).

The programmed time (and day) can be displayed by holding (2) down for five seconds.

Temperature display

If an ambient temperature sensor is connected (Espar # 25 1482 89 41 00) and the ignition is activated, the temperature can be permanently displayed by pressing (1) briefly. If the ignition is deactivated, the time temperature is displayed for 15 seconds when (1) is pressed twice.

Timer Operating Instructions (Webasto)



WEBASTO 18046

These instructions refer to the WEBASTO timer illustrated above

***Note**: Heater timer control pad may differ from the one described. Refer to your manufacturer's instruction booklet for detailed operating instructions.*

To Set the Clock

If the time display e.g. 18:33 is wrong, or if it flashes 8:88, hold ⏲ and press either ⏴ (backwards) or ⏵ (forwards). The longer you hold the button down, the quicker the display changes. The last few minutes are set accurately by quick pushes. Adjust to get exact time, e.g. 23:59. The display fades after 20 seconds.

Present Time Display

Press ⏲ at any time. Present time appears on the screen.

Manual Heating Start-Up

Press 🔥 to switch the heater on or off immediately. The green light illuminates when the heater is on.

Programming Heating Start Time

Press 1 and the display shows the time at which the heater will start. You can alter the starting time by pressing either ⏴ (backwards) or ⏵ (forwards) button. The longer you hold the button down, the faster the display changes. The last few minutes are set accurately by quick pushes. The display fades after 20 seconds. Start time 1 remains on the display, and the yellow light stays on. Starting time #1 is now activated.

Button 2 allows you to program a second starting time:

Press button 2 which de-activates starting time 1, then proceed as with 1.

The activation of the second starting time is indicated by the symbol 2.

To Check (or activate) Start Time

Press button 1 or 2 briefly. The display shows the programmed starting time for 20 seconds. This also programs the timer to start the heater at the time shown.

To Cancel Heating Start Time

Press button ▫ or 2 briefly. The appropriate number in the display goes out, together with the yellow light.

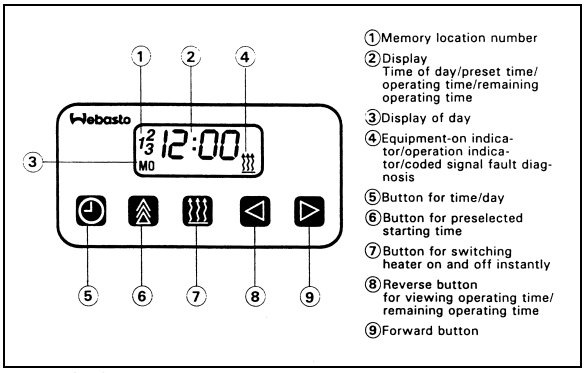
***Note:** Switch on the preheating system briefly about once a month, even during the warm season.*

***Caution:** When welding on the vehicle, disconnect the preheater module connector in order to protect this system from voltage surges.*

Caution: *To avoid running down the batteries, do not turn on the preheating system for more than one hour before starting the engine.*

Warning: *The preheating system uses the same fuel as the engine. Do not operate in a building or while refueling. Operate only in a well-ventilated area.*

Timer operating instructions (Webasto)



WEBASTO 18327

These instructions refer to the WEBASTO timer illustrated above.

Remaining Operating Time

The remaining operating time refers to the period of time the heater still continues to remain in operation. It may be changed while the heater is in operation.

Setting the Digital Timer

After the power has been connected, all symbols on the digital display are flashing. The time of the day and the day of the week must be set.

All flashing symbols of the timer can be set by means of the Forward (9) or Reverse (8) buttons.

When buttons (8) and (9) are pressed for more than 2 seconds, the quick digit advance mode is activated.

Setting the Time and Day of the Week

1. Press button (5) for more than 2 seconds (time display flashes).
2. Press (8) or (9) button to set the time of day.
3. Wait 5 seconds. The time of day is stored (time of week flashes).
4. Press (8) or (9) button to set the correct day of week.
5. Wait 5 seconds. The day of week is stored.

Viewing the Time (Ignition ON)

Continuous display of current time and day of the week.

Viewing the Time (Ignition OFF)

Briefly press button (5) to display current time and day for 5 seconds.

Switching Heater ON (Instant Heating) With Ignition ON:

Press button (7). Heater is switched on (continuous operation) and continues to operate until button (7) is pressed again or ignition is switched off.

Note: *If the ignition is switched off while heater is in operation, the remaining operating time of 5 minutes flashes on the display and the heater will continue to operate for this period of time.*

Switching Heater ON (Instant Heating) With Ignition OFF:

Press button (7). Heater is switched on for preset operating time (the factory-set heater operating duration is 60 minutes)

Switching Heater OFF

Press button (7). The heater starts its after-run cycle and switches off thereafter.

Presetting Operating Duration

1. Press button (6). Memory location number flashes.

Note: *By repeatedly pressing button (6), starting time 2 or 3 can be preset.*

2. Press button (8) or (9) until correct startup time is set.
3. Wait 5 seconds. Preset starting time is stored and day of week flashes.
4. Press button (8) or (9) to select the correct startup day of week.
5. Wait 5 seconds. The startup day of week is stored.

The number of memory location remains on the display. The timer is now in the programmed mode and will switch the heater in a the preset time.

Note: *We recommend that memory locations 1 and 2 be used for presetting times within 24 hours of setting the timer. Memory location 3 can be used for a starting time within the next 7 days of setting the timer.*

Recalling Preset Times

Press (6) repeatedly until the desired memory location number and preset time are displayed.

Canceling Preset Time

Press button (6) repeatedly until no more memory location number is visible on the display.

Setting Operating Time

1. With heater off, press button (8). Operating time flashes.
2. Press button (8) or (9) to set the operating time (between 1 and 120 minutes)
3. Wait 5 seconds. Operating time is stored.

The heater remains in operation for the preset time (except for continuous operation).

Setting the Remaining Operating Time

1. With heater in operation, press button (8). Remaining operating time flashes.
2. Set remaining time with button (8) or (9).
3. Wait 5 seconds. Remaining operating time is stored.

Fault Diagnosis by Coded Light Signals

On heaters equipped with a fault diagnosis system using coded light signals, the equipment-on indicator/operation indicator flashes. Please consult your Webasto dealer.

Troubleshooting and Maintenance

The Espar preheater has a diagnostic code system, so the driver is prevented when something goes wrong. Codes are listed in chapter 8 “Technical Information” under “Espar Preheater Diagnstic Codes”.

Refer to the Maintenance Manual and to Webasto or Espar manuals for more information.

Note: *If there are no heater faults, the heater will go through a normal start cycle and regulate based on thermostat setting.*

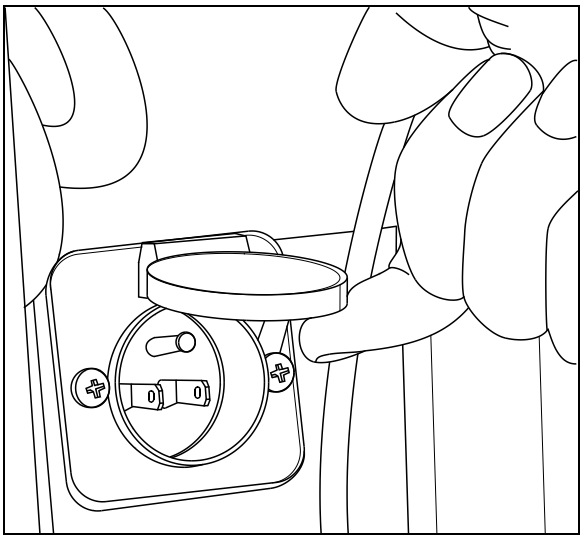
Note: *Switch on the preheating system briefly about once a month, even during the warm season.*

Caution: *When welding on the vehicle, disconnect the preheater module connector in order to protect this system from voltage surges.*

Caution: *To avoid running down the batteries, do not turn on the preheating system for more than one hour before starting the engine.*

Warning: *The preheating system uses the same fuel as the engine. Do not operate in a building or while refueling. Operate only in a well-ventilated area.*

110-120 VOLT CONNECTOR



110-120 VOLT POWER CONNECTOR 06390

The optional 110-120 volt power connector is located on the engine compartment rear door. Refer to "Vehicle Exterior" chapter 1. Connect the female end of an extension cord to the male connector. Connect the plug at the other end of the cord to a 110-120 VAC outlet only.

The engine may be equipped with an engine immersion-type electric block heater to assist cold weather starting.

The engine block heater should be used whenever the vehicle is parked for extended periods in cold weather and whenever a suitable power source is available.

Caution: *Only use a 110-120 VAC power source. Use only a grounded type (three pronged) extension cord with a minimum rated current capacity of 15 amps. Disconnect the extension cord before starting or moving the vehicle.*

KEYLESS ENTRY SYSTEM

By using this system, you can lock or unlock the entrance door and the baggage and service compartment doors. The keyboard is located below the entrance door handle. The master code in the microprocessor/relay module is pre-programmed by the manufacturer and cannot be deleted. Moreover, you can program your own entry code (e.g. a birthday or part of a social security number).

The master code is:

- Printed on the owner's wallet card;
- Printed on three decals, joined to the owner's wallet card.
- Printed on decal affixed to the keyless system microprocessor/relay module in the front console;

When you use the keyless entry system, the keyboard and step lights illuminate.

Do not push the buttons with a key, pencil or any other hard or sharp object as the buttons could be damaged. Although each button is provided with two digits separated by a vertical line, there is only one contact per button. Press in the center of the button (between the two digits, on the vertical line).

You must unlock the entrance door before you unlock any other baggage or service compartment door. If you let more than five seconds pass between the numbers you press, the system shuts down, and you have to enter your code again. If the keyless entry system does not work properly, use the key to lock or unlock entrance or compartment doors.

KEYLESS OPERATING INSTRUCTIONS

1. To unlock the entrance door and disarm the anti-theft alarm, enter the permanent factory code or the personal code. After pressing the fifth digit, the door will unlock. During the night, press any button to illuminate the keyboard, then enter the code.
2. When pressing any button, the keyboard lights up for five seconds and the step lights illuminate for twenty-five seconds.
3. To unlock the baggage and service compartment doors, press button 3|4 within five seconds of entering the code.
4. To lock entrance door, compartments and arm the anti-theft alarm system all at the same time, press buttons 7|8 and 9|0 simultaneously.

PROGRAMMING A PERSONAL CODE

Note: *To avoid erasing the code from the system memory, you should connect the keyless entry system to house batteries, otherwise the code will be erased each time battery main disconnect switches are set to the OFF position.*

You can program one personal code to unlock the entrance door and compartments. This code does not replace the permanent code that is factory programmed into the system. Use your personal code in the same manner that you would use the original code.

Do not choose a code that presents the numbers in sequential order, such as 1|2, 3|4, 5|6, 7|8, 9|0. Studies show that people who idly press the buttons usually press a sequential pattern. Also, do not select a code that uses the same button five times. Thieves can easily figure out these types of codes.

1. Choose and memorize your personal code.
2. Enter the original code, and within five seconds, press button 1|2.
3. Within five seconds of pressing button 1|2, enter your personal code, pressing each button within five seconds of the previous digit. The keyboard light will immediately turn *OFF* if the code is correctly entered.

The keyless entry system registers your personal code. To unlock the entrance door, you can use either code.

To erase your personal code, enter the original code, press button 1|2, then wait six seconds.

REMOTE ENTRY TRANSMITTER

Up to four hand held (key fob) transmitters can control electronic door lock system.

To unlock the entry door:

- Press the UNLOCK button on the transmitter. This will unlock the door and disarm the anti-theft system.

To unlock all compartments:

- Press UNLOCK a second time within five seconds of the first unlock. If more than five seconds pass pressing UNLOCK will only unlock the entry door.

To lock all doors and arm the anti-theft system:

- Press LOCK on the transmitter once.

To confirm that the door and compartments have been locked and that the anti-theft system is armed:

- Press LOCK again within five seconds of the first lock. The horn will chirp once if the door and compartments have locked. If the door or one of the compartments are open, a door ajar signal prevents arming of the system.

To set off the personal security alarm:

- Press the red PANIC button on any transmitter. The horn will sound and the headlamps will flash for a maximum of three minutes.

To deactivate the personal security alarm:

- Press the red PANIC button again on any transmitter or turn the ignition key *ON*.

Note: *the remote entry features will not function when the ignition is in the* ON *or* ACC*. position.*

Programming Transmitters

To program additional transmitters or replacing a lost or broken transmitter, all transmitters for a vehicle must be programmed at the same time. The receiver assembly module erases all previous transmitters from memory. When the transmitters are programmed or reprogrammed, the receiver assembly module can store up to four transmitters in memory.

To program or reprogram transmitters into the remote/keyless entry system, perform the following steps:

1. Make sure that the anti-theft system is not armed or triggered.
2. Turn the ignition key from *OFF* to *ON* five times within ten seconds, ending in *ON*. Refer to chapter 3, “Controls and Instruments” for information on positions of the ignition switch.

If the system has successfully entered program mode, it will lock then unlock all doors.

3. Press any button on a transmitter. The doors will lock and unlock to confirm that the transmitter has been programmed. Repeat for each other transmitter.

If the door locks do not respond for any transmitter, wait a few seconds and press the button again. If the doors still fail to respond, call your service representative.

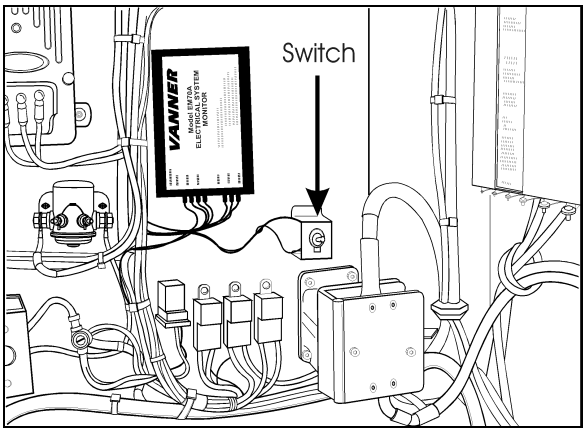
4. Turn ignition OFF (or wait up to five minutes after step two). To exit program mode. If a new set of transmitters have been programmed or reprogrammed, the remote control system will lock and unlock all doors one last time to confirm.

CHAPTER 5 : STARTING AND STOPPING PROCEDURES

STARTING ENGINE FROM DRIVER'S COMPARTMENT

Start or stop the engine as follows:

STARTING ENGINE



MASTER SWITCH IN MAIN POWER COMPARTMENT

- Set the master switch located in the main power compartment to the *ON* position;
- Make sure the starter selector switch located in the engine compartment is set to the *NORMAL* position. When starting the engine from the front of the motorcoach, set the battery master switch located on the dashboard to the *ON* position. Refer to the "Controls & Instruments" chapter 3;
- Apply the spring-loaded parking brakes by pulling the parking brake control button all the way up;
- Place transmission in neutral;
- Turn key in ignition to *START* position, release after starting.

Caution : *Do not engage starter for more than 15 seconds at a time. If engine does not start within 15 seconds, release ignition key and let starter cool for one minute before attempting to restart.*

***Caution* :** *Do not press accelerator pedal before starting. This could result in an electronic control unit fault and degrade the fuel system control.*

Caution : *Special precautions are necessary with turbocharged engines to avoid possible turbine damage. After starting, run the engine at slow idle for two minutes to allow lubricating oil to reach the turbocharger. Then run the engine at fast idle. Let oil pressure reach normal operating range before driving.*

Note : *If engine does not start, return key to* OFF *position before attempting to restart.*

Note : *If the accelerator pedal is depressed before starting, release and wait 30 seconds before attempting to restart.*

STOPPING ENGINE

- Apply parking brake and place transmission in neutral (N);
- Allow engine to idle for at least two minutes before shutting *OFF* engine. This insures that the turbine speed drops and allows time for the engine exhaust gas temperature to drop to 300 °F (150 °C);
- Turn key in ignition switch to *OFF* position.

Caution : *Do not shut* OFF *engine when running above slow idle.*

Caution : *Set the battery master switch to the* OFF *position after parking and when left unattended for an extended period of time. Refer to "Controls & Instruments" chapter 3.*

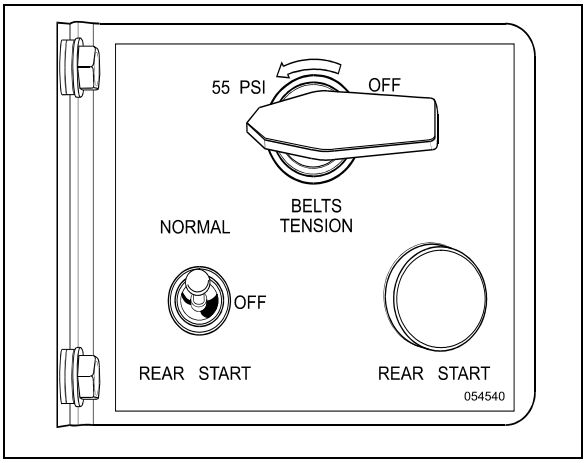
STARTING FROM THE ENGINE COMPARTMENT

Switches to start and stop the engine from inside the engine compartment are mounted on a small panel to the right of the engine.

STARTING ENGINE

Warning : *Apply parking brake and place transmission in neutral (N) before starting engine from inside engine compartment.*

- Set the master switch located in the main power compartment to the *ON* position;
- Set the starter selector switch to the *REAR START* position. Set the battery master switch located on the dashboard to the *ON* position. Refer to "Control & Instruments" chapter 3;
- Press the starter push-button switch. Release push-button after starting.



REAR START PANEL

Warning : *Do not wear loose clothing when working near engine. Stand clear of rotating components.*

Caution : *Refer to cautions in "Starting From The Engine Compartment" in this chapter.*

STOPPING ENGINE

To stop engine, set the starter selector switch to the *OFF* position.

Caution : *Do not stop engine by any other method.*

COLD WEATHER STARTING

COLD STARTING AID (ETHER)

The motorcoach may be equipped with the optional ether cold starting aid to facilitate cold-weather starts when the temperature is below 35°F (2°C). A control rocker switch is located on the dashboard. To activate the ether starting aid, proceed as follows:

- Before cranking engine, press the rocker switch for 3 seconds to fill solenoid valve;
- Release rocker switch to discharge shot of ether;
- Allow 3 seconds for shot to discharge;
- Start engine.

