PREVOST

COACH MANUFACTURER

OWNER'S MANUAL

LE MIRAGE XLII

PA1527

revised 2023/07/14

TABLE OF CONTENTS

FOREWORD

This PREVOST XL2 *Owner's Manual* has been prepared to thoroughly acquaint you, the owner, with vehicle's 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 remain with the vehicle at the time of resale. Please notify PREVOST 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 PREVOST 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 PREVOST 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.

This manual, or portions thereof, cannot be reproduced in any form whatsoever, in whole or in part, without the written consent of PREVOST CAR INC.

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.

To ensure safe and reliable operation, heed the following safety precautions.

SAFE OPERATING PRACTICES

- Operation and maintenance of the vehicle must be performed only by qualified personnel.
- Before driving, conduct a walk around inspection and check that all baggage compartment doors and equipment access doors are securely shut.
- Make sure good visibility is maintained at all times. Keep windshields clean and free of obstructions.
- Adjust the driver's seat so that all controls can be reached easily.
- Always wear the safety belt when driving.
- Check the instrument panel frequently. Do not operate the vehicle when dials or indicators are not in their normal operating condition.
- Always pay attention to pedestrians passing in front and behind the vehicle. Always yield to pedestrians at pedestrian walkways.
- Do not drive over obstacles on the road. Empty boxes, piles of leaves, and snowdrifts could conceal hidden dangers that could damage the vehicle suspension and underbody.
- When turning or changing lanes, signal your intention well in advance.
- When approaching to make a right turn, reduce the space between the vehicle and the curb to make sure another vehicle cannot pass on the right. Since the vehicle makes wide turns, allow enough space to make safe turns.
- Switch from high beams to low beams when meeting or following other vehicles within 500 feet (150 meters).
- Never leave the vehicle 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.
- Shut-off the engine before refueling, adding oil, performing maintenance or servicing tasks, unless stated otherwise.
- Fuel is highly flammable and explosive. Do not smoke when refueling. Keep away from open flames or sparks.
- Do not run the engine or HVAC system with access doors left open. Close compartment doors before operating any equipment.
- 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.
- Do not attempt to push or pull-start a vehicle equipped with an automatic transmission.
- The service life of the vehicle depends on the kind of maintenance it receives. Always record any problems and report them immediately to maintenance personnel.
- Do not use the trailer hitch before reading the safety, technical and operational requirements on page 16 of this manual.

DEFENSIVE DRIVING PRACTICES

- For city driving, allow a four to six second travel interval between your vehicle and the vehicle ahead. Increase this travel interval to six to eight seconds for highway driving. Increase time interval for driving at night or in foul weather.
- Be prepared to stop when approaching an intersection. The stopping distance of the vehicle increases with the weight and speed.
- Establish eye-to-eye contact with other drivers and with pedestrians. Use, high beam and low beam headlights, turn signals and horn as needed.
- On highway, don't stare at the road ahead. Keep your eyes moving. Check mirrors and dashboard instruments frequently.
- To keep the vehicle from drifting across lanes during highway driving, always look over the horizon on the road ahead.
- Adjust your speed to road conditions, traffic and visibility. Never exceed the posted speed limits.
- If another vehicle is following close behind, reduce your speed to let the vehicle pass.

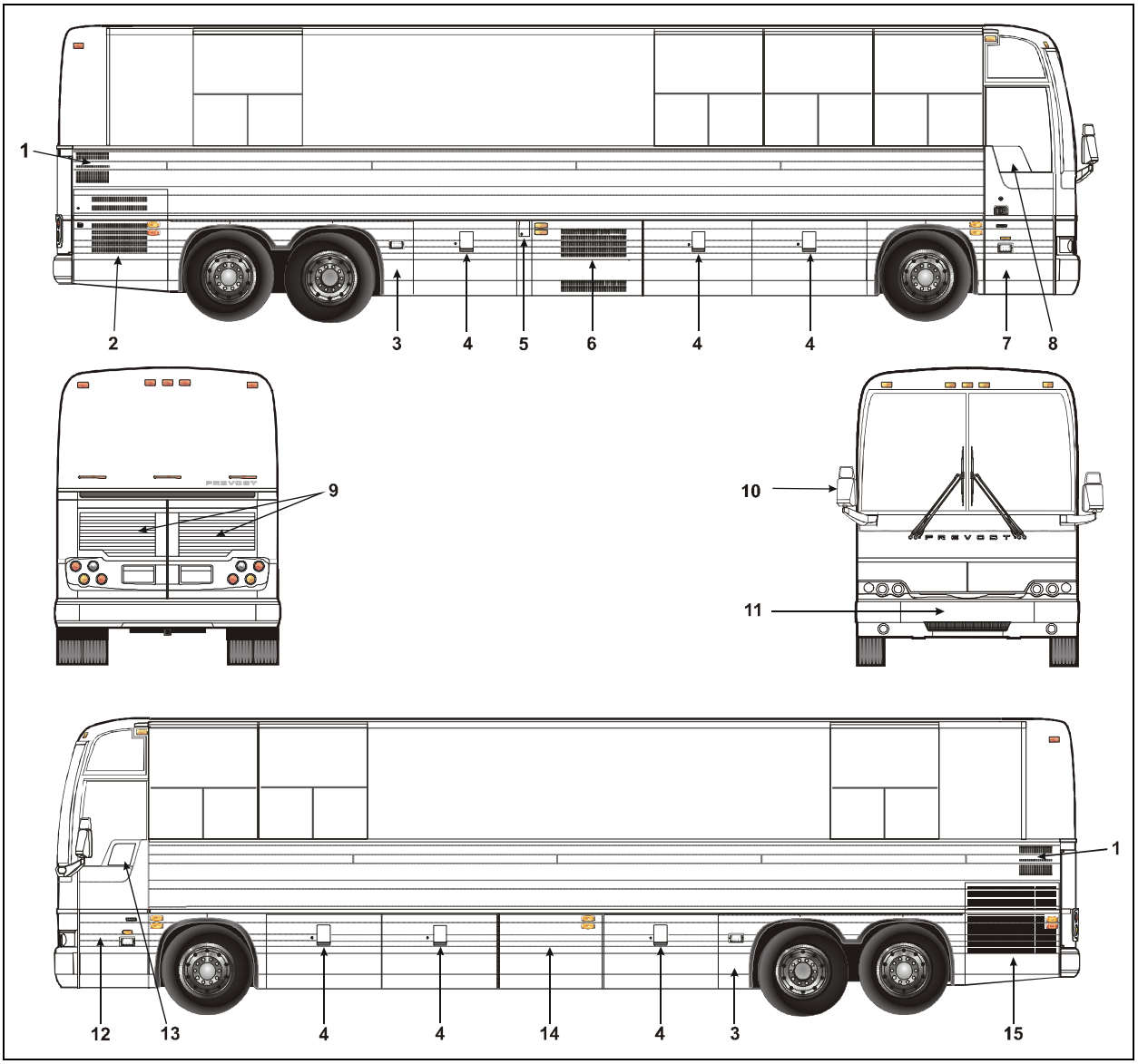
For additional information about safe operation and defensive driving practices, contact the local department of motor vehicles authority.

OTHER PRECAUTIONS

Warning: *Prior to working on a system inside the 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.*

Caution: *Prior to welding or soldering on the vehicle, disconnect all electronic modules, positive and negative battery connections. If these modules (ECM, ECU, ABS) are not disconnected, electronic components (EPROM, CHIPS) could be permanently damaged.*

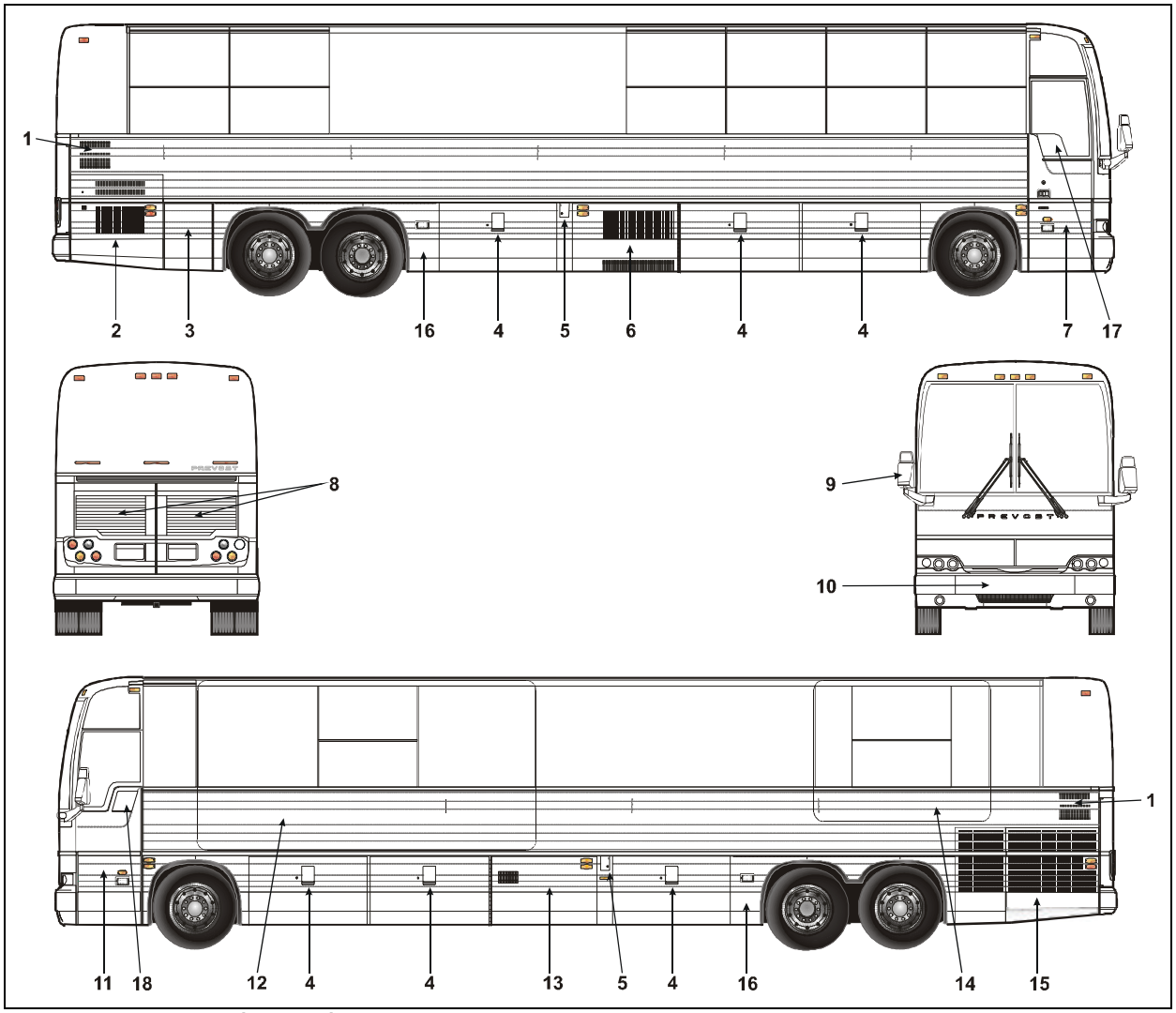
Refer to your maintenance manual for all related procedures.



XL2-40 EXTERIOR VIEW (TYPICAL) 18XXX

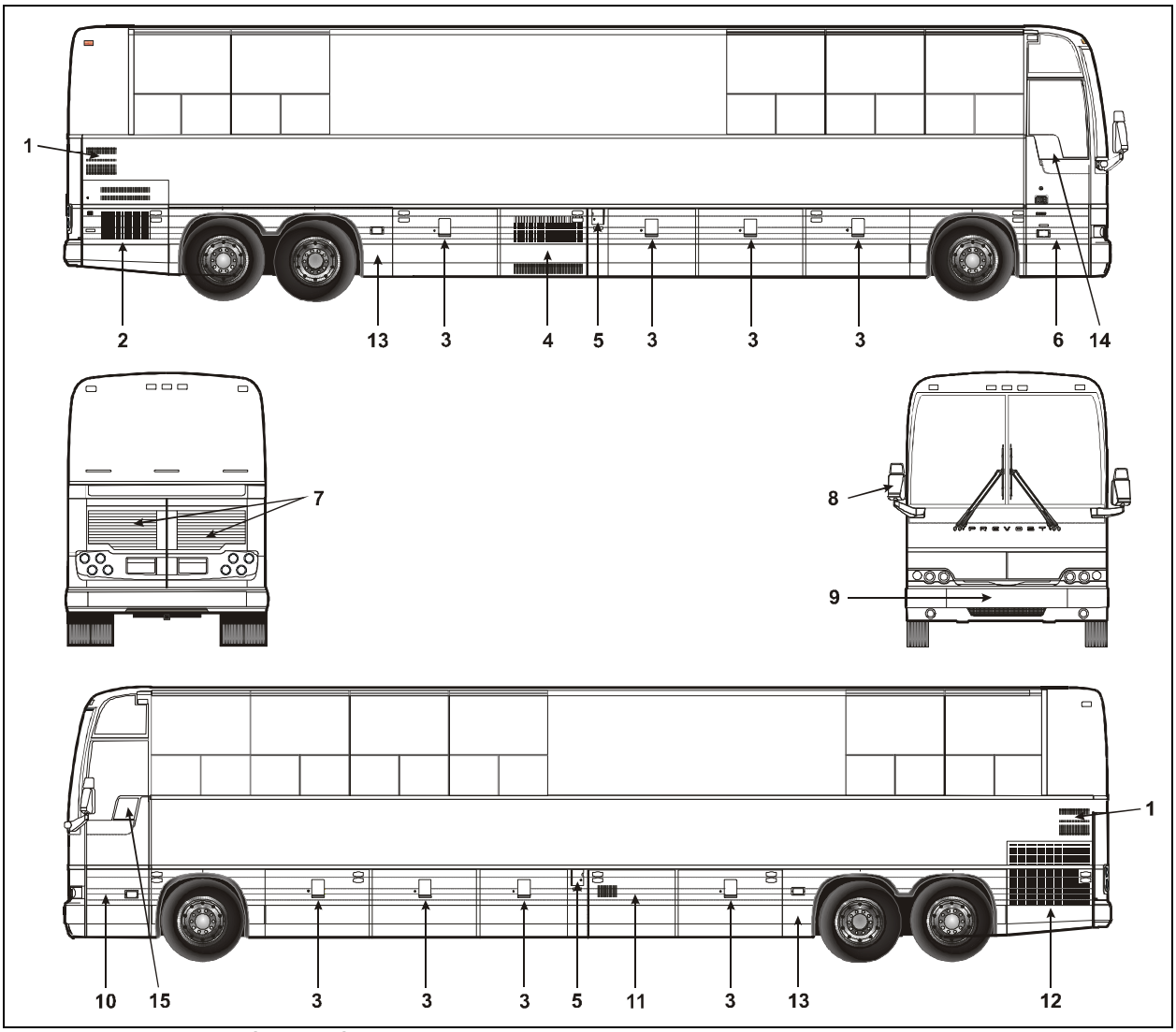
1. Engine air intake
2. Engine compartment R.H. side door
3. Hinged rear fender
4. Baggage compartment
5. Fuel filler door
6. Condenser or baggage compartment
7. Entrance door
8. Entrance door power window
9. Engine compartment rear doors
10. Rear-view mirror
11. Reclining bumper
12. Front service compartment
13. Driver's power window
14. Evaporator or baggage compartment
15. Radiator door

VEHICLE EXTERIOR



XL2-45 EXTERIOR VIEW (TYPICAL) 18XXX

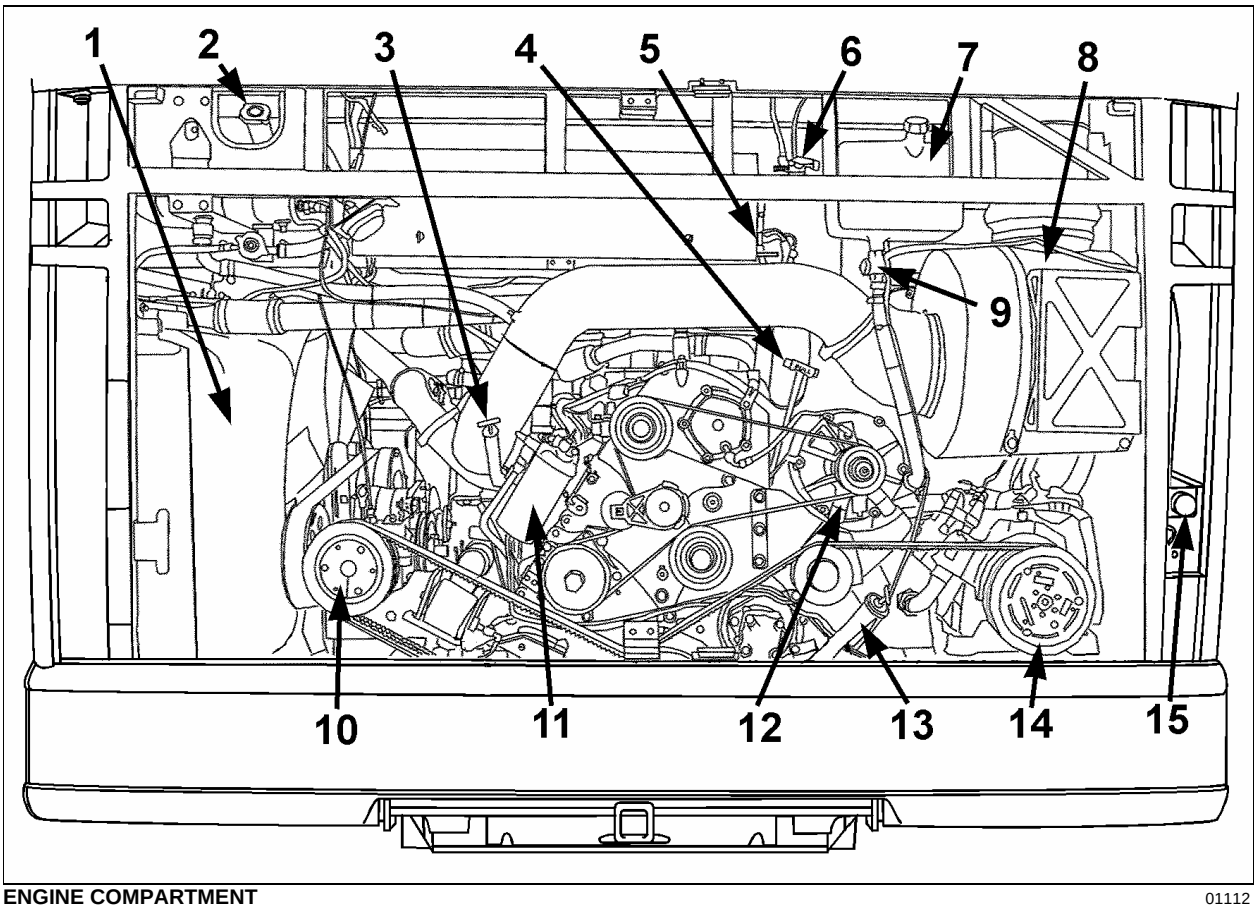
1. Engine air intake
2. Engine compartment R.H. side door
3. R.H. side rear service compartment
4. Baggage compartment
5. Fuel filler door
6. Condenser or baggage compartment
7. Entrance door
8. Engine compartment rear doors
9. Rear-view mirror
10. Reclining bumper
11. Front service compartment
12. Front Slide-Out (Optional)
13. Evaporator or baggage compartment and access to Slide-Out electrical panel
14. Rear Slide-Out (Optional)
15. Radiator door
16. Hinged rear fender
17. Entrance door power window
18. Driver's power window



XL2-45E EXTERIOR VIEW (TYPICAL) 18XXX

1. Engine air intake
2. Engine compartment R.H. side door
3. Baggage compartment
4. Condenser or baggage compartment
5. Fuel filler door
6. Entrance door
7. Engine compartment rear doors
8. Rear-view mirror
9. Reclining bumper
10. Front service compartment
11. Evaporator or baggage compartment
12. Radiator door
13. Hinged rear fender
14. Entrance door power window
15. Driver's power window

ENGINE COMPARTMENT COMPONENTS



ENGINE COMPARTMENT 01112

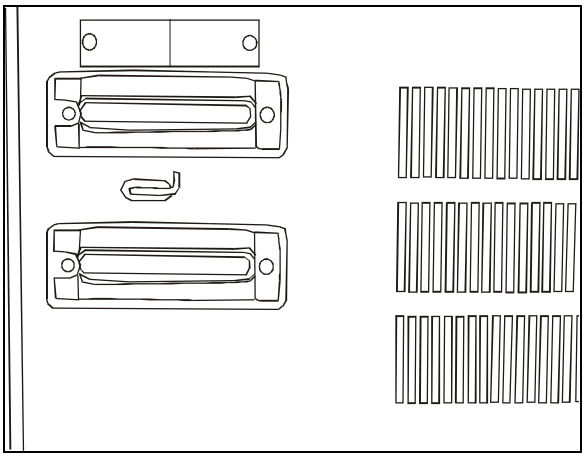
1. Radiator;
2. Coolant fluid surge tank;
3. Transmission oil dipstick;
4. Engine oil dipstick;
5. Starter selector switch and Engine rear start push-button switch;
6. Belt tensioner control valve;
7. Engine oil reserve tank;
8. Air filter;
9. Oil reserve tank drain valve;
10. Radiator fan gearbox;
11. Engine coolant filter/conditioner;
12. Alternator;
13. Engine oil filler tube;
14. Main A/C compressor;
15. 110 – 120 volt connector.

Most serviceable parts may be accessed through exterior compartments. There may be slight differences in the location of parts and in the configuration of compartments between models, depending on options.

ENGINE COMPARTMENT R.H. SIDE DOOR

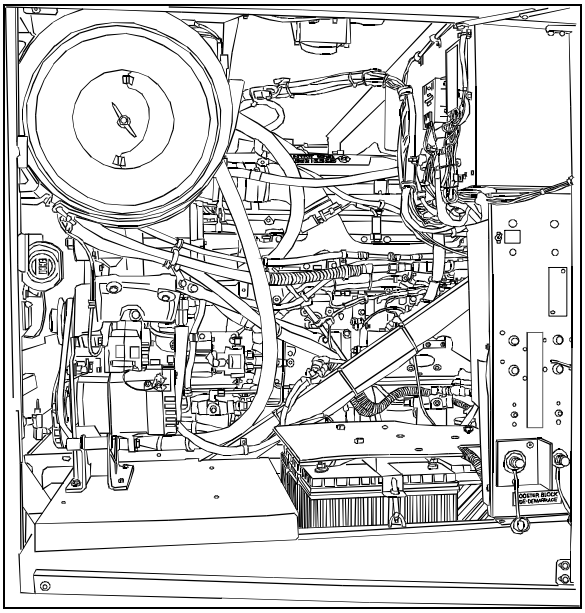
The engine compartment R.H. side door provides access to the following (if equipped):

- Engine compartment rear door release lever;
- Batteries;
- Battery equalizer;
- Voltage regulator;(w/270A alternator only)
- Circuit breakers;
- Booster terminals;
- Alternator(s);
- Primary air circuit fill valve and drain cock;
- Fuel filter/water separator;
- Cold weather starting fluid bottle;
- A/C Compressor.



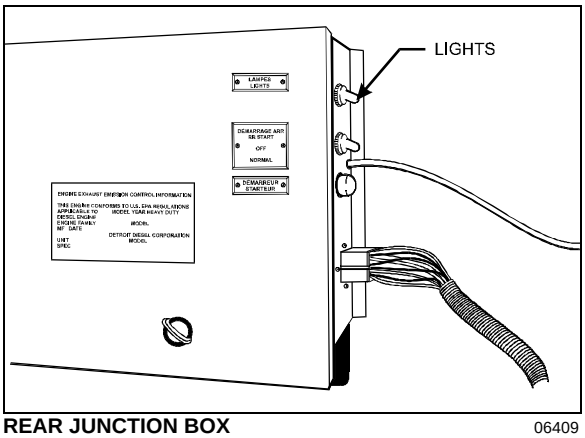
ENGINE COMPARTMENT R.H. DOOR 18559

This door can be locked or unlocked using the exterior compartment key or, if so equipped, by the central door locking system. To open, push sideways the small lever located between the marker lights.



R.H. SIDE ENGINE COMPARTMENT 18513

Turn *ON* the light in the engine compartment using a switch on the right-hand side of the rear junction box.



REAR JUNCTION BOX 06409

Warning: *Unless otherwise stated, 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.*

R.H. SIDE REAR SERVICE COMPARTMENT (XL2-45 MTH ONLY)

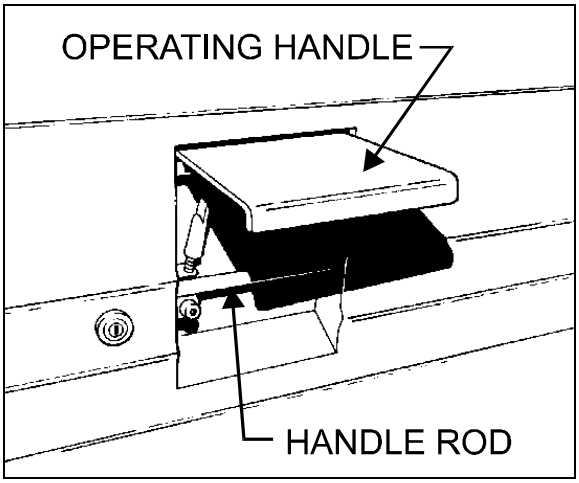
This compartment is closed off from the engine compartment and can be used for storage or to house custom mechanical components.

To open the door, first open the engine compartment R.H. side door and pull the lever close to the lower door hinge.

LEVER IN ENGINE COMPARTMENT R.H. SIDE DOOR 18372

Lights in the compartment turn *ON* automatically when the door is opened.

BAGGAGE COMPARTMENTS



BAGGAGE DOOR LOCK AND LEVER 18043

The baggage compartment doors of the XL2-45 model provide 407 ft^3 (11,53 m^3) of storage space (the XL2-40 has 315 ft^3 [8,9 m^3] of storage capacity). The compartments can be locked or unlocked by using the exterior compartment key. Pull up operating handle to release the latch, and then pull the door open. Pressurized cylinders assist the opening and closing of the baggage compartment doors and hold the doors open.

To close, pull the door down by the handle rod. Complete the closing of the door by returning the operating handle to its initial position.

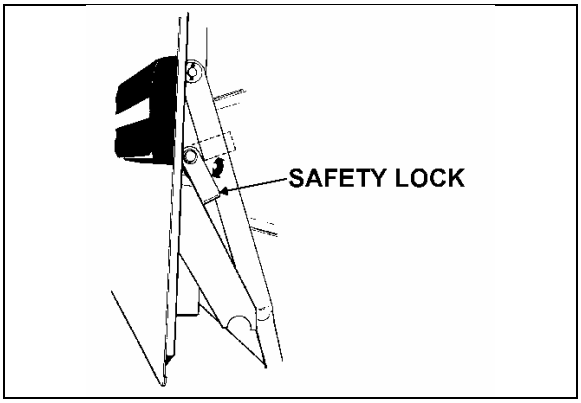
Caution: *Do not slam shut the baggage compartment doors. Damage to door weather-stripping or locking mechanism could result.*

Lights in the baggage compartments turn *ON* automatically when the door is opened.

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 vehicle unattended.*

Note: *In case of malfunction or special conditions, use the safety lock to keep the door securely opened.*



SAFETY LOCK 18038

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

FUEL FILLER DOOR

There is one fuel filler door on each side of the vehicle, providing easy fuel filling (MTH-40 has only one). Both fuel filler doors can be unlocked with the exterior compartment key. Springs keep the door either open or shut.

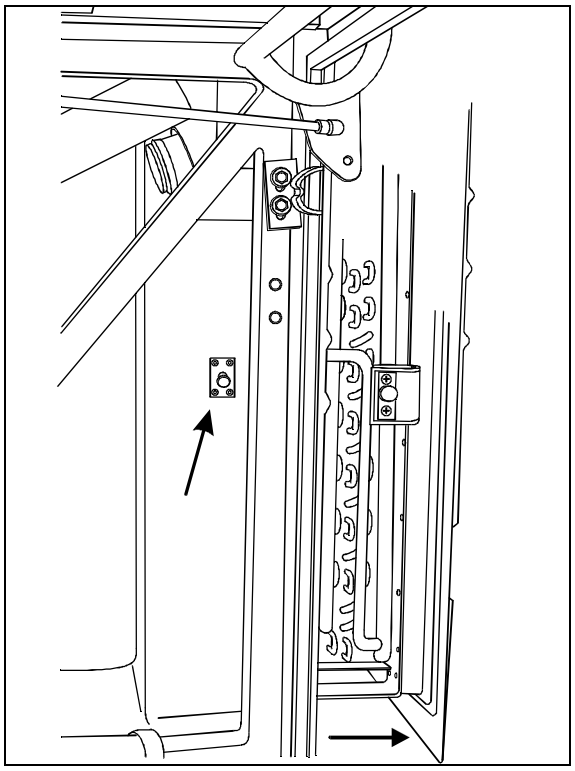
Note: *Provided the vehicle is parked on level ground, an automatic nozzle will automatically shut off when tank is approximately 95% full.*

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.*

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

A/C CONDENSER DOOR

Pull the release latch located inside the adjacent baggage compartment to open the condenser door.

