PREVOST

COACH MANUFACTURER

OWNER'S MANUAL

LE MIRAGE XLII

BUS SHELLS

PA1565 revised 2023/07/14

PA1565 2nd Edition
Date: February 2008
Starting from vehicle: 8-9423
Featuring: DDC S60-2007 engine, TPMS & COSW

revised 2023/07/14: light bulb data table removed

This PREVOST XLII *Owner's Manual* equipped with the new US07 engine and controls on steering wheel 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 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. It describes and explains the equipment and options available for installation in our factory. Therefore, there may be equipment described herein that is not installed on your vehicle. This publication also does not cover equipment installed by your interior designer or system manufacturer.

The following words are used to emphasize particularly important information:

DANGER

Directs the operator's attention to unsafe practices which could result in serious personal injury or death.

WARNING

Directs the operator's attention to unsafe practices which could result in serious personal injury or severe damage to the vehicle.

CAUTION

Directs the operator's attention to unsafe practices where personal injury is not likely but damage to vehicle components could occur.

NOTE

Indicates supplementary information essential to the proper operation of the vehicle.

For your own safety and to ensure prolonged service life of your private motorcoach, heed our warning labels: **DANGER, WARNING**, **CAUTION** and *NOTE*. Ignoring them could result in extensive damage and/or serious personal injury.

2 Safety Precautions

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 14 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

DANGER

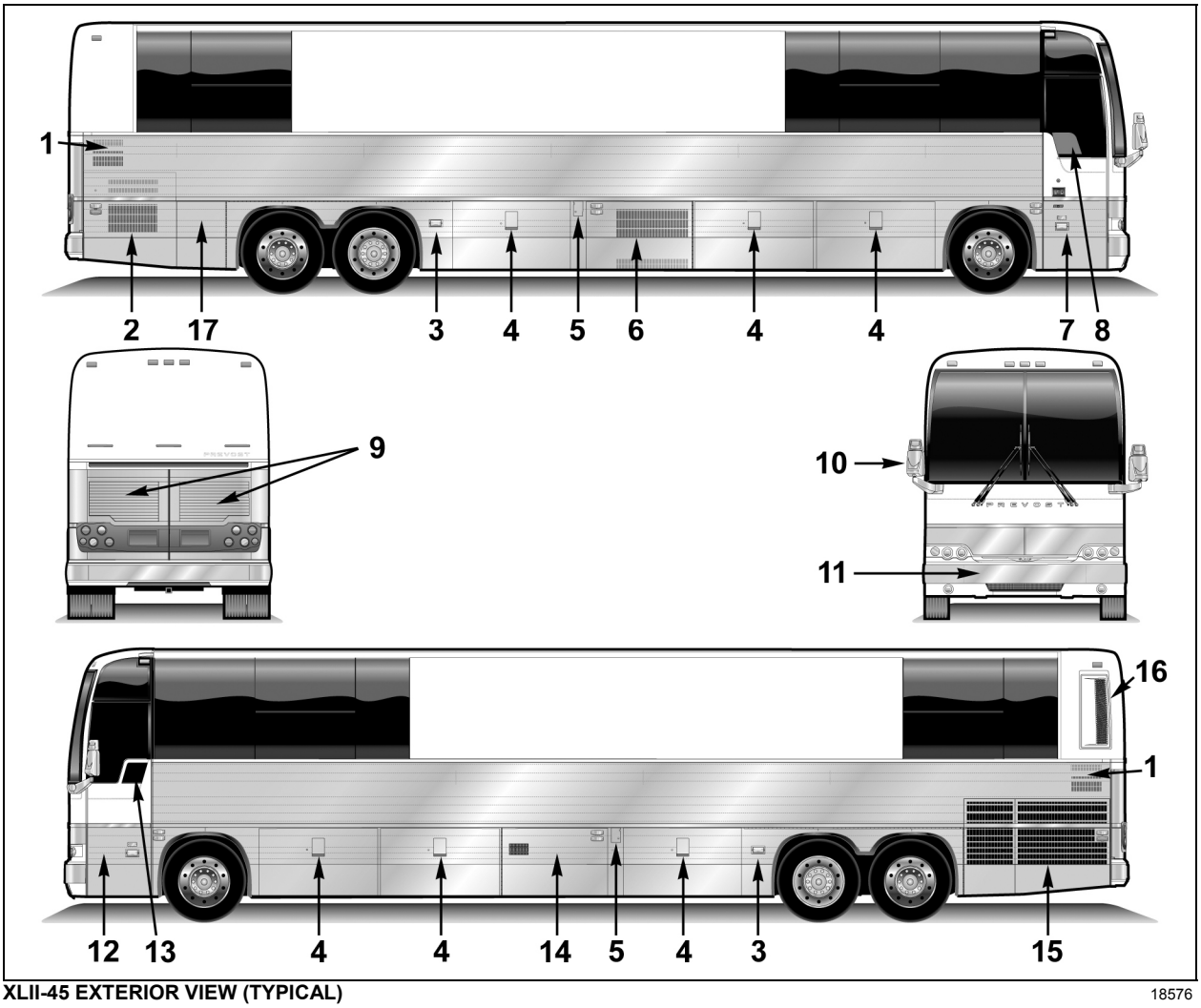
Prior to working on a system inside the vehicle, make sure to cut electrical power and air supply. A component could be supplied with electricity even if battery master switch is set to the *OFF* position and/or a component could be pressurized even if air tanks are emptied. Always refer to the appropriate 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 (MCM, CPC, TCM, ECU, ABS) are not disconnected, electronic components (EPROM, CHIPS) could be permanently damaged.