Caution : *Use the cold starting aid only when absolutely necessary. Excessive use of starter fluid could result in serious engine damage.*

ENGINE BLOCK HEATER

The motorcoach is equipped with an engine immersion-type electric block heater to assist cold weather starting. The 110-120 VAC power connector is located on the engine compartment rear door. Connect the female plug of an extension cord to the 110-120 VAC male outlet. Plug the extension cord into a 110-120 VAC power source only. Use the engine block heater whenever the motorcoach is parked for an extended period of time in cold weather and when a 110-120 VAC power source is available.

Caution : *Use only a 110-120 VAC power source. Use only grounded (three prongs) extension cords with a minimum rated capacity of 15 amps. Disconnect the extension cord before starting. Before driving, make sure the extension cord is disconnected and the engine compartment door is closed.*

ENGINE WARM-UP

After starting the engine, keep the parking brake applied and let the engine run at slow idle for two minutes to allow lubricating oil to reach the turbocharger. Increase engine speed to fast idle, using the FAST IDLE switch located on the dashboard for five minutes without loading the engine. Monitor the gauges and indicator lights to make sure all conditions are normal. If an abnormal condition is observed, stop the engine immediately and have the condition corrected.

Warning : *Never let the engine run in an enclosed, non-ventilated area. Engine exhaust fumes contain dangerous gases which can be fatal if inhaled. Before warming up the engine, open the door(s) or move the motorcoach outside.*

Note : *The engine will reach normal operating temperature shortly after driving. Avoid driving with full throttle until engine coolant temperature reaches 140°F (60°C).*

WORLD TRANSMISSION (WT) WARM-UP

When the transmission temperature falls below -20°F (-29°C), the CHECK TRANS telltale light illuminates after the engine is started. In this case, the transmission will be locked in neutral (N) until the transmission temperature rises above -20°F (-29°C) and the CHECK TRANS telltale light goes out. The transmission will only operate in first or reverse gears until it reaches the normal operating temperature.

JUMP STARTING

In order to avoid damage to solid-state electrical components, it is important that jumper (booster) cables be used correctly and only in emergencies. To jump start, use another 24 volt DC, negative grounded, power source. Use only jumper cables rated at 500 cranking amperes.

Note : *To charge batteries using the booster block terminals, the main power switches must be turned on.*

Warning : *Injury, explosion, battery acid damage or charging system overload may result if these jump starting procedures are not precisely followed.*

Warning : *Wear eye protection and remove rings, metal jewellery and watches with metal bands.*

Warning : *The battery could rupture or explode if jump started when the run-down battery fluid is frozen or if the battery fluid level is low. Check condition of run-down battery before attempting to jump start.*

Warning : *The gases given off by batteries while jump starting are explosive. Do not smoke near batteries.*

Caution : *Do not let the two vehicles touch. Keep a walk-through distance between the two vehicles. Make sure positive (red) and negative (black) jumper cable clamps do not touch.*

Caution : *Never connect the jumper cable to the negative terminal post of the run-down battery.*

Caution : *Do not jump start if a maintenance-free battery has a yellow test indicator. Have the battery replaced.*

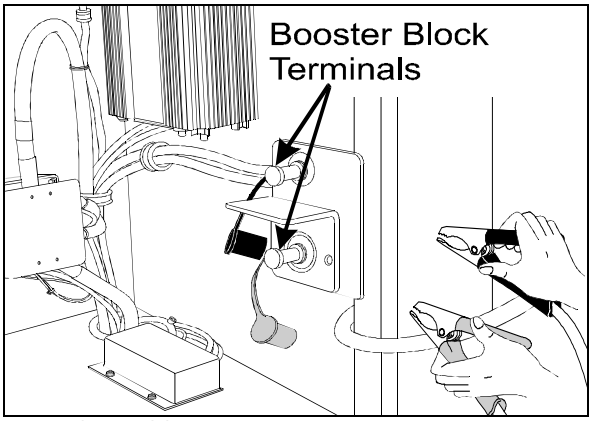
Caution : *Before attempting to jump start, make sure the parking brake is applied and the transmission is in neutral (N). Turn off all lights, heaters and other electrical accessories.*

To jump start, proceed as follows:

1. Remove the protective caps from the booster block terminals located in the main power compartment;
2. Connect one end of the red jumper cable to the positive (+) post of the booster power source. If the good battery is in another vehicle, that vehicle's engine must be shut *OFF* before connecting;
3. Connect the other end of the same red jumper cable to the positive (+) terminal on the booster block;
4. Connect one end of the black jumper cable to the negative (-) post on the booster power source;

5. Connect the other end of the same black jumper cable to the negative (-) terminal on the booster block; If the good battery is in another vehicle, start that vehicle's engine;
6. Let the engine run for a few minutes, then start the motorcoach with the run-down battery;
7. Disconnect the jumper cables in reverse order given in steps 2 through 5;
8. Install protective caps on the booster block terminals.

Note : *Jumper cables must be rated at 500 cranking amperes. If jumper cable length is 20 feet (6 m) or less, use 2/0 (AWG) gauge wires. If cable length is between 20 to 30 feet (6 to 9 m), use 3/0 (AWG) gauge wires.*



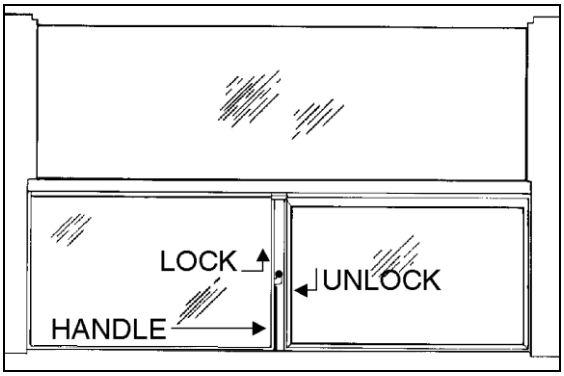
MAIN POWER COMPARTMENT

CHAPTER 6 : EMERGENCY FEATURES AND SAFETY EQUIPMENT

EMERGENCY FEATURES

SLIDING TYPE WINDOW

The sliding-type window could be used as an emergency exit. To open the window, unlock it then slide window and screen. Lock window when closed.



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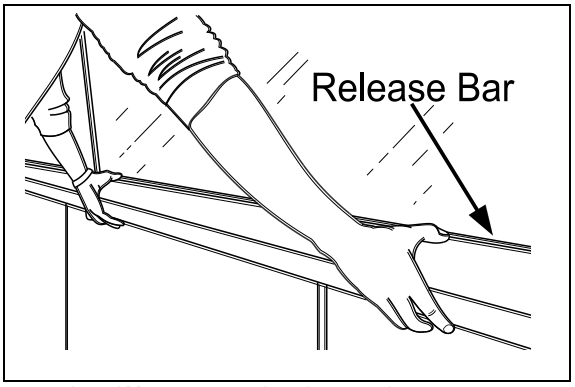
HINGED TYPE WINDOW

Some side cabin windows can be opened from the inside for emergency escape.

To open a side window emergency exit, slide fingers under window release bar. Lift the window release bar and push the window out from the bottom.

To close an emergency exit side window, lift the release bar and pull the window in.

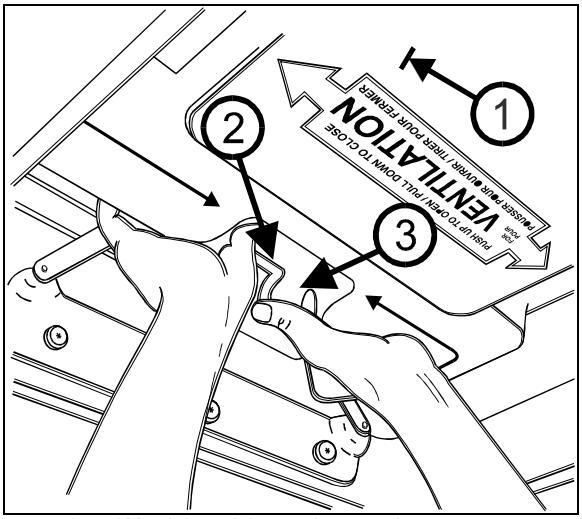


EMERGENCY EXIT WINDOW OPENING

Caution : *To prevent damage, keep the emergency exit windows closed during normal operation. To avoid damaging the emergency exit system, do not slam windows shut.*

EMERGENCY ROOF ESCAPE

An emergency escape hatch (1) may be installed in the roof at the rear of the motorcoach. It is designed to be opened by occupants. An optional emergency roof hatch may be located at the front of the motorcoach. In case of an emergency, push out the ventilation hatch completely. To release the emergency hatch, pull tab (2) rearward while pushing handle (3) out. An instruction decal with complete operating instructions is located on the escape hatch.

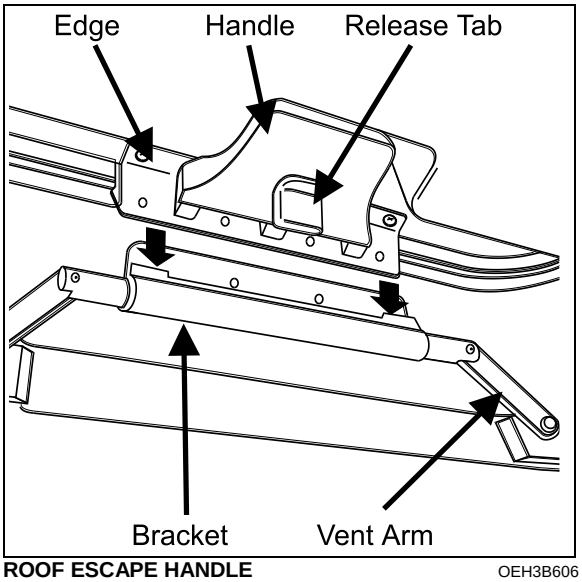


EMERGENCY ROOF ESCAPE OPENING OEH3B604

Note : *In the event of ventilation blower motor failure, the emergency roof escape may be used to aid ventilation by pushing the hatch upward.*

Caution : *Be aware of reduced motorcoach overhead clearance when driving under overpasses when the emergency roof escape hatch is open.*

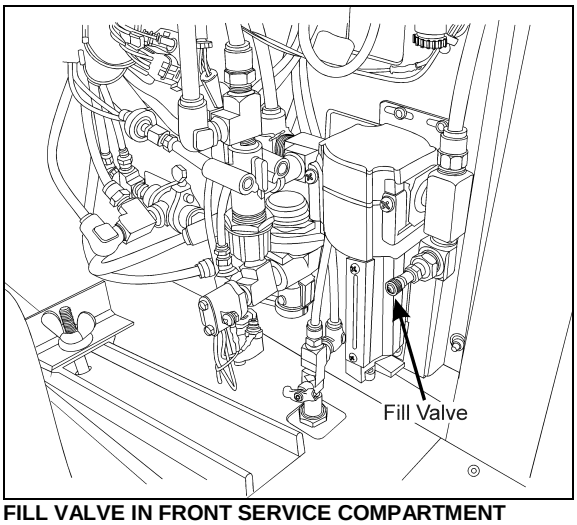
To re-latch handle after use, vent arms must be pushed upright in FULL OPEN VENT position. Insert edge between the two sections of the bracket and pull handle in to lock the hatch. Finally, pull the hatch in to close one side at a time.



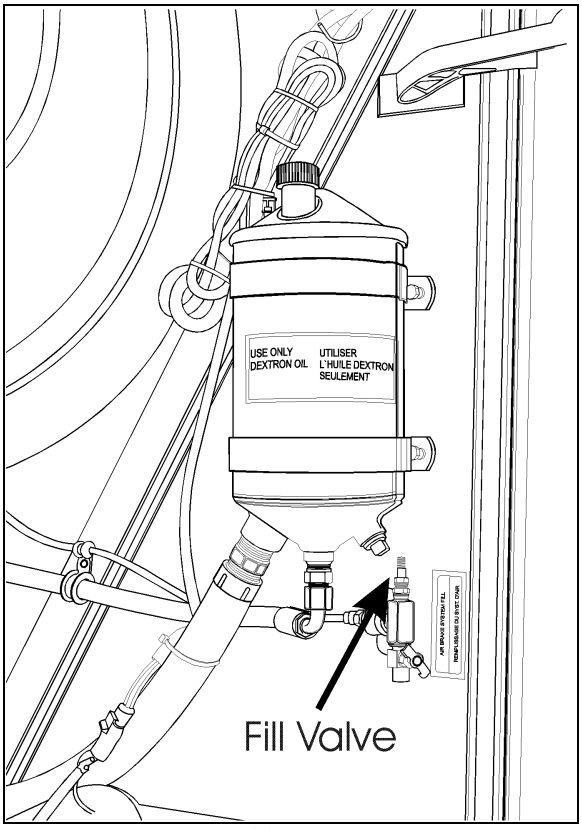
ROOF ESCAPE HANDLE OEH3B606

EMERGENCY AIR-FILL VALVES

The motorcoach is equipped with two air system emergency fill valves to supplement the air system when air pressure is low and the engine cannot be operated. One valve is located inside the front service compartment. The other valve is located inside the engine compartment near the R.H. access door hinge.



FILL VALVE IN FRONT SERVICE COMPARTMENT



FILL VALVE IN ENGINE COMPARTMENT

Both air system emergency fill valves are fitted with standard tire valve stems. The air systems can be filled using any standard external air supply line. The fill valve located in the engine compartment supplies air for all systems (brakes, suspension and accessories). The fill valve located in the service compartment supplies air for accessories only.

Caution : *Air filled through the two emergency fill valves will pass through the standard air filtering system. Do not fill air at any other location. Do not exceed 120 psi (827 kPa).*

EMERGENCY AND PARKING BRAKES

During normal operation, if air pressure in both brake circuits drops below 40 psi (276 kPa), spring-loaded emergency parking brakes will be immediately applied at full capacity to the drive axle wheels to stop the motorcoach.

Spring-loaded parking brakes are applied by pulling up the control valve knob located on the L.H. lateral console.

Parking brakes are not designed to be used as service brakes. For normal driving conditions, the control valve knob must remain in the down position.

Note : *Only use the parking brakes to supplement the service brakes to stop the motorcoach in emergency conditions. The stopping distance will be considerably longer than when using normal service brakes.*

Note : *Before releasing the parking brakes by pushing down the control valve knob, check the pressure gauges to make sure that the brake system air pressure is greater than or equal to 95 psi (655 kPa).*

Warning : *Always apply the parking brakes before leaving the driver's seat.*

Note : *A beep will sound if the ignition switch has been turned off without applying the parking brakes. The same beep will sound if pressure is still applied to the service brake pedal.*

Note : *The stoplights will automatically turn on when the parking brake is applied and the ignition key is turned to the ON position.*

SAFETY EQUIPMENT

FIRE EXTINGUISHERS

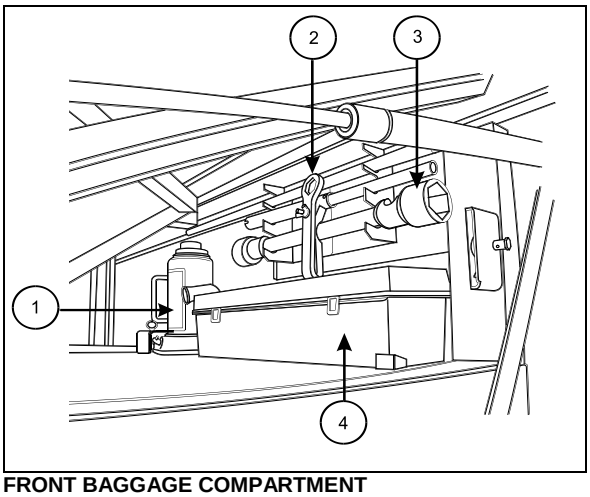
Two fire extinguishers are located on the motorcoach L.H. side just behind the driver's seat. Instructions for use are found on the extinguishers. Make sure you know how to operate fire extinguishers in case of an emergency.

FIRST AID KIT

The First Aid Kit is optional. A sticker (white cross over red background) identifies the First Aid Kit. It is usually stored near the driver's seat.

EMERGENCY WARNING REFLECTORS

A kit containing three triangular reflectors is provided to warn other drivers on the road in case of a breakdown. The kit is located on the right side of the first R.H. side baggage compartment with the jack and tools. The reflectors provide visible warning of an emergency situation. The three reflectors should be placed as indicated on the box cover. These reflectors comply with FMVSS 125 (Federal Motor Vehicle Safety Standards).



FRONT BAGGAGE COMPARTMENT

JACK/TOOLS

A kit for jacking up the motorcoach is stored in the first R.H. side baggage compartment. The kit includes a :

1. 30 ton bottle jack;
2. Bumper wrench;
3. Wheel nut wrench and lever;
4. Triangular reflectors.

DAYTIME RUNNING LIGHTS

The low beams come *ON* automatically at reduced intensity when the engine is started and the parking brake is released. The daytime running lights provide added safety by making the traveling motorcoach more visible to other drivers.

The lights are not used when:

- Engine is stopped;
- Parking brake is applied;
- The exterior lighting switch is turned to the second position.

Warning : *Do not drive with the daytime running lights at night. For night driving, turn* ON *the headlights by depressing the exterior lighting rocker switch to the second position. The daytime running lights do not provide sufficient illumination for safe driving at night.*

FOG LIGHTS

Optional halogen fog lights may be installed (refer to "Controls & Instruments" chapter 3). Fog lights provide better visibility in fog and precipitation. They improve visibility immediately in front of the vehicle. They also provide added safety.

Note : *Some states or provinces may restrict the use of fog lights. Verify local state or provincial regulations before using.*

CORNERING LIGHTS

The motorcoach may be equipped with up to four halogen cornering lights. Two lights are installed at the front of the vehicle, on each side as standard equipment. Two optional lights may be installed on each side at the rear of the motorcoach. The front lights illuminate at the same time as the turn signal flashers to increase lateral visibility while turning. The rear lights illuminate automatically when the reverse (R) range is selected to increase visibility while backing-up the vehicle.