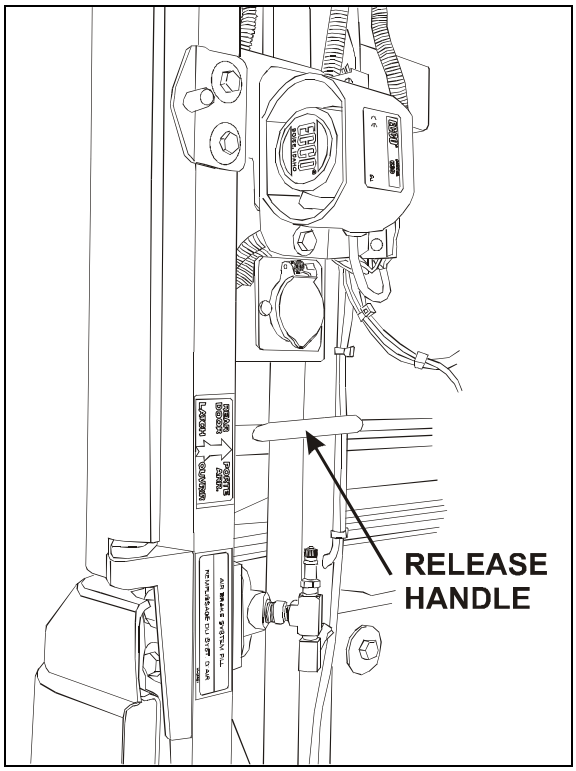


CONDENSER DOOR 18378

ENGINE COMPARTMENT REAR DOORS

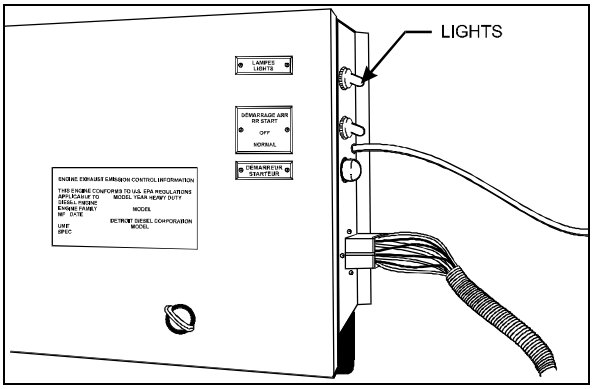
To open the engine compartment rear doors, open the engine compartment R.H. side door and pull the lever located on the rear door, close to the bottom door hinge. The engine compartment doors swing out to provide access to the following:

- Engine;
- Alternator(s);
- Compressor(s);
- Belt tension valve (refer to Care and Maintenance chapter);
- Engine starting selector (refer to Starting and Stopping Procedures chapter);
- Rear junction compartment;
- Certification plates;
- Diagnostic Data Reader (DDR) receptacle (refer to Other Features chapter);
- Engine coolant surge tank;
- Air cleaner restriction indicator;
- Engine oil dipstick;
- Engine oil reserve tank;
- Power steering fluid reserve tank;
- Automatic transmission oil dipstick;
- Engine coolant filler cap;
- Primary air circuit fill valve and drain cock;
- 110-120 volt connector.



OPENING THE ENGINE COMPARTMENT REAR DOORS FROM R.H. SIDE DOOR 18547

A catch holding each door open engages when the door is fully open. Release the catches before closing the doors. Close the L.H. door first, then firmly shut the R.H. door.

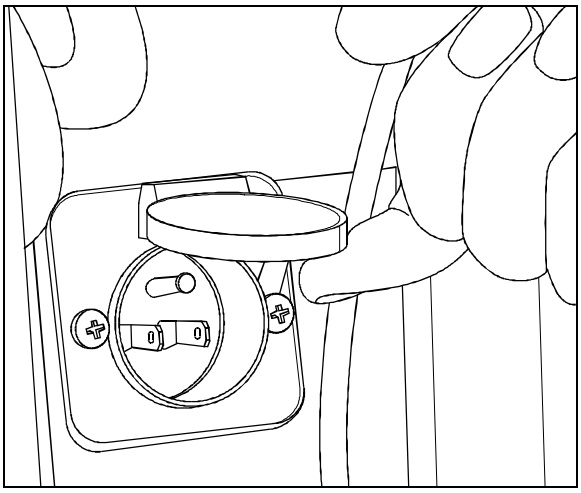


REAR JUNCTION BOX 06409

Turn the lights ON in the engine compartment using the switch on the right-hand side of the rear junction box.

Warning: *Unless otherwise specified, 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



110 VOLT CONNECTOR 06390

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

To access the connector, open the engine compartment R. H. side door. The connector is attached to the L. H. side frame post.

RECLINING BUMPER COMPARTMENT

The front bumper can be tilted downward to give access to the bumper compartment. Pull the release handle located inside front service compartment to unlock. Tilt down the entire bumper assembly to access the compartment. Push the bumper back up firmly in place to lock in position.

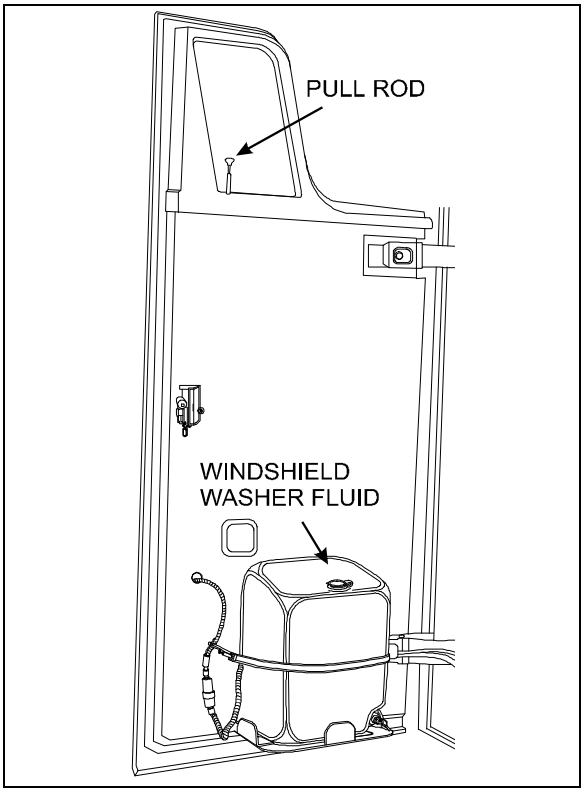
Warning: *The compartment behind the bumper is not designed for storage. Never store loose objects in this compartment since they can interfere with the steering linkage mechanism.*

Use care when opening or closing the reclining bumper compartment to prevent personal injury.

FRONT SERVICE COMPARTMENT

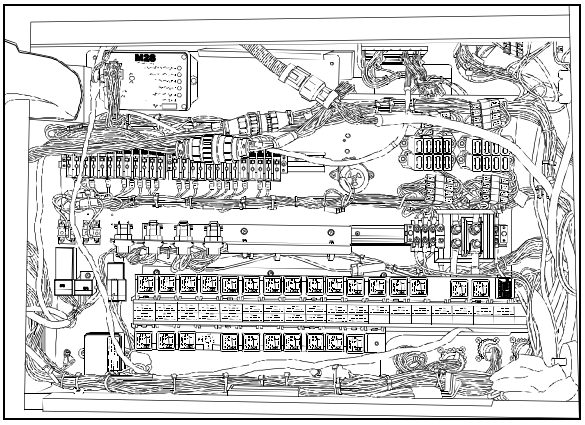
To open the front compartment door, pull the rod inside the vehicle, next to the driver's power window or use the key to open from outside the vehicle. The front service compartment provides access to the following:

- Front junction box;
- Windshield washer reservoir;
- Accessory air tank drain valve;
- Accessory system fill valve;
- (WTEC) transmission module (ECU);
- ABS electronic control unit.

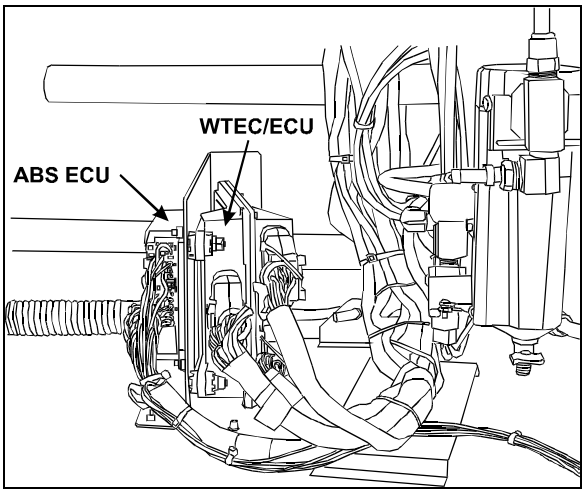


FRONT SERVICE COMPARTMENT DOOR 18381

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



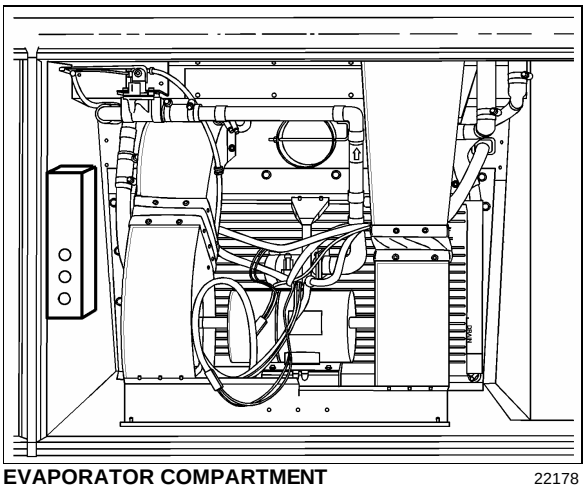
FRONT JUNCTION BOX IN SERVICE COMPARTMENT 06397



FRONT SERVICE COMPARTMENT 06532

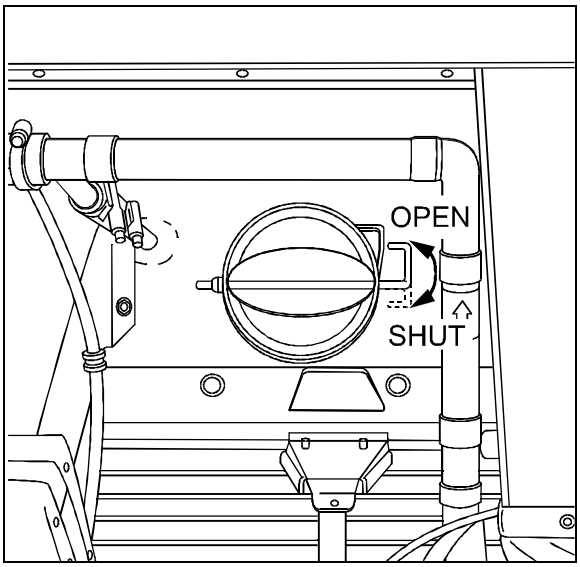
EVAPORATOR COMPARTMENT

The HVAC (Heating, Ventilating and Air-Conditioning) breakers and power relays are found in this compartment.



EVAPORATOR COMPARTMENT 22178

The 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 swing the HVAC compartment door open.

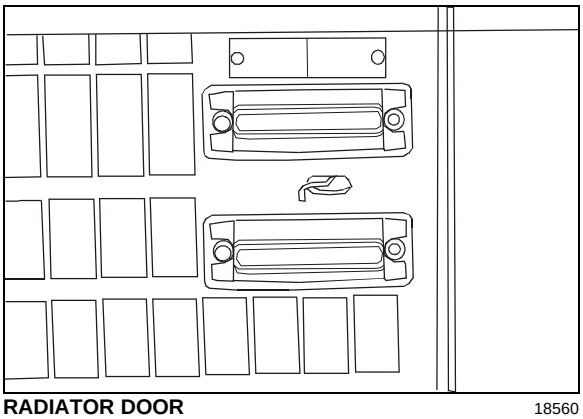


RECIRCULATION DAMPER IN HVAC COMPARTMENT 22175

Open or close the recirculation damper with the lever shown in the illustration above

RADIATOR DOOR

Open the engine radiator door by pushing sideways the release lever.

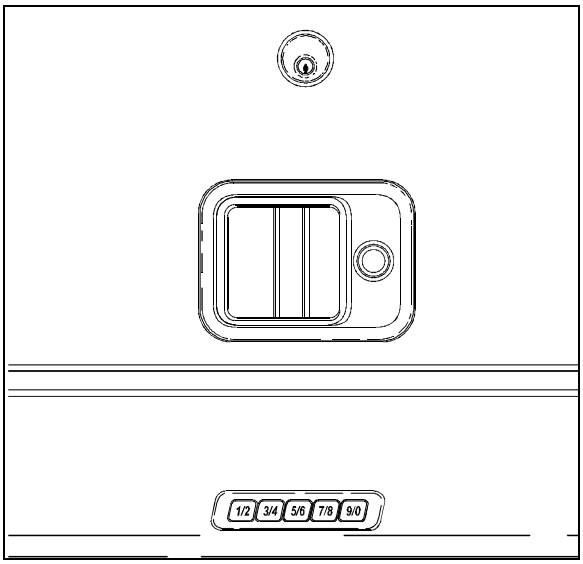


RADIATOR DOOR 18560

ENTRANCE DOOR

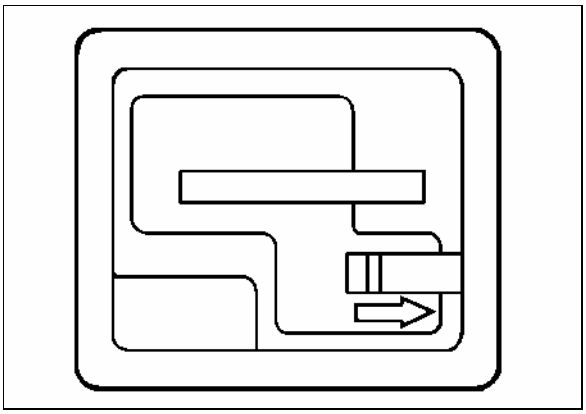
Lock or unlock the entrance door from outside the vehicle by either turning the key in the door lock (counterclockwise to lock, clockwise to unlock), by using the outside key pad (see “Keyless Entry System” in this chapter), or by using the remote control (electronic key).

Open the door by pulling on the lever. Close by pushing the door shut.



ENTRANCE DOOR 18380

There are two ways of unlocking the entrance door from the inside. The first consists in actuating the rocker switch on the R.H. dashboard panel. This operation will also unlock the baggage compartments. 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.



DOOR-LOCK PANEL 18187

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, enter the five digits of the code. After pressing the fifth digit, the door will unlock. During the night, press any button to illuminate the keyboard, and 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 and compartments all at the same time, press buttons 7|8 and 9|0 at the same time.

Programming Your Personal Code

Note: *To avoid erasing your personal 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 a personal code to unlock the 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 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.

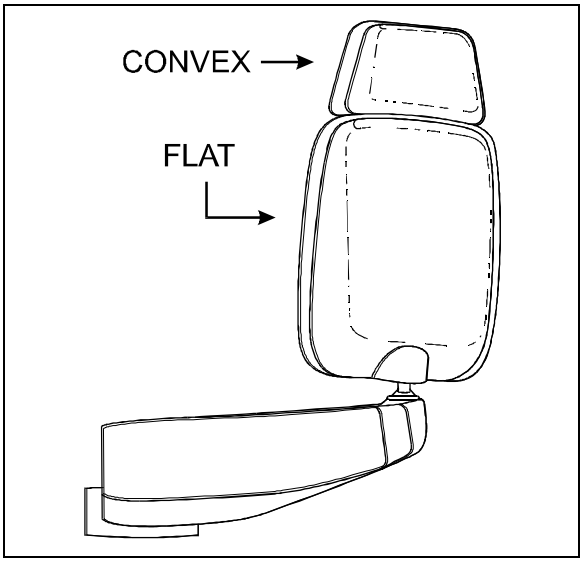
Refer to “Controls and instruments” chapter, for instructions on remote unlock key fob. Refer to “Other Features” chapter, for full details on keyless entry system.

REAR VIEW MIRRORS

The vehicle 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. The elements 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 and could break the mirror glass.*



REAR VIEW MIRRORS 18376

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

Adjust the side-view mirrors until the side of the vehicle is visible. Adjust the flat-type mirror until the road behind is in full view.

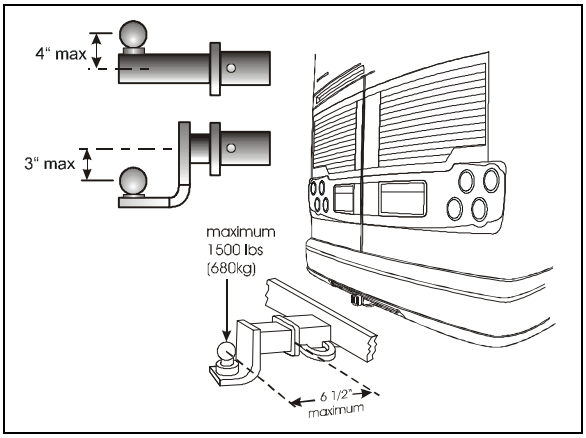
BACK-UP CAMERA

An optional back-up camera is available which provides the driver with visual assistance when backing-up. For additional information, refer to "Controls & Instruments" and ‘Care and maintenance’ chapters.

TRAILER HITCH

20 000 lb 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 23337

- **Maximum gross trailer weight: 20,000 lb (9072 kg)**
- **Maximum tongue weight at 6 1/2 inches (165 mm) or less from coupling receiver: 1,500 lb (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.

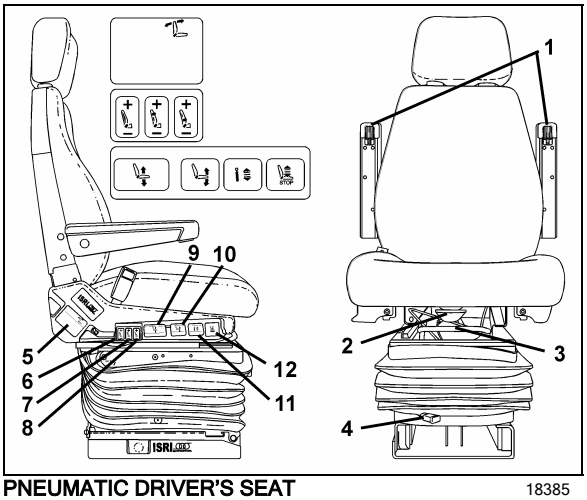
DRIVER'S SEAT - "DELIVERY"

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 pneumatically 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 ISRI SEATS



PNEUMATIC DRIVER'S SEAT 18385

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

Armrest (1)

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

Seat Cushion (2)

Provides optimum comfort and support for any leg shape or size. Adjustable to 50 mm (2 inch) length.

Fore-and-aft (3)*

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

Isolator (4)

Reduces horizontal vibration, ensuring smooth ride.

Backrest (5)

Lift lever to select proper adjustment angle of backrest.

Air Side Bolster (6)

Offers desired side support to avoid body side-way.

Air Lumbar (7) (8)

Provides back support with upper and lower settings, ensuring comfort during lengthy sitting.

Air Height Adjustment (9)

Moves seat up or down independently of other seat settings. 100 mm (4 inch) total travel.

Adjustable Seat Recline (10)

Allows easy adjustment of four-setting inclination.

Adjustable Shock Absorber (11)

Choose stiff or soft ride infinitely.

Quick Air Release (12)

Exhausts all air from suspension, allowing for easy entry/exit. Returns seat to previous position.

ELECTRIC ISRI SEATS

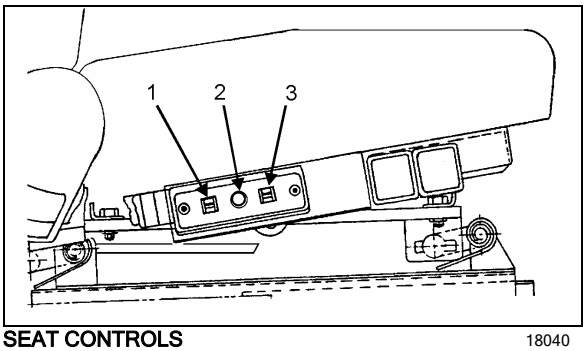
Adjust electric seats as follows:

Tilt (rear) (1)

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

Fore-and-aft/Up-Down (2)

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.



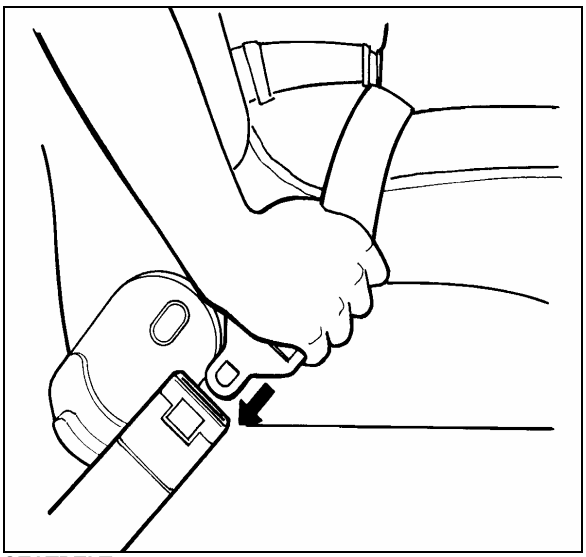
SEAT CONTROLS 18040

Tilt (front) (3)

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

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.



SEATBELT 18028

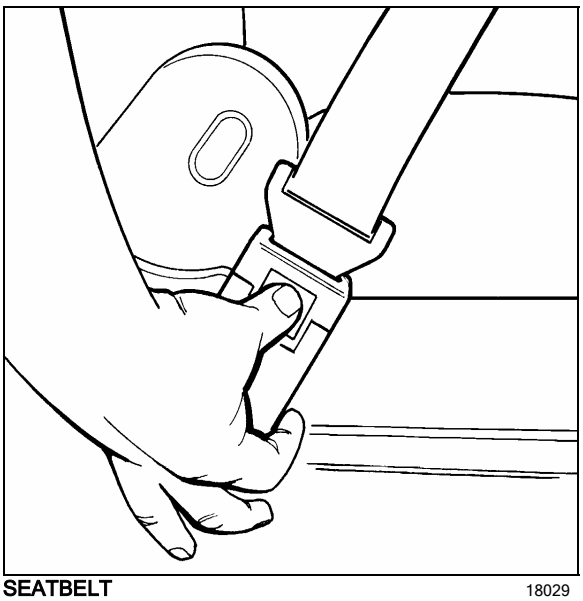
Note: *The safety belt must be pulled out slowly and continuously, otherwise it will lock the reel before the latch plate reaches the buckle. If this happens, allow the belt to retract completely and repeat the procedure correctly.*

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.

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



SEATBELT 18029

STEERING WHEEL ADJUSTMENT

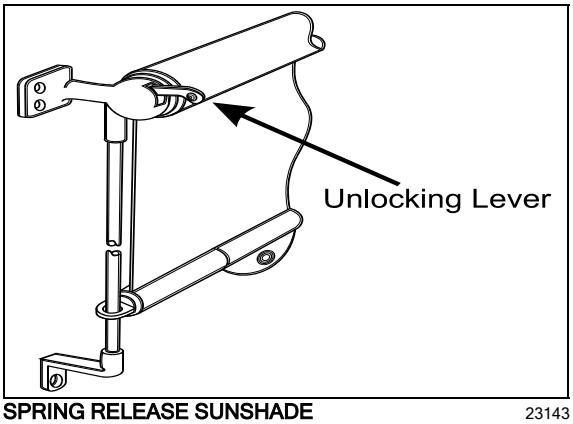
Push on the valve button with the left foot to unlock the steering wheel for tilt and telescopic adjustment.

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

SUNSHADES (BLINDS)

This vehicle is provided with three pivoting type sun visors which are installed as standard equipment. Pivot the appropriate sun visor to the desired position. Two electrically operated sunshades may also be selected (optional) but are not factory installed.

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 23143

INSIDE MIRROR

One (optional) mirror is located in the driver's area, 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 Chapter, Controls & Instruments. The direction and volume of air flow are adjustable.

WINDOWS

The vehicle is equipped with single pane or double pane (thermos) windows. There are two automobile-like power windows and a possible combination of three types of side windows, all of them flush-mounted to the structure: fixed, awning and sliding windows. Following is a description and operating instructions for these types of windows:

DRIVER'S POWER WINDOW

The driver's area is equipped with a power window on the driver's side and another power window in the entrance door. The windows are controlled by rocker switches located on the L.H. control panel. Refer to Chapter, Controls & Instruments.

FIXED WINDOWS

These windows are glued to the structure and form an integral part of the body of the vehicle, helping reduce vibration and noise. Fixed windows cannot be opened.

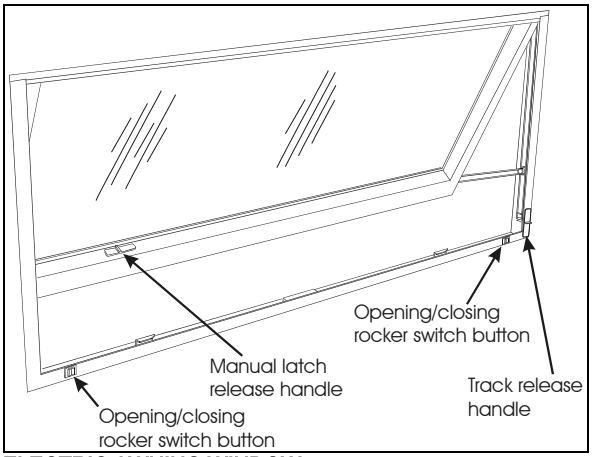
AWNING WINDOWS

To open or close an electrically-operated awning window, use the rocker switch button located at the bottom of the window framing. After closing the window, maintain the rocker switch button depressed to latch the window.

Caution: *Avoid holding the rocker switch button depressed after the window has reached its full opened position or after the window has been latched.*

Caution: *Never try to open or close the awning window by pulling or pushing directly on the window, this could damage the opening mechanism gearbox.*

A telltale light on the dashboard illuminates when an awning window is opened. Refer to Controls and instruments chapter for more information.



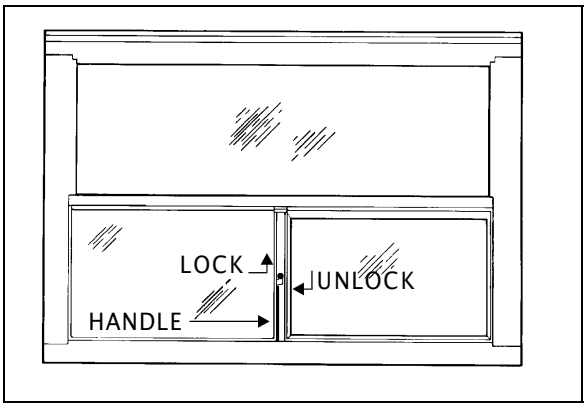
ELECTRIC AWNING WINDOW 18585

Note: *The awning window electrical circuit is equipped with a thermistor protecting the components from overheating. If the awning window is opened and closed repeatedly, causing overheating of the components, the*

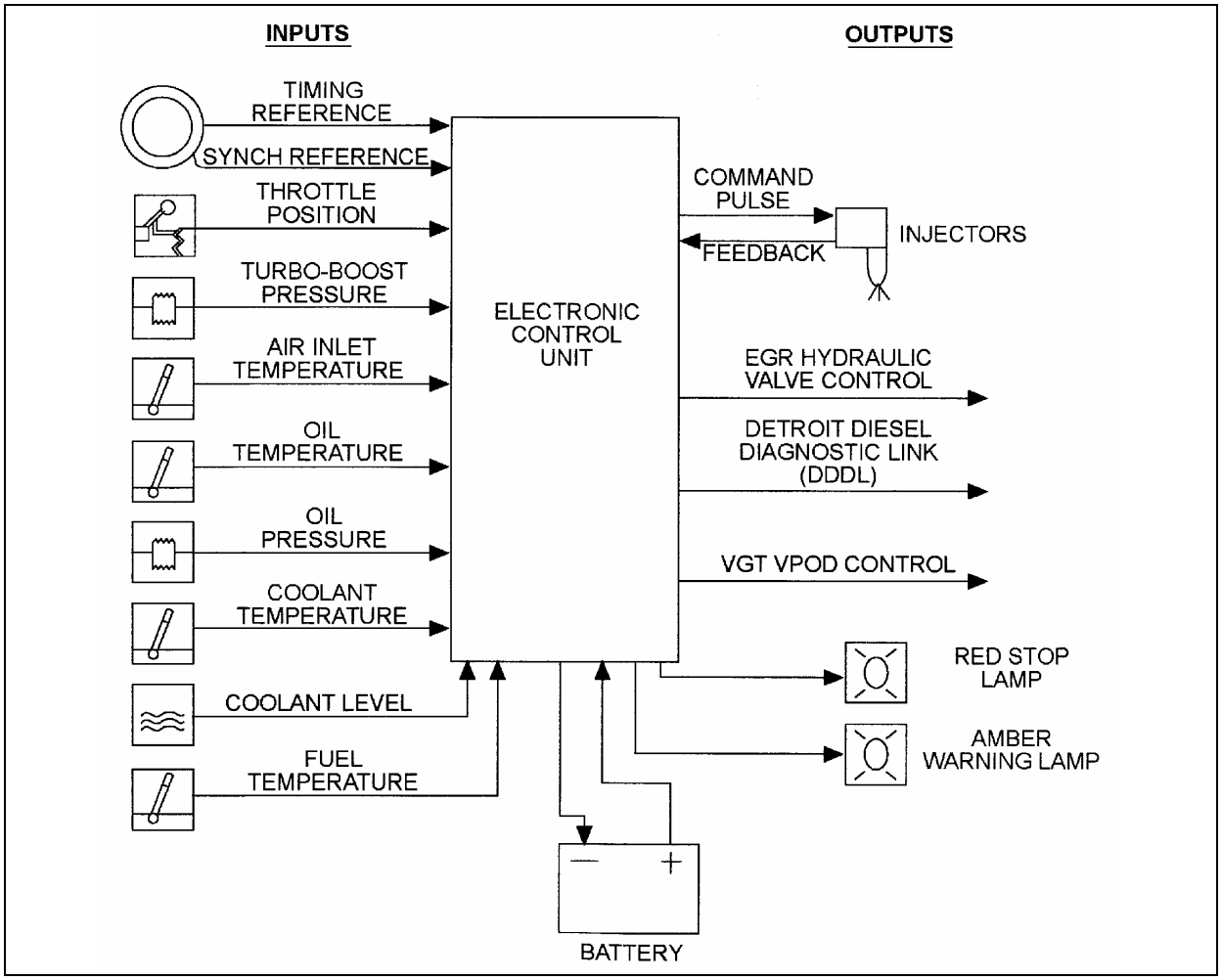
thermal protection will interrupt the operation of the window for a short while to permit cooling down of the components. This feature also prevents personal injuries and damages to the components if something obstructs the window movement.

SLIDING WINDOWS

Unlatch and pull the sliding window inwards, then slide open. Reverse operation to close.



SLIDING WINDOW 18206



SHEMATIC DIAGRAM OF DDEC V SYSTEM 01143

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). Active and inactive codes will flash respectively the STOP ENGINE and the CHECK ENGINE indicators. Refer to "Technical Information" chapter under "DDEC V Diagnostic Codes".

DDEC V 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 V 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 allow 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 V 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.

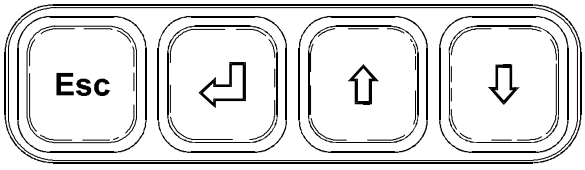
The MCD uses a dashboard integrated liquid crystal display. It provides automated intensity control of the display, based on the dashboard instrument panel lights for improved driver convenience.

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.

DRIVING MODE MENU

This menu includes the following modes; Gauge Mode; Fuel Economy, Time/Dist; Faults?.

GAUGE MODE MENU

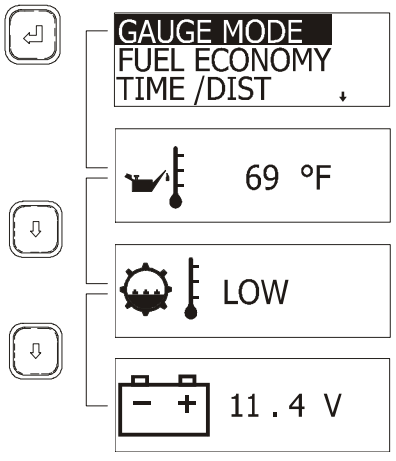
Transmission fluid temperature, engine oil temperature and battery voltage can be displayed in this mode.

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 MENU

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 and leg fuel consumption using the up and down arrows.

To exit FUEL ECONOMY menu, 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.

TIME / DIST MENU

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

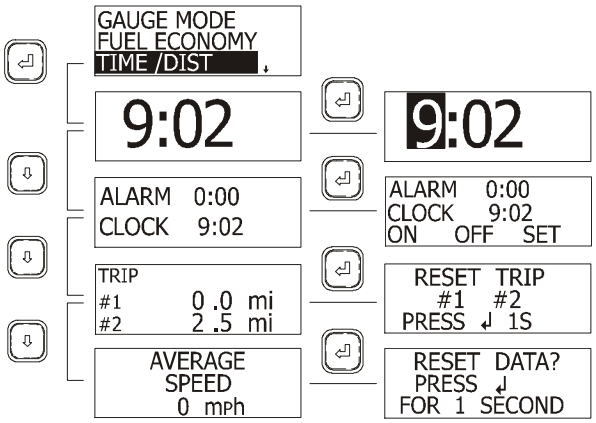
To display the digital clock.

1. Highlight TIME/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 TIME/DIST menu, press Esc key.



06388

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.

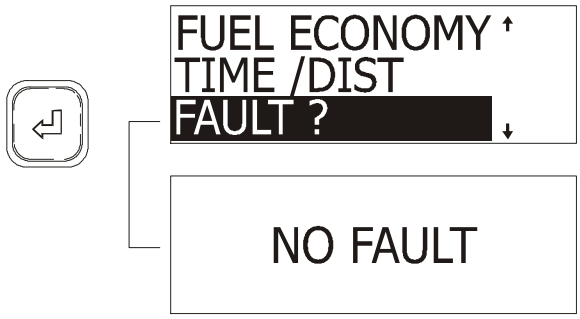
To reset:

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

FAULT ? MENU (Fault messages)

To display logged fault messages:

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



NON-DRIVING MODE MENU

SET UP MODE MENU

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:

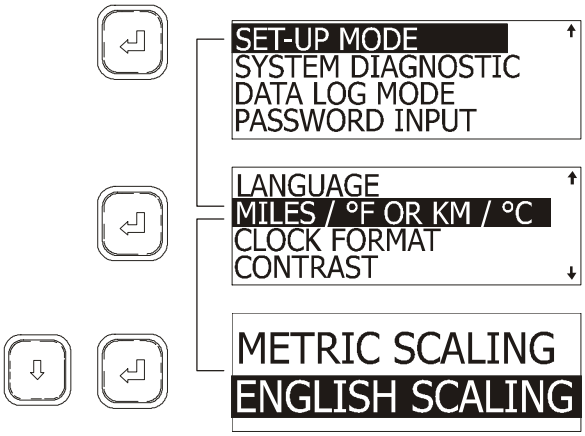
1. In SET UP MODE, highlight LANGUAGE using the arrow keys.
2. Press the enter key (⏎).
3. Highlight the desired language using the arrow keys.
4. Press enter key (⏎) to confirm the language choice.

The MCD returns to SET UP MODE menu.

Metric or Standard Units

1. In SET UP MODE menu, highlight MILES/°F OR KM/°C 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 menu.

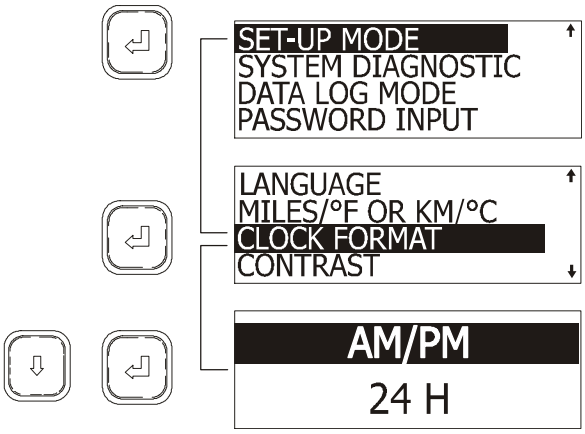


06384

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.

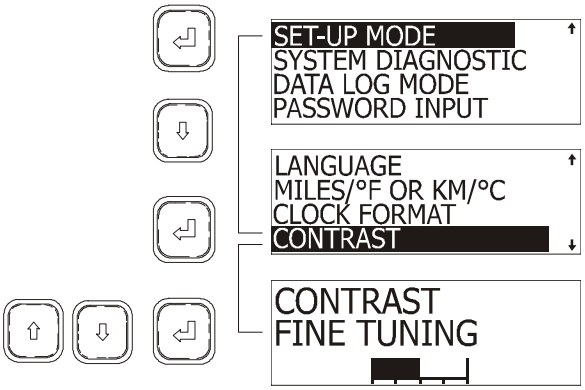


06389

Setting Contrast

1. In SET UP MODE, highlight 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.

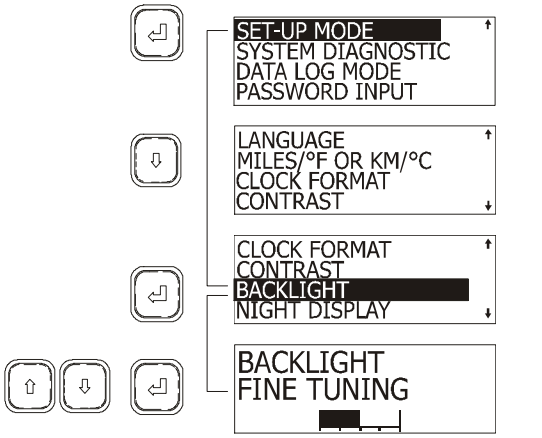


06395

Setting Backlight

1. In SET UP MODE, highlight BACKLIGHT using the arrow keys.
2. Press the enter key (⏎).
3. Using the arrow keys, set the desired back lighting. A horizontal graphic shows state of lighting.
4. Press enter key (⏎) to confirm.

The MCD returns to SET UP MODE.

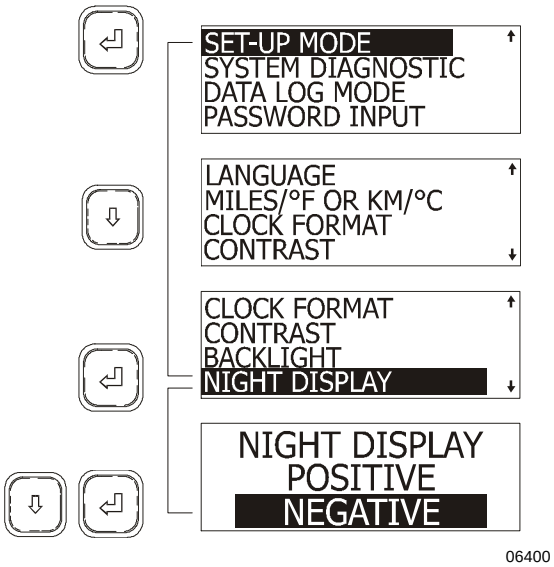


Setting Night Display

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.



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.

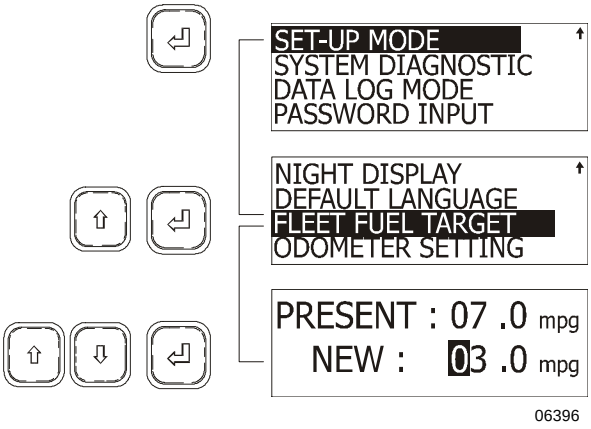
The MCD returns to SET UP MODE.

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.

SYSTEM DIAGNOSTIC MENU

System Diagnostic menu allows the driver to request diagnostics from the ECU's of components such as the engine, ABS 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 SYSTEM DIAGNOSTIC, then pressing the enter key to confirm.

FAULT DIAGNOSTIC MENU

To request a diagnostic:

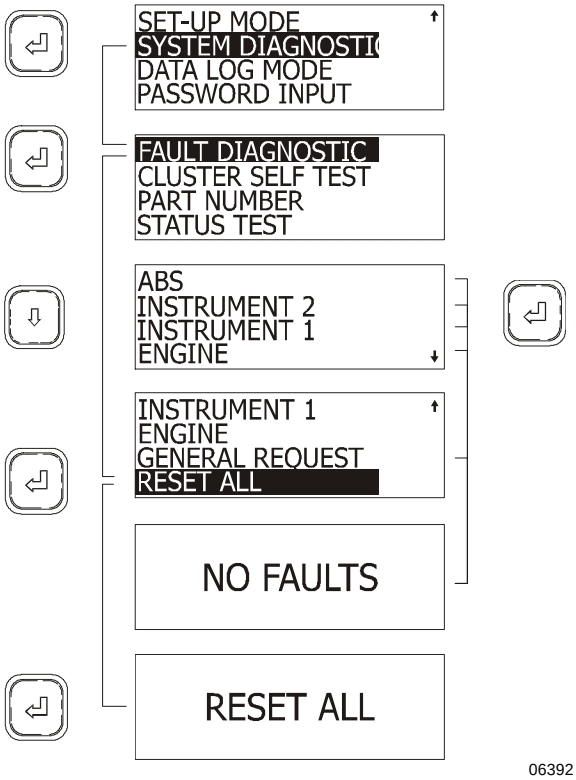
1. Highlight FAULT DIAGNOSTIC with the arrow keys.
2. Press the enter key (⏎) to confirm.
3. Highlight the component to request a diagnostic using the arrow keys.
4. Press the enter key (⏎).

After showing a fault message (if any) the MCD returns to FAULT 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 FAULT DIAGNOSTIC screen.



06392

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 FAULT DIAGNOSTIC screen.

Exit FAULT DIAGNOSTIC and return to SYSTEM DIAGNOSTIC using Esc key.

Cluster Self Test

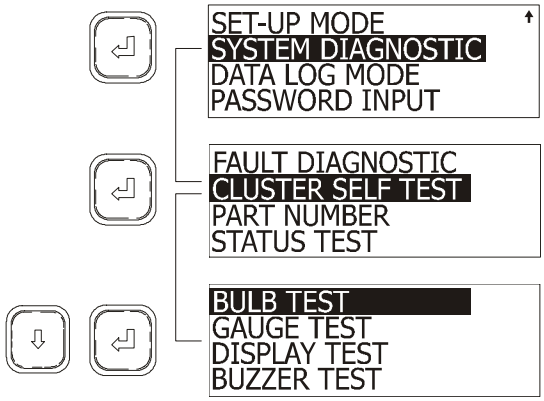
Tests cluster light bulbs, gauges, MCD display and buzzers.

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.*



06378

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.

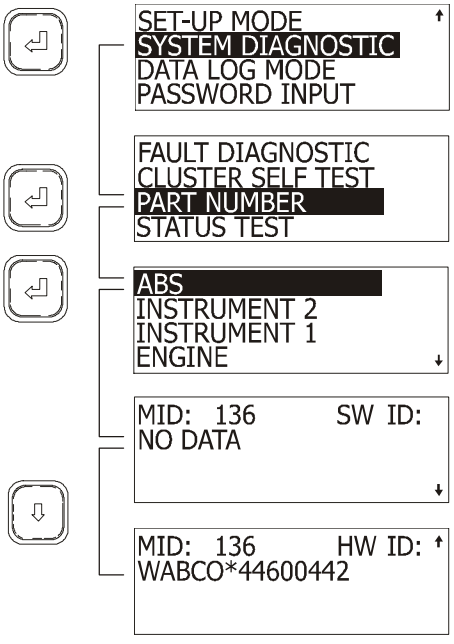
PART NUMBER

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 PART NUMBER:

1. When in SYSTEM DIAGNOSTIC menu, highlight PART NUMBER 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.



06391

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. This feature is enabled when correct password is entered (see password input)

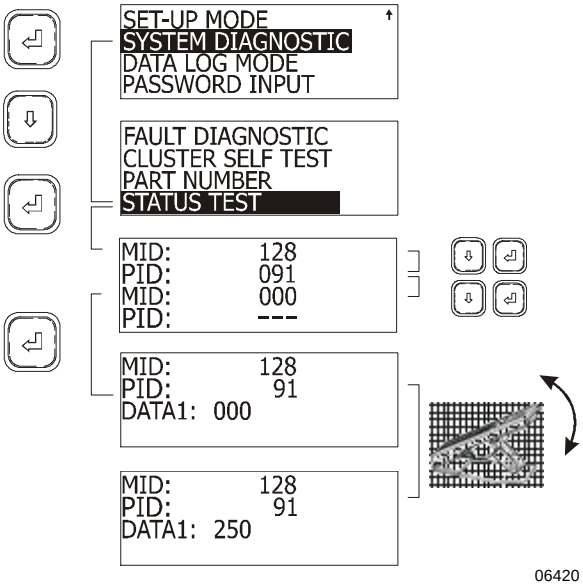
In Status Test mode, the MCD will monitor the system and display the data on the screen. Up to two components can be monitored at once.

To perform a status test:

1. When in SYSTEM DIAGNOSTIC, highlight 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.



06420

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 MENU

This feature shows total accumulated distance, fuel used engine hours and idle time.

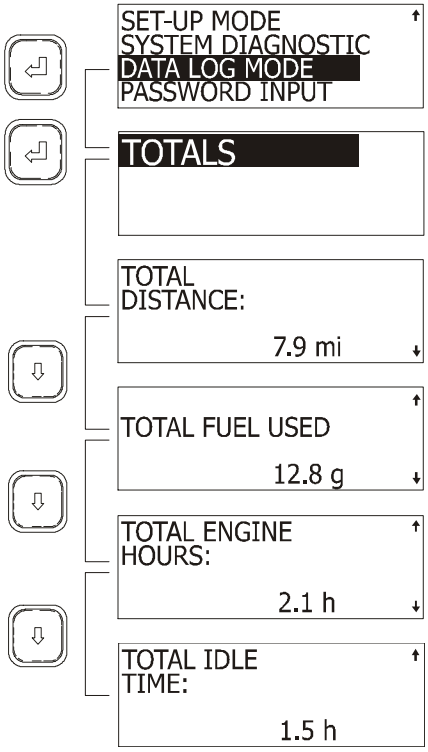
To access data log:

1. Highlight DATA LOG MODE using the arrow keys.
2. Press enter key (⏎) to confirm.

The screen shows TOTALS highlighted.

3. Press enter key (⏎).
4. View totals using the arrow keys.

Exit by pressing the Esc key.



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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".

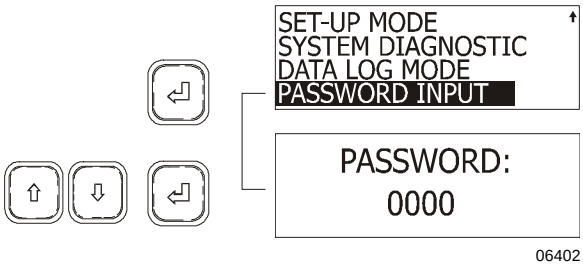
The owner's password is initially set to "1234".

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.



06402

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.

ALLISON WORLD TRANSMISSION ELECTRONIC CONTROL UNIT (ECU)

The ECU works with the automatic transmission equipped with a push-button shift selector.

The World Transmission electronic control 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. 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, "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).

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. 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) 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 RPM.

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

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

ANTILOCK BRAKING SYSTEM (ABS)

The purpose of the Antilock 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.

The tag axle service 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.*

VARIABLE ASSISTANCE STEERING GEAR (OPTIONAL)

The steering effort is controlled automatically in relation to vehicle speed. For more information, refer to Maintenance Manual Section 14: Steering.

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, and 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 your personal 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 is 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, “Controls and Instruments” chapter 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.

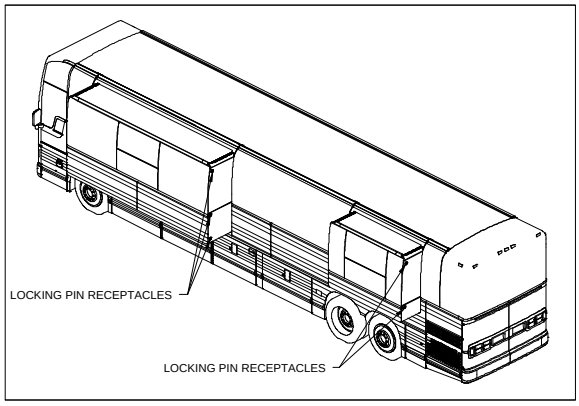
SLIDE-OUT OPERATION

SAFETY PRECAUTIONS

Before operating both slide-out units, proceed to the following verifications:

- Make sure that the area <u>outside</u> of the slide-out is clear and that there are no persons or objects within 3 feet of the slide-out outside wall. ***Serious personal injury or damage to the vehicle components may occur***.
- Make sure that the area <u>inside</u> the motor home where the room retracts (30" for the front and 24" for the rear slide-out) is free of people or obstacles. ***Serious personal injury or damage to the vehicle components may occur***.
- In temperatures below freezing point, make sure that the entire sliding surface outside the slide-out is free of snow, ice or sleet. ***Failure to clear all ice or snow may seriously damage the inflatable seal.***

- The parking brake must be applied.
- The transmission shifter must be in the "Neutral" position.
- Make sure that the locking pin receptacles are free of foreign objects.
- Open a window to avoid slide-out movement restriction.
- Level the vehicle.



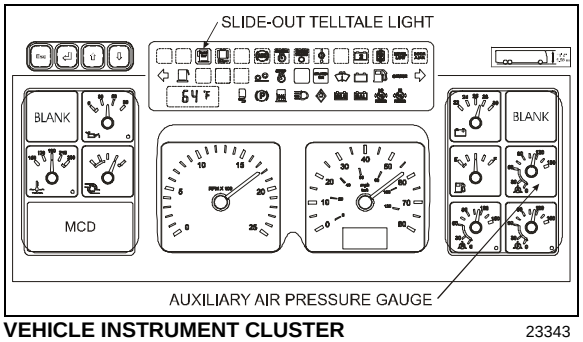
SLIDE-OUT LOCKING PIN RECEPTACLES

FRONT SLIDE-OUT OPERATION

Preliminary condition for the front slide-out operation

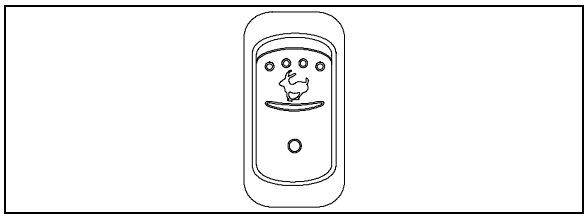
Before extending or retracting the front slide-out, please make sure all the following conditions are met:

1. Make sure the air pressure is 110 psi minimum on the auxiliary air pressure gauge.



VEHICLE INSTRUMENT CLUSTER 23343

2. Make sure the parking brake is applied
3. Turn the ignition key to the "ON" position, start the engine and set the RPM to fast idle.



FAST IDLE BUTTON 06264

Warning: *The inflatable seals can be re-inflated only when the slide-out is in its full "OUT" or full "IN" position. Do not leave the slide-out in any position other than the full extended or closed position as water infiltration may occur.*

Front slide-out extending operation

With the ignition switch to the "ON" position and the engine running, press and hold down the handheld control rocker switch to the "OUT" position. The green indicator light "ROOM IN OPERATION" will come on to indicate that the slide-out operation cycle is activated. The following actions will be done in sequence:

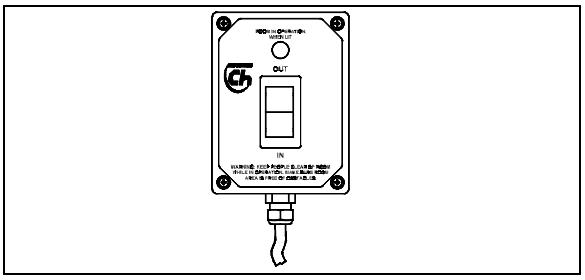
- Deflation of the inflatable seal
- Unloading of the tag axle
- Retraction of the locking pins
- Movement of the slide-out to its full "OUT" position

Then releasing the rocker switch will permit the following actions:

- Re-inflation of the seal
- Reloading of the tag axle

When the rocker switch is released, the green indicator light goes out. Note that for safety reasons, releasing the rocker switch will stop the slide-out movement instantly. At any time, releasing the rocker switch from the "OUT" position and pressing it to the "IN" position will reverse the operation.

Note: *Handheld control green indicator light flashing. A green light flashing indicates an error condition or missing operation condition. Refer to the troubleshooting list at the end of this section if that situation occurs.*



SLIDE-OUT HANDHELD CONTROL

Front slide-out retracting operation

With the ignition switch to the "ON" position and the engine running, press and hold down the rocker switch to the "IN" position to retract the slide-out. Note that the green indicator light "ROOM IN OPERATION" will come on. When the movement of the slide-out to its full "IN" position is completed, the rocker switch can be released to allow the re-inflation of the seal and reloading of the tag axle. The green indicator light goes out as the rocker switch is released. At any time during the slide-out movement, releasing the rocker switch will stop the operation instantly.

Please note that while the room retracts, there is a hissing sound. This is normal, as air is being blown in the gear racks on top of the slide-out to clear out leaves, water or other foreign matter.

REAR SLIDE-OUT OPERATION

Preliminary condition for the rear slide-out operation

Before extending or retracting the rear slide-out, please respect all the following conditions:

1. Make sure the air pressure is 110 psi minimum on the auxiliary air pressure gauge.
2. Make sure the parking brake is applied
3. Turn the ignition key to the "ON" position, start the engine and set the RPM to fast idle.

Rear slide-out extending operation

With the ignition switch to the "ON" position and the engine running, press and hold down the handheld control rocker switch to the "OUT" position. The green indicator light "ROOM IN OPERATION" will come on to indicate that the slide-out operation cycle is activated. The following actions will be done in sequence:

- Deflation of the inflatable seal
- Retraction of the locking pins
- Movement of the slide-out to its full "OUT" position

Then releasing the rocker switch will permit the following actions:

- Re-inflation of the seal

When the rocker switch is released, the switch green indicator light goes out**.** Note that for safety reasons, releasing the rocker switch will stop the slide-out movement instantly. At any time, releasing the rocker switch from the "OUT" position and pressing it to the "IN" position will reverse the operation.

Note: *Handheld control green indicator light flashing. A green light flashing indicates an error condition or missing operation condition. Refer to the troubleshooting list at the end of this section if that situation occurs.*

Rear slide-out retracting operation

With the ignition switch to the "ON" position and the engine running, press and hold down the rocker switch to the "IN" position to retract the slide-out. Note that the green indicator light "ROOM IN OPERATION" will come on. When the movement of the slide-out to its full "IN" position is completed, the rocker switch can be released to allow the re-inflation of the seal. The green indicator light goes out as the rocker switch is released. At any time during the slide-out movement, releasing the rocker switch will stop the operation instantly.

Please note that while the slide-out retracts, there is a hissing sound. This is normal, as air is being blown in the gear racks on top of the room to clear out leaves, water or other foreign matter.

SLIDE-OUT LOGIC CONTROLLER

Pin State Indicator

Determine the state of each pins of the slide-out.

A/B/C/D Buttons

A+D (at the same time) set the current position as the outer limit.

B+C (at the same time) reset to the manufacturer settings.

Inputs

Each LEDs determine the state of each of the inputs connected to the controller.