COMPARTMENT LIGHTING

Baggage, engine, front service, main power compartment and rear electric compartment lights are automatically turned *ON* when the compartment door is opened. A telltale light on the central dashboard will illuminate when a compartment door is open.

MUD FLAPS AND SPLASH GUARDS

Mud flaps are installed behind each front wheel and the tag axles. Mud flaps minimize dirt on the lower panels of the motorcoach and prevent stones and debris from being thrown at vehicles travelling behind the motorcoach. Splash guards may be installed behind each dual wheel of the drive axle to prevent stone projectiles from being thrown at the tag axle wheels.

BACK-UP CAMERA

An optional back-up camera is available which provides the driver with visual assistance when backing-up.

The TV monitor may be mounted on the left side pillar and switches *ON* automatically when the transmission is in the reverse (R) range.

BACK-UP ALARM

The back-up alarm alerts pedestrians and other drivers when the motorcoach is being backed-up. Take extra precautions whenever backing-up. If necessary, use a guide to provide directions when backing-up. Both the alarm and optional camera are automatically activated when the transmission is put in the reverse (R) range.

BACK-UP ALARM OVERRIDE

A rocker switch located on the R.H. side dashboard panel allows the driver to override the Back-Up alarm system (as for example : at night on a camping site).

Note : *After use, return to normal operation*

ALARM SYSTEM

In addition to the dashboard indicator lights, the motorcoach is equipped with an audible alarm system to provide audible indications to the driver of the conditions given in the following table.

Indicator Light	Audible Alarm	Condition
Air primary	Buzzer	Low air pressure
Air secondary	Buzzer	Low air pressure
Check Trans	Buzzer	Inhibits shifting of transmission
Back-Up Alarm	Beep	Reverse gear engaged
Fire	Buzzer	Fire in engine compartment
Tag-Axle	Buzzer	Tag axle raised or unloaded

Note : *All alarm units are located in the front service compartment. The low pressure alarms for both primary and secondary air pressure systems are produced by the same alarm unit.*

SPARE PARTS KIT

The motorcoach may be equipped with a spare parts kit (optional). The kit contains parts such as bulbs, circuit breakers, belts, etc. The spare parts kit is stored in the first baggage compartment.

CHAPTER 7 : CARE AND MAINTENANCE

CLEANING

INTERIOR CLEANING

The cleaning information provided in this section is regarded as recommended cleaning practices. Cleaning results may vary depending on the condition of the stain. Always clean stains promptly for best results.

Note : *Use only approved cleaning products such as Prevost A.P.C., all purpose cleaner (Prevost # 683664). Never use stain protection products on new fabrics. To prevent permanent staining of fabrics, clean stains soon after they occur. Incorrect treatment of stains can worsen them. Get help from a cleaning specialist to remove stubborn stains.*

Driver's Seat Upholstery

Normal Cleaning

Firmly beat the seat upholstery with a blunt object, such as a wooden paddle, to release dust and dirt. Vacuum the seat upholstery fabric in the direction of the stitching using an upholstery nozzle.

Note : *Upholstery life will be reduced due to the abrasive nature of dirt and grit. Vacuum the seat upholstery regularly.*

Removal Of Stains And Marks

Remove stains and marks from the wool plush as follows:

Method 1

- Apply a nonflammable solvent (Trichloro-ethylene) to stained area with a clean, white absorbent rag;
- Clean stain by starting at the outer edges of the stain and working in toward the center;
- Blot affected area frequently with a clean, dry absorbent cloth to prevent stain rings caused by excess solvent.

Warning : *Use solvents in a well ventilated area. Open all windows and doors.*

Method 2

- Wet the stain with a solution of household detergent and lukewarm water. Do not soak the stain;
- Rub the stain with a damp cloth;
- Rinse cloth after each application.

Caution : *Do not use soap, soap powder, ammonia, soda, bleach or cleaning products containing any of these compounds.*

Beverage Stains

Remove beverage stains by following method 1. If stain persists, repeat method 1 using methylated spirits instead of solvent.

Alcoholic Beverage Stains

Remove alcoholic beverage stains by wetting the stain with water, then clean following method 2.

Burns

Scrape burnt area using a knife or razor blade then clean following method 2. Consult an upholstering specialist when dealing with extensive burns.

Cosmetic Stains

Remove stains left by cosmetics by following method 1 then method 2.

Ink Stains

Remove ink stains following method 2. If stain persists, apply a warm oxalic acid solution. Rinse with water.

Blood, Urine Or Vomit Stains

Remove such stains by following method 2.

Copying Ink - Ball-Point Pen Ink

Treat with methylated spirits, blotting frequently to avoid spreading stain, followed by method 2.

Marking Ink (Felt-tip Pens)

Treat with Methyl-Ethyl-Ketone (MEK) followed by method 2.

Oil, Grease And Paint

Remove excess using a knife. Treat with method 1 followed by method 2. If stain persists, repeat procedure.

Rust Stains

Remove rust stains by following method 2. Apply a warm oxalic acid solution to stained area. Rinse with water.

Tar

Soften tar with benzene, then treat using method 1 followed by method 2.

Chewing Gum

Soften gum with cyclohexane. Carefully scrape off stains using a sharp knife or razor blade.

Plastic And Vinyl

Clean plastic and vinyl trim using a clean damp cloth or sponge. For vinyl trim marks, use a lukewarm all purpose cleaner or a mild saddle soap. Remove water spots and soap traces using a clean damp cloth or sponge. Dry with a clean soft cloth.

Remove grease, tar or oil stains with a clean cloth or sponge and an all purpose or solvent-type vinyl cleaner.

Apply a colorless vinyl or leather protective product to maintain the luster and pliability of the plastic or vinyl surface.

Windows

Clean the inside of the windows with a solution of one part vinegar to ten parts water.

Stainless Steel

Use a stainless steel cleaner and follow the manufacturer's instructions. Stainless steel cleaning solution may be ordered from Prevost Car Inc. quoting part number 68-0356.

Formica

Remove stains on formica surfaces with a household detergent, methylated spirits or mineral turps. Clean with a mild abrasive and water solution if stain persists.

Carpet

Vacuum carpets regularly to prolong carpet life.

Rubber Components

Use only pure water or glycerin to clean stains on rubber components.

Caution : *Never use solvents on rubber components.*

Floor Cleaning

Clean floors with a quality nonionic detergent cleaner. Follow the manufacturer's recommendations for cleaning.

Remove any excess detergent solution using a wet/dry vacuum or mop. Rinse floor with a solution of one part Clorox to ten parts warm water.

Polish dry floor using a high-speed buffer and a smooth red 3-M polishing pad.

Mop floor periodically with a solution of 5 per cent Clorox in warm water.

EXTERIOR CLEANING

Frequent washing and waxing of the motorcoach exterior will help to protect the paint finish. The paint finish is attacked by the abrasive effects of airborne particles and damage from corrosive pollutants.

Before washing the exterior of the motorcoach, close the fresh air dampers using the switch located on the lower R.H. control panel. Install keyhole protectors to prevent water from penetrating. Rinse motorcoach with water to remove all loose dirt. Wash motorcoach using a quality brand car wash soap. Follow manufacturer's recommendations for cleaning. Rinse well with water.

The motorcoach exterior should be cleaned, waxed and buffed when water droplets no longer form on the painted surfaces.

Caution : *Hot water can damage paint. Keep water cool or lukewarm.*

Caution : *Make sure cleaning solutions are not harmful to painted surfaces. Read the manufacturer's instructions before using.*

Caution : *Do not spray water jet directly into fresh air inlet dampers.*

Caution : *Do not aim high pressure water jet at radiator doors. This could damage the radiator fins.*

To prevent corrosion, remove caked-on dirt and road salt from the motorcoach underbody using a high pressure water jet. Clean wheel housings, bumpers, muffler, tailpipe and brackets.

Carry out corrosion prevention cleaning at least twice a year. Spray underneath of the motorcoach and let soak before cleaning. Let engine and exhaust system cool down before cleaning.

Tar Or Oil

Remove tar or oil as soon as possible with an approved automotive tar and oil remover or turpentine. Thoroughly clean area with car wash soap and water. Let dry, then wax.

Insects

Remove insect stains as soon as possible with lukewarm soap and water or insect remover.

Tree Sap

Remove tree sap or bird droppings with lukewarm soap and water. Do not allow to harden.

Windows

To prevent windshield wiper streaking, keep silicone sprays away from windshield. Remove road film and wax build-up from windows with lukewarm soap and water or with an alcohol-based cleaning agent. If a chamois is used to dry and polish glass, use it exclusively for that purpose.

Wiper Blades

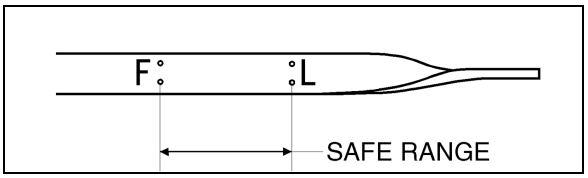
To avoid tearing frozen wiper blades, loosen them before removing. Remove and clean wiper blades periodically with an alcohol-based cleaning solution. Clean wiper blades using a sponge or soft cloth.

OIL LEVEL VERIFICATION

ENGINE OIL LEVEL

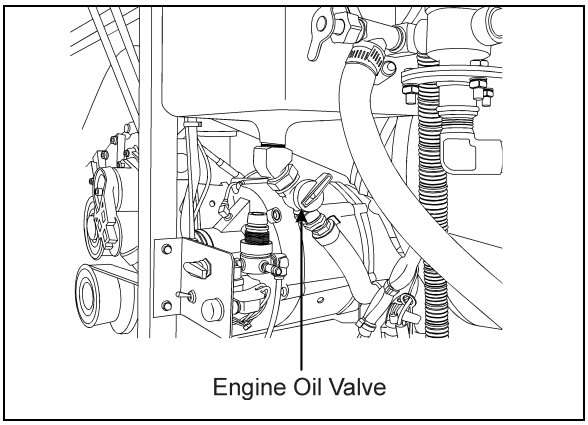
Check engine oil level when engine is still warm and with motorcoach parked on a level surface. Shut *OFF* engine and wait at least 10 minutes for oil to drain into oil pan before checking. Check engine oil level daily or before each trip. Add oil as required. Do not overfill. Remove dipstick, wipe clean and fully reinsert to ensure an accurate reading. Remove dipstick and check engine oil level.

The oil level must be maintained between the two marks indicated on the dipstick. Do not let the oil level drop below the L mark. Add oil by opening the oil reserve tank drain valve or through the oil filler pipe. Use the markings on the tank to check the quantity of oil added. Close the oil reserve tank drain valve or oil filler cap after adding oil. Recheck the oil level. Do not let the oil level go above the F mark on the dipstick.

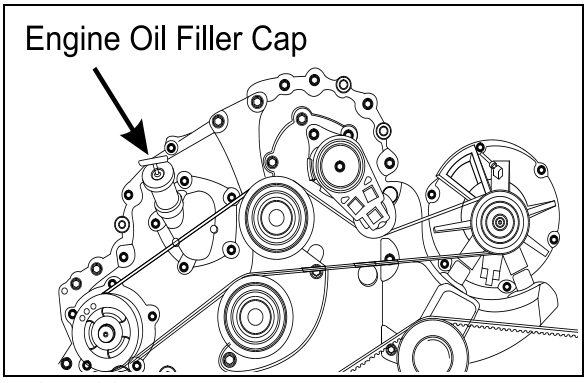


ENGINE OIL LEVEL DIPSTICK 01027

Caution : *Keep engine oil level between "L" and "F" on dipstick. Do not overfill. Check when refueling.*



ENGINE OIL VALVE



ENGINE COMPARTMENT

AUTOMATIC TRANSMISSION OIL LEVEL

The automatic transmission oil level dipstick is accessible through the engine compartment rear door and is located on the left side of the engine. To check the transmission oil level, a "cold check" and a "hot check" must be performed. A cold check must be made when the transmission oil is between 60°F and 140°F (16°C and 60°C).

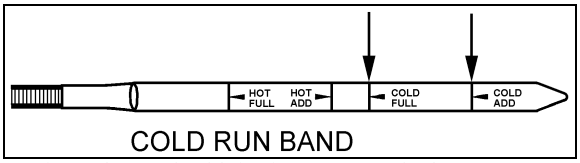
Note : *Perform the cold check first to verify the transmission oil level before performing the hot check.*

Warning : *To prevent personal injury, do not service transmission wearing loose clothing. Stand clear of the engine and rotating components while checking the oil level.*

To prevent dirt and foreign matter from entering the transmission, clean the end of the oil fill tube before removing dipstick. To remove dipstick, unscrew filler cap approximately three turns and pull out dipstick.

Cold Check

Run the engine until the transmission oil temperature is between 60°F and 140°F (16°C and 60°C). With the engine idling, make sure the parking brake is applied and the transmission is in neutral (N). Remove and wipe the dipstick with a clean cloth. Check oil level. If the oil level is within the COLD RUN band, the oil level is correct and a hot check can be performed. If the oil level is on or below the lower line of the COLD RUN band, add oil until the level lies within the COLD RUN band. If the oil level is above the COLD RUN band, drain oil until the level is within the band.

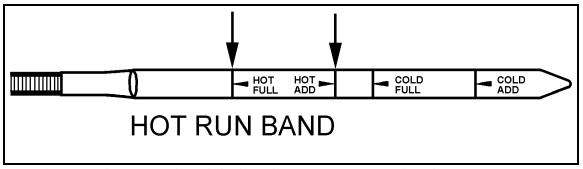


AUTOMATIC TRANSMISSION OIL LEVEL DIPSTICK

Caution : *The oil level rises as oil temperature rises. Do not add oil above the "cold run" band before the transmission reaches 160°F to 250°F (70°C to 120°C).*

Hot Check

Make sure the transmission oil temperature is between 160°F and 250°F (70°C and 120°C) before performing the hot check. Run the engine between 1,000 and 1,200 RPM for approximately one minute to purge air from the system. With the engine idling and the parking brake applied, shift transmission from forward (D) to reverse (R) and back into neutral (N) to fill clutch cavities with oil. Remove and clean dipstick, then check oil level. If the oil level is on or under the lower HOT RUN line, add just enough oil to bring up the level to the middle of the HOT RUN band.



AUTOMATIC TRANSMISSION OIL LEVEL DIPSTICK

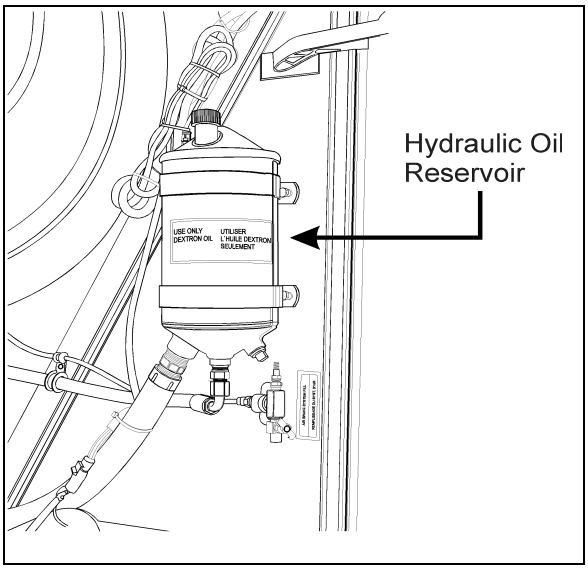
Note : *Approximately 1 quart (0.95 liters) of oil will raise the oil level from the lower line of the HOT RUN band to the middle of the HOT RUN band.*

Replace dipstick and tighten the filler tube cap until the rubber seal is correctly seated.

Caution : *Do not overfill transmission oil reservoir. Severe damage may result.*

POWER STEERING FLUID LEVEL

The motorcoach is equipped with a power steering system. The hydraulic fluid tank is located in the engine compartment R.H. side door.



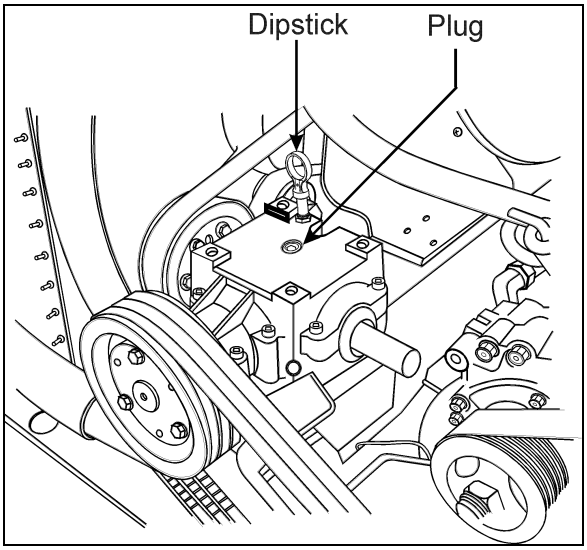
ENGINE COMPARTMENT R.H. SIDE DOOR

Check fluid level as follows:

1. Stop engine and open engine compartment R.H. side door;
2. Unscrew and remove the dipstick located on top of the fluid tank and wipe with a clean rag;
3. Replace dipstick in tank, then remove to check fluid level;
4. Add hydraulic fluid until it reaches the FULL mark on the dipstick (use Dexron II, Dexron IIE, Dexron III or Mercon fluid type);
5. Replace and tighten dipstick.

RADIATOR FAN GEARBOX OIL LEVEL

The radiator fan is belt-driven by the engine crankshaft pulley through a gearbox and drive shaft. A dipstick located on the top of the gearbox is used to check the radiator fan gearbox oil level.