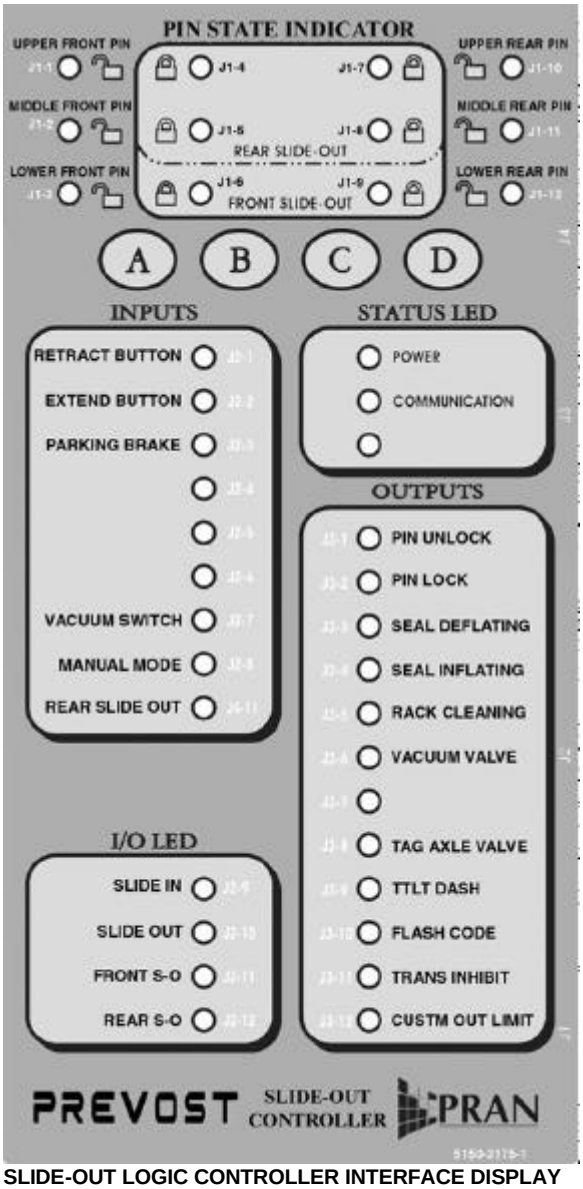
Status LED

Power:

ON: the controller is powered
OFF: the controller is not powered

Communication:

Indicates the activity on the serial communication port. Blinking in normal operation at 1Hz



SLIDE-OUT LOGIC CONTROLLER INTERFACE DISPLAY

Outputs

Each LED determine the state of the outputs controlled by the controller. The flash code description can be found in the troubleshooting list at the end of this section.

I/O LED

Slide in: ON if the slide-out is retracting.

Slide out: ON if the slide-out is extending.

Front S-O Set: ON if the controller is configured as the front slide-out.
Rear S-O Set: ON if the controller is configured as the rear slide-out.

SLIDE-OUT MANUAL OVERRIDE PROCEDURES

In case of power retracting system failure to function, it is possible to use two different manual override procedures to retract or extend the slide-out.

The first one, which is the power assist override will permit you to control the slide-out motor directly connected to the battery power, without the use of the logic controllers or motor controllers.

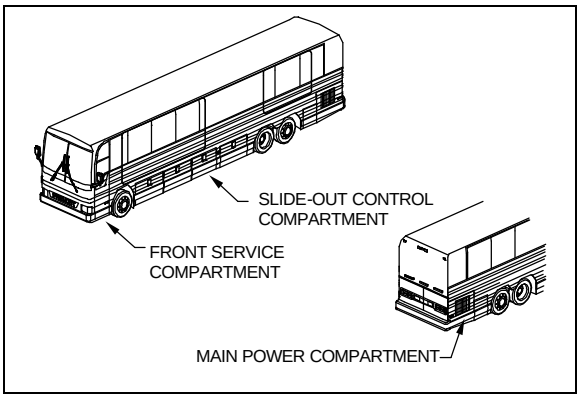
The second manual override procedure consist in rotating the slide-out motor shaft using a manual ratchet.

However, it is very important to follow all the instructions very carefully to insure that the inflatable seal or the retraction mechanisms are not damaged.

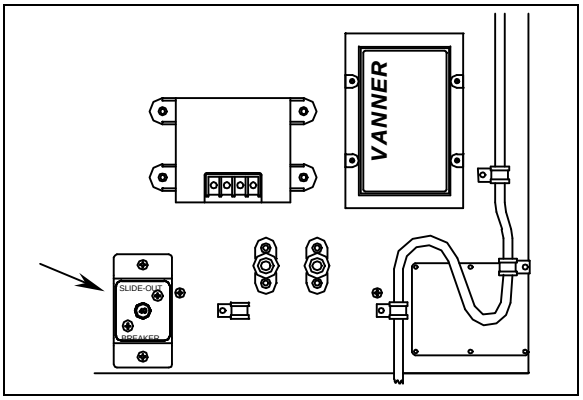
Preliminary conditions for manual override procedure

Before using one of the slide-out manual override procedures, make sure that the problem cannot be solved by one of the following simple checks:

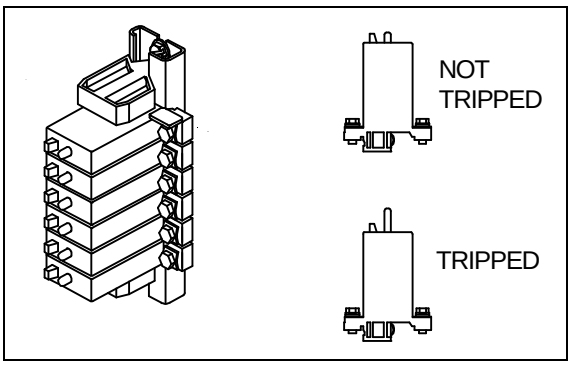
- Make sure that none of the breakers are tripped (the breakers are located in the slide-out control compartment and in the main power compartment).
- Make sure the barking brake is applied.
- Make sure the voltage is high enough by running the engine at fast idle or having the battery charger connected.



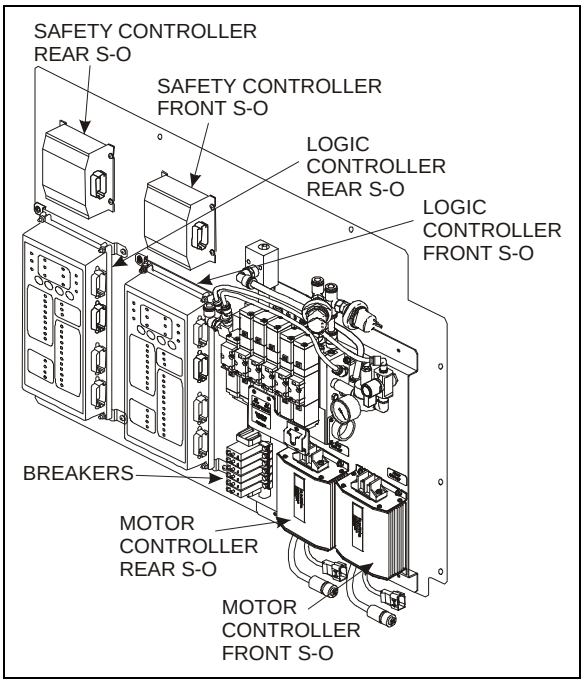
COMPARTMENTS LOCATION



MAIN SLIDE-OUT BREAKER IN MAIN POWER COMPARTMENT



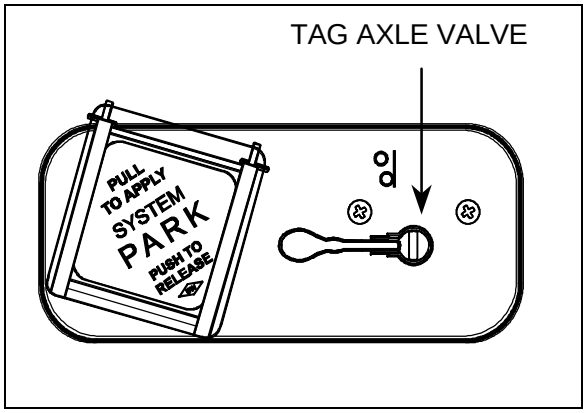
BREAKERS IN SLIDE-OUT CONTROL COMPARTMENT



SLIDE-OUT ELECTRICAL PANEL

POWER ASSIST OVERRIDE – Retracting procedure – Front and rear slide-out

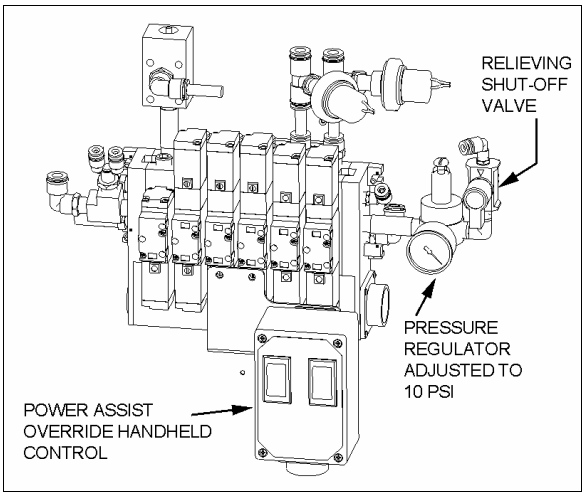
Note: *For the front slide-out, the tag axle must be unloaded with the manual switch located on the left-hand control panel with the ignition switch to the "ON" position. This procedure is not necessary for the rear slide-out.*



TAG AXLE VALVE ON LEFT LATERAL CONTROL PANEL
06390

1. Turn the ignition switch to the "OFF" position.

2. Deflate the inflatable seal by using the relieving shut-off valve located in the slide-out control compartment. Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is "0 psi".

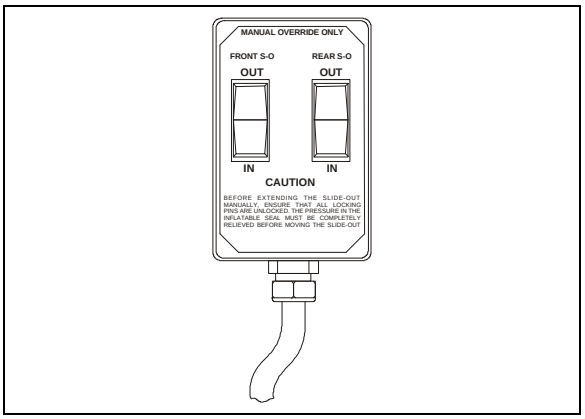


INFLATABLE SEAL PRESSURE REGULATOR

Warning: *The pressure in the inflatable seal must be completely relieved to prevent any damage to the seal.*

Caution: *Before moving the slide-out manually, ensure that all locking pins are unlocked. Refer to the slide-out manual extending procedure.*

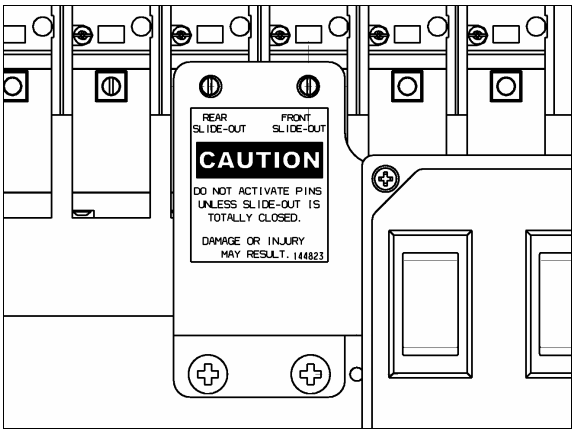
3. Turn the ignition switch to the "ON" position, start the engine and set the RPM to fast idle.
4. With the power assist override handheld control, press and hold down the Front S-O or Rear S-O rocker switch to the "IN" position, depending on which slide-out you want to retract.



POWER ASSIST OVERRIDE HANDHELD CONTROL

Caution: *Remember that in override mode, the logic controller doesn't keep track of the slide-out position neither command the motor controller. Be careful as the slide-out approaches its closed position, in order not to overshoot it, which may damage the mechanism.*

5. Once the slide-out room is lined up to its closed position (flush with the vehicle body), release the rocker switch.
6. To close the locking pins, use the following method:



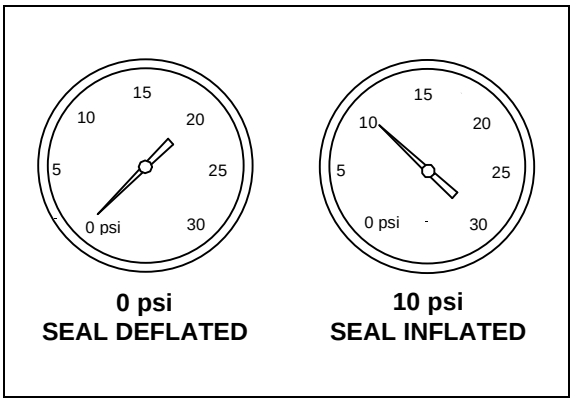
LOCKING PIN VALVE PROTECTION PLATE

Warning: *Actuating the locking pins on the slide-out not completely closed or with locking pins misaligned with their receptacle may result in glass breakage and cause serious injury.*

a) Insert a small screwdriver in the protection plate hole to access the "pin valve manual override screw" corresponding to the slide-out to be locked. Turn the override screw clockwise to actuate the locking pins. During the process, you should hear a hissing sound, as the air flows to the pin cylinders.

b) When the locking pins have been locked, re-insert a screwdriver in the protection plate hole. Turn the override screw counterclockwise and keep it in this position to cancel the manual override actuation.

7. Finally, the inflatable seal can be re-inflated by turning the shut-off valve handle counterclockwise. Check the pressure gage on the inflatable seal regulator if the pressure is increasing to 10 psi.



INFLATABLE SEAL PRESSURE GAGE

8. When the retraction procedure is completed, if the transmission DRIVE range or REVERSE cannot be selected to move the vehicle, verify that at least one pin is locked on each slide-out. To do so, check the lights (12) on the "PIN STATE INDICATOR" zone of the logic controller interface display. A light next to all padlocks is used to identify the state locked or unlocked of the pins. For the rear slide-out, take note that only 4 pins are used in the upper section of the pin state indicator zone. With the ignition key to the "ON" position, verify if at least one pin locked light is "ON". Otherwise, go back to step 7 of this section to manually lock all the pins until all pin locked lights go "ON".

Note: *The slide-out safety controllers use a relay to inhibit transmission range selection to prevent the vehicle from moving if each slide-out has not at least one pin locked.*

POWER ASSIST OVERRIDE – Extending procedure – Front and rear slide-out

Note: *For the front slide-out, the tag axle must be unloaded with the manual switch located on the left-hand control panel with the ignition switch to the "ON" position. This procedure is not necessary for the rear slide-out.*

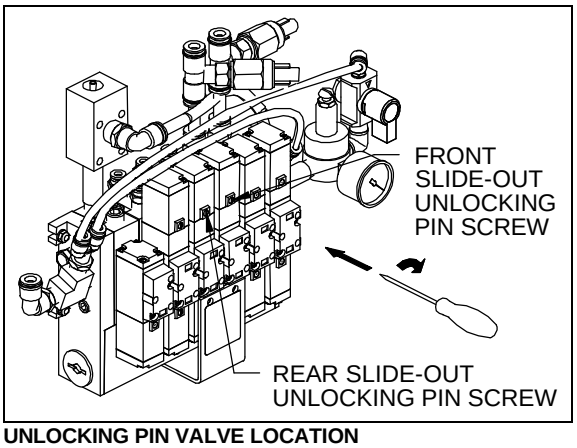
1. Turn the ignition switch to the "OFF" position.
2. Deflate the inflatable seal by using the relieving shut-off valve located in the slide-out control compartment. Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is "0 psi".

Warning: *The pressure in the inflatable seal must be completely relieved to prevent any damage to the seal.*

3. To unlock the pins, use the following method:

a) Identify the proper pneumatic valve controlling the unlocking of the pins of the slide-out to be extend.

b) Ensure the ignition key is in the "OFF" position. When the proper valve has been identified (right side for front slide-out and left side for rear slide-out), turn clockwise the "pin valve manual override screw" to actuate the locking pins. Keep the override screw in this position. During the process, you should hear a hissing sound, as the air flows to the pin cylinders.



UNLOCKING PIN VALVE LOCATION

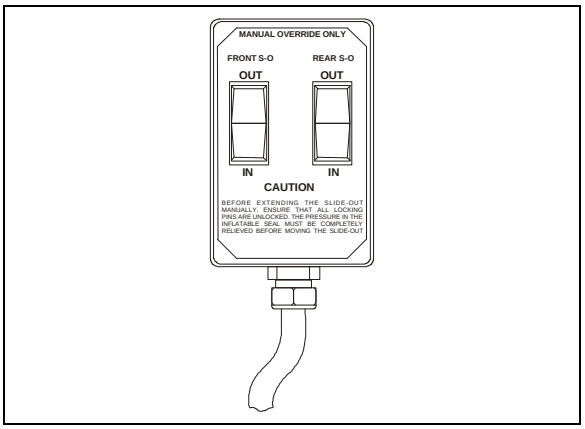
c) Verify if all the pins are unlocked with the ignition to the "ON" position. To do so, check the lights on the "PIN STATE INDICATOR" zone of the logic controller interface display. A light next to all unlocked padlocks is used to identify the state unlocked of the pins. For the rear slide-out, take note that only 4 pins are used in the upper section of the pin state indicator zone. If at least one light is off, that means all the pins are not unlocked and it will not be possible to manually move the slide-out. In this case, restart the engine and make sure the air pressure is 110 psi minimum on the auxiliary air pressure gauge.

d) Switch the ignition to the "OFF" position, and remove the ignition key for more security.

e) When the locking pins have been unlocked, turn the pin valve manual override screw

counterclockwise and keep it in this position to cancel the manual override actuation.

4. Turn the ignition switch to the "ON" position, start the engine and set the RPM to fast idle.



POWER ASSIST OVERRIDE HANDHELD CONTROL

5. With the power assist override handheld control, press and hold down the Front S-O or Rear S-O rocker switch to the "OUT" position depending on which slide-out you want to retract.

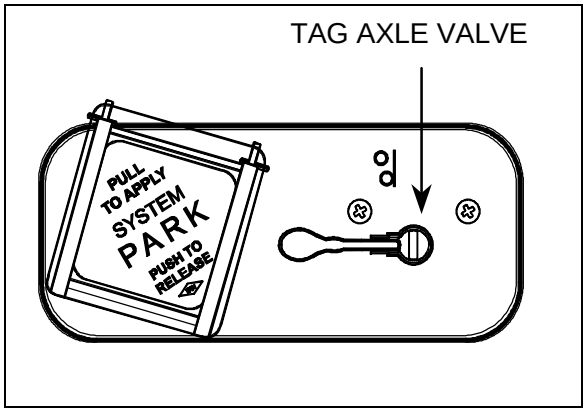
Caution: *Remember that in override mode, the logic controller doesn't keep track of the slide-out position neither command the motor controller. Be careful as the slide-out approaches its opened position, in order not to overshoot it, which may damage the mechanism.*

6. Once the slide-out room is lined up to its opened position (resting against the stoppers), release the rocker switch.

7. Finally, the inflatable seal can be re-inflated by turning the shut-off valve handle counterclockwise. Check the pressure gage on the inflatable seal regulator if the pressure is increasing to 10 psi.

Manual ratchet retracting procedure – Front and rear slide-out

Note: *For the <u>front</u> slide-out, the tag axle must be unloaded with the manual switch located on the left-hand control panel with the ignition switch to the "ON" position. This procedure is not necessary for the rear slide-out.*



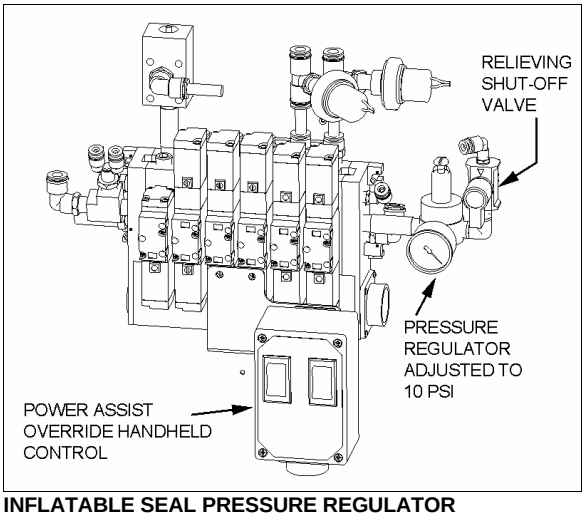
TAG AXLE VALVE ON LEFT LATERAL CONTROL PANEL
06390

1. Turn the ignition switch to the "OFF" position, and remove the ignition key for more safety.
2. Deflate the inflatable seal by using the relieving shut-off valve located in the slide-out control compartment. Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is "0 psi".

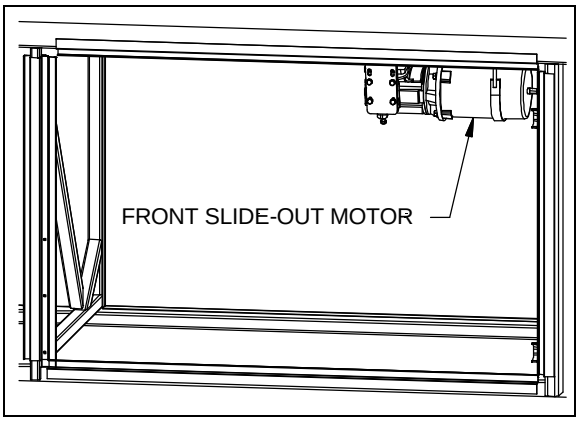
Warning: *The pressure in the inflatable seal must be completely relieved to prevent any damage to the seal.*

Caution: *Before moving the slide-out manually, ensure that all locking pins are unlocked. Refer to the slide-out manual extending procedure.*

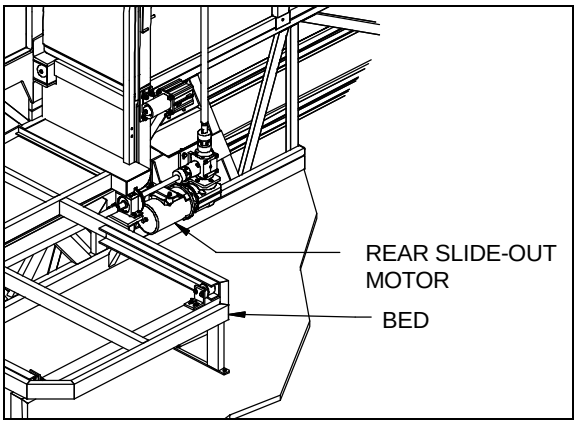
3. To move the slide-out use a ½" hexagonal socket on the back of the slide-out motor.



INFLATABLE SEAL PRESSURE REGULATOR



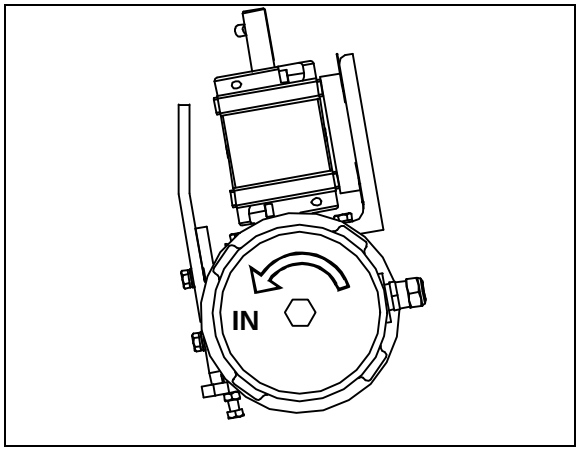
FRONT SLIDE-OUT MOTOR



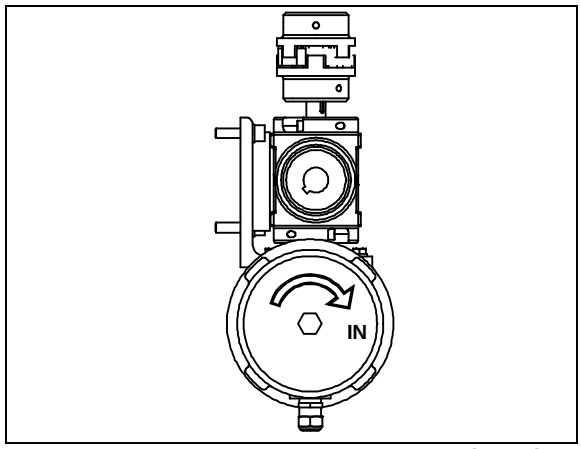
REAR SLIDE-OUT MOTOR INSIDE COACH

4. Rotate the slide-out motor with a manual ratchet or any power drill until the slide-out comes to its closed position.

Caution: *Slow down on the closing speed as the slide-out approaches its closed position, in order not to overshoot it, which may damage the mechanism.*



DIRECTION OF ROTATION FOR RETRACTING (FRONT)

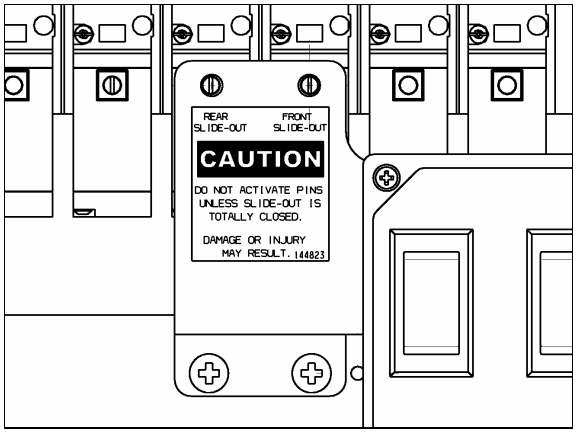


DIRECTION OF ROTATION FOR RETRACTING (REAR)

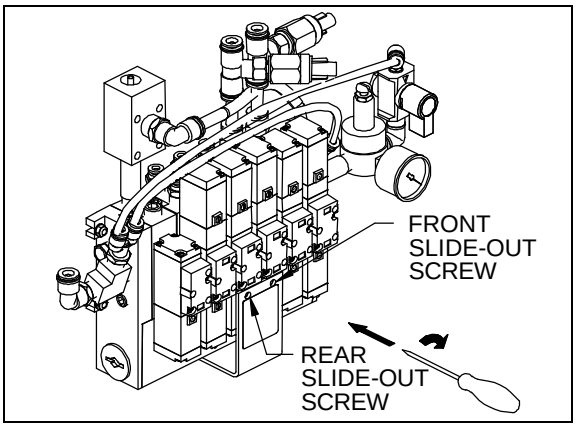
5. Once the slide-out room is lined up to its closed position, remove the tool from the motor.

6. To close the locking pins, use the following method:

   a) Insert a small screwdriver in the protection plate hole to access the "pin valve manual override screw" corresponding to the slide-out to be locked. Turn the override screw clockwise to actuate the locking pins. During the process, you should hear a hissing sound, as the air flows to the pin cylinders.



LOCKING PIN VALVE PROTECTION PLATE

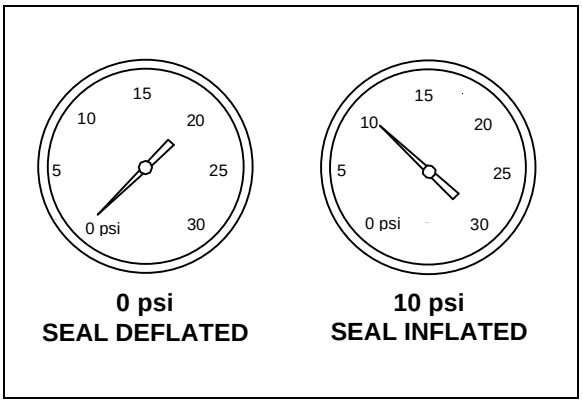


LOCKING PIN VALVE LOCATION

Warning: *Actuating the locking pins on the slide-out not completely closed or with locking pins misaligned with their receptacle may result in glass breakage and cause serious injury.*

b) When the locking pins have been locked, re-insert a screwdriver in the protection plate hole. Turn the override screw counterclockwise and keep it in this position to cancel the manual override actuation.

7. Finally, the inflatable seal can be re-inflated by turning the shut-off valve handle counterclockwise. Check the pressure gage on the inflatable seal regulator if the pressure is increasing to 10 psi.



INFLATABLE SEAL PRESSURE GAGE

8. When the retraction procedure is completed, if the transmission DRIVE range or REVERSE cannot be selected to move the vehicle, verify that at least one pin is locked on each slide-out. To do so, check the lights (12) on the "PIN STATE INDICATOR" zone of the logic controller interface display. A light next to all padlocks is used to identify the state locked or unlocked of the pins. For the rear slide-out, take note that only 4 pins are used in the upper section of the pin state indicator zone. With the ignition key to the "ON" position, verify if at least one pin locked light is "ON". Otherwise, go back to step 7 of this section to manually lock all the pins until all pin locked lights go "ON".

Note: *The slide-out safety controllers use a relay to inhibit transmission range selection to prevent the vehicle from moving if each slide-out has not at least one pin locked.*

Manual ratchet extending procedure – Front and rear slide-out

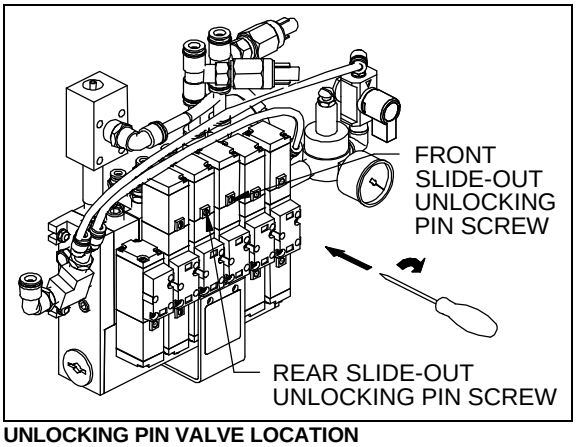
Note: *For the front slide-out, the tag axle must be unloaded with the manual switch located on the left-hand control panel with the ignition switch to the "ON" position. This procedure is not necessary for the rear slide-out.*

1. Turn the ignition switch to the "OFF" position, and remove the ignition key for more safety.
2. Deflate the inflatable seal by using the relieving shut-off valve located in the slide-out control compartment. Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is "0 psi".