ENGINE COMPARTMENT

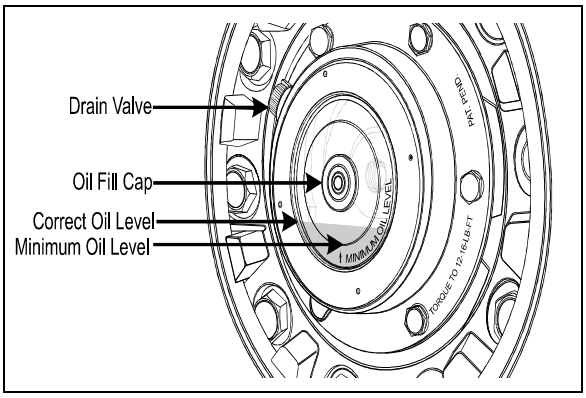
Check radiator fan gear box oil level as follows:

1. Stop engine;
2. Set battery master switch to *OFF* position;
3. Open engine compartment door and place engine starter switch to *OFF* position;
4. Remove the dipstick located on the top of the gearbox and wipe with a clean rag;
5. Insert dipstick in gearbox case, then remove again to check mark;

6. Add, if necessary, MOBIL SHC 634 synthetic lubricant (or Prevost P/N 18-0185) until it reaches "FULL" mark;
7. Reinsert the dipstick;
8. Place engine control box to *NORMAL* position. Close engine compartment door;
9. Set battery master switch to *ON* position.

WHEEL BEARING OIL LEVEL

The oil level for the front and tag axle wheel bearings must be maintained to the level marked in the cap. The oil level indicator, which is shown as a line, is part of the plastic lens and is located above the words MINIMUM OIL LEVEL. Wait at least 15 minutes before checking the oil level after the motorcoach has been driven to make sure the bearing oil has settled. Differential oil is used to lubricate the drive axle wheel bearings. Maintain the drive axle wheel bearing oil at the level indicated to ensure adequate lubrication.



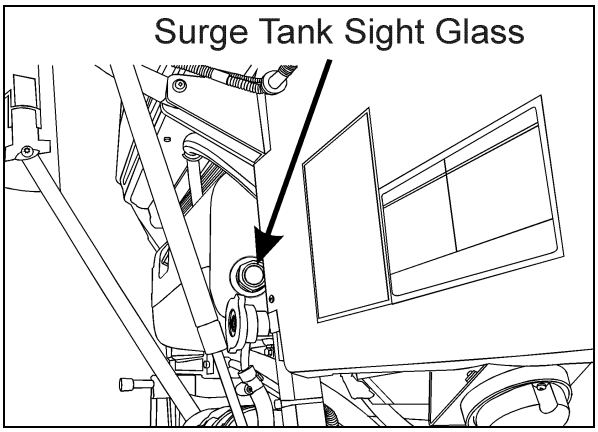
WHEEL BEARING

Caution : *The wheel bearing oil fill cap has a small vent hole in the center to prevent overpressure in the bearing housing. Clean occasionally by inserting a needle.*

OTHER VERIFICATIONS

COOLANT LEVEL CHECK

Coolant level is correct when coolant is visible through the surge tank sight glass when cold. If coolant level is low, fill system with the same 50-50 mixture normally used.



ENGINE COMPARTMENT

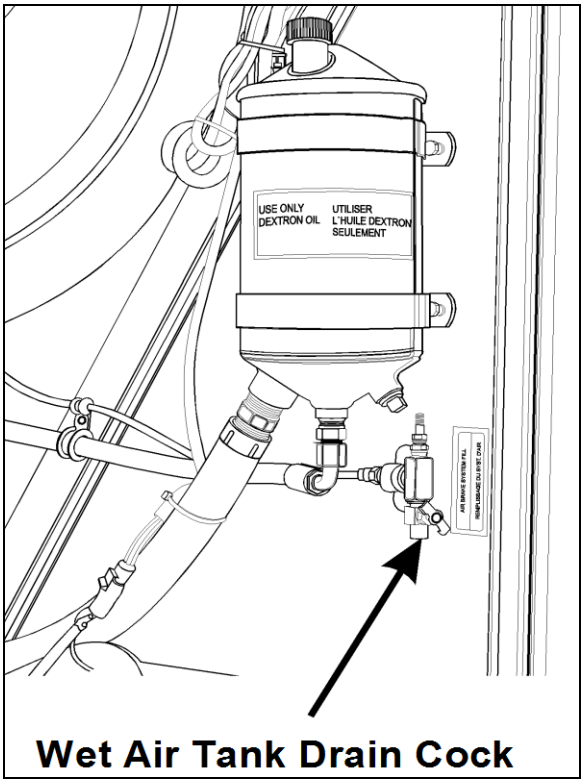
Warning : *Hot engine coolant is under high pressure. Allow engine to cool down before adding coolant.*

AIR TANK PURGE

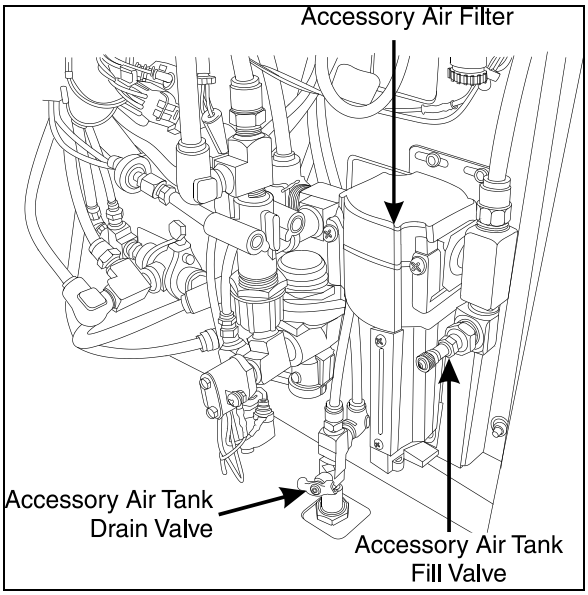
The motorcoach may be equipped with up to twelve air tanks. Purge accessory and wet air tanks before each trip. The primary and secondary air tanks must be purged at every oil change. Oil changes should be scheduled at least every 12,500 miles (20 000 km).

The accessory air tank drain cock is accessible from the front service compartment. The wet air tank drain cock is accessible from the engine compartment R.H. side door. All air tanks are equipped with a drain cock underneath the tank. Refer to the "Lubrication and Service Check Point Chart" in the "Maintenance Manual" for tank locations.

Drain tanks by turning cocks counterclockwise.



ENGINE COMPARTMENT



FRONT SERVICE COMPARTMENT

FIRE EXTINGUISHERS

Inspect fire extinguishers monthly to insure operation in emergency situations.

- On extinguishers with a pressure gauge, the needle should be in the green or *NORMAL* range. Refill or replace extinguisher if pressure is below normal;
- Check that seal on handle is intact;
- Check that hose nozzle is in good condition and the nozzle is free of obstruction;
- Keep fire extinguishers clean.

WATER SEPARATOR

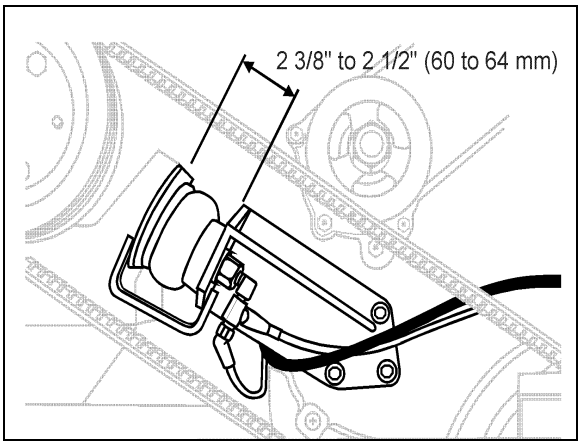
The optional water separator installed in the engine compartment is used to prevent water from entering the fuel system. The water separator should be drained periodically or when the water separator telltale light on the dashboard goes on. To drain water, loosen bleed screw below separator one quarter turn. Tighten bleed screw when finished.

BELT TENSION ADJUSTMENT

The radiator transfer fan and air conditioning compressor are driven by V-belts.

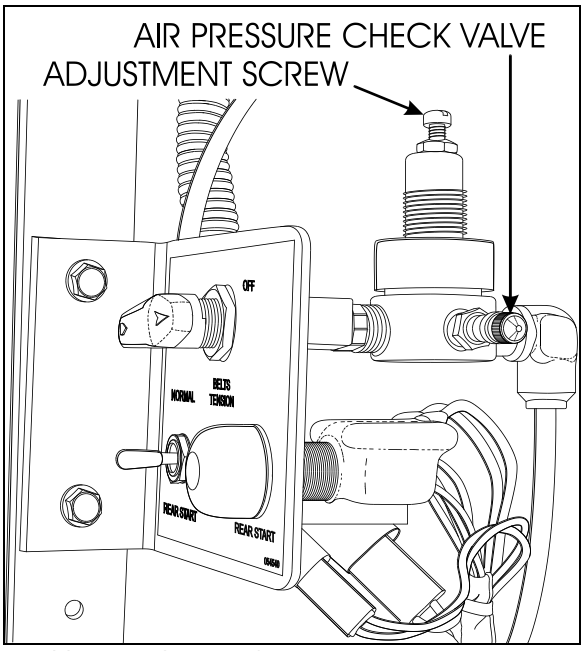
Belt Tension Gauge #68-2404 is used to measure the belt tension of series-60 engine belts. Refer to Prevost "Maintenance Manual" or "Service Bulletins" for recommended belt sizes and tension settings.

Belt tensioning is applied through air bellows which are adjusted by an air pressure regulating valve mounted in the engine compartment, right behind the engine start panel. For proper operation of the air bellows, adjust the upper tensioning bracket to provide a 2 3/8"-2 1/2" (60-64mm) extension with the pneumatic system under normal pressure and the pressure regulating valve set at 50 psi (345 kPa).



AIR BELLOWS

For belt replacement, air pressure must be released from bellows by means of the belt tensioning pressure control valve. This valve, mounted close to the pressure regulating valve, is manually operated. Before handling, be sure that all engine stopping safety precautions have been observed.



PRESSURE REGULATING VALVE

General Rules For Belt Tensioning

- Refer to Prevost "Maintenance Manual" or "Service Bulletins" for recommended belt sizes and tension settings;
- With belt tension set, run engine for 10 minutes. Check tension and reset if necessary;
- Periodically inspect belt and pulleys for wear or damage;
- Do not treat belts with any compounds. Keep belts dry;
- Do not use belts wider than the bottom surface of the tension gauge.

BACK-UP CAMERA

The retractable back-up camera is visible only when turned *ON*. A switch located in the rear electric compartment is used to extract the camera for cleaning.

To clean the camera's protective glass, turn the switch *ON* and spray with soapy water. Wipe with a clean damp rag or wiper blade.

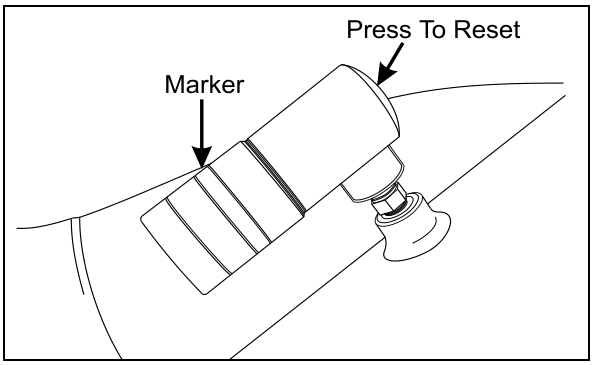
Warning : *To avoid injury, do not clean camera with transmission in reverse (R). Shut off engine and apply parking brake before cleaning.*

Caution : *To prevent scratches to the camera protective glass, do not wipe with dry rag. Use a clean damp rag.*

AIR FILTER RESTRICTION INDICATOR

A filter restriction indicator is used to monitor the vacuum level between the air filter and engine. A red marker is displayed when the air filter is clogged. When a red marker is displayed, the air filter must be replaced. Reset by pressing on the indicator's extremity.

The filter restriction indicator is located on the engine air intake duct.



RESTRICTION INDICATOR

A/C AND HEATING SYSTEM AIR FILTERS

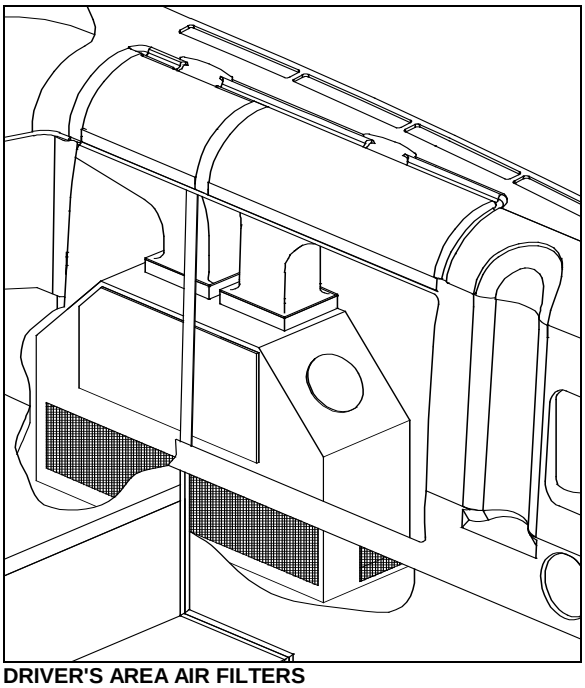
For maximum air conditioning and heating system efficiency, air filters should be inspected and cleaned as required in maintenance schedule to ensure proper ventilation of the evaporator and heating radiator cores. To clean filters, back flush with water, then dry with air.

Caution : *Do not use high pressure water jet to avoid damaging filter.*

Caution : *Be sure not to reverse filter upon installation.*

DRIVER'S AREA FILTERS

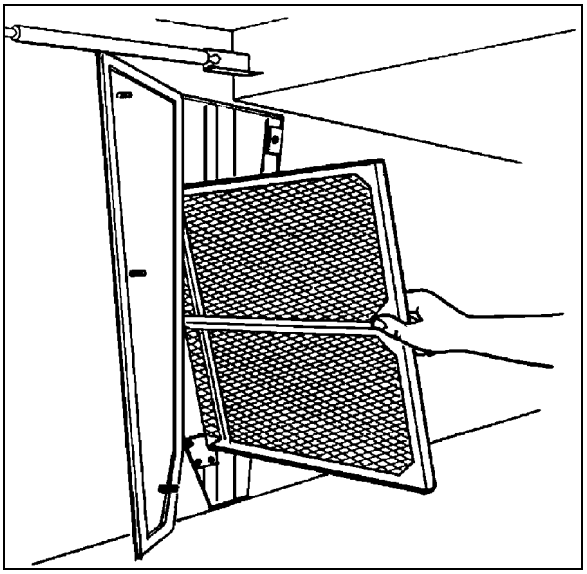
The driver HVAC system's air filters are located behind the dashboard's R.H. side lateral plastic panel. To gain access to the A/C filters, unscrew the R.H. lateral console's grill located at the top step of the entrance door steps. Remove the Recycled Air and Fresh Air filters for cleaning.



DRIVER'S AREA AIR FILTERS

CABIN SYSTEM AIR FILTER

The central HVAC system's air filter is located in the A/C and heating compartment on L.H. side of the vehicle. To gain access, locate access panel in one of the baggage compartment adjacent to the A/C and heating compartment. Open panel by unscrewing (¼ turn) the three screws of either panel, unsnap both fasteners on top of filter and slide out the filter for cleaning.



CABIN SYSTEM AIR FILTER OEH3B748

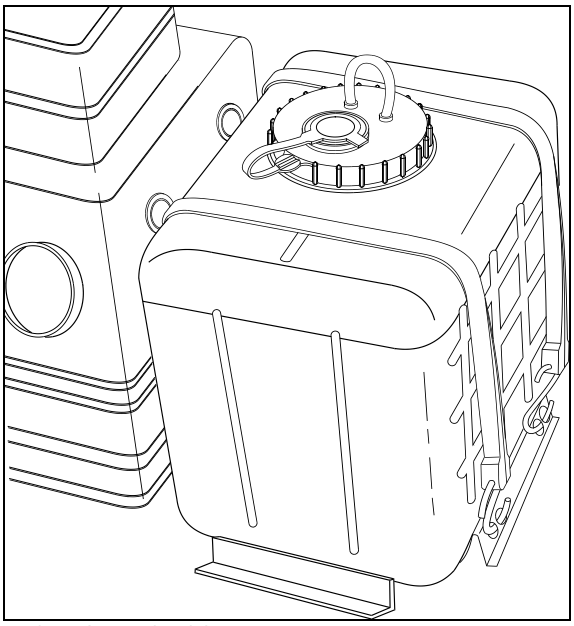
Caution : *Be sure not to install filter in inverted position.*

FLEXIBLE HOSE INSPECTION

Inspect flexible hoses regularly to ensure efficient, economical and safe operation of the engine and related equipment.

WINDSHIELD WASHER TANK

The windshield washer reservoir is located in the front left service compartment. The reservoir has a capacity of 5 US gallons (19 liters) and is equipped with a spin-on-type cover. Check the windshield washer fluid level regularly.



FRONT SERVICE COMPARTMENT

The spray jets are located under the windshield wiper arms.

Upper and lower windshield wipers have separate controls and separate washer pumps which are connected to the same reservoir.

LUBRICATION

Grease all lubrication points during scheduled maintenance. For heavy loads or extended use, lubricate more often.

PRE-STARTING INSPECTION

WITH ENGINE STOPPED

General

Inspect hoses for leaks. Carefully inspect all fittings, clamps and ties. To prevent chafing, make sure hoses are not touching shafts, couplings, heated surfaces, sharp edges or other parts. Since hose clamps and ties can vibrate loose or fail over time, inspect frequently and tighten or replace as necessary.

Check for loose nuts and bolts. Visually inspect safety of compartment door latches. Test operation of all exterior lights.

Leaks

Check for leaks under motorcoach and in compartments.

Correct leaking hoses immediately. Failure to correct leaks can cause severe damage to the equipment, as well as increase operating costs due to lost fluids. Treat fuel and oil leaks as an immediate fire hazard.

Warning : *Fire hazard - personal injury and property damage may result from fire caused by leaking flammable fluids.*

Hose Service Life

Hoses have a limited service life. Thoroughly inspect hoses annually. Look for surface damage or indications of twisted, worn, crimped, cracked or leaking lines. Replace damaged hoses immediately.

Hoses should be replaced during major overhaul or after a maximum of five years service. Make sure replacement hoses match the original equipment manufacturer's specifications.

Tires And Wheels

Check for loose wheel nuts. Both aluminum alloy and steel wheel nuts should be tightened to 450 to 500 foot-pounds (610 to 680 N.m.) torque.

Tire Pressure

Keep the tires inflated to the recommended inflation pressure to prolong tire life and for safety.

Note : *Recommended tire inflation pressures are given in the "Coach Final Record" located in the technical publication package supplied with the motorcoach. The cold tire inflation pressures are on the Department of Transport certification plate located on the back of the driver's seat.*

Warning : *Do not exceed maximum inflation pressure. Incorrect tire pressure increases tire wear and could lead to loss of driving control because of reduced road handling. Check tire pressure regularly.*

Changing Wheels

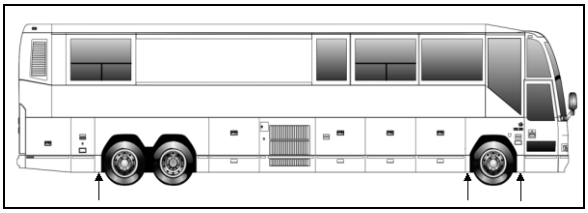
In case of a flat tire, turn *ON* the hazard flashers and bring the motorcoach to a stop on the side of the road. Apply the parking brake. Make sure the motorcoach is parked safely away from traffic. Set up the triangular reflectors in accordance with applicable highway regulations.

We suggest that you **do not** attempt to change a wheel. First, the wheel and tire are very heavy and usually there is no space available to put the removed flat. Second, the wheel nuts, especially those on inner dual, can become very tight after being on for only a short time. Often a heavy air wrench is required to get these nuts loose. We suggest you get help via CB radio or cellular phone. There are tire service trucks all over the country who can bring a wheel and make the change safely.

The following information is for the Tire Service-man that you may have called.

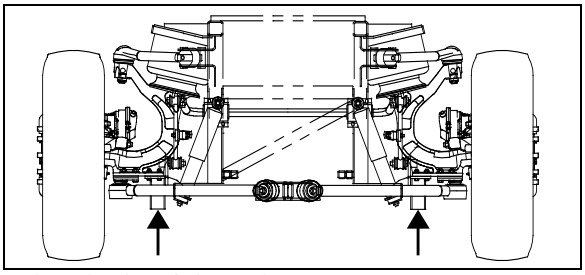
Jacking Points

Twelve jacking points are located on the motorcoach: three are located on each side of the frame and two are located under each axle. Refer to the following illustrations for the location of jacking points.

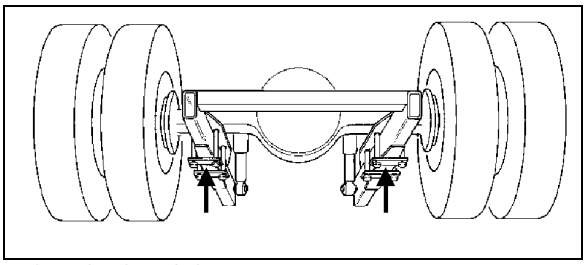


JACKING POINTS ON FRAME

Warning : *The suspension of the vehicle must be in the normal ride position before jacking. The level low system must be in the* OFF *position prior to turning* OFF *the ignition key.*

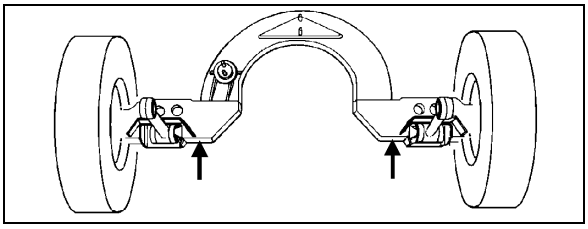


JACKING POINTS ON FRONT AXLE



JACKING POINTS ON DRIVE AXLE OEH3B762

Warning : *Always unload or retract the tag axle before jacking the vehicle from the front and drive axle jacking points to prevent damage to suspension components.*



JACKING POINTS ON TAG AXLE OEH3B764

Warning : *The jacking points on the tag axle must be used for raising the tag axle only.*

Several kinds of hydraulic jacks can be used. Only jack at the specified jacking points. Jack must support the following capacities:

- Front axle: 13,000 lbs. (5 900 kg);
- Drive axle: 25,000 lbs. (11 365 kg).

Hydraulic Jack

To raise : turn release valve clockwise. Insert handle in socket and raise by pumping.

To lower : remove handle and turn the release valve slowly counterclockwise.

Always keep ram and extension screw retracted when jack is not in use.

Service : Check oil level when jack fails to raise to full height. Lower ram completely with release valve open and jack in upright position, remove filler plug and refill to level of filler hole with hydraulic jack oil. Never use brake fluid.

Warning : *Jack is intended for lifting only. Do not get under the vehicle or load for any reason unless it is properly supported with safety stands and securely blocked.*

Warning : *Do not overload jack above rated capacity. Prevent "side loading", make sure load is centered on ram. Do not push or tilt load off jack.*

Towing

To prevent damage to the motorcoach, use the two tow eyes located under the back bumper and/or fixed to the motorcoach's frame between the front axle and the front bumper. Use only a solid link tow bar and a safety chain to tow the motorcoach. If required, connect an auxiliary air supply to the vehicle so brakes can be operated while towing.

Warning : *During a towing operation, the driver should be alone inside the motorcoach.*

Caution : *To prevent damage to the drivetrain components, disconnect axle shafts or driveshaft before towing. Do not attempt to push or pull-start a motorcoach equipped with an automatic transmission.*

Note : *Make sure axle shafts or driveshaft are installed correctly after towing. Tighten axle shaft and driveshaft nuts to the correct torque settings. Do not invert shafts.*

Doors

Close all exterior doors and windows. Check for good tightness and fit.

Tools And Spares

Make sure the motorcoach is equipped with a wheel nut wrench, door keys, spare belts, reflectors and jack.

Air System

To purge water from air and accessory tanks, open drain cocks. Close drains when completed. Refer to heading "Air Tank Purge" in this chapter.

Water Separator

To purge water separator, loosen bleed screw. Tighten bleed screw after purging.

Coolant Level

Check coolant level. Coolant level is correct when visible in the filler neck of the surge tank. If coolant level is low, fill system with 50-50 coolant mixture. Refer to the motorcoach "Maintenance Manual" for more information.

Warning : *Hot engine coolant is under pressure. Do not attempt to open the coolant filler cap when the engine is hot. Allow engine to cool before adding coolant.*

Wheel Bearings

Check wheel bearing oil level in sight glass. Refer to heading "Wheel Bearing Oil Level" in this chapter.

Caution : *Check wheel bearing cover for overheating (especially after brake work) during fuel stops by touching the wheel bearing cover.*

Windshield Washer Reservoir

Make sure windshield washer reservoir is full. For cold weather, use antifreeze windshield washer to prevent freezing.

Engine Oil

Check engine oil level during fuel stops. If the oil level is low, refer to heading "Engine Oil Level" in this chapter.

Warning : *Check the engine oil level with motorcoach parked on a level surface and with the parking brake engaged.*

Power Steering Oil Tank

Check steering oil level. Refer to heading "Power Steering Fluid Level" in this chapter.

Belts

Check for loose, worn or broken belts.

Belt Tension Adjustment

Check belt tension manually. Refer to heading "Belt Tension Adjustment" in "Other Verifications" section in this chapter.

Fire Extinguishers

Check fire extinguishers to make sure they are ready for operation. Refer to heading "Fire Extinguishers" in "Other Verifications" section in this chapter.

Emergency Exits

Test emergency exits for correct operation.

Driver's Section

Adjust driver's mirrors and seat.

WITH ENGINE RUNNING

Leaks

Walk around motorcoach and listen for air leaks.

Turbocharger

Check for leaks and listen for unusual sounds coming from the turbocharger.

Automatic Transmission

Check automatic transmission oil level. Refer to heading "Automatic Transmission Oil Level" in this chapter.

Gauges And Buzzers

Perform a telltale light test (see "Controls and Instruments" chapter). Make sure gauges are in normal operating condition. Indicator lights and buzzers should all be *OFF* before driving.

Fuel Level

Make sure fuel level is sufficient.

Service Brakes

Check for correct pressure build-up. Pressure loss should not exceed 3 psi/minute (21 kPa/minute) with engine stopped and without brake applied. Perform a full brake application. Air loss should not exceed 7 psi/minute (48 kPa/ minute).

Brake Test

Release parking and emergency brakes. Pump service brake pedal until air pressure drops to 65 psi (448 kPa). Make sure the warning buzzer operates and that the emergency brakes apply (the control valve knob lifts up). Allow air pressure to reach 95 psi (655 kPa) before releasing parking brake.

Parking And Emergency Brake Test

Driving the vehicle while the parking brake is applied should not be possible.

FIRST SERVICE ON NEW MOTORCOACH

Note : *Refer to Maintenance Manual for precise service schedule.*

Engine Oil

Preliminary oil change is not required since the engine has been test-run at the factory. Change oil and filter every 12,500 miles (20 000 km) or once a year, whichever comes first.

Automatic Transmission Oil Filter

Replace automatic transmission oil filter cartridge after first 5,000 miles (8 000 km) and then every 25,000 miles (40 000 km).

Coolant System Strainer

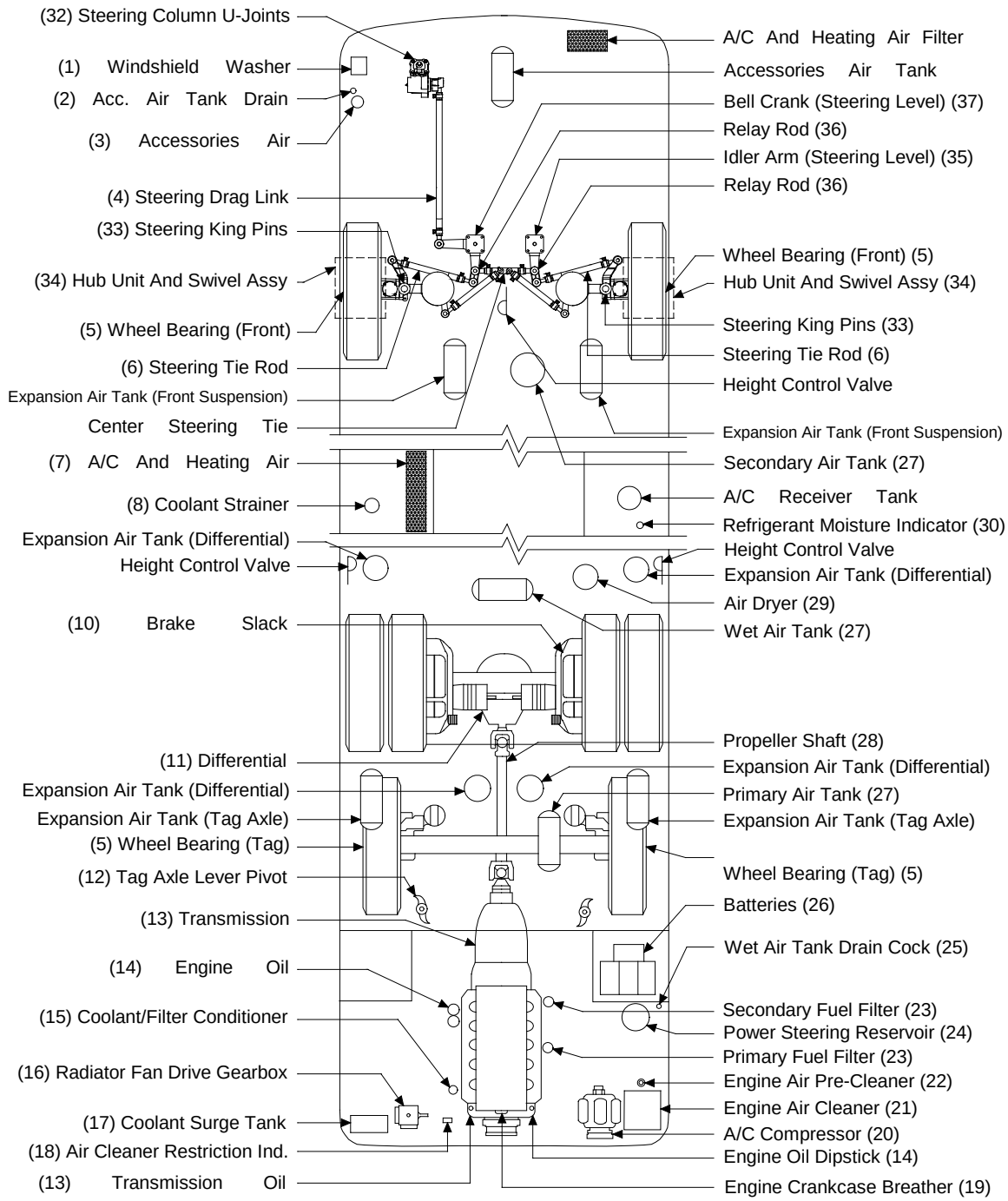
The coolant system strainer is designed to recover the soldering residues trapped inside the coolant lines during their initial assembly. Clean strainer after first 3,000 miles (5 000 km) and then every 50,000 miles (80 000 km).

Note : *If soldering has been performed on cooling system, clean strainer after 3,000 miles (5 000 km).*

GENERAL RECOMMENDATIONS

- Understand basic principles of motorcoach operation.
- Always maintain the vehicle in good running condition.
- Do not drive with low fuel. If the fuel tank runs dry, the engine will not start until the air is bled from the fuel system. Refer to "Maintenance Manual" for more information.
- Allow engine to run for at least 2 minutes at slow idle before shutting *OFF*.
- Engine should be at idle when shifting from neutral (N) to forward (D) or from neutral (N) to reverse (R).
- The automatic transmission does not have a park (P) position. Place transmission in neutral (N) position and apply parking brake when the motorcoach is stopped. A warning buzzer will sound if the engine is stopped and the parking brake has not been applied when foot pressure is removed from the brake pedal.
- Always follow the procedures described in this manual.
- Unless stated otherwise, shut *OFF* the engine before performing all servicing, lubrication and maintenance tasks.
- Do not attempt to push or pull-start a motorcoach equipped with an automatic transmission.
- The vehicle may be damaged if towed with the axle shafts or driveshaft connected. Do not push or pull-start the motorcoach in first or reverse gears.
- Two chemical fire extinguishers are stored near the back of the driver's seat. In case of fire, immediately evacuate all occupants. Human life safety is the first priority. Do not attempt to extinguish the fire if there is immediate danger or risk for personal injury.
- When driving on ice and snow, accelerate and decelerate gradually.

Warning : *Report all problems affecting passenger or driver safety to your service center or an authorized service center. Have problems corrected immediately.*



LUBRICATION AND SERVICING POINTS 24002M

WALK-AROUND INSPECTION (BEFORE EVERY TRIP)

It is a good practice to make a basic visual inspection of key areas on the vehicle before every trip and to report any problem areas to your service center or an authorized service center.

Outside The Vehicle

ITEM*	DESCRIPTION
---	Check for leaks under vehicle and in engine compartment
---	Check that baggage and service compartment doors close properly
---	Inspect tires and wheels for correct tire pressure, wear or damage and for missing wheel studs and nuts
1	Check windshield washer fluid level and add if necessary
---	Check condition of windshield wiper blades
---	Verify proper operation of all road lights, signal lights, brake lights, marker lights and back-up lights; Replace light bulbs as required
2-25	Drain accumulated water in accessory and wet air tanks

Engine Compartment

ITEM*	DESCRIPTION
14	Check engine crankcase oil level; Add if necessary
13	Check transmission oil level (can be checked from push-button shift selector); Add if necessary
24	Check power steering reservoir fluid level; Add if necessary
17	Check coolant surge tank fluid level; Add if necessary
23	Drain accumulated water in primary fuel filter/water separator (if equipped)
18-21	Check air cleaner restriction indicator; Replace air cleaner when red signals locks in full view

Inside The Vehicle

ITEM*	DESCRIPTION
---	Check for proper operation of the entrance door
---	Check that emergency exit windows and roof escape hatches can be opened, then close all windows and hatches securely
---	Verify proper operation of windshield wiper/washer
---	Adjust mirrors for adequate rear view vision
---	Start engine and check for proper operation of all gauges and indicator lights
---	Check for proper operation of electric and air horns and back-up alarm

* Item numbers refer to figure on page 15 of this section.

LUBRICATION AND SERVICING SCHEDULE

Service Every 6,250 Miles (10 000 Km) Or Twice A Year, Whichever Comes First.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
21	Engine Air Cleaner	Inspect and clean, replace element if required	Filter: #530197
22	Engine Air Pre-Cleaner	Check discharge tube	----------
20	A/C Compressor	Check oil level, add if necessary	Polyolester Oil
31	A/C Receiver Tank	Check refrigerant level, add if necessary	HFC 134a
30	Refrigerant Moisture Indicator	Replace filter dryer unit according to moisture indicator (as needed)	Filter: #452497
11	Differential	Check oil level, add if necessary	Multigrade gear oil
16	Radiator Fan Drive Gearbox	Check oil level, add if necessary	Synthetic oil: ISO VG 460
28	Propeller Shaft	Grease one fitting on each universal joint and one fitting on slip joint	Multi purpose grease
12	Tag Axle Lever Pivot	Grease one fitting on each pivot	Multi purpose grease
10	Brake Slack Adjuster	Grease one fitting on each slack adjuster (drive axle only)	Multi purpose grease
4	Drag Link Ends	Grease one fitting at each end	Multi purpose grease
36	Relay Rod Ends	Grease one fitting at each end	Multi purpose grease
6	Steering Tie Rod Ends	Grease one fitting at each end	Multi purpose grease
35	Idler Arm	Grease fitting	Multi purpose grease
37	Bell Crank	Grease fitting	Multi purpose grease

* Item numbers refer to figure on page 15 of this section.
** See end of this section for lubricant and part number specifications.