Warning: *The pressure in the inflatable seal must be completely relieved to prevent any damage to the seal.*

3. To unlock the pins, use the following method:

a) Identify the proper pneumatic valve controlling the unlocking of the pins of the slide-out to be extent.



UNLOCKING PIN VALVE LOCATION

b) Ensure the ignition key is in the "OFF" position. When the proper valve has been identified (right side for front slide-out and left side for rear slide-out), turn clockwise the "pin valve manual override screw" to actuate the locking pins. Keep the override screw in this position. During the process, you should hear a hissing sound, as the air flows to the pin cylinders.

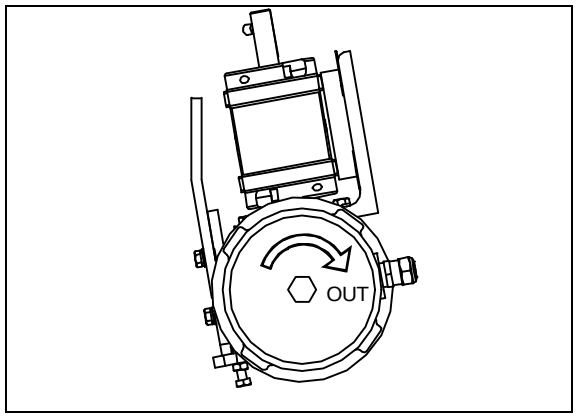
c) Verify if all the pins are unlocked with the ignition to the "ON" position. To do so, check the lights on the "PIN STATE INDICATOR" zone of the logic controller interface display. A light next to all unlocked padlocks is used to identify the state unlocked of the pins. For the rear slide-out, take note that only 4 pins are used in the upper section of the pin state indicator zone. If at least one light is off, that means all the pins are not unlocked and it will not be possible to manually move the slide-out. In this case, restart the engine and make sure the air pressure is 110 psi minimum on the auxiliary air pressure gauge.

d) Switch the ignition to the "OFF" position, and remove the ignition key for more security.

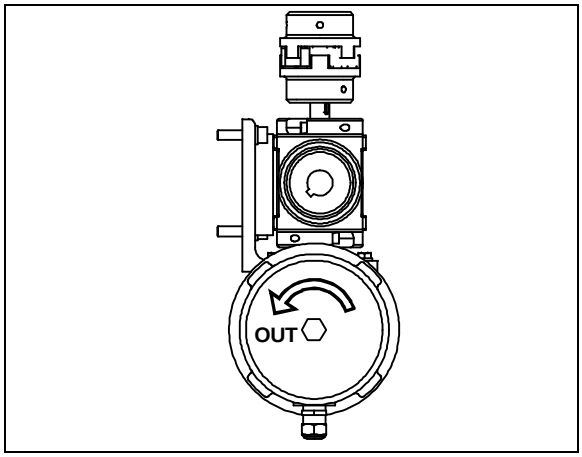
e) When the locking pins have been unlocked, turn the pin valve manual override screw counterclockwise and keep it in this position to cancel the manual override actuation.

4. To move the slide-out, use a ½" hexagonal socket on the back of the slide-out motor.
5. Rotate the motor with a manual ratchet or any power drill until the slide-out comes to its full opened position.
6. Once the slide-out is lined up to its opened position, remove the tool from the motor.
7. Finally, the inflatable seal can be re-inflated by turning the shut-off valve handle counterclockwise. Check the pressure gage on the inflatable seal regulator if the pressure is increasing to 10 psi.

Caution: *Slow down on the opening speed as the slide-out approaches its opened position, in order not to overshoot it, which may damage the mechanism.*



DIRECTION OF ROTATION FOR EXTENDING (FRONT)



DIRECTION OF ROTATION FOR EXTENDING (REAR)

SLIDE-OUT TROUBLESHOOTING – THIRD GENERATION

How to recognize 3rd generation controller

When there is no error conditions, press and hold the handheld control rocker switch in the IN or OUT position for 3 seconds and release it. If the controller is a generation 3, the LED on the control will blink three times. Generation 3 controller can also be recognized by their different colors: gray instead of blue/yellow.

Flash code operation

The flash codes are either displayed on the dashboard (telltale panel), on the handheld control or on the logic controller.

In a case where both the front and rear slide-out are in error and flashing error codes on their respective remotes, the dash telltale will flash the front slide-out error code.

A flash code consist of two consecutive series of blinks separated by a one-and-one-half second

pause. The first series of blinks identifies the first digit of the error number and the second series of blinks identifies the second digit of the error number. The flash code repeats itself after a pause of 4 seconds. All flash codes except 12, 31, 32 and 33 are repeating themselves for ever until cleared with the Ignition turned OFF and ON. The codes 12, 31, 32 and 33 will repeat three times and then stopped.

Examples of codes:

Code #12

Flashes 1 time, pause of 1,5 seconds, then Flashes 2 times, pause of 4 seconds

Code #23

Flashes 2 times, pause of 1,5 seconds, then Flashes 3 times, pause of 4 seconds

Warning: *If the dash slide-out telltale light starts blinking while on the road for 30 minutes, it means that one of the structural pins (4 bottom pins for the front slide or 2 bottom pins for the rear slide) is not properly inserted. Driving for a long period in this condition can damage the vehicle structure.*

Caution: *If the dash slide-out telltale light comes ON and stays ON (no blink) after 30 minutes on the road, it means that one of the 2 upper pins (not structural) are not properly inserted. Driving with the upper pins not inserted will not cause damage to the vehicle structure.*

Clearing the flash code blink

Turning the ignition OFF and ON again, will stop the flash code blinking.

Bringing back the last flash code

Press and hold the handheld control rocker switch in the IN or OUT position for 2 seconds to see again an active flash code error that was cleared by turning the Ignition OFF and ON.

CODE DESCRIPTION

SIGNAL	PROBLEM	CAUSE	CORRECTIVE ACTION
Code #12	The slide-out does not extend or retract	The parking brake is not seen as being active by the controller	Make sure the parking brake is applied Confirm parking brake application with the parking brake light on the telltale panel Check wiring
Code #13	The seal deflates but the slide-out does not extend or retract	Problem with the vacuum switch sensor or the seal deflating valve	Visually inspect the seal to confirm that it is deflated If seal deflates, check/replace the vacuum switch If seal does not deflate, check the seal deflating valve
Code #14	The seal deflates but the slide-out does not extend	The controller does not see all pins unlocked	Safety module not present or disconnected One of the unlock sensor wrongly positioned or broken Pin unlock valve defective
Code #21	When extending, the slide-out stops after having extended by 1 inch	The limit IN sensor is seen as active by the controller	Check the limit IN sensor

SIGNAL	PROBLEM	CAUSE	CORRECTIVE ACTION
Code #22	When retracting, the slide-out went too far	The limit IN sensor is always seen as inactive by the controller	Check the limit IN sensor
Code #23	When extending, the slide-out stops after having extended by 8 inches	The controller does not see the teeth sensor	Check the teeth sensor
Code #24	The slide-out does not move out	Problem with the slide-out motor or motor drive controller module	Ensure the motor breaker is not tripped Check/replace the motor drive
Code #25	When retracting, the slide-out does not move at all or moves by 8 inches and stops	Teeth sensor not seen by the controller or a problem with the motor drive module or the motor itself	Check that the motor breaker is not tripped Check/replace the teeth sensor Check/replace the motor drive module
Code #26	The slide-out retracts but refuses to pin	The slide-out position has been moved manually, mixing-up the teeth counter	Use the manual procedure to re-pin, it will reset the counter. If this problem comes back, check the teeth sensor adjustment
Code #31	One of the unlock sensor is defective and needs repair. No immediate impact on the slide-out operation	One of the unlock sensor is always seen active even when the pins are locked	Check the unlock sensors
Code #32	One of the lock sensor is defective and needs repair. No immediate impact on the slide-out operation	One of the lock sensor is always seen as active	Check the lock sensors
Code #33	The slide-out stopped in overcurrent	There is abnormal friction in the slide-out movement or the slide-out mechanical stopper before reaching full extension	Check the mechanical slides
Code #41	The slide-out is not working properly	The front and the rear logic controllers have the same ECU number	Check the wiring of the rear module, to make sure the input J4-11 is ON.
Code #42	The slide-out does not extend or retract	The battery voltage is too low	Start the engine and set the RPM to fast idle Connect to a battery charger capable to supply 40 Amps

STARTING THE ENGINE

In normal circumstances, the engine should be started from the driver's seat. However, a rear-start panel in the engine compartment permits starting the engine from that location, mainly for maintenance purposes.

STARTING FROM THE DRIVER'S SEAT

- Apply the spring-loaded parking brakes by pulling the parking brake control button all the way up;
- Make sure that the starter selector switch located in the engine compartment is set to the *NORMAL* position;
- Make sure that the battery master switch located on the rear circuit breaker panel is set to the *ON* position;
- Place transmission in neutral;
- Turn ignition key to *START* position (refer to "Controls and Instruments" chapter), release the key after the engine starts.
- Brake pedal must be applied when selecting Drive (D) otherwise the transmission will stay in neutral (N).

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 the Engine

- Apply parking brake and place transmission in neutral (N);
- Allow engine to idle for at least two minutes before shutting engine *OFF*. This insures that the turbine speed drops and allows time for the engine exhaust gas temperature to drop to about 300°F (150°C);
- Turn the ignition key to the *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.*

STARTING FROM THE ENGINE COMPARTMENT

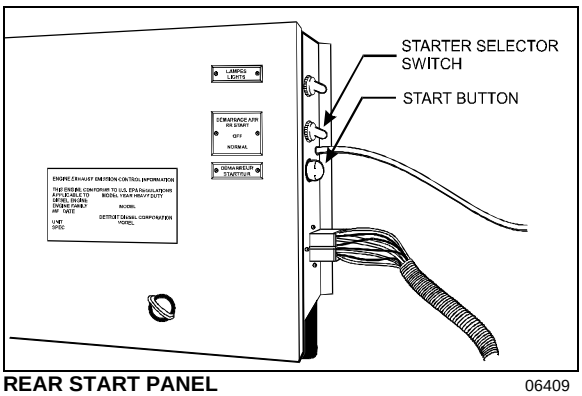
Switches to start and stop the engine from inside the engine compartment are mounted on a small panel over the engine.

Warning: *Apply parking brake and place transmission in neutral (N) before starting engine from inside the engine compartment.*

Set the battery master switch to the *ON* position;

Set the starter selector switch to the *REAR START* position;

Press the starter push-button switch. Release push-button after the engine starts.



REAR START PANEL 06409

Warning: *Do not wear loose clothing when working near engine. Stand clear of rotating components.*

Caution: *Refer to cautions in "Starting Engine from Driver's Seat" in this chapter.*

Stopping the Engine

To stop the engine, set the starter selector switch to the *OFF* position.

Caution: *Do not stop engine by any other method.*

COLD WEATHER STARTING

The vehicle may be equipped with the optional ether cold starting aid to facilitate cold-weather starts when the temperature is below 35°F (2°C). To activate the ether starting aid, proceed as follows:

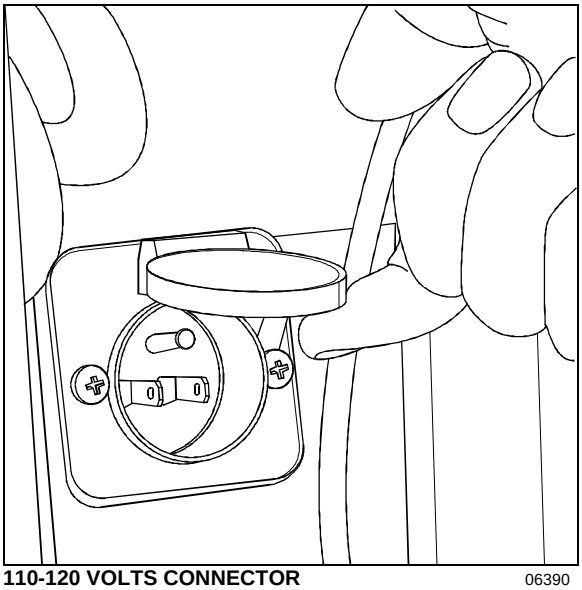
1. Before cranking engine, press the “Ether” rocker switch on the dashboard for 3 seconds to fill the solenoid valve;
2. Release rocker switch to discharge a shot of ether;
3. Allow 3 seconds for the shot to discharge;
4. Start engine.

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 vehicle may be equipped with an engine immersion-type electric block heater to assist cold weather starting. The 110-120 VAC power connector is located to the right, behind the engine compartment rear doors. 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 vehicle 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.*



110-120 VOLTS CONNECTOR 06390

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 vehicle outside.*

Note: *The engine will reach normal operating temperature shortly after driving. Avoid driving at 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 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.

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.*

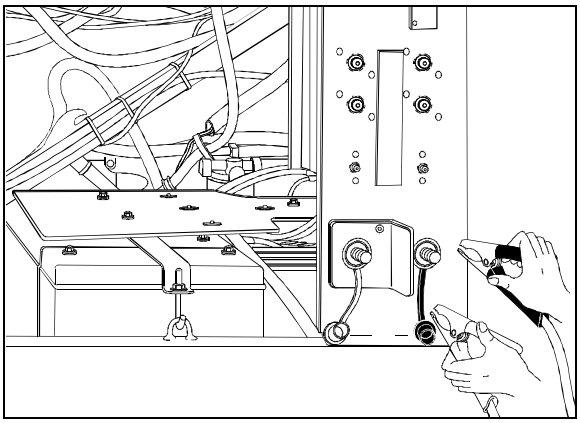
Caution: *Do not jump start if a maintenance-free battery has a yellow test indicator. Have the battery replaced.*

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 R.H. side engine 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 vehicle 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.*

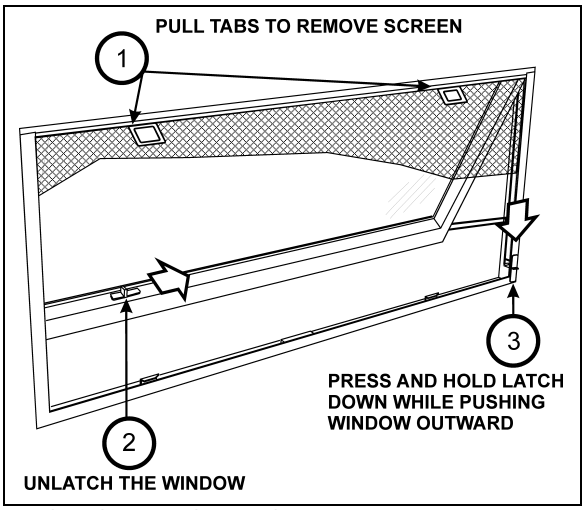


ENGINE COMPARTMENT 06401

EMERGENCY EXITS

Locate and learn how to use all possible emergency exits. Inform all guests or passengers of the location of exits and how to use them in case of an emergency.

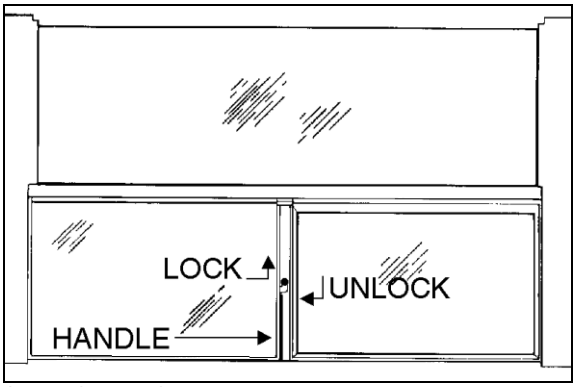
ELECTRIC AWNING WINDOWS



ELECTRIC AWNING WINDOW
18584

SLIDING WINDOWS

Sliding windows can be used as emergency exits. To open, unlock, pull in window then slide open.



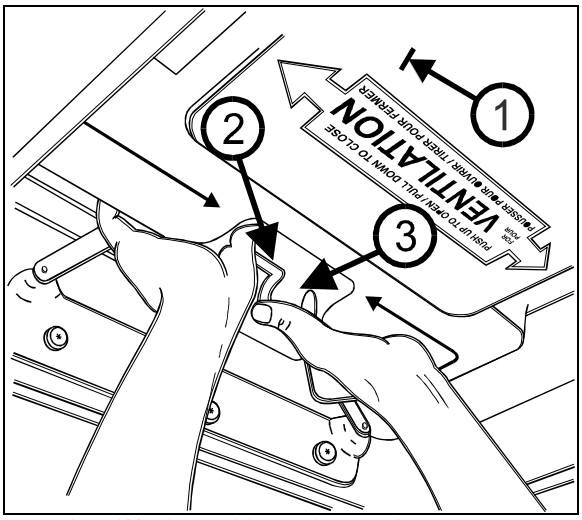
SLIDING WINDOW 18206

FIXED WINDOWS

Fixed windows are glued to the structure of the vehicle; they do not open and are very hard to break. Do not attempt to open, instead find and use the entrance door, the nearest awning or sliding window or a roof escape hatch.

ROOF ESCAPE HATCH

A roof ventilation hatch, designed to be opened by occupants may be installed in the roof at the rear of the vehicle. It can serve as an emergency escape (1). Another optional roof hatch may be located at the front of the vehicle. 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 hatch.

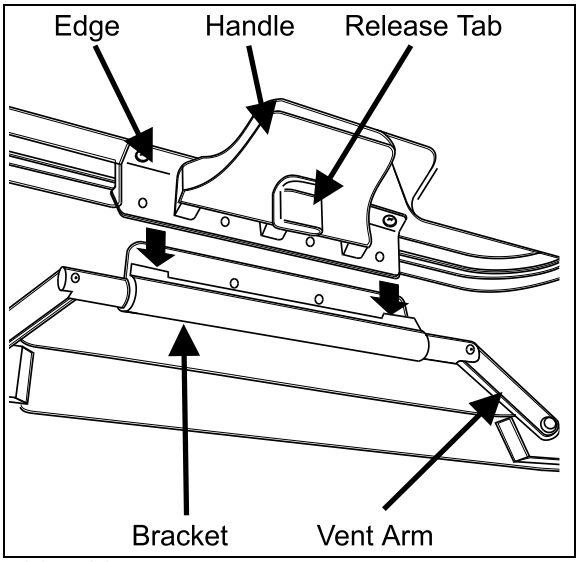


EMERGENCY ROOF ESCAPE OPENING OEH3B604

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 vehicle overhead clearance when driving under overpasses when the emergency roof escape hatch is open.*

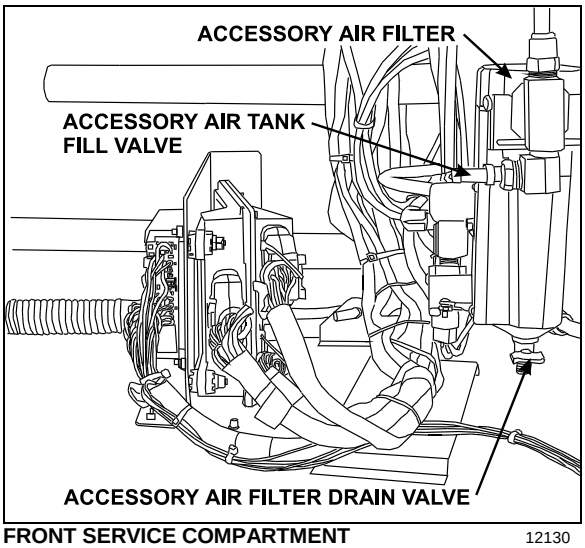
To latch handle after use, vent arms must be pushed upright in FULL OPEN VENT position. Insert edge between the two sections of the bracket and pull handle in to lock the hatch. Finally, pull the hatch in to closed position, one side at a time.



ROOF ESCAPE HANDLE OEH3B606

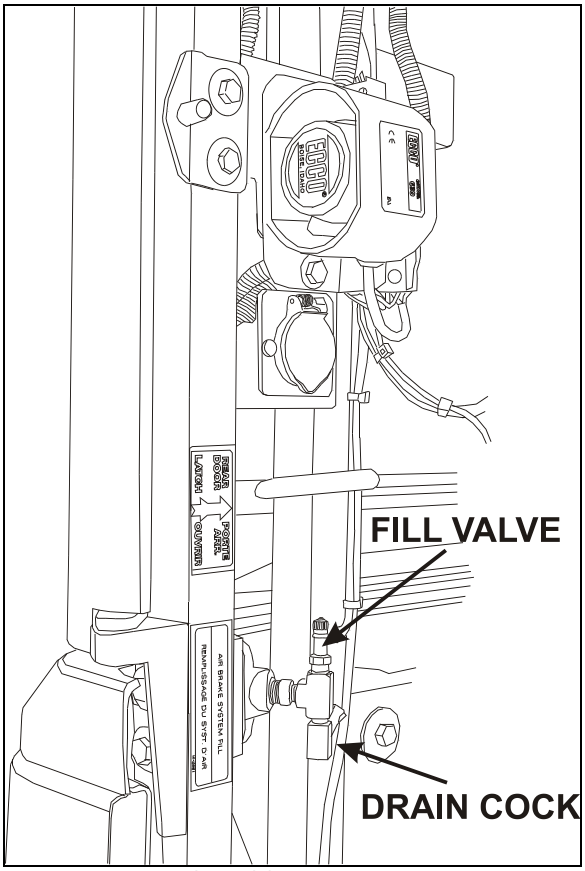
EMERGENCY AIR-FILL VALVES

The vehicle 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.



FRONT SERVICE COMPARTMENT 12130

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.



FILL VALVE IN ENGINE COMPARTMENT 12162

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 vehicle.

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.

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

Note: *Only use the parking brakes to supplement the service brakes to stop the vehicle 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).*

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

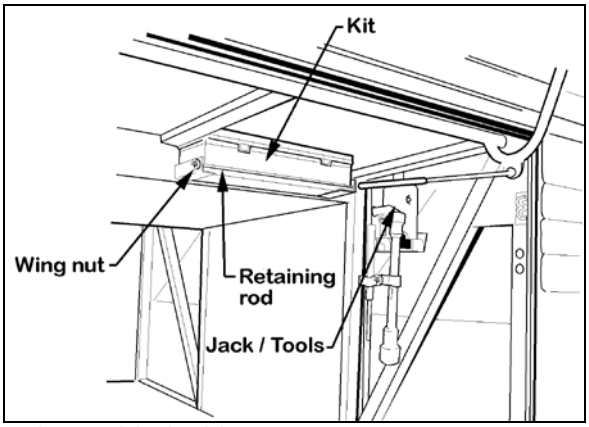
Two fire extinguishers are located on the vehicle L.H. side just behind the driver's seat. Instructions for use are found on the extinguishers. Make sure you know how to operate fire extinguishers in case of an emergency.

FIRST AID KIT

The optional first aid kit is usually stored near the driver's seat. A white cross over red background decal identifies the first aid kit.

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 ceiling of the first R.H. side baggage compartment, but may have been relocated by the converter. 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 23010

JACK/TOOLS

A kit for jacking up the vehicle is stored in the first R.H. side baggage compartment, attached to the forward bulkhead of the compartment. The kit includes a:

- 30 ton bottle jack;
- Bumper wrench;
- Wheel nut wrench and lever.

SPARE PARTS KIT

The vehicle 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.

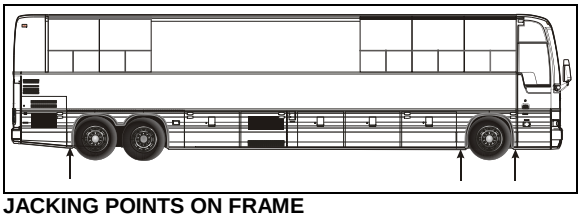
CHANGING WHEELS

In case of a flat tire, turn *ON* the hazard flashers and bring the vehicle to a stop on the side of the road. Apply the parking brake. Make sure the vehicle 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 that can bring a wheel and make the change safely.

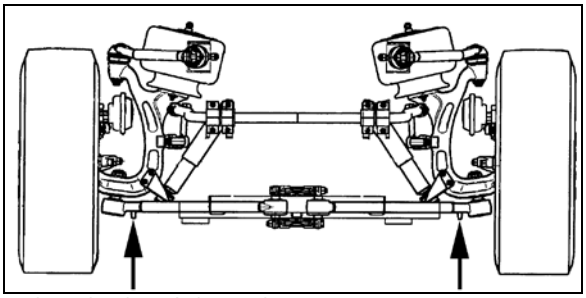
JACKING POINTS

Twelve jacking points are located on the vehicle: 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.

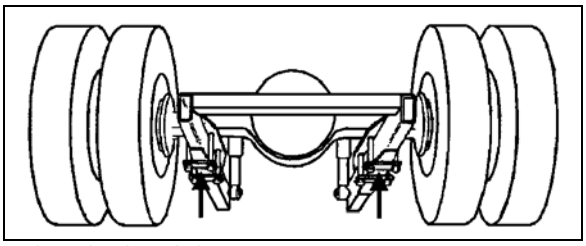


JACKING POINTS ON FRAME

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.*

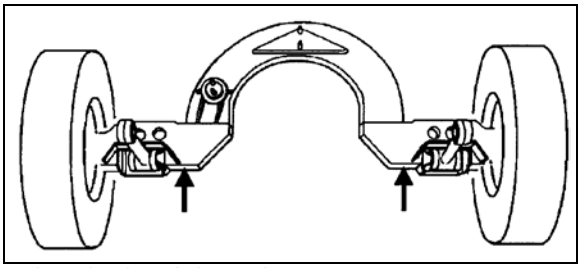


JACKING POINTS ON FRONT AXLE 16139



JACKING POINTS ON DRIVE AXLE 11005

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 11023

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: 20,000 lb (9 100 kg);

Drive axle: 40,000 lb (18 200 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.

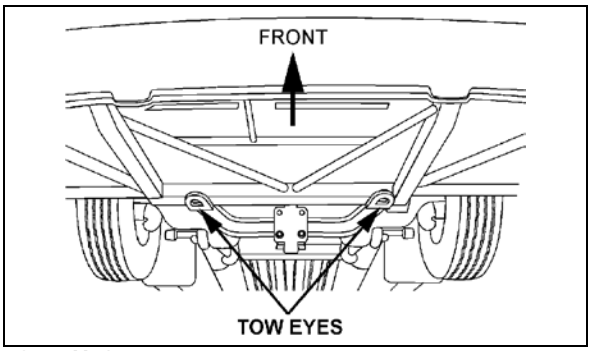
Service: Check oil level when jack fails to raise to full height. Lower ram completely with release valve open and jack in upright position, remove filler plug and refill to level of filler hole with hydraulic jack oil. Never use brake fluid.

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 vehicle, use the two tow eyes located under the back bumper and/or fixed to the vehicle's frame between the front axle and the front bumper. Use only a solid link tow bar and a safety chain to tow the vehicle. If required, connect an auxiliary air supply to the vehicle so brakes can be operated while towing.



TOW EYES 18003A

Warning: *During a towing operation, the driver should be alone inside the vehicle.*

Caution: *To prevent damage to the drive train components, disconnect axle shafts or driveshaft before towing. Do not attempt to push or pull-start a vehicle 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.*

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 vehicle 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 OFF 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

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 AND DOCKING LIGHTS

The vehicle 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 vehicle. When activated, the front lights illuminate at the same time as the turn signal flashers to increase lateral visibility while turning. The rear lights illuminate when the reverse (R) range is selected to increase visibility while backing-up the vehicle. All four lights will illuminate when the docking position is selected using the rocker switch. Refer to chapter: “Controls and Instruments”.

COMPARTMENT LIGHTING

Baggage and front service compartment lights are automatically turned *ON* when the corresponding compartment door is opened. A telltale light on the dashboard illuminates when the baggage compartment door is open.

MUD FLAPS AND SPLASH GUARDS

Mud flaps are installed behind each front and tag axle wheel in order to minimize dirt on the lower panels of the vehicle and prevent stones and debris from being thrown at vehicles traveling behind the vehicle. 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. It 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 vehicle 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.

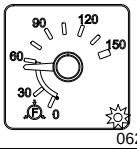
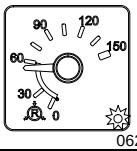
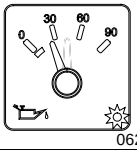
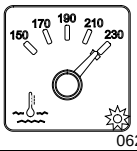
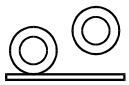
BACK-UP ALARM CANCEL SWITCH

A rocker switch located on the L.H. side dashboard panel allows the driver to cancel 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 vehicle 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
 06227	Yes	Air pressure in primary system below 66 psi (860 kPa)
 06228	Yes	Air pressure in secondary system below 66 psi (860 kPa)
 06229	Yes	Engine oil pressure Below 50 psi (345 kPa)
 06231	Yes	Coolant temperature above 223°F (106°C)
 06282	Yes	Gear changing inhibited
None	Yes	Reverse gear engaged
 06288	Yes	Fire in engine compartment
 06271	Yes	Tag axle retracted
None	Yes	Engine OFF but parking brake not applied
 06309	Yes	Major problem detected by engine ECU

Indicator Light	Audible Alarm	Condition
 06273	Yes	Outside temperature close to water freezing point
 06292	Yes	Transmission fluid too hot

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.*

Caution: *Custom fabrics and materials may require different cleaning and maintenance practices. Consult your converter.*

SEAT UPHOLSTERY

Firmly beat the fabric with a blunt object, such as a wooden paddle, to release dust and dirt. Vacuum the seat fabric in the direction of the stitching using an upholstery nozzle.