Service Every 12,500 Miles (20 000 Km) Or Once A Year, Whichever Comes First.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
14	Engine	Change oil and filters	Engine oil: SAE 15W40, API CG4 Filters: #510458
23	Fuel Filters	Change primary and secondary fuel filters (Fill with clean fuel before installation)	Primary: #510137 Prim. w/sep.: #531390 Secondary: #510128
15	Coolant Filter/Conditioner	Replace element	Filter: #550630
17	Coolant Surge Tank	Test coolant solution	----------
27	Air Tanks	Drain accumulated water from all tanks	----------
7	A/C And Heating Air Filters	Clean or replace two elements (twice a year)	Driver's: #871049 Passenger's: #871051

Service Every 25,000 Miles (40 000 Km) Or Once A Year, Whichever Comes First.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
13	Automatic Transmission	Change oil and filters	Dexron-IIE or Dexron-III

Service Every 50,000 Miles (80 000 Km) Or Once A Year, Whichever Comes First.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
16	Radiator Fan Drive Gearbox	Change oil	Synthetic oil: ISO VG 460
24	Power Steering Reservoir	Replace oil filter cartridge element	Cartridge: #660987
5	Front And Tag Axle Bearings	Repack with grease or refill with differential oil	Multi purpose grease or differential oil
34	Hub Unit And Swivel Assy	Refer to GKN Axles Ltd Kirkstall Division, Service Manual, paragraph "1. Lubrication"	
8	Coolant Strainer	Check and clean, change cartridge if required	Cartridge: #871029
19	Engine Crankcase Breather	Clean breather steel mesh	----------
---	Flexible Hose	Thoroughly inspect all hoses	----------

* Item numbers refer to figure on page 15 of this section.
** See end of this section for lubricant and part number specifications.

Service Every 100,000 Miles (160 000 Km) Or Once Every Two Years, Whichever Comes First.

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
11	Differential	Change oil; Clean breathers	Multigrade gear oil
3	Accessories Air Filter	Change filter element	Filter: #641252
29	Air Dryer	Change cartridge	Cartridge: #641278

Miscellaneous Service

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
17	Cooling System	Drain, flush and refill every two years or 200,000 miles (320 000 km) whichever comes first	Engine coolant
25	Battery Terminals	Clean and coat terminals yearly	Battery terminal coating
---	Discharge Tubes***	Every three months: Check 2 condenser's discharge tubes Check 6 evaporator's discharge tubes Check 2 front discharge tubes	----------
32	Steering Column U-Joints	Grease when needed	Multi purpose grease

* Item numbers refer to figure on page 15 of this section.
** See end of this section for lubricant and part number specifications.
*** Discharge tubes are rubber tubes located under vehicle.

LUBRICANT SPECIFICATIONS

ITEM*	DESCRIPTION	SPECIFICATIONS
12	Engine Oil	SAE Viscosity Grade: 15W40 API Classification: CG4
24	Power Steering Oil	Automatic Transmission Oil (Dexron-IIE or Dexron-III)
15	Engine Coolant	Low silicate, ethylene glycol coolant 50% antifreeze/water solution is normally used Antifreeze concentration should be between 30% and 67%
20	A/C Compressor Oil	Polyolester Oil, HFC 134a compatible: Castrol SW-68 (POE) or equivalent
11 and 5	Differential Oil And Wheel Bearing Oil	Multigrade gear oil meeting MIL-L-2105-D: 85W140 If temperature drops below 10°F (-12°C), 80W90 should be used, and below -15°F (-26°C), 75W90 should be used. (In extreme conditions or for better performance, full synthetic gear oil can be used.)
16	Fan Gearbox Oil	Synthetic oil: ISO VG (viscosity grade) 460 Mobil SHC 630 or equivalent
13	Automatic Transmission Oil	Dexron-IIE or Dexron-III
---	Multi Purpose Grease	Good quality lithium-base grease: NLGI No.2 Grade is suitable for most temperatures NLGI No.1 Grade is suitable for extremely low temperatures

* Item numbers refer to figure on page 15 of this section.

CHAPTER 8 : TECHNICAL INFORMATION

DIMENSIONS

Overall length (over bumpers)	45' (13,7 m)
Overall width	102" (2,59 m)
Overall height	148.75" (3,78 m)
Wheelbase (center of front axle to center of drive axle)	314" (7,97 m)
Floor height from ground	63" (1,60 m)
Ground clearance	11" (0,28 m)
Step height from ground	14" (0,36 m)
Headroom	83" (2,11 m)
Entrance door opening width	26" (0,66 m)
Front overhang	76.2" (1,93 m)
Rear overhang	103.5" (2,63 m)
Front track	85.9" (2,18 m)
Drive track	76.7" (1,95 m)
Rear track	83.6" (2,12 m)
Turning circle radius (exterior front corner)	42' (12,8 m)

WEIGHT

Curb weight (before conversion)	31,990 lbs (14 540 kg)
Gross vehicle weight rating	52,060 lbs (23 650 kg)
Gross axle weight rating (G.A.W.R.)	
front axle	16,500 lbs (7 500 kg)
drive axle	22,460 lbs (10 200 kg)
tag axle	14,000 lbs (6 350 kg)

The Gross Vehicle Weight Rating (G.V.W.R.) and the Gross Axle Weight Rating (G.A.W.R.) for front, drive and tag axles are listed on a certification plate located on the L.H. control panel in driver's section.

CAPACITIES

Engine oil		
Crankcase	37 U.S. qts	(35 l)
Reserve tank	10 U.S. qts	(9,5 l)
Fuel reservoir (legal capacity equal to 95% of volume)	230 U.S. gal.	(871 l)
Cooling system	24 U.S. gal.	(91 l)
Transmission (does not include external circuit)	10 U.S. gal.	(38 l)
Differential oil	20 U.S. qts	(18.7 l)
Power steering reservoir	4.0 U.S. qts	(3,8 l)
A/C compressor oil	4.5 U.S. qts	(4,3 l)
Windshield washer reservoir	5 U.S. gal.	(19 l)
Refrigerant	24.1 lbs	(11 kg)

FUEL TYPE

ASTM specification D-975
Recommended grade 1-D
Acceptable grade 2-D

WHEELS AND TIRES

Steel wheels .....9 X 22.5
Aluminum forged wheels .....9 X 22.5
Except inner drive axle (steel) .....9 X 22.5
Tires..... 315/80 R 22.5
Recommended tire inflation pressure (cold)
Front axle .....115 psi (795 kPa)
Drive axle .....90 psi (620 kPa)
Tag axle .....100 psi (690 kPa)

Caution: *These tire pressures are established in accordance with the maximum allowable load on each axle. A lower pressure is recommended if the axle load is less than the above specifications. Weigh vehicle fully loaded and pressurize according to tire manufacturer's recommendations. For non standard tire and wheel specifications, see Prévost tire pressure tabulation in "Coach Final Record".*

BELTS

	Make	Model	Qty
Radiator fan drive (transfer)	Gates	AX 73	3
Radiator fan drive (fan)	Dayco	Poly COG	1
A/C system compressor	Gates	BX 97	2
Alternator 24V, 270 Amp	Detroit Diesel, Gates, Dayco	Poly-V 12K 72"	1
Alternator 28V, 140 Amp	Gates	BX 31	1

ENGINE

Detroit Diesel DDEC IV Series 60:

- 500 HP @ 2 100 rpm
- 1 550 lb•ft @ 1 200 rpm
- Operating range: 1 200 – 2 100 rpm
- Diesel, four cycles, six cylinders inline, 12,7 l
- Turbo, air to air charge cooled
- Overhead camshaft, four valves per cylinder

TRANSMISSION

Allison six speed automatic World Transmission B500 or B500R (with optional output retarder) with electronic control:

Gear	**Ratio**
1st	3.510
2nd	1.906
3rd	1.429
4th	1.000
5th	0.737
6th	0.639
Reverse	4.801
Converter	1.790
Output retarder	optional

DRIVE AXLE

Ratio:

- 4.89 : 1 standard
- 4.56 : 1 optional

BRAKES

- Dual system plus emergency/parking brake
- Air operated:
  disc type on front, drive and tag axles
- Brake effective area:
  - 24 in^2 on front axle
  - 30 in^2 (service) and 36 in^2 (emergency/parking) on drive axle
  - 16 in^2 (service) and 16 in^2 (emergency/parking) on tag axle
- Automatic slack adjuster
- Two cylinder air compressor, engine gear driven, water cooled and lubricated
- Air dryer
- Nylon color coded air lines

ANTI-LOCK BRAKING SYSTEM (ABS)

Components

- Electronic control module
- Solenoid control valve
- Sensors
- Clamping bushes
- Wiring harnesses

Electronic Control Module Technical Data

Maintenance free

Voltage ..... 24 ± 6 volts
Thermal operating range ..... -40 to 167°F
..... (-40 to 75°C)

Solenoid Control Valve Technical Data

Maintenance free

Voltage ..... 24 (+4.8, -2.4) volts DC
Rated current ..... 1.65 amps
Thermal operating range ..... -40 to 176°F
..... (-40 to 80°C)

Sensor Technical Data

Two cored screened cable.....AWG 18 (1 mm²)
Thermal operating range.....-40 to 176°F
..... (-40 to 80°C)

STEERING

- Tilt steering wheel and telescopic steering column
- Integral hydraulic assisted steering gear
- System pressure: 2175 psi (15 000 kPa)

ELECTRICAL SYSTEM

- 24 volt system
- 12 volt exterior lighting
- 24 volt, 270 amp, self-rectified, belt-driven, oil-cooled *Delco* alternator (optional) lubricated by engine circuit
- 2-28 volt, 140 amp, self-regulated, belt-driven, air-cooled *Bosh* alternator
- Four 12 volt, maintenance-free batteries with a 1250 cold cranking amp capacity
- 100 amp battery equalizer
- 12 volt, 145 amp, air-cooled, belt-driven, additional alternator (optional)

SUSPENSION

Front Axle

- 2 air springs
- 2 shock absorbers
- 1 height control valve
- 1 sway bar

Drive Axle

- 4 air springs
- 4 shock absorbers
- 3 longitudinal radius rods
- 1 transversal radius rod
- 2 height control valves
- 1 sway bar

Tag Axle

- 2 air springs
- 2 shock absorbers
- 3 longitudinal radius rods
- 1 transversal radius rod

ALIGNMENT

Front Axle

- Toe in 3/32 ± 1/32" (2,4 ± 0,8 mm)
- Caster 2° (not adjustable)
- Camber 1/8° ± 1/4°

Tag Axle

- Toe in 0 ± 3/32" (0 ± 2,4 mm)

HEATING AND AIR CONDITIONING

DRIVER'S SYSTEM

Air conditioning capacity	2 tons
Refrigerant type	134a
Heating capacity	37 000 Btu/hr
Air flow	450 cfm (12,7 m^3/min)

CENTRAL SYSTEM

Air conditioning capacity	7.5 tons
Refrigerant type	134a
Heating capacity	152 000 Btu/hr
Air flow	2 600 cfm (73,6 m^3/min)

COMPRESSOR

Number of cylinders	6
Operating speed	400 to 2 200 rpm (1,750 rpm, nominal)
Minimum speed for lubrication	400 rpm
Oil capacity	4.5 U.S. qts (4,3 l)
Approved oils	Castrol SW-68 (POE)

Note: *The above oils are suitable for use with reciprocating compressors using refrigerant R-134a and with evaporator temperatures above -40°F (-40°C).*

OIL SPECIFICATIONS

ENGINE

Heavy-duty engine oil SAE 15W-40 meeting API Classification CG-4.

AUTOMATIC TRANSMISSION

The transmission must be filled with *Dexron IIE,Dexron III* or automatic transmission fluid or any equivalent Class C4 hydraulic fluid.

DIFFERENTIAL

Multigrade gear oil meeting MIL-L-2105-D: 85W140 is recommended for use in drive axle. This lubricant performs well over a broad temperature range, providing good gear and bearing protection in a variety of climates. If temperature drops below 10°F (-12°C), 80W90 should be used, and below -15°F (-26°C), 75W90 should be used. In extreme conditions or for better performance, full synthetic gear oil can be used.

FAN GEARBOX

Synthetic oil *Mobil SHC 634* is recommended for the fan gearbox.

POWER STEERING RESERVOIR

This reservoir must be filled with automatic transmission oil, *Dexron IIE*, *Dexron III* or Mercon fluid.

WHEEL BEARINGS

The front and tag axle wheel bearings must be filled to the level mark in the cap using differential oil. Drive axle wheel bearings are lubricated by the differential oil. Maintain differential oil level to ensure adequate lubrication of drive axle wheel bearings at all times. Refer to "Care And Maintenance" chapter under "Wheel Bearing Oil Level" heading.

On vehicles equipped with grease lubricated wheel bearings, pack with wheel bearing grease.

PRE-HEATING SYSTEM (OPTIONAL)

WEBASTO

Model DBW2020

Heating output	80 000 Btu/hr (23 300 W)
Fuel type	same as engine
Fuel consumption	0.8 U.S. gal./hr (3 l/hr)
Rated voltage	24 volts
Electric power consumption	120 watts

DDEC IV DIAGNOSTIC CODES

READING CODES

To read the diagnostic codes, a Diagnostic Data Reader should be plugged into the receptacle located on the side panel of the L.H. control panel or momentarily depress the STOP ENGINE OVERRIDE switch located on the L.H. lower control panel with the ignition *ON*, the engine idling or engine shut off. Active codes will be flashed on the STOP ENGINE indicator light located on the central dashboard followed by the inactive codes being flashed on the CHECK ENGINE indicator light located on the central dashboard. The cycle is repeated until the operator depresses the STOP ENGINE OVERRIDE switch. For example: a code "43" consists of four flashes, followed by a short pause, then another three flashes in quick succession. The following table is a list of the DDEC diagnostic codes.

DDEC Code Number (Flashed)	DESCRIPTION	DDEC Code Number (Flashed)	DESCRIPTION
11	(VGS) Variable speed sensor input voltage low	12	(VGS) Variable speed sensor input voltage high
13	Coolant level sensor input voltage low	14	Oil temperature circuit failed high
14	Coolant temperature circuit failed high	14	Intercooler temperature circuit failed high
15	Oil temperature circuit failed low	15	Coolant temperature circuit failed low
15	Intercooler temperature circuit failed low	16	Coolant level circuit failed high
17	Bypass or throttle, valve position sensor input voltage high	18	Bypass or throttle, valve position sensor input voltage low
21	TPS input voltage high	22	TPS input voltage low
23	Fuel temperature circuit failed high	24	Fuel temperature circuit failed low
25	No active codes	26	Aux. shutdown #1 or #2, input active
27	Air temperature circuit failed high	28	Air temperature circuit failed low
31	Auxiliary output #3 short to ground (high side)	31	Auxiliary output #3 open circuit (high side)
31	Auxiliary output #4 short to ground (high side)	31	Auxiliary output #4 open circuit (high side)
32	CEL or SEL short to battery (+)	32	CEL or SEL open circuit
33	Turbo boost pressure circuit failed high	34	Turbo boost pressure circuit failed low
35	Oil pressure circuit failed high	36	Oil pressure circuit failed low
37	Fuel pressure circuit failed high	38	Fuel pressure circuit failed low
41	Too many SRS (missing TRS)	42	Too few SRS (missing SRS)
43	Coolant level low	44	Oil temperature high
44	Intercooler temperature high	44	Coolant temperature high
44	Intake air temperature high	45	Oil pressure low
46	ECM battery voltage low	47	Fuel or air inlet pressure high
47	Turbo boost pressure high	48	Fuel or air inlet pressure low
52	ECM A/D conversion fault	53	ECM non volatile memory fault

DDEC Code Number (Flashed)	DESCRIPTION	DDEC Code Number (Flashed)	DESCRIPTION
54	Vehicle speed sensor fault	55	J1939 data link fault
56	J1587 data link fault	57	J1922 data link fault
58	Torque overload	61	Injector response time long
62	Auxiliary output short to battery (+) or open circuit or mechanical fault	63	PWM drive short to battery(+) or open circuit
64	Turbo speed sensor input fault	65	Throttle valve position input fault
66	Engine knock sensor input fault	67	Coolant or air inlet pressure sensor input voltage fault
68	TPS idle validation circuit fault (open circuit)	68	TPS idle validation circuit fault (grounded circuit)
71	Injector response time short	72	Vehicle overspeed
73	Gas valve position input fault or ESS fault	74	Optimized idle safety loop short to ground
75	ECM battery voltage high	76	Engine overspeed with engine brake
77	Fuel temperature high	81	Dual fuel BOI failed high
81	Oil level circuit failed high	81	Crankcase pressure circuit failed high
81	Exhaust temperature voltage failed high	82	Oil level circuit failed low
82	Dual fuel BOI failed low	82	Exhaust temperature failed low
82	Crankase pressure circuit failed low	83	Exhaust temperature failed high
83	Oil level high	83	External pump pressure high
83	Crankase pressure high	84	Oil level or crankase pressure failed low
85	Engine overspeed	86	Barometric pressure sensor input voltage high
86	External pump pressure sensor input voltage high	87	Barometric pressure sensor input voltage low
87	External pump pressure sensor input voltage low	88	Coolant pressure low

WORLD TRANSMISSION (WT) DIAGNOSTIC CODES

DIAGNOSTIC CODE MEMORY LIST (WT)

The WT Diagnostic Code Memory List contains the following headings: Code List Position, Main Code, Sub Code, Active indicator, Ignition Cycle Counter and Event counter. Up to five (5) codes can be stored at the same time in this memory.

The last occurring codes are listed first. Accessing the code list position, main code, sub code and active indicator is done through the Shift Selector Display or through the Pro-Link Diagnostic Tool. Access to the ignition cycle counter and event counter is through the Pro-Link diagnostic tool only. The following table is an example of the information stored in memory.

DIAGNOSTIC CODE MEMORY LIST

Code List Position	Main Code	Sub Code	Active Indicator	Ignition Cycle Counter	Event Counter
d1	21	12	YES	00	10
d2	41	12	YES	00	04
d3	23	12	NO	08	02
d4	34	12	NO	13	01
d5	56	11	NO	22	02
Displayed on Shift Selector Display and Diagnostic Tool			"YES"=ACTIVE = "MODE ON"	Ignition cycle counter and event counter are not available on Shift Selector Display	

Note : *All information stored in memory can be accessed using the Pro-Link Diagnostic Tool.*

Note : *The diagnostic codes are stored in the memory queue in positions 1 through 5. The location of a diagnostic code in the memory queue is identified by "d1" (diagnostic code #1) through "d5".*

The following paragraphs define the different WT Diagnostic Code Memory List headings:

Main Code

The general condition or area of fault detected by the ECU.

Sub Code

The specific area or condition under the Main Code in which the condition was detected.

Active Indicator

Illuminates when a fault condition is active (Shift Selector will display *MODE ON* or the Pro-Link Diagnostic Tool will display *YES*). The indicator will extinguish when the fault condition is gone.

Ignition Cycle Counter

Used to clear inactive diagnostic codes from the code list in memory. The counter is incremented each time a normal ECU power-down occurs following the clearing of the active indicator. A diagnostic code will be cleared from the list when the counter exceeds 25.

Event Counter

Used to record the number of times a diagnostic code occurs prior to the incident being cleared from the code list. The last occurring code will be stored in position "d1". If the most recent code is already in the code list, that code will be moved to position "d1". The Active Indicator will illuminate (Shift Selector will display *MODE ON*

or the Diagnostic Tool will display *YES*), the Ignition Cycle Counter will be cleared and "1" will be added to the Event Counter.

CLEARING THE ACTIVE INDICATOR AND CODE RECORDS FROM THE CODE LIST IN MEMORY

If the conditions causing a diagnostic code to be set are cleared, the Active Indicator can be manually cleared by holding the *MODE* button down continuously for 3 seconds until a tone is heard from the shifter. To clear code records from the list, hold the *MODE* button down continuously for ten seconds until a second tone sounds. All diagnostic records in the list that are not active will then be cleared and the remaining records will then be moved up the list.

CODE READING AND CODE CLEARING PROCEDURES

Diagnostic codes can be read and cleared by two methods: by using the Pro-Link 9000 Diagnostic Tool plugged into the receptacle located in the driver's footwell or by using the Shift Selector Display. The operation of the Pro-Link 9000 Diagnostic Tool is described in the user's manual provided with the Tool. This section describes how to read and clear codes using the Shift Selector Display.

The Diagnostic Display Mode can be entered for viewing codes at any speed. Codes can only be cleared when the output speed = 0 and no output speed sensor failure is active.

Reading Codes

Read codes as follows:

1. Enter the Diagnostic Display Mode by pressing both the "▲" (up arrow) and "▼" (down arrow) push buttons at the same time, twice on the push-button Shift Selector.

Note : *To obtain the oil level, press the "▲" (up arrow) and "▼" (down arrow) push-buttons once, at the same time. Refer to "Oil Level Sensor (OLS) Codes" in this chapter.*

2. Read the first code in the first of the five code positions on the digital display of the Shift Selector. For example, code "25 11" is stored in the first position. The display will change every two seconds as follows:
   a) Code list position = "d1"
   b) Main code = "25"
   c) Sub code = "11"
   d) Display will repeat steps a, b and c.

3. Press the MODE button momentarily to view the second position (d2) as described in step 2.

4. To view the third, fourth and fifth positions (d3, d4 and d5), momentarily press the MODE button as explained above.

5. Pressing the MODE button momentarily after the fifth position (d5) is displayed will return the code display to the first position (d1).

6. Any code which is active will be indicated by the MODE ON indicator (Active Indicator) being illuminated while in that code position. While in the normal operating mode, the MODE ON indicator is illuminated to indicate the ECONOMY mode operation. Refer to "Controls & Instruments" chapter under MODE.

7. Any code position in the list which does not have a diagnostic code logged will display "- -" for both the Main and Sub Code displays. All positions after a code position without any code stored will also display "- -".

Clearing Codes

Clear codes as follows:

- Clearing of the Active Indicator is automatically done at ECU power-down for all codes except code "69 34".

- Some codes will clear the Active Indicator automatically when the condition causing the code is no longer detected by the ECU. Refer to the "Diagnostic Code List and Description" table in this chapter.

- Manual clearing is possible while in the Diagnostic Display Mode and after the condition causing the code is corrected (output speed must be zero).

1. To clear all Active Indicators, hold down the MODE button continuously for 3 seconds until the Shift Selector tone sounds for 0.5 second.

2. Release the MODE button to return to normal operating mode. If the condition causing the code was not active at the time, the active indicator will go out.

Note : *If clearing a code while locked in a drive (D) or reverse (R) position (fail-to-range), the transmission will still be in drive (D) or reverse (R) when the clearing procedure is completed. Neutral (N) must be manually selected.*

Exiting The Diagnostic Display Mode

The Diagnostic Display Mode can be exited by any of the following methods:

1. Press the "▲" (up arrow) and "▼" (down arrow) push buttons at the same time on the push-button Shift Selector.

2. Press any range button, "D", "N" or "R" on the push-button Shift Selector (the shift will be commanded if it is not inhibited by an active code).

3. Do nothing and wait until the calibrated time (approximately 10 minutes) has passed. The system will automatically return to the normal operating mode.

4. Turn off power to the ECU (shut off the engine with the ignition key).

5. After clearing the active indicator as described in "Clearing Codes" section.

Clearing Records From The Code List In Memory

If the Active Indicator has been successfully cleared manually and the MODE button is held down continuously for 10 seconds while in the display mode until a tone sounds, all diagnostic records in the Code List that are not active will be cleared and the remaining records will be moved up the Code List.

DIAGNOSTIC CODE RESPONSE

The following responses are used in the "Diagnostic Code List and Description" table to command safe operation when diagnostic codes are set.

DNS - Do Not Shift Response

- Release lock-up clutch and inhibit lock-up operation.
- Inhibit all shifts.
- Turn *ON* the CHECK TRANS light.
- Display the range attained.
- Ignore any range selection inputs from the pushbutton or lever Shift Selector.

DNA - Do Not Adapt Response

- The ECU stops adaptive shift control while the code is active.

SOL OFF - SOLenoid OFF Response

- All solenoids are commanded *OFF* (turning solenoids “A” and “B” off electrically cause them to be on hydraulically).

RPR - Return to Previous Range Response

- When the speed sensor ratio or C3 pressure switch test associated with a shift not successful, the ECU commands the same range as commanded before the shift.

NNC - Neutral No Clutches Response

- When certain speed sensor ratio or C3 pressure switch tests are not successful, the ECU commands a neutral condition with no clutches applied.

DIAGNOSTIC CODE LIST AND DESCRIPTION

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
13	12	ECU input voltage, low	Yes	DNS, DNA, SOL OFF, (Hydraulic default)
13	13	ECU input voltage, medium low	No	DNA
13	23	ECU input voltage, high	Yes	DNS, SOL OFF (Hydraulic default)
14	12	Oil level sensor, failed low	No	None
14	23	Oil level sensor, failed high	No	None
21	12	Throttle position sensor, failed low	No	Use throttle default value, DNA
21	23	Throttle position sensor, failed high	No	Use throttle default value, DNA
22	14	Engine speed sensor reasonableness test	No	Use default engine speed, DNA
22	15	Turbine speed sensor reasonableness test	Yes	DNS, lock in current range, DNA
22	16	Output speed sensor reasonableness test	Yes(1)	DNS, lock in current range, DNA
23	12	Primary Shift Selector or RSI Link Fault	Yes	Hold in last valid direction. May cause "cateye" display
23	14	Secondary Shift Selector or RSI Link Fault	Yes	Hold in last valid direction
23	16	Shift Selector display line fault	No	None, may cause "cateye" display
24	12	Sump fluid temperature, cold	Yes	DNS, lock in neutral
24	23	Sump fluid temperature, hot	No	No upshifts above a calibration range
25	0	Output speed sensor detected at 0 speed (Low)	Yes(1)	DNS, lock in current range (Low), DNA
25	11	Output speed sensor detected at 0 speed (1st)	Yes(1)	DNS, lock in current range (1st), DNA
25	22	Output speed sensor detected at 0 speed (2nd)	Yes(1)	DNS, lock in current range (2nd), DNA
25	33	Output speed sensor detected at 0 speed (3rd)	Yes(1)	DNS, lock in current range (3rd), DNA
25	44	Output speed sensor detected at 0 speed (4th)	Yes(1)	DNS, lock in current range (4th), DNA
25	55	Output speed sensor detected at 0 speed (5th)	Yes(1)	DNS, lock in current range (5th), DNA
25	66	Output speed sensor detected at 0 speed (6th)	Yes(1)	DNS, lock in current range (6th), DNA
25	77	Output speed sensor detected at 0 speed (R)	Yes(1)	DNS, lock in current range (R), DNA
26	00	Throttle source not detected	No	Use throttle default values, DNA
26	11	Engine coolant source not detected	No	Use default value of 0°F
32	0	C3 pressure switch open, Low range	Yes	DNS, lock in current range (Low), DNA

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
32	33	C3 pressure switch open, 3rd range	Yes	DNS, lock in current range (3rd), DNA
32	55	C3 pressure switch open, 5th range	Yes	DNS, lock in current range (5th), DNA
32	77	C3 pressure switch open, Reverse range	Yes	DNS, lock in current range (R), DNA
33	12	Sump oil temperature sensor failed low	No	Use default value of 200°F (93°C)
33	23	Sump oil temperature sensor, failed high	No	Use default value of 200°F (93°C)
34	12	Factory calibration compatibility number wrong	Yes	DNS, SOL OFF (Hydraulic default), DNA
34	13	Factory calibration block checksum	Yes	DNS, SOL OFF (Hydraulic default), DNA
34	14	Power off block checksum	No	Use previous location or factory calibration and reset adaptive, DNA
34	15	Diagnostic queue block checksum	No	Use previous location or clear diagnostic queue, DNA
34	16	Real time block checksum	Yes	DNS, SOL OFF (Hydraulic default), DNA
34	17	Customer modifiable constants checksum	Yes	DNS, SOL OFF (Hydraulic default), DNA
35	0	Power interruption (code set after power restored)	No	None (Hydraulic default during interruption)
35	16	Real time write interruption	Yes	DNS, SOL OFF (Hydraulic default), DNA
36	0	Hardware/Software not compatible	Yes(2)	DNS, SOL OFF (Hydraulic default), DNA
42	12	Short to battery, A solenoid circuit	Yes	DNS, SOL OFF, DNA
42	13	Short to battery, B solenoid circuit	Yes	DNS, SOL OFF, DNA
42	14	Short to battery, C solenoid circuit	Yes	DNS, SOL OFF, DNA
42	15	Short to battery, D solenoid circuit	Yes	DNS, SOL OFF, DNA
42	16	Short to battery, E solenoid circuit	Yes	DNS, SOL OFF, DNA
42	21	Short to battery, F solenoid circuit	No	Lock-up inhibited, DNA
42	22	Short to battery, G solenoid circuit	Yes	DNS, lock in a range
42	23	Short to battery, H solenoid circuit	No	Differential lock inhibited (3070 only), retarder inhibited
42	24	Short to battery, J solenoid circuit	No	Low and 1st inhibited
42	26	Short to battery, N solenoid circuit	No	Low and 1st inhibited, allow retarder
44	12	Short to ground, A solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
44	13	Short to ground, B solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
44	14	Short to ground, C solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
44	15	Short to ground, D solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
44	16	Short to ground, E solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
44	21	Short to ground, F solenoid circuit	No	Lockup inhibited, DNA
44	22	Short to ground, G solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
44	23	Short to ground, H solenoid circuit	No	Differential lock inhibited (3070 only), retarder operation inhibited
44	24	Short to ground, J solenoid circuit	No	Low and 1st inhibited
44	26	Short to ground, N solenoid circuit	No	Low and 1st inhibited, retarder allowed
45	12	Open circuit, A solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
45	13	Open circuit, B solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
45	14	Open circuit, C solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
45	15	Open circuit, D solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
45	16	Open circuit, E solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
45	21	Open circuit, F solenoid circuit	No	Lock-up inhibited, DNA
45	22	Open circuit, G solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
45	23	Open circuit, H solenoid circuit	No	Differential lock inhibited (3070 only), retarder inhibited
45	24	Open circuit, J solenoid circuit	No	Low and 1st inhibited
45	26	Open circuit, N solenoid circuit	No	Low and 1st inhibited, retarder allowed
46	21	Overcurrent, F solenoid circuit	No	Lock-up inhibited, DNA
46	26	Overcurrent, N and H solenoid circuits	No	Low and first inhibited or retarder inhibited, DNA
46	27	Overcurrent, A-Hi solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
51	01	Offgoing ratio test (during shift), Low to 1	Yes	DNS, RPR, DNA
51	10	Offgoing ratio test (during shift), 1 to Low	Yes	DNS, RPR, DNA
51	12	Offgoing ratio test (during shift), 1 to 2	Yes	DNS, RPR, DNA
51	21	Offgoing ratio test (during shift), 2 to 1	Yes	DNS, RPR, DNA
51	23	Offgoing ratio test (during shift), 2 to 3	Yes	DNS, RPR, DNA
51	24	Offgoing ratio test (during shift), 2 to 4	Yes	DNS, RPR, DNA
51	35	Offgoing ratio test (during shift), 3 to 5	Yes	DNS, RPR, DNA
51	42	Offgoing ratio test (during shift), 4 to 2	Yes	DNS, RPR, DNA
51	43	Offgoing ratio test (during shift), 4 to 3	Yes(1)	DNS, RPR, DNA

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
51	45	Offgoing ratio test (during shift), 4 to 5	Yes(1)	DNS, RPR, DNA
51	46	Offgoing ratio test (during shift), 4 to 6	Yes	DNS, RPR, DNA
51	53	Offgoing ratio test (during shift), 5 to 3	Yes	DNS, RPR, DNA
51	64	Offgoing ratio test (during shift), 6 to 4	Yes	DNS, RPR, DNA
51	65	Offgoing ratio test (during shift), 6 to 5	Yes	DNS, RPR, DNA
	XY	Offgoing ratio test, X to Y(3)		
52	1	Offgoing C3PS test (during shift), Low to 1	Yes	DNS, RPR, DNA
52	8	Offgoing C3PS test (during shift), L to N1	Yes	DNS, NNC, DNA
52	32	Offgoing C3PS test (during shift), 3 to 2	Yes	DNS, RPR, DNA
52	34	Offgoing C3PS test (during shift), 3 to 4	Yes	DNS, RPR, DNA
52	54	Offgoing C3PS test (during shift), 5 to 4	Yes	DNS, RPR, DNA
52	56	Offgoing C3PS test (during shift), 5 to 6	Yes	DNS, RPR, DNA
52	71	Offgoing C3PS test (during shift), R to 1	Yes	DNS, NNC, DNA
52	72	Offgoing C3PS test (during shift), R to 2	Yes	DNS, NNC, DNA
52	78	Offgoing C3PS test (during shift), R to N1	Yes	DNS, NNC, DNA
52	99	Offgoing C3PS test (during shift), N3 to N2	Yes	DNS, RPR, DNA
52	XY	Offgoing C3PS test (during shift) X to Y(3)		
53	8	Offgoing speed test (during shift), L to N1	Yes(1)	DNS, NNC, DNA
53	18	Offgoing speed test (during shift), 1 to N1	Yes(1)	DNS, NNC, DNA
53	28	Offgoing speed test (during shift), 2 to N1	Yes(1)	DNS, NNC, DNA
53	29	Offgoing speed test (during shift), 2 to N2	Yes(1)	DNS, RPR, DNA
53	38	Offgoing speed test (during shift), 3 to N1	Yes(1)	DNS, NNC, DNA
53	39	Offgoing speed test (during shift), 3 to N3	Yes(1)	DNS, RPR, DNA
53	48	Offgoing speed test (during shift), 4 to N1	Yes(1)	DNS, NNC, DNA
53	49	Offgoing speed test (during shift), 4 to N3	Yes(1)	DNS, RPR, DNA

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
53	58	Offgoing speed test (during shift), 5 to N1	Yes(1)	DNS, NNC, DNA
53	59	Offgoing speed test (during shift), 5 to N3	Yes(1)	DNS, RPR, DNA
53	68	Offgoing speed test (during shift), 6 to N1	Yes(1)	DNS, NNC, DNA
53	69	Offgoing speed test (during shift), 6 to N4	Yes(1)	DNS, RPR, DNA
53	78	Offgoing speed test (during shift), R to N1	Yes	DNS, NNC, DNA
53	99	Offgoing speed test (during shift), N2 to N3 or N3 to N2	Yes	DNS, RPR, DNA
53	XY	Offgoing speed test (during shift), X to Y(3)		
54	1	Oncoming ratio test (after shift), L to 1	Yes	DNS, RPR, DNA
54	7	Oncoming ratio test (after shift), L to R	Yes	DNS, NNC, DNA
54	10	Oncoming ratio test (after shift), 1 to L	Yes	DNS, RPR, DNA
54	12	Oncoming ratio test (after shift), 1 to 2	Yes	DNS, RPR, DNA
54	17	Oncoming ratio test (after shift), 1 to R	Yes	DNS, NNC, DNA
54	21	Oncoming ratio test (after shift), 2 to 1	Yes	DNS, RPR, DNA
54	23	Oncoming ratio test (after shift), 2 to 3	Yes	DNS, RPR, DNA
54	24	Oncoming ratio test (during shift), 2 to 4	Yes	DNS, RPR, DNA
54	27	Oncoming ratio test (after shift), 2 to R	Yes	DNS, RPR, DNA
54	32	Oncoming ratio test (after shift), 3 to 2	Yes	DNS, RPR, DNA
54	34	Oncoming ratio test (after shift), 3 to 4	Yes	DNS, RPR, DNA
54	35	Oncoming ratio test (during shift), 3 to 5	Yes	DNS, RPR, DNA
54	42	Oncoming ratio test (during shift), 4 to 2	Yes	DNS, RPR, DNA
54	43	Oncoming ratio test (after shift), 4 to 3	Yes	DNS, RPR, DNA
54	45	Oncoming ratio test (after shift), 4 to 5	Yes	DNS, RPR or SOL OFF (Hydraulic default), DNA
54	46	Oncoming ratio test (during shift), 4 to 6	Yes	DNS, RPR, DNA
54	53	Oncoming ratio test (during shift), 5 to 3	Yes	DNS, RPR, DNA
54	54	Oncoming ratio test (after shift), 5 to 4	Yes	DNS, RPR, DNA