Note: *The abrasive nature of dirt and grit. will reduce upholstery life expectancy. Vacuum regularly.*

Removal Of Stains And Marks

Depending on the nature of the stain, apply one of the two methods explained below to remove stains and marks on wool plush.

Method One:

1. Apply a nonflammable solvent (Trichloro-ethylene) to stained area with a clean, white absorbent rag;
2. Clean stain by starting at the outer edges of the stain and working in toward the center;
3. 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 Two

1. Wet the stain with a solution of household detergent and lukewarm water. Do not soak the stain;
2. Rub the stain with a damp cloth;
3. 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 one. If stain persists, repeat method one using methylated spirits instead of solvent.

Alcoholic Beverage Stains

Remove alcoholic beverage stains by wetting the stain with water, then cleaning following method two.

Burns

Scrape burnt area using a knife or razor blade then clean following method two. Consult an upholstery specialist when dealing with extensive burns.

Cosmetic Stains

Remove stains left by cosmetics by following method one then method two.

Ink Stains

Remove ink stains following method two. If stain persists, apply a warm oxalic acid solution. Rinse with water.

Blood, Urine Or Vomit Stains

Remove such stains by following method two.

Copying Ink - Ball-Point Pen Ink

Treat with methylated spirits, blotting frequently to avoid spreading stain, followed by method two.

Marking Ink (Felt-tip Pens)

Treat with Methyl-Ethyl-Ketone (MEK) followed by method two.

Oil, Grease And Paint

Remove excess using a knife. Treat with method one followed by method two. If stain persists, repeat procedure.

Rust Stains

Remove rust stains by following method two. Apply a warm oxalic acid solution to stained area. Rinse with water.

Tar

Soften tar with benzene, then treat using method one followed by method two.

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 vinyl 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.

Note: *For custom or special floor covering materials, consult the manufacturer or your converter for information on how to clean and maintain these types of floors.*

EXTERIOR SURFACES

Frequent washing and waxing of the vehicle exterior will help protect the finish and luster. The paint finish is attacked by the abrasive effects of airborne particles and corrosive pollutants.

Before washing the exterior of the vehicle, close the fresh air dampers using the “REC” button located on HVAC control panel and on the air intake duct in the evaporator compartment. Install keyhole protectors to prevent water from penetrating. Rinse vehicle with water to remove all loose dirt. Wash vehicle using a quality brand car wash soap. Follow manufacturer's recommendations for cleaning. Rinse well with water.

The vehicle 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 vehicle 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 vehicle 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.

WINDSHIELD

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.

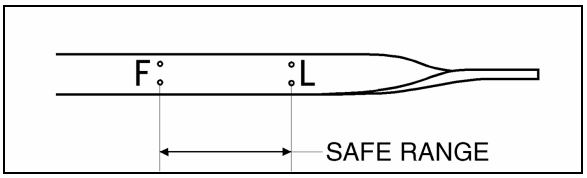
FLUID LEVEL VERIFICATION

Periodic inspection of oil level is the most economical and easiest way to help your vehicle perform at its best. Rigorous oil level inspection and replacement will greatly help minimize expensive and unscheduled repairs.

ENGINE OIL LEVEL

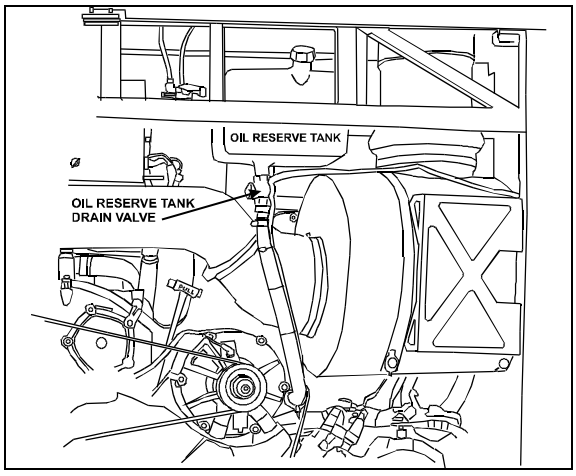
Check engine oil level when engine is still warm and with vehicle parked on a level surface. Shut *OFF* engine and wait at least 10 minutes for oil to drain into oil pan before checking. Check engine oil level daily or before each trip. Add oil as required. Do not overfill. Remove dipstick, wipe clean 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 tube. 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.

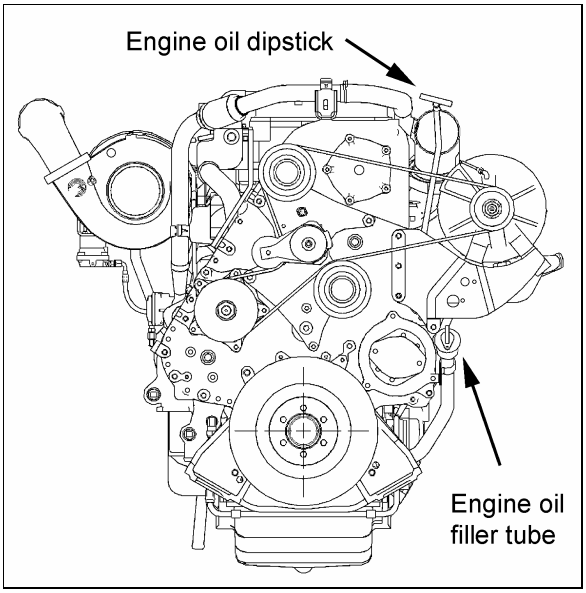


ENGINE OIL LEVEL DIPSTICK 01027

Caution: *Keep engine oil level between "L" and "F" on dipstick. Do not overfill. Check when refueling.*



ENGINE COMPARTMENT 01063



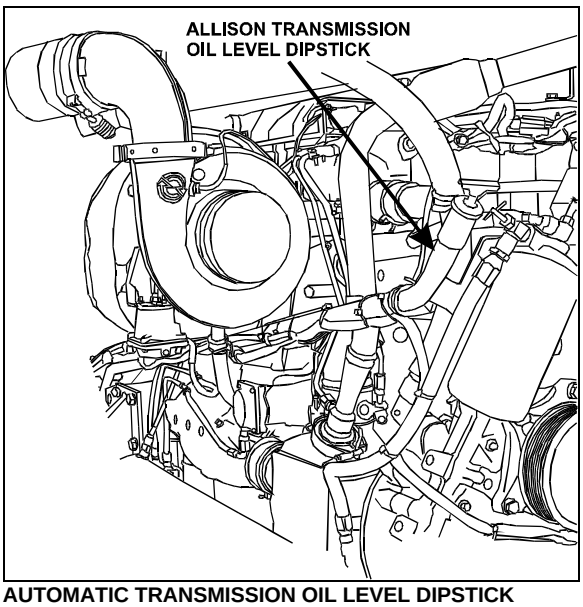
ENGINE COMPARTMENT 01051

AUTOMATIC TRANSMISSION OIL LEVEL

Transmission fluid level may be checked using dipstick or transmission control pad display. Refer to section ”Technical Information” in this manual for how to use the control pad as a transmission oil level indicator.

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).



AUTOMATIC TRANSMISSION OIL LEVEL DIPSTICK

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.*

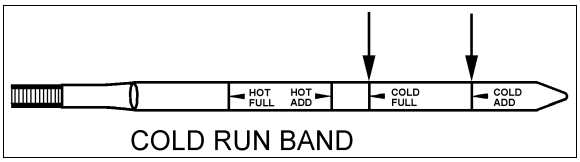
Caution: *Do not mix fluid types or brands because of possible incompatibility*

Caution: *Use clean fluid and containers when filling transmission. Never use containers that have contained water or anti-freeze (Glycol).*

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 120°F (16°C and 50°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.



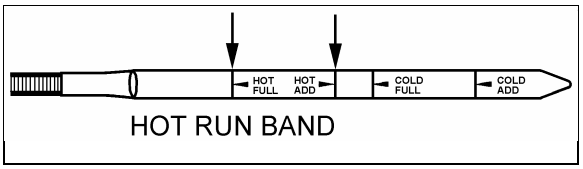
AUTOMATIC TRANSMISSION OIL LEVEL DIPSTICK 07006

Caution: *The oil level rises as oil temperature rises. Do not add oil above the "cold run" band before the transmission reaches 180?F to 220?F (82?C to 104?C).*

Hot Check

Make sure the transmission oil temperature is between 180°F and 220°F (82°C and 104°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 07006

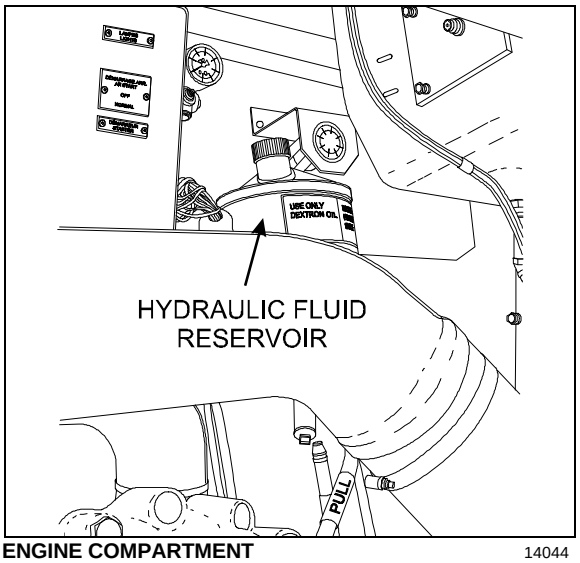
Note: *Approximately 1 quart (0.95 liters) of oil will raise the oil level from the lower line of the HOT RUN band to the middle of the HOT RUN band.*

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 vehicle is equipped with a power steering system. The hydraulic fluid tank is located in the engine compartment.



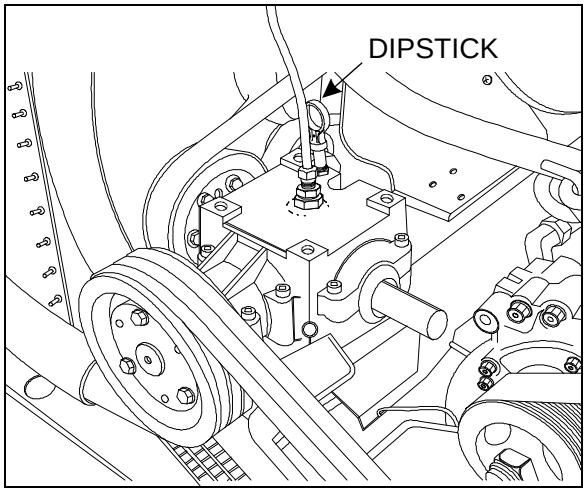
ENGINE COMPARTMENT 14044

Check fluid level as follows:

1. Stop engine, open engine compartment doors and place rear start switch to *OFF* position;
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;
6. Place engine rear start switch to *NORMAL* position. Close engine compartment doors.

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 top of the gearbox is used to check the radiator fan gearbox oil level.



ENGINE COMPARTMENT 05062

Check radiator fan gear box oil level as follows:

1. Stop engine, open engine compartment R.H. side door and place battery master switch to the *OFF* position;
2. Open engine compartment doors and place engine starter switch to *OFF* position;
3. Remove the dipstick located on top of the gearbox and wipe with a clean rag;
4. Insert dipstick in gearbox case, then remove again to check mark;
5. Add, if necessary, MOBIL SHC 630 synthetic lubricant (Prévost #180217) until it reaches "FULL" mark;

Note: *Mobil SHC 630 is a new lubricant and is not compatible with SHC 634 lubricant that was previously used.*

6. Reinsert the dipstick;

7. Place engine rear start switch to *NORMAL* position. Close engine compartment doors;
8. Set battery master switch to *ON* position.

DRIVE AXLE WHEEL BEARING OIL LEVEL

Drive axle wheel bearings are lubricated by the differential oil. Maintain differential oil at correct level to ensure adequate lubrication of drive axle wheel bearings at all times.

FRONT AND TAG AXLE WHEEL HUBS

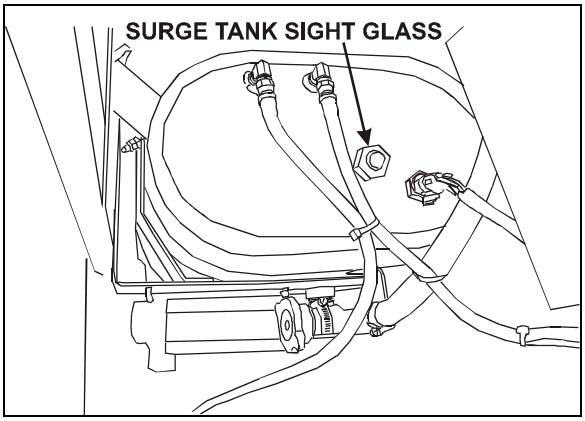
The unitized hub bearings used on the NDS range of axles, are non-serviceable items. Bearings are pre-adjusted, lubricated and have seals fitted as part of the manufacturing process. The bearings are greased for life and there is no need or facility for re-lubrication.

COOLANT FLUID LEVEL

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.

Caution: *Use only coolant that meets DDC specs for use in DDC engines.*

The cooling system must be maintained according to DDC maintenance specs for coolant, ratio of 50/50 and supplemental coolant additives (SCAs). Failure to do so could damage the cooling system. Refer to Maintenance Manual or DDC for instructions.

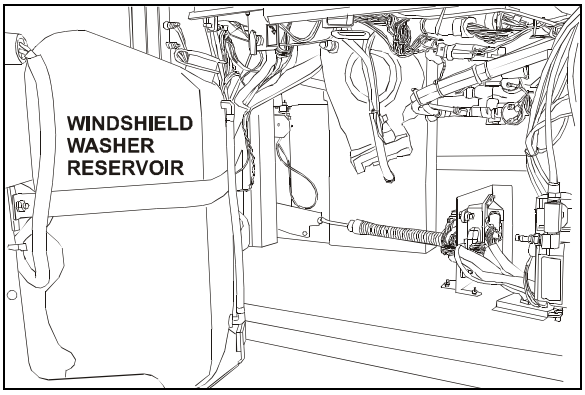


ENGINE COMPARTMENT 05094

Warning: *Hot engine coolant is under high pressure. Allow engine to cool down before adding coolant.*

WINDSHIELD WASHER TANK

The windshield washer reservoir is located in the front service compartment door. The reservoir has a capacity of 5.3 US gallons (20 liters). Check fluid level regularly.



FRONT SERVICE DOOR 18381

The spray jets are located on the windshield wipers and are angled to spray towards the center of the windshield.

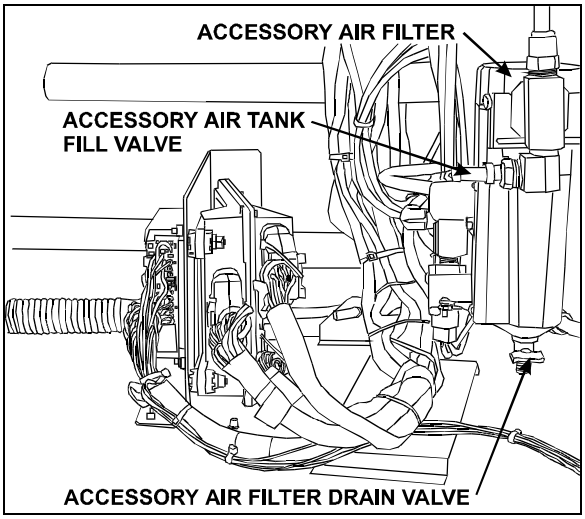
OTHER VERIFICATIONS

AIR TANK PURGE

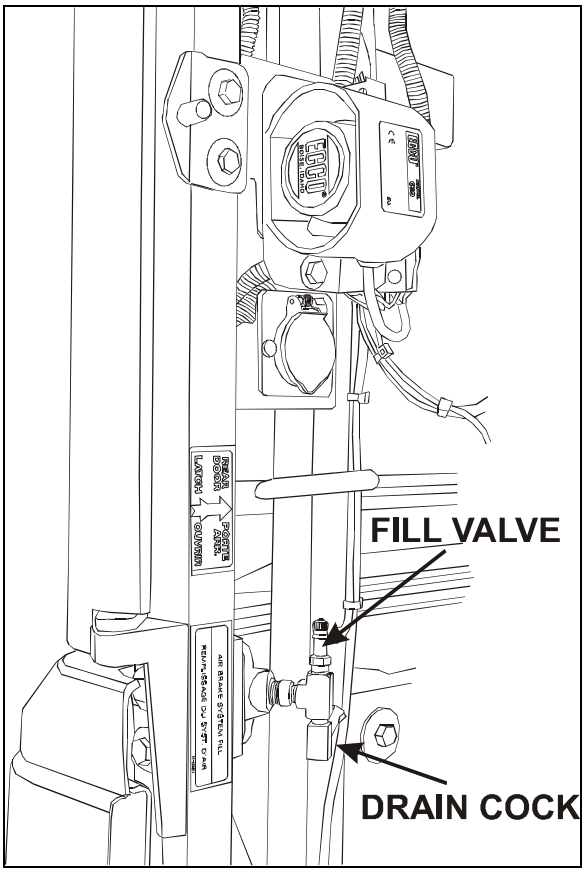
The vehicle may be equipped with up to twelve air tanks. Purge accessory and wet air tanks before each trip. The primary and secondary air tanks must be purged at every oil change. Oil changes should be scheduled at least every 12,500 miles (20 000 km).

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. 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.



FRONT SERVICE COMPARTMENT 12162



FRONT SERVICE COMPARTMENT 12130

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;

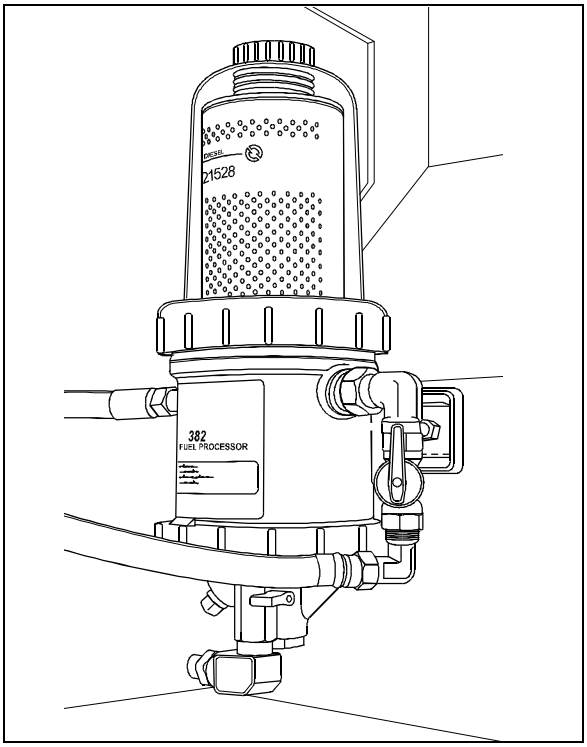
Check that seal on handle is intact;

Check that hose nozzle is in good condition and the nozzle is free of obstruction;

Keep fire extinguishers clean.

FUEL FILTER / 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 illuminates. To drain water, loosen bleed screw below separator one quarter turn. Tighten bleed screw when finished.



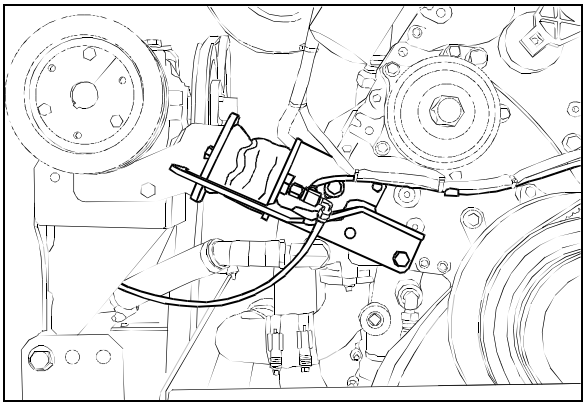
FUEL FILTER / WATER SEPARATOR 03032

BELT TENSION ADJUSTMENT

The radiator transfer fan and air conditioning compressor are driven by V-belts.

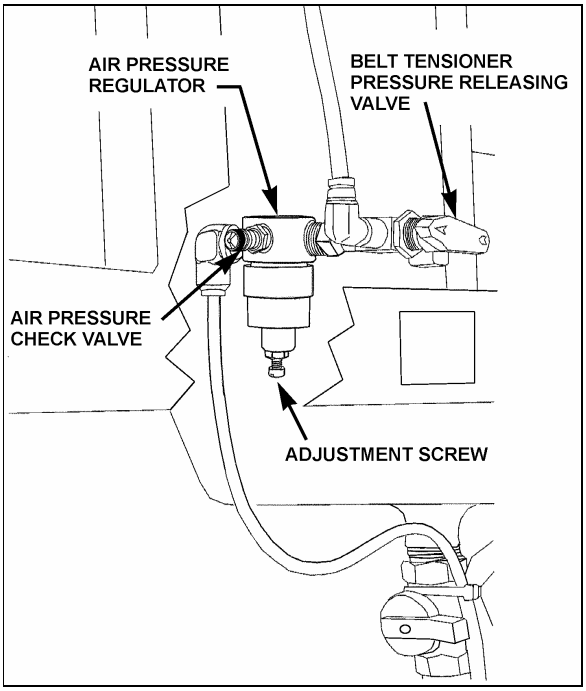
Belt tensioning is applied through air bellows which are adjusted by an air pressure regulating valve mounted in the engine compartment, right behind the belt tensioning pressure control valve. The correct pressure of 45 psi (310 kPa) for W5 and 50 psi (345 kPa) for W0 and WE is

set at the factory. Periodically verify the pressure at the regulating valve using a tire pressure gauge and correct if necessary. The distance between the stop and the plate at the top of the bellow should be approximately ¼ " (7 mm).



AIR BELLOWS 01059

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 12175

- Refer to the Parts Manual, Maintenance Manual or "Service Bulletins" for recommended belt sizes and tension settings;
- Periodically inspect belt and pulleys for wear or damage;
- Do not treat belts with any compounds. Keep belts dry.

BACK-UP CAMERA

The optional back-up camera is located on the rear cap. To clean the camera's protective glass, spray with soapy water. Wipe with a clean damp rag or wiper blade.

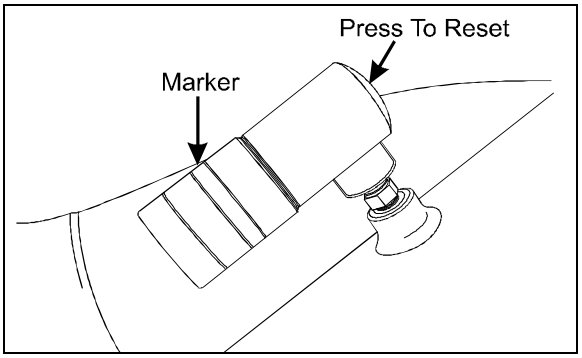
Warning: *To avoid injury, do not clean camera with transmission in reverse (R). Shut off engine and apply parking brake before cleaning.*

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 (optional) 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 01052

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.

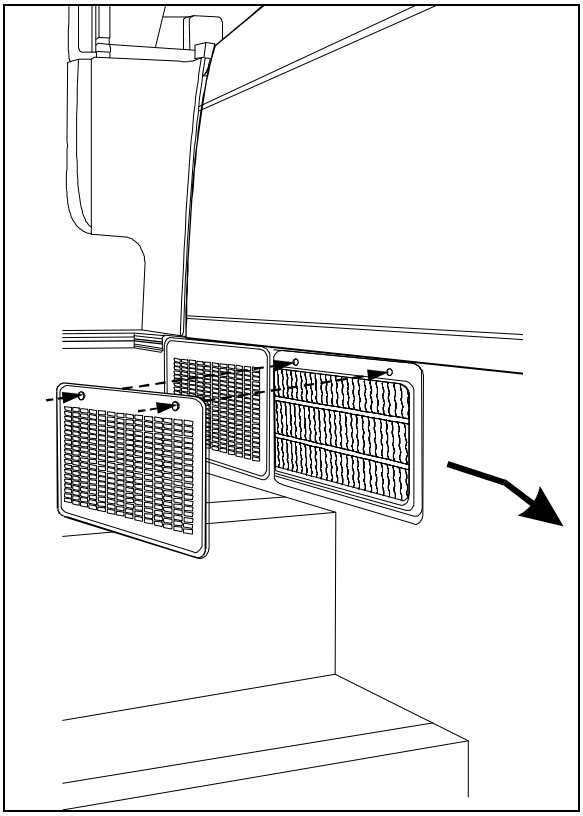
Caution: *Do not use high pressure water jet to avoid damaging filter.*

Caution: *Be sure not to reverse filter upon installation.*

DRIVER'S AREA AIR FILTERS

The driver HVAC system's air filters are located behind the R.H. console. To gain access to the A/C filters, unscrew the grill located at the top step of the entrance door steps. Remove the filters for cleaning or replacement.

Note: *If the windshield is continuously fogged, check that the driver's air filter is not clogged.*

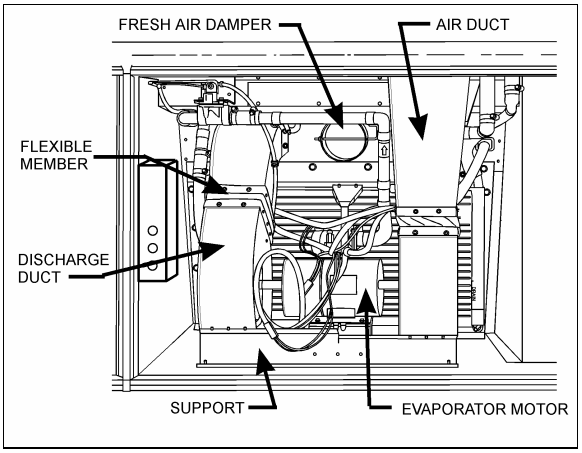


DRIVER'S AREA AIR FILTER REMOVAL 22172

CABIN SYSTEM AIR FILTER

The central HVAC system's air filters are located in the evaporator compartment on L.H. side of the vehicle. To gain access, open evaporator compartment door. Remove filter panel by unscrewing the six fixing screws. Slide out the filter for cleaning.

Caution: *Be sure not to install filter in inverted position.*



CABIN SYSTEM AIR FILTER REMOVAL 22178

HOSE INSPECTION

Inspect hoses regularly to ensure efficient, economical and safe operation of the engine and related equipment.

LUBRICATION

Grease all lubrication points during scheduled maintenance. For heavy loads or extended use, lubricate more often. Refer to the Maintenance Manual, section 24 for information on lubrication.

PRE-STARTING INSPECTION

WITH ENGINE STOPPED:

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.

Caution: *All hose clamps of 1 3/8" ID and over, used on the heating and cooling systems, are of the* "Constant-torque" *type. This type of clamp is designed to automatically adjust its diameter to compensate for the normal expansion /contraction of a hose and metal connection that occurs during vehicle operation and shutdown. A torque wrench should be used for proper installation. The recommended torque is 90 to 100 lbf-in. (10 to 11 Nm). The hose clamps will break if over-torqued and cause loss of coolant. Do not over-tighten, especially during cold weather when hose has contracted.*

Leaks

Check for leaks under vehicle 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.

Wheels And Tires

Check for loose wheel nuts. Both aluminum alloy and steel wheel nuts should be tightened to 450 to 500 lbf-ft (610 to 680 Nm) 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", placed in the technical publications package supplied with the vehicle. The cold tire inflation pressures are on the Department of Transport certification plate located on the L.H. console besides 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.*

Doors

Close all exterior doors and windows. Check for good tightness and fit.

Tools And Spares

Make sure the vehicle 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 vehicle "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 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 fluid.

Engine Oil

Check engine oil level during fuel stops. It is normal for diesel engines to burn some oil. If the oil level is low, refer to heading "Engine Oil Level" in this chapter.

Warning: *Check the engine oil level with vehicle 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 using a pressure gauge. 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

Verify emergency exits for correct operation.

Driver's Section

Adjust driver's mirrors and seat.

WITH ENGINE RUNNING:

Leaks

Walk around vehicle 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 VEHICLE

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 World transmission filter cartridges after the first 5,000 miles (8 000 km) and then, every 12,000 miles (19 300 km) if you use Dexron-IIE or Dexron-III. Replace filter cartridges every 50,000 miles (80 000 km) if you use TranSynd fluid.