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
54	56	Oncoming ratio test (after shift), 5 to 6	Yes	DNS, RPR, DNA
54	64	Oncoming ratio test (after shift), 6 to 4	Yes	DNS, RPR, DNA
54	65	Oncoming ratio test (after shift), 6 to 5	Yes	DNS, RPR, DNA
54	70	Oncoming ratio test (after shift), R to L	Yes	DNS, NNC, DNA
54	71	Oncoming ratio test (after shift), R to 1	Yes	DNS, NNC, DNA
54	72	Oncoming ratio test (after shift), R to 2	Yes	DNS, NNC, DNA
54	80	Oncoming ratio test (after shift), N1 to L	Yes	DNS, RPR, DNA
54	81	Oncoming ratio test (after shift), N1 to 1	Yes	DNS, RPR, DNA
54	82	Oncoming ratio test (after shift), N1 to 2	Yes	DNS, RPR, DNA
54	83	Oncoming ratio test (after shift), N1 to 3	Yes	DNS, RPR, DNA
54	85	Oncoming ratio test (after shift), N1 to 5	Yes	DNS, RPR, DNA
54	86	Oncoming ratio test (after shift), N1 to 6	Yes	DNS, RPR, DNA
54	92	Oncoming ratio test (after shift), N2 to 2	Yes	DNS, RPR, DNA
54	93	Oncoming ratio test (after shift), N3 to 3	Yes	DNS, RPR, DNA
54	95	Oncoming ratio test (after shift), N3 to 5	Yes	DNS, RPR, DNA
54	96	Oncoming ratio test (after shift), N4 to 6	Yes	DNS, RPR, DNA
54	XY	Oncoming ratio test (after shift), X to Y(3)		
55	07	Oncoming C3PS test (after shift), Low to R	Yes(1)	DNS, NNC, DNA
55	17	Oncoming C3PS test (after shift), 1 to R	Yes(1)	DNS, NNC, DNA
55	27	Oncoming C3PS test (after shift), 2 to R	Yes(1)	DNS, NNC, DNA
55	87	Oncoming C3PS test (after shift), N1 to R	Yes	DNS, RPR, DNA
55	97	Oncoming C3PS test (after shift), NVL to R	Yes(1)	DNS, NNC, DNA
55	XY	Oncoming C3PS test (after shift), X to Y(3)		
56	0	Range verification test, L	Yes(1)	DNS, 1st, Low or SOL OFF (Low),DNA
56	11	Range verification ratio test, 1st	Yes	DNS, 6th, DNA
56	22	Range verification ratio test, 2nd	Yes(1)	DNS, 6th or 5th, DNA

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
56	33	Range verification ratio test, 3rd	Yes(1)	DNS, 5th or SOL OFF (4th), DNA
56	44	Range verification ratio test, 4th	Yes	DNS, 3rd or 5th, DNA
56	55	Range verification ratio test, 5th	Yes(1)	DNS, SOL OFF (5th) or 3rd, DNA
56	66	Range verification ratio test, 6th	Yes	DNS, 5th, 3rd or SOL OFF (3rd), DNA
56	77	Range verification ratio test, R	Yes	DNS, N2 or N3, DNA
57	11	Range verification C3PS test, 1st	Yes	DNS, SOL OFF (3rd), DNA
57	22	Range verification C3PS test, 2nd	Yes	DNS, 3rd, DNA
57	44	Range verification C3PS test, 4th	Yes	DNS, 5th or SOL OFF (3rd), DNA
57	66	Range verification C3PS test, 6th	Yes	DSN, SOL OFF (5th), DNA
57	88	Range verification C3PS test, N1	Yes	DNS, N3, DNA
57	99	Range verification C3PS test, N2 or N4	Yes	DNS, N3, DNA
61	0	Retarder oil temperature, hot	No	None
62	12	Retarder oil temperature sensor, low	No	None
62	23	Retarder oil temperature sensor, high	No	None
62	32	Engine coolant sensor, failed low	No	Use default value of 0°F
62	33	Engine coolant sensor, failed high	No	Use default value of 0°F
63	0	Input function fault	Yes	Depends on input function, DNA
63	26	Kickdown input, failed on	No	Kickdown operation inhibited
63	40	Service brake status input, failed on	No	No auto Neutral to Drive shifts for refuse packer (I/O package # 41). No retarder if a TPS code is also active
64	12	Retarder modulation request sensor, failed low	No	Retarder operation inhibited
64	23	Retarder modulation request sensor, failed high	No	Retarder operation inhibited
66	0	Serial communications interface fault	No	Use default throttle values, DNA
66	11	SCI engine coolant source fault	No	Use default value of 0°F
69	27	ECU, inoperative A-Hi switch	Yes	DNS, NNC, DNA
69	28	ECU, inoperative F-Hi switch	Yes	Lock-up inhibited, DNA
69	29	ECU, inoperative N and H-Hi switch	No	Low and 1st inhibited, retarder inhibited, DNA
69	33	ECU, Computer Operating Properly (COP) timeout	No	Reset ECU, shutdown ECU on 2nd occurrence (power loss: hydraulic defaults), may cause "cateye" display, DNA(4)
69	34	ECU, write timeout	Yes	DNS, SOL OFF (Hydraulic default), DNA
69	35	ECU, checksum test	No	Induce COP timeout (reset ECU), DNA(4)
69	36	ECU, RAM self test	No	Induce COP timeout (reset ECU), DNA(4)
69	39	Communication chip addressing error	No	Use default for J1939 data, DNA

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
69	41	ECU, I/O ASIC addressing test	No	Induce COP timeout (reset ECU), DNA(4)
69	42	SPI output failure	Yes	GPO 1-8 and reverse warning inoperable
69	43	SPI input failure	Yes	DNS, lock in range, DNA

(1) This code is logged to real time to protect the transmission in case a loss of power to the ECU (Power Interruption code 35 00) occurs.
(2) The ECU hardware or software must be changed so that they are compatible.
(3) Additional codes could be logged for other shifts where X indicates range shifted from and Y indicates range shifted to.
(4) The COP reset will cleat the active inhibit.

OIL LEVEL SENSOR (OLS) CODES

Oil level codes are obtained as follows:

1. Press both the "▲" (up arrow) and "▼" (down arrow) push-buttons simultaneously. Oil level codes are displayed in 2 minutes (e.g. display will flash and 8, 7, ...; countdown will occur during the 2 minutes) once the following parameters are met:

- Engine at idle;
- Oil at operating temperature;
- Transmission in neutral (N);
- Transmission output shaft stopped;
- Oil level sensor present and working.

After 2 minutes, the display will flash one of the codes shown below:

CODE	CAUSE OF CODE
OL-OK	oil level is correct
LO-01	one quart low
LO-02	two quarts low
HI-01	one quart high
HI-02	two quarts high

Note : *Failure to meet one of the above parameters will stop the two minute countdown. One of the codes shown below will indicate the cause of the countdown interruption. Once all parameters are met, the countdown will continue from where it left off.*

CODE	CAUSE OF CODE
OL-50	Engine speed (rpm) too low
OL-59	Engine speed (rpm) too high
OL-65	Neutral must be selected
OL-70	Sump oil temperature too low
OL-79	Sump oil temperature too high
OL-89	Output shaft rotation
OL-95	Sensor failure

EXITING THE OIL LEVEL DISPLAY MODE

To exit the Oil Level Display Mode, press any range button ("R", "N" or "D").

Clearing Codes

If the CHECK TRANS light is illuminated, first clear all diagnostic codes by pressing both the "▲" (up arrow) and "▼" (down arrow) push-buttons at the same time, twice.

Take the motorcoach for a test drive. If the CHECK TRANS light illuminates again, record the diagnostic codes. Refer to "World Transmission (WT) Diagnostic Codes" under "Reading Codes".

PLATES AND CERTIFICATION

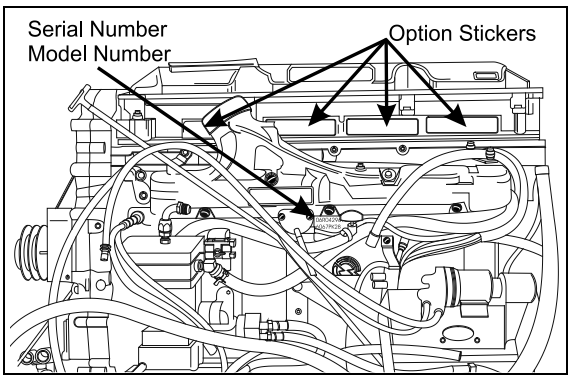
DATA PLATES

The main components of the vehicle such as engine, transmission, axles and chassis are identified by different serial numbers. It may be necessary to locate these numbers for warranty purposes.

Engine

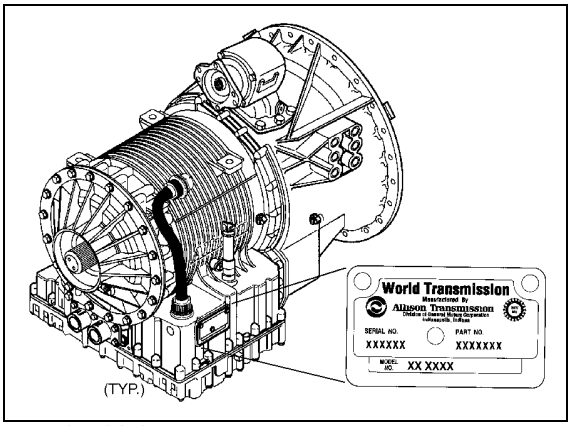
The engine serial and model number are stamped on the cylinder block (as viewed from the flywheel end) on the left side just below the fire deck and above the cast-in Detroit Diesel logo.

In addition, option stickers are located on the rocker cover (starter side). The engine serial and model number and a list of the optional engine equipment are written on these stickers. Refer to this information when ordering replacement parts.

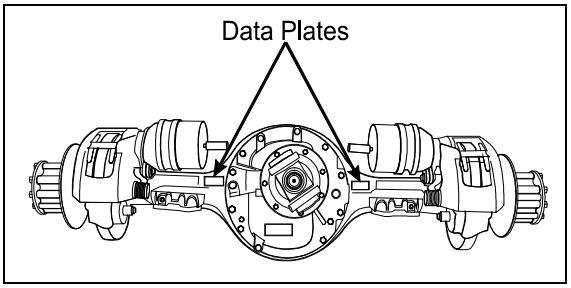


SERIES 60 ENGINE

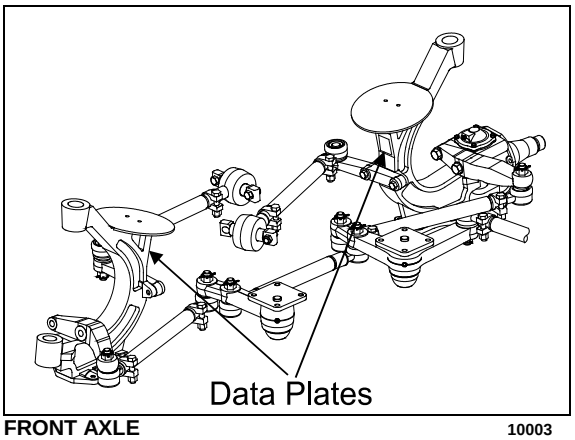
Transmission



TRANSMISSION DATA PLATE 07019



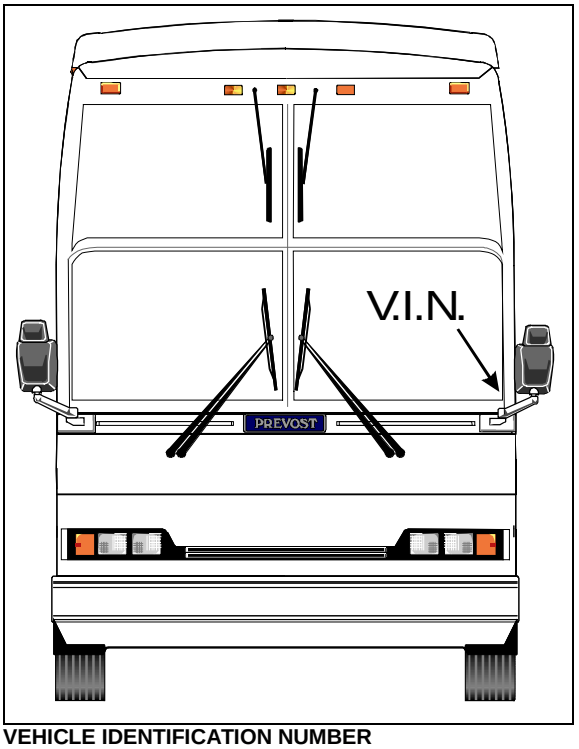
DRIVE AXLE



FRONT AXLE 10003

VEHICLE IDENTIFICATION NUMBER (VIN)

The Vehicle Identification Number is stamped on a plate located on the windshield frame pilar (driver's side). The VIN is visible from the outside of the motorcoach. Make sure the correct vehicle identification number is given when ordering replacement parts. Using the VIN when ordering parts will facilitate processing.



VEHICLE IDENTIFICATION NUMBER

Note : *Record the VIN in the motorcoach documentation and keep with company records. The VIN will normally be used for vehicle registration and for obtaining vehicle insurance coverage.*

SAFETY CERTIFICATION

Motorcoach components meet specifications and standards as follows:

- Material and parts conform to ASTM and/or SAE standards in effect at the time of manufacture.
- All factory-installed interior materials meet FMVSS 302 for fire resistance.
- Certified according to Provincial, State and Federal Safety standards (Canadian and US) BMCSS, FMVSS and CMVSS.

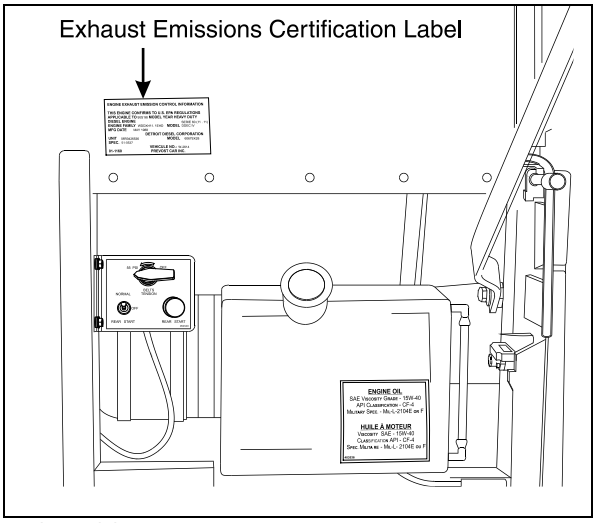
Other applicable certification labels are affixed to the component.

DOT Certification Label

This certifies that motorcoaches manufactured by Prévost Car Inc. comply with all Federal Motor Vehicle Safety Standards at the time of manufacture. The DOT Certification label is affixed on the modesty panel, behind the driver's seat.

EPA Engine Label

The exhaust emission certification label affixed to the oil reserve tank certifies that the engine conforms to federal and any state exhaust emission regulations. It gives the operating conditions under which certification was made.



ENGINE COMPARTMENT

COACH FINAL RECORD

The Coach Final Record is a record of all data pertaining to the assembly of the motorcoach. This record is included in the technical publication package supplied with the motorcoach. Retain this record in the company records office for reference and safe-keeping.

SERVICE LITERATURE

Additional copies of the following service literature are available on request and at low cost.

- **Maintenance Manual**
- **Owner's Manual**
- **Parts Manual**
- **Service Center Directory**

To order the desired manual(s), please contact your local distributor or write to:

PRÉVOST CAR INC.

ATT.: TECHNICAL PUBLICATIONS DEPARTMENT
35, boulevard Gagnon,
Sainte-Claire, Québec,
Canada, G0R 2V0

Specify the complete vehicle serial number. Allow 30 days for delivery.

INDEX

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

R

S

T

V

W

NOTICE

Declaration Of The Manufacturing Defects To The Government Of The United States

If you believe that your vehicle has 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 Prévost Car Inc.

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 Prévost Car Inc.

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.

Declaration Of The Manufacturing Defects To The Canadian Government

If you stay in Canada, and if you believe that your vehicle has a safety defect, you should immediately inform Transport Canada and Prévost Car Inc. You may write to:

Transport Canada
Box 8880
Ottawa, Ontario, K1G 3J2

Declaration Of The Manufacturing Defects To Prévost Car Inc.

In addition to notify the NHTSA (or Transport Canada), please contact Prévost Car at **1-418-883-3391**. Or you may write to:

Prévost Car Inc.
After-sales service department
35, boulevard Gagnon
Ste-Claire (Québec)
Canada G0R 2V0

PREVOST *H3-41 & 45*

CHANGE OF ADDRESS OR OWNERSHIP

Any change in address or ownership should be brought to the attention of the manufacturer by completing and sending out one of the cards supplied below.

CERTIFIÉ-CERTIFIED ISO 9001 PREVOST

CHANGE OF ADDRESS

VEHICLE SERIAL NUMBER

OLD ADDRESS	NEW ADDRESS
NAME	
NO. STREET APT	NO. STREET APT
CITY STATE/PROVINCE ZIP/POSTAL CODE	CITY STATE/PROVINCE ZIP/POSTAL CODE
( ) – PHONE ( ) – FAX	( ) – PHONE ( ) – FAX

CERTIFIÉ-CERTIFIED ISO 9001 PREVOST

CHANGE OF OWNERSHIP

VEHICLE SERIAL NUMBER

The ownership of this vehicle is transferred

FROM:	TO:
NAME	NAME
NO. STREET APT	NO. STREET APT
CITY STATE/PROVINCE ZIP/POSTAL CODE	CITY STATE/PROVINCE ZIP/POSTAL CODE
( ) – PHONE ( ) – FAX	( ) – PHONE ( ) – FAX

CHANGE OF ADDRESS OR OWNERSHIP

AFFIX STAMP HERE

PREVOST

PRÉVOST CAR INC.
AFTER-SALES SERVICE DEPARTEMENT
35, boulevard Gagnon
Sainte-Claire, (Québec)
Canada G0R 2V0

AFFIX STAMP HERE

PREVOST

PRÉVOST CAR INC.
AFTER-SALES SERVICE DEPARTEMENT
35, boulevard Gagnon
Sainte-Claire, (Québec)
Canada G0R 2V0