COOLANT SYSTEM STRAINER

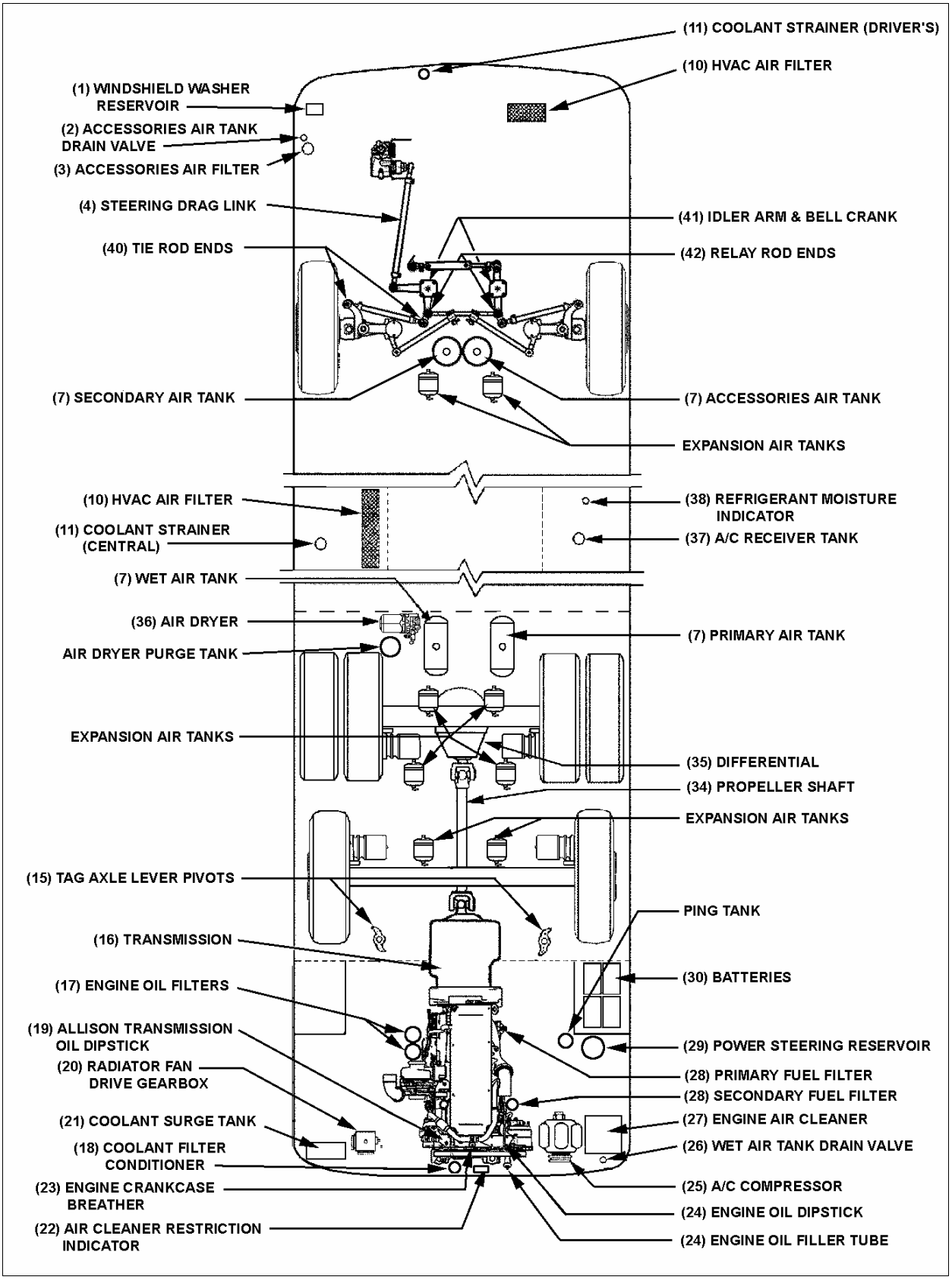
The coolant system strainer is designed to recover the soldering residues trapped inside the coolant lines during their initial assembly. Clean strainer after first 3,000 miles (5 000 km) and then every 50,000 miles (80 000 km). Refer to the Maintenance Manual under section 05: Cooling System.

Note: *If soldering has been performed on cooling system, clean strainer after 3,000 miles (5 000 km).*

GENERAL RECOMMENDATIONS

- Understand basic principles of vehicle 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 two 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 vehicle 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 vehicle 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 vehicle 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 (TYPICAL) 24026

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 Prévost service center or a Prévost-authorized service center.

Outside The Vehicle

ITEM*	DESCRIPTION
---	Check for leaks under vehicle and in engine compartment.
---	Check that baggage and service compartment doors are properly closed.
---	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.
2-26	Drain accumulated water in accessory and wet air tanks.

Engine Compartment

ITEM*	DESCRIPTION
24	Check engine crankcase oil level; add if necessary.
19	Check transmission oil level (can be checked from push-button shift selector); add if necessary.
29	Check power steering reservoir fluid level; add if necessary.
21	Check coolant surge tank fluid level; add if necessary.
28	Drain accumulated water in primary fuel filter/water separator (if equipped).
22, 27	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 lubrication and servicing points 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**
27	Engine Air Cleaner	Inspect and replace element if required	Filter: #530197
---	Engine Air Pre-Cleaner	Check discharge tube	----------
25	A/C Compressor	Check oil level, add if necessary	Polyolester Oil
37	A/C Receiver Tank	Check refrigerant level, add if necessary	HFC 134a
38	Refrigerant Moisture Indicator	Replace filter dryer unit according to moisture indicator (as needed)	Filter: #950332
35	Differential	Check oil level, add if necessary	Multigrade gear oil
20	Radiator Fan Drive Gearbox	Check oil level, add if necessary	Mobil SHC 630
34	Propeller Shaft	Grease one fitting on each universal joint and one fitting on slip joint	Multi purpose grease
15	Tag Axle Lever Pivot	Grease one fitting on each pivot	Multi purpose grease
---	Steering King Pins	Grease fitting	Multi-purpose grease
---	A-arm ball joints	Grease fitting	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
40	Steering Tie Rod Ends	Grease one fitting at each end	Multi purpose grease
37	Idler Arm	Grease fitting	Multi purpose grease
37	Bell Crank	Grease fitting	Multi purpose grease

* Item numbers refer to figure on lubrication and servicing points 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**
17	Engine Oil Filters	Change oil and filters	Engine oil: SAE 15W40, API CG4 Filters: #510458
28	Fuel Filters	Change primary and secondary fuel filters (Fill with clean fuel before installation)	Primary: #510137 Prim. w/sep.: #531390 Secondary: #510128
18	Coolant Filter/Conditioner	Replace element	Filter: #550630
21	Coolant Surge Tank	Test coolant solution	----------
7	Air Tanks	Drain accumulated water from all tanks	----------
10	A/C and Heating Air Filters	Clean or replace two elements (twice a year)	Driver's: #871049 Passenger's: #871051
16	Automatic Transmission	Change filters. Change transmission fluid if indicated by oil analysis.	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**
20	Radiator Fan Drive Gearbox	Change oil	Mobil SHC 630
29	Power Steering Reservoir	Replace oil filter cartridge element	Cartridge: #660987
16	Allison Transmission (50, 000 miles/every 2 years)	Change fluid and filters (if containing TranSynd fluid only).‡	Fluid: TranSynd™ Filters: #571709
18	Coolant Strainer	Check and clean, change cartridge if required. ‡‡	Cartridge: #871029
23	Engine Crankcase Breather	Clean breather steel mesh	----------
---	Hoses	Thoroughly inspect all hoses	----------

* Item numbers refer to figure on lubrication and servicing points of this section.

** See end of this section for lubricant and part number specifications.

‡ When the transmission contains a mixture of fluids (defined as the quantity of non-TranSynd fluid remaining in the transmission after a fluid change combined with the quantity of TranSynd required to fill the transmission to the proper level), perform the fluid and filter change at 25,000 miles (40 200 Km) or 1 year, whichever comes first.

‡‡ If soldering has been performed on the system, clean strainer after 3,000 miles (5 000 Km).

SERVICE EVERY 100,000 MILES (160 000 KM) OR ONCE EVERY TWO YEARS, WHICHEVER COMES FIRST

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
35	Differential	Change oil; Clean breathers	Multigrade gear oil
3	Accessories Air Filter	Change filter element	Filter: #641252
36	Air Dryer	Change cartridge	Cartridge: #641278

MISCELLANEOUS SERVICE

ITEM*	DESCRIPTION	REMARKS	LUBRICANT &/OR PART**
18, 21	Cooling System	Drain, flush and refill every two years or 200,000 miles (320 000 km) whichever comes first	Engine coolant
30	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	----------

* Item numbers refer to figure on lubrication and servicing points of this section.

** See end of this section for lubricant and part number specifications.

*** Discharge tubes are rubber tubes located under vehicle.

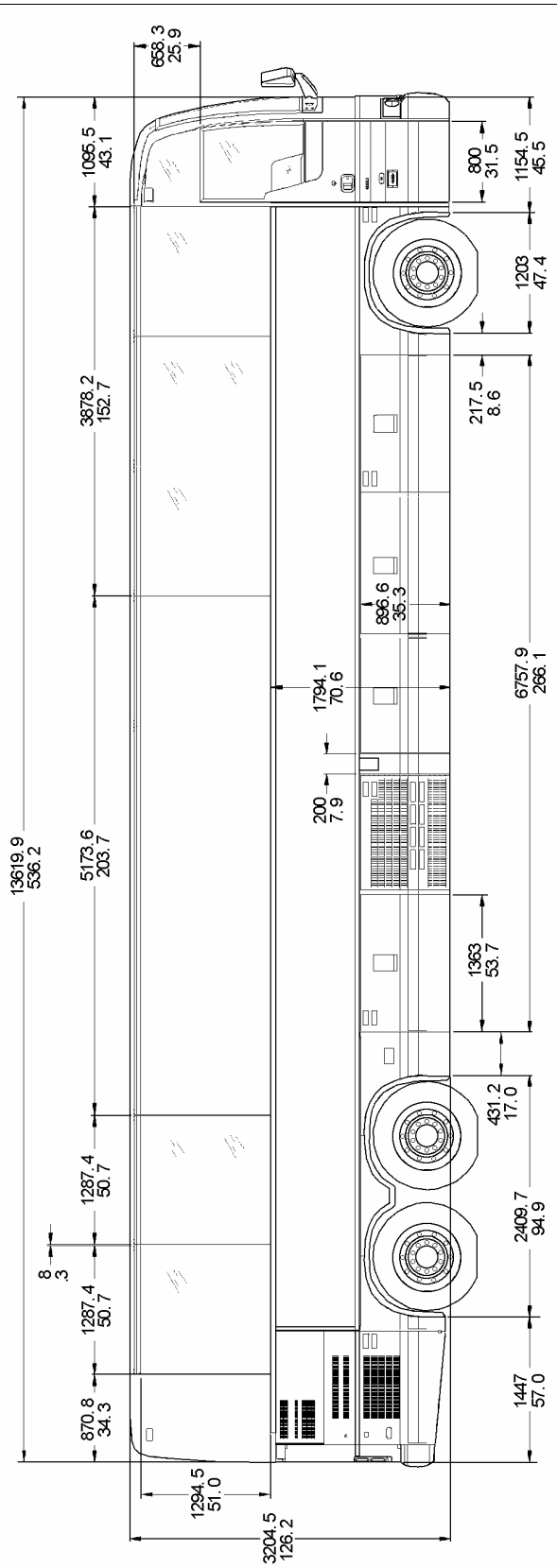
LUBRICANT SPECIFICATIONS

ITEM*	DESCRIPTION	SPECIFICATIONS
24	Engine Oil	SAE Viscosity Grade: 15W40 API Classification: CI-4
29	Power Steering Oil	Automatic Transmission Oil (Dexron-IIE or Dexron-III)
18, 21	Engine Coolant	Low silicate, ethylene glycol coolant 50% antifreeze/water solution is normally used Antifreeze concentration should be between 30% and 67%
25	A/C Compressor Oil	Polyolester Oil, HFC 134a compatible: Castrol SW-68 (POE) or equivalent
35	Differential 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.)
20	Fan Gearbox Oil	Mobil SHC 630
19	Automatic Transmission Oil	Dexron-IIE, Dexron-III or TranSynd
---	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 lubrication and servicing points of this section.

PART NUMBER SPECIFICATIONS

Please, refer to your vehicle Parts Manual



MTH XLII-45E OVERALL DIMENSIONS

DIMENSIONS AND WEIGHTS	W0-40	W5-45 WE-45
Overall length (including bumpers)	40'0" (12,2 m)	45' (13,7 m)
Overall width	102" (2,59 m)	
Overall height	148 3/4" (3,78 m)	
Wheelbase (center of front axle to center of drive axle)	280" (7,11 m)	315" (8,00 m)
Floor height from ground	48 1/2" (1,23 m)	
Ground clearance	11" (280 mm)	
Step height from ground	15" (380 mm)	
Step height (other steps)	7" (178 mm)	
Headroom	83" (2,11 m) STD	
Entrance door opening width	30" (762 mm)	
Front overhang	69" (1,75 m)	
Rear overhang	77½" (1,97 m)	102 1/2" (2,60 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)	41'-5" (12.6 m)	45'-7" (13.9 m)
Curb weight (before conversion)	N/A	N/A
Gross Vehicle Weight Rating (G.V.W.R.)	54,500 lb (24 775 kg)	
Front axle Gross Axle Weight Rating (G.A.W.R.)	18,000 lb (8 186 kg)	
Drive axle (G.A.W.R.)	22,500 lb (10 225 kg)	
Tag axle (G.A.W.R.)	14,000 lb (6 364 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	W0-40 WE-45	W5-45
Engine oil (in crankcase)	37 U.S. qts (35 l)	
Engine oil (in reserve tank)	8.4 U.S. qts (8,0 l)	
Fuel tank (legal capacity equal to 95% of volume)	250 U.S. gal. (945 l)	208 U.S. gal. (787 l) plus 90 U.S. gal. (opt) (341 l)
Cooling system	18.7 U.S. gal. (71 l)	
	27.6 U.S. gal. (104,5 l)	
Transmission (does not include external circuit)	6 U.S. gal. (23 l) 6.9 U.S. gal. (26 l) with retarder	
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	5.3 U.S. gal. (20 l)	
Refrigerant	24.1 lb (11 kg)	

FUEL TYPE

ASTM specification..... D-975
Recommended grade..... 1-D
Acceptable grade 2-D

WHEELS AND TIRES

Drive Axle Aluminum forged wheels... 9" X 22½"
Drive Axle Tires.....315/80 R 22½"
Tag & Front Axle Wheels.....10½" X 22½"
Tag & Front Axle Tires.....365/70 R 22½"

RECOMMENDED TIRE INFLATION PRESSURE AT MAXIMUM COLD LOAD

The recommended tire inflation pressures are given in the applicable documents supplied with the vehicle. In addition, maximum cold tire inflation pressures are listed on the Department of Transport's certification plate, affixed on the panel behind the driver's seat.

Warning: *Special tire selection may lower maximum allowable speed limit, even below posted speed limit. For maximum safety, check with tire manufacturer.*

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" or special specification chart affixed next to the DOT certification plate.*

BELTS

Use	Make	Model	Qty
Radiator fan drive (gearbox) MTH 40-45E	Dayco	AX 73	3
Radiator fan drive (gearbox) MTH 45'	Dayco	BX-77	3
Radiator fan drive (fan) MTH 40-45E	Dayco	Poly-V 10/55	1
Radiator fan drive (fan) MTH 45'	Dayco	12PK 2100	1
A/C system 05G compressor (MTH 40'-45')	Gates	V Belt	2
A/C system 05G compressor (MTH 45E with 2 Bosch)	Gates	V Belt BX-100	2
A/C system Seltec compressor	Gates	V Belt A35	1
Alternator Delco 1X 24V, 270 Amp	Detroit Diesel	Poly-V 10/2232	1
Alternator Bosch 2X 28V, 140 Amp	Detroit Diesel	Poly-V 10/2232	1

ENGINE

The engine is a Detroit Diesel DDEC V Series 60, displacing 12.7 or 14.0 liters. It is an inline six cylinder, four stroke, turbocharged, air to air charge cooled, diesel engine with an overhead camshaft, and four valves per cylinder.

Rated horsepower

MTH 40' & 45E (12.7 l)..... 455 HP @ 1 800 rpm
MTH 45' (14.0 l)..... 515 HP @ 1 800 rpm

Peak torque

MTH 40' & 45E..... 1,550 lbf-ft @ 1,200 rpm
MTH 45' ..... 1,650 lbf-ft @ 1,200 rpm

Operating range ..... 1,200 – 2,100 rpm

TRANSMISSION

Allison World Transmission B500 electronically controlled six speed automatic transmission (B500R with the optional output retarder).

GEAR RATIOS

1st.....3.510
2nd.....1.906
3rd.....1.429
4th.....1.000
5th.....0.737
6th.....0.639
Reverse.....4.801
Converter.....1.790
Drive axle ratio.....4.56

BRAKES

The features of the braking system include a dual system where the front and rear circuits are completely independent from each other. The brakes are air operated disc type brakes with automatic slack adjusters on front, drive and tag axles. The emergency/parking brakes are located on drive and tag axles.

BRAKE CHAMBER EFFECTIVE AREA:

Front axle.....24 in^2
Drive axle..... 24 in^2 (service)
.....24 in^2 (emergency/parking)
Tag axle..... 14 in^2 (service)
.....16 in^2 (emergency/parking)

AIR SYSTEM

Compressed air is provided by a 15.8 cfm Bendix-Westinghouse BA-921, one cylinder, gear driven, water cooled and engine-oil lubricated air compressor.

Other features and components of the air system include an air dryer and nylon color coded air lines.

ANTI-LOCK BRAKING SYSTEM (ABS)

The anti-lock braking system has one Electronic Control Unit (ECU) controlling a four channel system. One wheel slip sensor is mounted at each front axle and drive axle wheel. The Tag axle wheels are slave to the drive axle wheels.

The Electronic Control Module (ECM) is maintenance free. Its operating voltage is 24 ± 6 volts DC. The thermal operating range for the ECM is from -40 to 167°F (-40 to 75°C).

The solenoid control valves are maintenance free. Their operating voltage is 24 (+4.8, -2.4) volts DC. The rated current draw is 1.65 amps. The thermal operating range of the solenoid control valves is from -40 to 176°F (-40 to 80°C).

TROUBLESHOOTING AND TESTING

For troubleshooting and testing of the vehicle's anti-lock braking system, refer to Meritor WABCO Maintenance Manual: *"Anti-Lock Brake Systems For Trucks, Tractors and Buses"* or use dashboard Message Center Display (MCD) Diagnostic Mode under ECU Diagnostic: "ABS".

STEERING

- Tilt steering wheel and telescopic steering column
- Integral hydraulic assisted steering gear
- System pressure: 2175 psi (15 000 kPa)

ELECTRICAL SYSTEM

- 24 volt, negative ground
- 12 volt exterior lighting
- Alternator: either a 24 volt, 270 amp, self-rectified, belt-driven, oil-cooled Delco alternator (optional) lubricated by the engine circuit, or either single or twin 28 volt, 140 amp, self-regulated, belt-driven, air-cooled Bosh alternators.
- Four 12 volt, group 31 format maintenance-free batteries connected in series/parallel. Cold cranking capacity is 1900 amps with a reserve capacity of 195 minutes.
- 100 amp battery equalizer.
- 12 volt, 145 amp, air-cooled, belt-driven, additional alternator (optional).

SUSPENSION

Goodyear rolling lobe type air springs (bellows) are used throughout.

INDEPENDENT FRONT SUSPENSION

2 Bellows (14.5") for a G.A.W.R. of 18,000 lb;

2 Shock absorbers;

2 Upper V-Links;

2 Lower V-Links;

2 Torque rods;

2 Steering Levers;

1 Leveling valve;

1 sway bar (1¾" diameter).

DRIVE AXLE

4 Bellows (11");

4 Shock absorbers;

3 Radius rods;

1 Panhard rod;

2 Leveling valves.

TAG AXLE

2 Bellows (11");

2 Shock absorbers;

3 Radius rods;

1 Lateral Panhard rod.

ALIGNMENT SPECIFICATIONS

Use wheel alignment systems which work with angle measurements only, such as Josam or Hunter systems. Alignment specifications are listed in the following tables:

FRONT AXLE (INDEPENDENT FRONT SUSPENSION)						
	Minimum value		Nominal value		Maximum value	
Load	Non-converted	Converted	Non-converted	Converted	Non-converted	Converted
Right camber (degrees)	0.2	-0.150	0.35	0.0	0.55	0.200
Left camber (degrees)	0.2	-0.150	0.35	0.0	0.55	0.200
Right caster (degrees)	2.55		2.8		3.05	
Left caster (degrees)	2.55		2.8		3.05	
Total toe-in (degrees)	0.08		0.13		0.17	

DRIVE AXLE			
	Minimum value	Nominal value	Maximum value
Thrust angle (degrees)	-0.04	0	0.04

TAG AXLE			
	Minimum value	Nominal value	Maximum value
Parallelism (degrees)	-0.02	0	0.02

HEATING AND AIR CONDITIONING

Two air conditioning systems are available: the large capacity (central A/C) or the small capacity A/C (also known as driver's air). Vehicles equipped with the large capacity A/C benefit from a combination heating and cooling system that provides adequate capacity of conditioned and filtered air for all climatic conditions. Fresh air is drawn into the system from the left (driver's) side of the vehicle. Return air is taken from the middle of the vehicle. The driver's heater and defogger are controlled separately from the central unit. An air mixture selector enables air to be drawn into the system from outside the vehicle or recirculated. Driver's air provides cooling for the driver's area only, maximizing available baggage space for other uses. The small capacity A/C enables cooling the driver's area only.

SMALL CAPACITY A/C	
Air conditioning capacity	2 tons
Refrigerant type	134a
Air flow	450 cfm (12,7 m^3/min)

COMPRESSOR (For small capacity A/C)	
Number of cylinders	6
Operating speed	700 to 6 000 rpm
Oil capacity	6.0 U.S. oz (0,18 l)
Approved oil	ZXL100PG

LARGE CAPACITY A/C	
Air conditioning capacity	7.5 tons
Refrigerant type	134a
Heating capacity	152 000 Btu/h
Air flow	2 600 cfm (73,6 m^3/min)

COMPRESSOR (For large capacity A/C)	
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 oil	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 CI-4.

AUTOMATIC TRANSMISSION

The transmission must be filled with *Dexron IIE, Dexron III* automatic transmission fluid, Castrol TranSynd Synthetic 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 630 (Prévost #180217)* 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.

DDEC V DIAGNOSTIC CODES

To read the diagnostic codes, a Diagnostic Data Reader should be plugged into the receptacle located on the lower side panel of the L.H. control panel. To read diagnostic codes as blink codes, momentarily depress the STOP ENGINE OVERRIDE switch while the ignition is *ON*, the engine is idling or shut off. Active codes will be flashed on the STOP ENGINE indicator light followed by the inactive codes being flashed on the CHECK ENGINE indicator light. The cycle is repeated until the operator depresses the STOP ENGINE OVERRIDE switch again. For example: 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 V Code	PID	SID	FMI	DESCRIPTION
11	187	--	4	Variable Speed Governor Sensor Voltage Low
11	187	--	7	Variable Speed Governor Switch System Not Responding
12	187	--	3	Variable Speed Governor Sensor Voltage High
13	111	--	4	Coolant Level Sensor Input Voltage Low
13	111	--	6	Add Coolant Level Sensor Input Voltage Low
13		146	6	EGR Valve Current too High
14	52	--	3	Intercooler Coolant Temperature Sensor Input Voltage High
14	110	--	3	Coolant Temperature Sensor Input Voltage High
14	175	--	3	Oil Temperature Sensor Input Voltage High
15	52	--	4	Intercooler Coolant Temperature Sensor Input Voltage Low
15	110	--	4	Coolant Temperature Sensor Input Voltage Low
15	175	--	4	Oil Temperature Sensor Input Voltage Low
16	111	--	3	Coolant Level Sensor Input Voltage High

DDEC V Code	PID	SID	FMI	DESCRIPTION
16	111	--	5	Add Coolant Level Sensor Input Voltage High
16		146	5	EGR Valve Current too Low
17	51	--	3	Throttle Plate Position Sensor Input Voltage High
17	72	--	3	Blower Bypass Position Input Voltage High
17	354	--	3	Relative Humidity Sensor Circuit Failed High
18	51	--	4	Throttle Plate Position Sensor Input Voltage Low
18	72	--	4	Blower Bypass Position Input Voltage Low
18	354	--	4	Relative Humidity Sensor Circuit Failed Low
21	91	--	3	Throttle Position Sensor Input Voltage High
22	91	--	4	Throttle Position Sensor Input Voltage Low
23	174	--	3	Fuel Temperature Sensor Input Voltage High
23	--	65	3	Oxygen Content Circuit Input Voltage High
24	174	--	4	Fuel Temperature Sensor Input Voltage Low
24	--	65	4	Oxygen Content Circuit Input Voltage Low
25	--	--	--	Reserved for ‘‘No Codes"
26	--	25	11	Aux. Shutdown #1 Active
26	--	61	11	Aux. Shutdown #2 Active
27	105	--	3	Intake Manifold Temperature Sensor Input Voltage High
27	171	--	3	Ambient Air Temperature Sensor Input Voltage High
27	172	--	3	Air Temperature Sensor Input Voltage High
28	105	--	4	Intake Manifold Temperature Sensor Input Voltage Low
28	171	--	4	Ambient Air Temperature Sensor Input Voltage Low
28	172	--	4	Air Temperature Sensor Input Voltage Low
29	351	—	4	TCI Temperature Circuit Failed Low
29	404	—	4	Turbo Compressor Temperature Out Sensor Input Voltage Low
31	--	51	3	Aux. Output #3 Open Circuit (High Side) – Pin E-49
31	--	51	4	Aux. Output #3 Short To Ground (High Side) – Pin E-49
31	--	51	7	Aux. Output #3 Mechanical System Fail - Pin E-49
31	--	52	3	Aux. Output #4 Open Circuit (High Side) - Pin E-48
31	--	52	4	Aux. Output #4 Short to Ground (High Side) - Pin E-48
31	--	52	7	Aux. Output #4 Mechanical System Failure - Pin E-48
31	--	260	3	Aux. Output #12 Open Circuit (High Side) - Pin E-46
31	--	260	4	Aux. Output #12 Short to Ground (High Side) - Pin E-46
31	--	260	7	Aux. Output #12 Mechanical System Failure - Pin E-46
31	--	261	3	Aux. Output #13 Open Circuit (High Side) - Pin E-47
31	--	261	4	Aux. Output #13 Short to Ground (High Side) - Pin E-47

DDEC V Code	PID	SID	FMI	DESCRIPTION
31	--	261	7	Aux. Output #13 Mechanical System Failure - Pin E-47
31	--	262	3	Aux. Output #14 Open Circuit (High Side) - Pin E-50
31	--	262	4	Aux. Output #14 Short to Ground (High Side) - Pin E-50
31	--	262	7	Aux. Output #14 Mechanical System Failure - Pin E-50
31	--	263	3	Aux. Output #15 Open Circuit (High Side) - Pin E-51
31	--	263	4	Aux. Output #15 Short to Ground (High Side) - Pin E-51
31	--	263	7	Aux. Output #15 Mechanical System Failure - Pin E-51
31	--	264	3	Aux. Output #16 Open Circuit (High Side) - Pin E-52
31	--	264	4	Aux. Output #16 Short to Ground (High Side) - Pin E-52
31	--	264	7	Aux. Output #16 Mechanical System Failure - Pin E-52
31	--	265	3	Aux. Output #17 Open Circuit (High Side) - Pin E-53
31	--	265	4	Aux. Output #17 Short to Ground (High Side) - Pin E-53
31	--	265	7	Aux. Output #17 Mechanical System Failure - Pin E-53
32	--	238	3	RSL Short to Battery (+)
32	--	238	4	RSL Open Circuit
32	--	239	3	AWL Short to Battery (+)
32	--	239	4	AWL Open Circuit
33	102	--	3	Turbo Boost Pressure Sensor Input Voltage High
34	102	--	4	Turbo Boost Pressure Sensor Input Voltage Low
35	19	--	3	High Range Oil Pressure Sensor Input Voltage High
35	100	--	3	Oil Pressure Sensor Input Voltage High
36	19	--	4	High Range Oil Pressure Sensor Input Voltage Low
36	100	--	4	Oil Pressure Sensor Input Voltage Low
37	18	--	3	High Range Fuel Pressure Sensor Input Voltage High
37	94	--	3	Fuel Pressure Sensor Input Voltage High
37	95	--	3	Fuel Restriction Sensor Input Voltage High
38	18	--	4	High Range Fuel Pressure Sensor Input Voltage Low
38	94	--	4	Fuel Pressure Sensor Input Voltage Low
38	95		4	Fuel Restriction Sensor Input Voltage Low
39	—	146	2	EGR Leak- Boost Power
39	—	146	12	EGR Leak- Boost Jake
39	—	146	7	EGR Valve Not Responding
39	—	147	2	VNT Vanes Not Responding – Boost Power
39	—	147	11	VNT Vanes at Max – Jake
39	—	147	12	VNT Vanes Not Responding – Boost Jake
39	—	147	14	EGR Flow too low
39	—	147	7	VNT Vanes Not Responding – EGR

DDEC V Code	PID	SID	FMI	DESCRIPTION
41	--	21	0	Too Many CKP Sensor (missing CMP Sensor)
42	--	21	1	Too few CKP Sensor (missing CKP Sensor)
43	111	--	1	Coolant Level Low
44	52	--	0	Intercooler Coolant Temperature High
44	105	--	0	Intake Manifold Temperature High
44	105	--	14	Engine Power Derate Due to Intake Manifold Temperature
44	110	--	0	Coolant Temperature High
44	110	--	14	Engine Power Derate Due to Coolant Temperature
44	172	--	0	Air Inlet Temperature High
44	175	--	0	Oil Temperature High
45	19	--	1	High Range Oil Pressure Low
45	100	--	1	Oil Pressure Low
46	168	--	1	ECM Battery Voltage Low
46	--	155		Injector V (reg) Voltage Failed Low
46	--	211	1	Sensor Supply Pins V-11/V-12 Low
46	--	212	4	Injector V (slope) Voltage Failed Low
46	--	214	1	RTC Backup Battery Voltage Low, Pin E-59
46	--	221	4	Injector I (pull-in) Voltage Failed Low
46	--	232	1	Sensor Supply Voltage Low, Pin E-12/E-26
47	18	--	0	High Range Fuel Pressure High
47	94	--	0	Fuel Pressure High
47	102	--	0	Turbo Boost Pressure High
47	102	--	14	Engine Power Derate Due to Turbo Boost Pressure
47	106	--	0	Air Inlet Pressure High
47	164	--	0	Injection Control Pressure High
48	18	--	1	High Range Fuel Pressure Low
48	94	--	1	Fuel Pressure Low
48	106	--	1	Air Inlet Pressure Low
48	164	--	1	Injection Control Pressure Low
48	351	--	1	TCI Temperature Low
48	404	—	1	Turbo Compressor Temperature Out Low
48	404	--	14	Engine Power Derate Due to Turbo Compressor Out Temperature
48	411	--	1	EGR Differential Pressure Low
48	412	--	1	EGR Temperature Low
49	351	--	0	TCI Temperature High
49	404	--	0	Turbo Compressor Out Temperature High

DDEC V Code	PID	SID	FMI	DESCRIPTION
51	351	--	3	TCI Temperature Circuit Failed High
51	404	--	3	Turbo Compressor Out Temperature Sensor Input Voltage High
52	--	254	12	A/D Conversion Fail
53	--	253	2	Nonvolatile Checksum Incorrect
53	--	253	12	EEPROM Write Error
53	--	253	13	Out of Calibration
54	84	--	12	Vehicle Speed Sensor Fault
55	--	216	14	Other ECU Fault (This fault is logged in conjunction with another fault to indicate missing information from another ECU.)
55	--	231	12	J1939 Data Link Fault
55	--	248	8	Proprietary Data Link Fault (Master)
55	--	248	9	Proprietary Data Link Fault (Receiver)
56	--	250	12	J1587 Data Link Fault
57	--	249	12	J1922 Data Link Fault
58	92	--	0	Torque Overload
61	--	xxx	0	Injector xxx Response Time Long
62	--	26	3	Aux. Output #1 Short to Battery (+) – Pin V-4
62	--	26	4	Aux. Output #1 Open Circuit - Pin V-4
62	—	26	7	Aux. Output #1 Mechanical System Not Responding Properly - Pin V-4
62	--	40	3	Aux. Output #2 Short to Battery (+) - Pin V-5
62	--	40	4	Aux. Output #2 Open Circuit - Pin V-5
62	—	40	7	Aux. Output #2 Mechanical System Not Responding Properly – Pin V-5
62	--	53	3	Aux. Output #5 Short to Battery (+) - Pin V-6
62	--	53	4	Aux. Output #5 Open Circuit - Pin V-6
62	—	53	7	Aux. Output #5 Mechanical System Not Responding Properly - Pin V-6
62	--	54	3	Aux. Output #6 Short to Battery (+) - Pin V-7
62	--	54	4	Aux. Output #6 Open Circuit - Pin V-7
62	--	54	7	Aux. Output #6 Mechanical System Not Responding Properly - Pin V-7
62	--	55	3	Aux. Output #7 Short to Battery (+) - Pin V-40
62	--	55	4	Aux. Output #7 Open Circuit - Pin V-40
62	—	55	7	Aux. Output #7 Mechanical System Not Responding Properly - Pin V-40
62	--	56	3	Aux. Output #8 Short to Battery (+) – Pin V-53
62	--	56	4	Aux. Output #8 Open Circuit - Pin V-53

DDEC V Code	PID	SID	FMI	DESCRIPTION
62	--	56	7	Aux. Output #8 Mechanical System Not Responding Properly - Pin V-53
62	--	257	3	Aux. Output #9 Open Circuit – Pin V-54
62	--	257	4	Aux. Output #9 Short to Gnd – Pin V-54
62	--	257	7	Aux. Output #9 Mechanical System Failure – Pin V-54
62	--	258	3	Aux. Output #10 Open Circuit – Pin V-55
62	--	258	4	Aux. Output #10 Short to Gnd – Pin V-55
62	--	258	7	Aux. Output #10 Mechanical System Failure – Pin V-55
62	--	259	3	Aux. Output #11 Open Circuit – Pin E-13
62	--	259	4	Aux. Output #11 Short to Gnd – Pin E-13
62	--	259	7	Aux. Output #11 Mechanical System Failure – Pin E-13
63	--	57	0	PWM #1 Above Normal Range, Pin V-53
63	--	57	1	PWM #1 Below Normal Range, Pin V-53
63	--	57	3	PWM #1 Short to Battery (+), Pin V-53
63	--	57	4	PWM #1 Open Circuit, Pin V-53
63	--	58	0	PWM #2 Above Normal Range, Pin V-46
63	--	58	1	PWM #2 Below Normal Range, Pin V-46
63	--	58	3	PWM #2 Short to Battery (+), Pin V-46
63	--	58	4	PWM #2 Open Circuit, Pin V-46
63	--	59	0	PWM #3 Above Normal Range, Pin E-3
63	--	59	1	PWM #3 Below Normal Range, Pin E-3
63	--	59	3	PWM #3 Short to Battery (+), Pin E-3
63	--	59	4	PWM #3 Open Circuit, Pin E-3
63	--	60	0	PWM #4 Above Normal Range, Pin E-4
63	--	60	1	PWM #4 Below Normal Range, Pin E-4
63	--	60	3	PWM #4 Short to Battery (+), Pin E-4
63	--	60	4	PWM #4 Open Circuit, Pin E-4
63	--	267	0	PWM #5 Above Normal Range - Pin E-8
63	--	267	1	PWM #5 Below Normal Range - Pin E-8
63	--	267	3	PWM #5 Short to Battery (+) - Pin E-8
63	--	267	4	PWM #5 Open Circuit - Pin E-8
63	--	267	7	PWM #5 Mechanical System Failed - Pin E-8
63	--	268	0	PWM #6 Above Normal Range - Pin E-11
63	--	268	1	PWM #6 Below Normal Range - Pin E-11
63	--	268	3	PWM #6 Short to Battery (+) - Pin E-11
63	--	268	4	PWM #6 Open Circuit - Pin E-11
63	--	268	7	PWM #6 Mechanical System Failed - Pin E-11
64	103	--	0	Turbo Overspeed

DDEC V Code	PID	SID	FMI	DESCRIPTION
64	103	--	8	Turbo Speed Sensor Input Failure – Abnormal Period
65	51	--	0	Throttle Plate Position Above Normal Range
65	51	--	1	Throttle Plate Position Below Normal Range
65	51	--	2	Throttle Plate Position Erratic
65	51	--	7	Throttle Plate Not Responding
65	107	--	3	Air Filter Restriction Sensor Voltage High
65	107	--	4	Air Filter Restriction Sensor Voltage Low
66	99	--	3	Oil Filter Restriction Sensor Voltage High
66	99	--	4	Oil Filter Restriction Sensor Voltage Low
66	--	76	0	Engine Knock Level Above Normal Range
66	--	76	3	Engine Knock Level Sensor Input Voltage High
66	--	76	4	Engine Knock Level Sensor Input Voltage Low
66	--	76	7	Engine Knock Level Sensor Not Responding
67	20	--	3	High Range Coolant Pressure Sensor Input Voltage High
67	20	--	4	High Range Coolant Pressure Sensor Input Voltage Low
67	106	--	3	Air Inlet Pressure Sensor Input Voltage High
67	106	--	4	Air Inlet Pressure Sensor Input Voltage Low
67	109	--	3	Coolant Pressure Sensor Input Voltage High
67	109	--	4	Coolant Pressure Sensor Input Voltage Low
68	--	230	5	TPS Idle Validation Circuit Fault (open circuit)
68	--	230	6	TPS Idle Validation Circuit Fault (short to ground)
71	--	xxx	1	Injector xxx Response Time Short
72	84	--	0	Vehicle Overspeed
72	84	--	11	Vehicle Overspeed (Absolute)
72	--	65	0	Oxygen Content Too High
72	--	65	1	Oxygen Content Too Low
73	107	--	0	Air Filter Restriction High
73	--	77	0	Gas Valve Position Above Normal Range
73	--	77	1	Gas Valve Position Below Normal Range
73	--	77	3	Gas Valve Position Input Voltage High
73	--	77	4	Gas Valve Position Input Voltage Low
73	--	77	7	Gas Metering Valve Not Responding
74	70	--	4	Optimized Idle Safety Loop Short to Ground
74	99	--	0	Oil Filter Restriction High
75	168	--	0	ECM Battery Voltage High
75	--	155	3	Injector V (reg) Voltage Failed High
75	--	211	0	Sensor Supply Pins V-11/V-12 Voltage High

DDEC V Code	PID	SID	FMI	DESCRIPTION
75	--	212	3	Injector V (slope) Voltage Failed High
75	--	221	3	Injector V (pull-in) Voltage Failed High
75	--	214	0	RTC Backup Battery Voltage High
75	--	232	0	Sensor Supply Voltage High, Pin E-26
76	121	--	0	Engine Overspeed With Engine Brake
77	19	—	0	High Range Oil Pressure High
77	20	—	0	High Range Coolant Pressure High
77	21	—	0	ECU Temperature Above Range
77	21	—	1	ECU Temperature Below Range
77	21	—	3	ECU Temperature Above Failed High
77	21	—	4	ECU Temperature Above Failed Low
77	72	—	0	Blower Bypass Door Position High
77	72	—	1	Blower Bypass Door Position Low
77	73	—	1	Fire Pump Pressure Low
77	81	—	0	Exhaust Back Pressure High
77	81	—	1	Exhaust Back Pressure Low
77	81	—	3	Exhaust Back Pressure Sensor Voltage High
77	81	—	4	Exhaust Back Pressure Sensor Voltage Low
77	81	—	12	Exhaust Back Pressure at Rampdown Threshold
77	95	—	1	Fuel Filter Differential Pressure Low
77	99	—	1	Oil Filter Differential Pressure Low
77	100	—	0	Engine Oil Pressure High
77	102	—	1	Turbo Boost Pressure Low
77	105	—	1	Inlet Manifold Temperature Low
77	107	—	1	Air filter Restriction Pressure Low
77	108	—	0	Barometric Pressure High
77	108	—	1	Barometric Pressure Low
77	109	—	0	Coolant Pressure High
77	110	—	1	Coolant Temperature Low
77	111	—	0	Coolant Level High
77	171	—	0	Ambient Air Temperature High
77	171	—	1	Ambient Air Temperature Low
77	172	—	1	Air Inlet Temperature Low
77	174	—	0	Fuel Temperature High
77	174	—	1	Fuel Temperature Low
77	175	—	1	Engine Oil Temperature Low
77	222	—	14	Anti-Theft Fault Present

DDEC V Code	PID	SID	FMI	DESCRIPTION
77	251	—	10	Clock Module Abnormal Rate of Change
77	251	—	13	Clock Module Failure
77	252	—	10	Clock Module Abnormal Rate of Change
77	252	—	13	Clock Module Failure
77	354	—	0	Relative Humidity Above Range
77	354	—	1	Relative Humidity Below Range
77	446	—	0	Cylinder Head Temperature Above Range
77	—	151	11	Service Now Lamp Fault Expiration
78	86	--	14	Cruise Control/Adaptive Cruise Control Fault
81	98	--	3	Oil Level Sensor Input Voltage High
81	101	--	3	Crankcase Pressure Sensor Input Voltage High
81	153	--	3	Extended Crankcase Pressure Input Voltage High
81	164	--	3	Injection Control Pressure Sensor Input Voltage High
81	173	--	3	Exhaust Temperature Sensor Input Voltage High
81	411	—	3	EGR Delta Pressure Sensor Circuit Failed High
81	412	—	3	EGR Temperature Circuit Failed High
81	412	—	9	EGR Temperature Network Sensor Not Responding
81		20	3	Timing Actuator Failed High
81		20	4	Timing Actuator Failed Low
81	--	129	3	Exhaust Port Temperature #1 Sensor Voltage High
81	--	130	3	Exhaust Port Temperature #2 Sensor Voltage High
81	--	131	3	Exhaust Port Temperature #3 Sensor Voltage High
81	--	132	3	Exhaust Port Temperature #4 Sensor Voltage High
81	--	133	3	Exhaust Port Temperature #5 Sensor Voltage High
81	--	134	3	Exhaust Port Temperature #6 Sensor Voltage High
81	--	135	3	Exhaust Port Temperature #7 Sensor Voltage High
81	--	136	3	Exhaust Port Temperature #8 Sensor Voltage High
81	--	137	3	Exhaust Port Temperature #9 Sensor Voltage High
81	--	138	3	Exhaust Port Temperature #10 Sensor Voltage High
81	--	139	3	Exhaust Port Temperature #11 Sensor Voltage High
81	--	140	3	Exhaust Port Temperature #12 Sensor Voltage High
81	--	141	3	Exhaust Port Temperature #13 Sensor Voltage High
81	--	142	3	Exhaust Port Temperature #14 Sensor Voltage High
81	--	143	3	Exhaust Port Temperature #15 Sensor Voltage High
81	--	144	3	Exhaust Port Temperature #16 Sensor Voltage High
81	—	277	9	EGR Rate Sensor not Responding
81	—	277	12	EGR Rate Sensor Failed

DDEC V Code	PID	SID	FMI	DESCRIPTION
82	98	--	4	Oil Level Sensor Input Voltage Low
82	101	--	4	Crankcase Pressure Sensor Input Voltage Low
82	153	--	4	Extended Crankcase Pressure Input Voltage Low
82	164	--	4	Injection Control Pressure Sensor Input Voltage Low
82	173	--	4	Exhaust Temperature Sensor Input Voltage Low
82	411	—	4	EGR Delta Pressure Sensor Circuit Failed Low
82	412	—	4	EGR Temperature Circuit Failed Low
82	412	—	12	EGR Temperature Network Sensor Failed
82	--	129	4	Exhaust Port Temperature #1 Sensor Voltage Low
82	--	130	4	Exhaust Port Temperature #2 Sensor Voltage Low
82	--	131	4	Exhaust Port Temperature #3 Sensor Voltage Low
82	--	132	4	Exhaust Port Temperature #4 Sensor Voltage Low
82	--	133	4	Exhaust Port Temperature #5 Sensor Voltage Low
82	--	134	4	Exhaust Port Temperature #6 Sensor Voltage Low
82	--	135	4	Exhaust Port Temperature #7 Sensor Voltage Low
82	--	136	4	Exhaust Port Temperature #8 Sensor Voltage Low
82	--	137	4	Exhaust Port Temperature #9 Sensor Voltage Low
82	--	138	4	Exhaust Port Temperature #10 Sensor Voltage Low
82	--	139	4	Exhaust Port Temperature #11 Sensor Voltage Low
82	--	140	4	Exhaust Port Temperature #12 Sensor Voltage Low
82	--	141	4	Exhaust Port Temperature #13 Sensor Voltage Low
82	--	142	4	Exhaust Port Temperature #14 Sensor Voltage Low
82	--	143	4	Exhaust Port Temperature #15 Sensor Voltage Low
82	--	144	4	Exhaust Port Temperature #16 Sensor Voltage Low
82	—	277	12	EGR Rate Sensor Failed
82	412	—	9	EGR Temperature Smart Sensor not Responding
82	412	—	12	EGR Temperature Smart Sensor failed
83	73	—	0	Pump Pressure High
83	98	--	0	Oil Level High
83	101	--	0	Crankcase Pressure High
83	153	--	0	Extended Crankcase Pressure High
83	173	--	0	Exhaust Temperature High
83	411	—	0	EGR Delta Pressure High
83	412	—	0	EGR Temperature High
83	--	129	0	Exhaust Port Temperature #1 High
83	--	130	0	Exhaust Port Temperature #2 High
83	--	131	0	Exhaust Port Temperature #3 High

DDEC V Code	PID	SID	FMI	DESCRIPTION
83	--	132	0	Exhaust Port Temperature #4 High
83	--	133	0	Exhaust Port Temperature #5 High
83	--	134	0	Exhaust Port Temperature #6 High
83	--	135	0	Exhaust Port Temperature #7 High
83	--	136	0	Exhaust Port Temperature #8 High
83	--	137	0	Exhaust Port Temperature #9 High
83	--	138	0	Exhaust Port Temperature #10 High
83	--	139	0	Exhaust Port Temperature #11 High
83	--	140	0	Exhaust Port Temperature #12 High
83	--	141	0	Exhaust Port Temperature #13 High
83	--	142	0	Exhaust Port Temperature #14 High
83	--	143	0	Exhaust Port Temperature #15 High
83	--	144	0	Exhaust Port Temperature #16 High
84	98	--	1	Oil Level Low
84	101	--	1	Crankcase Pressure Low
84	153	--	1	Extended Crankcase Pressure Low
85	190	--	0	Engine Overspeed
85	190	--	14	Engine Overspeed Signal
86	73	--	3	Pump Pressure Sensor Input Voltage High
86	108	--	3	Barometric Pressure Sensor Input Voltage High
87	73	--	4	Pump Pressure Sensor Input Voltage Low
87	108	--	4	Barometric Pressure Sensor Input Voltage Low
88	20	--	1	High Range Coolant Pressure Low
88	109	--	1	Coolant Pressure Low
89	95	--	0	Fuel Restriction High
89	111	--	12	Maintenance Alert Coolant Level Fault

WORLD TRANSMISSION (WT) DIAGNOSTIC CODES

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 by using the Pro-Link Diagnostic Tool. Access to the ignition cycle counter and event counter can be done only through the Pro-Link diagnostic tool. 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:

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.*

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:

* Code list position = "d1"
* Main code = "25"
* Sub code = "11"

Display will repeat steps a, b and c.

Press the MODE button momentarily to view the second position (d2) as described in step 2.

To view the third, fourth and fifth positions (d3, d4 and d5), momentarily press the MODE button as explained above.

Pressing the MODE button momentarily after the fifth position (d5) is displayed will return the code display to the first position (d1).

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.

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

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).

To clear all Active Indicators, hold down the MODE button continuously for 3 seconds until the Shift Selector tone sounds for 0.5 second.

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:

- Press the "▲" (up arrow) and "▼" (down arrow) push buttons at the same time on the push-button Shift Selector.
- 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).
- Do nothing and wait until the calibrated time (approximately 10 minutes) has passed. The system will automatically return to the normal operating mode.
- Turn off power to the ECU (shut off the engine with the ignition key).
- 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

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
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
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

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
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

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
44	16	Short to ground, E solenoid circuit	Yes	DNS, SOL OFF (Hydraulic default), DNA
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

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
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
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)		

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
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
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

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
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
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

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
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
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

MAIN CODE	SUB CODE	DESCRIPTION	CHECK TRANS LIGHT	INHIBITED OPERATION DESCRIPTION
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

This code is logged in real time to protect the transmission in case a loss of power to the ECU (Power Interruption code 35 00) occurs.

The ECU hardware or software must be changed so that they are compatible.

Additional codes could be logged for other shifts where X indicates range shifted from and Y indicates range shifted to.

The COP reset will clear the active inhibit.

OIL LEVEL SENSOR (OLS) CODES

Oil level codes are obtained as follows:

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:

- Waiting time, vehicle must be stationary for at least 2 minutes to allow the oil to settle;
- Engine at idle;
- Oil at normal operating temperature, between 140°F (60°C) and 220°F (104°C):
- 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
O, L…O, K	Oil level is correct
O, L…L, O…01	One quart low
O, L…L, O…02	Two quarts low
O, L…H, I…01	One quart high
O, L…H, I…02	Two quarts high

Note: *Failure to meet one of the above parameters will stop the two minute countdown. One of the codes shown hereafter 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
O, L…-…0,X	Waiting time too short
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 Fluid 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) pushbuttons at the same time, twice.

Take the vehicle for a test drive. If the CHECK TRANS light illuminates again, record the diagnostic codes. Refer to "World Transmission (WT) Diagnostic Codes" in this chapter.

LIGHT BULB DATA

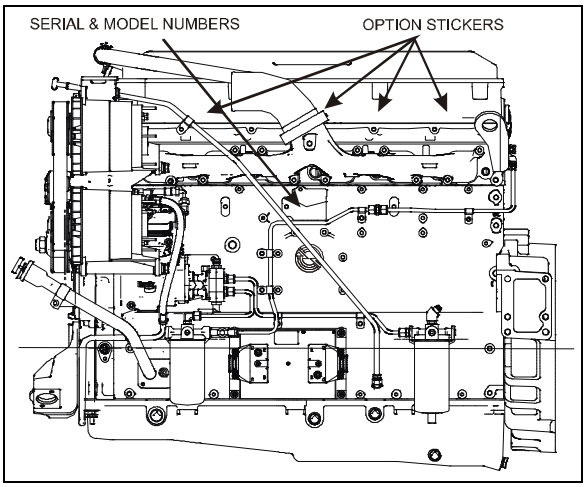
Please, refer to your vehicle Parts Manual for selection of replacement light bulbs.

PLATES AND CERTIFICATION

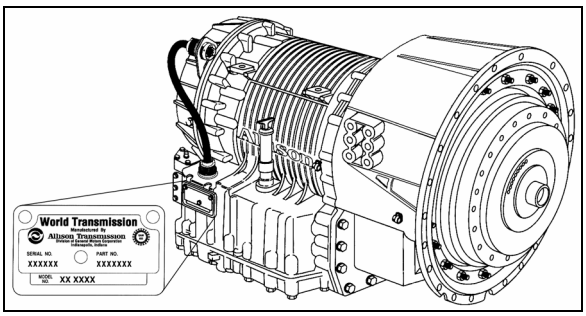
The main components of the vehicle such as engine, transmission, axles and chassis are identified by different serial numbers. It may be necessary to locate these numbers for warranty purposes.

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 "".

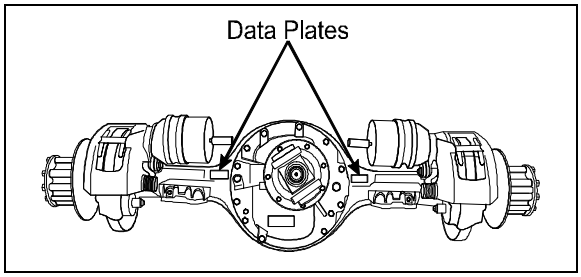
In addition, option decals are located on the rocker cover (starter side). The engine serial and model number and a list of the optional engine equipment are written on these decals. Refer to this information when ordering replacement parts.



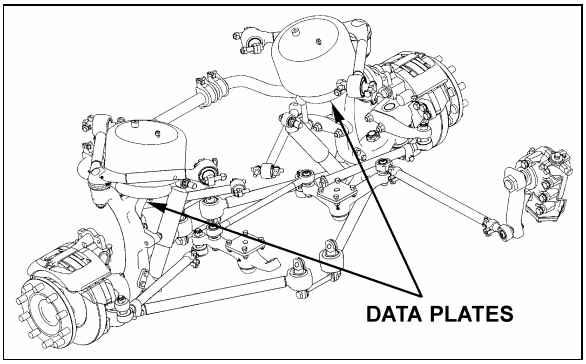
SERIES 60 ENGINE 00043



TRANSMISSION DATA PLATE 07076



DRIVE AXLE 11019



FRONT AXLE 10003

SAFETY CERTIFICATION

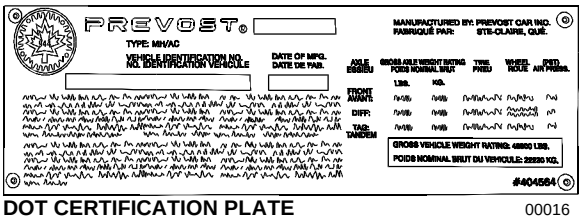
Vehicle components meet specifications and standards as follows:

- 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 PLATE

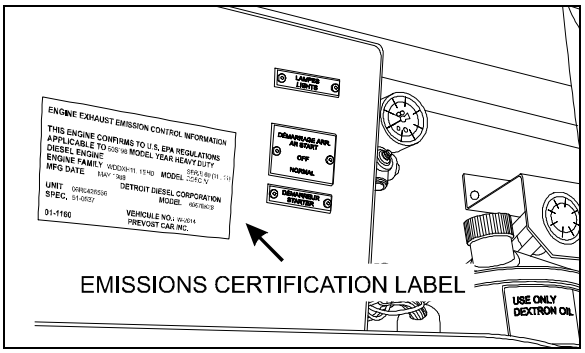
This certifies that vehicles manufactured by Prévost Car Inc. comply with all Federal Motor Vehicle Safety Standards at the time of manufacture. Information such as gross vehicle weight rating and tire pressure is also marked on this plate. The DOT Certification plate is affixed to L.H. control panel.



DOT CERTIFICATION PLATE 00016

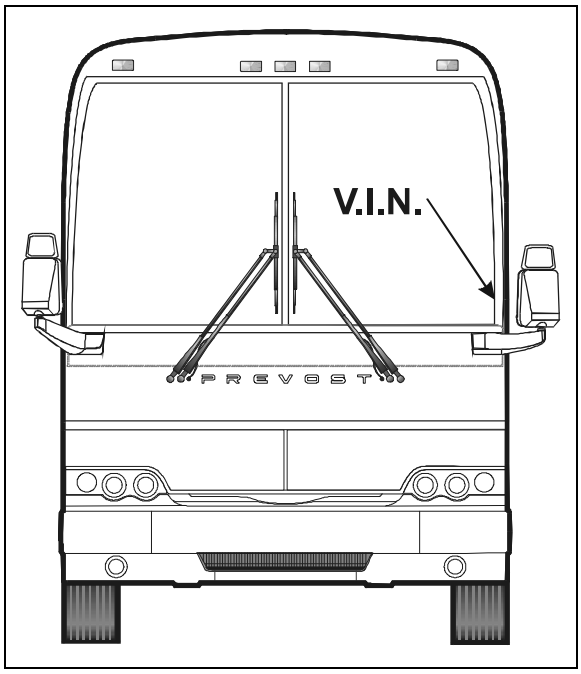
EPA ENGINE LABEL

The emissions certification label affixed to the rear junction box certifies that the engine conforms to federal and any state exhaust emissions regulations.



ENGINE COMPARTMENT 00019

VEHICLE IDENTIFICATION NUMBER (VIN)



VEHICLE IDENTIFICATION NUMBER 00017

The Vehicle Identification Number is stamped on a plate located on the windshield frame pillar (driver's side). The VIN is visible from the outside of the vehicle. Make sure the correct vehicle identification number is given when ordering replacement parts. Using the VIN when ordering parts will facilitate processing.

Note: *Record the VIN in the vehicle documentation and keep with company records. The VIN will normally be used for vehicle registration and for obtaining vehicle insurance coverage.*

COACH FINAL RECORD

The Coach Final Record is a record of all data pertaining to the assembly of the vehicle. This record is included in the technical publications package supplied with the vehicle. Retain this record in the company records office for reference and safe-keeping.

SERVICE LITERATURE

Visit our web sit at **www.prevostcar.com** for on-line product information and technical publications!

Additional copies of the following service literature are available upon request and at low cost.

* **Maintenance Manual**
* **Owner's Manual**
* **Parts Manual**
* **Service Center Directory**

To order, please call Prevost Parts toll free 1-800-463-8876 or write to:

PRÉVOST PARTS INC.

2955-A, Watt Street,

Sainte-Foy, (Quebec)

Canada, G1X 3W1

Please specify the complete vehicle serial number.

Allow 30 days for delivery.

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 toll-free Auto Safety Hotline at **1-800-424-9393** (or **366-0123**) in the 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 live in Canada and 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 **1-418-831-2046**. Or you may write to:

Prévost Car Inc.

After-sales service department

850, chemin Olivier

St-Nicolas (Québec)

Canada G7A 2N1

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