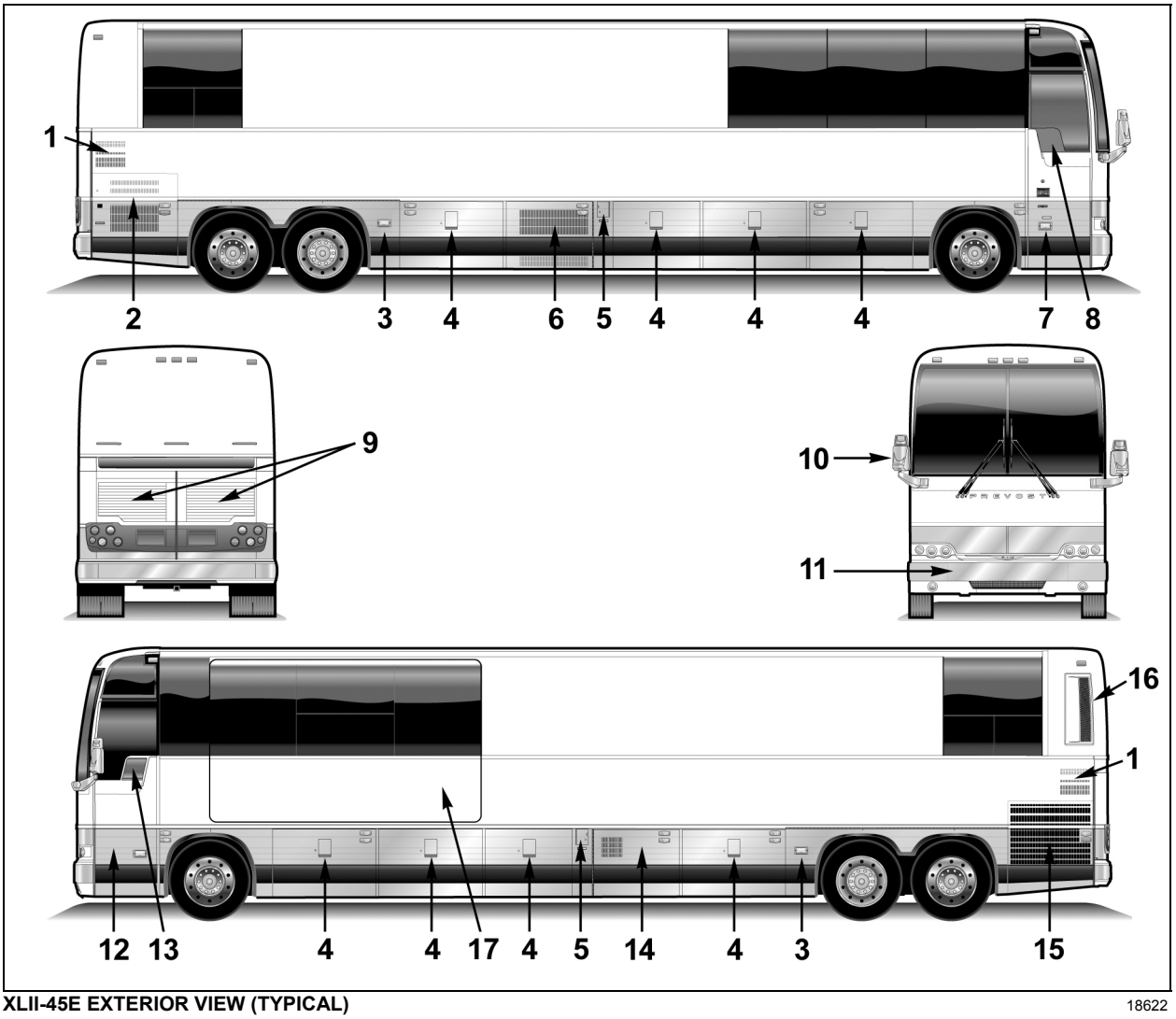
Refer to Section 00 of your maintenance manual for all related procedures.

4 Vehicle Exterior



XLII-45 EXTERIOR VIEW (TYPICAL) 18576

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 electrical and service compartment
13. Driver's power window
14. Evaporator or baggage compartment
15. Radiator door
16. Diesel Particulate Filter (DPF) compartment access door
17. R.H. side rear service compartment

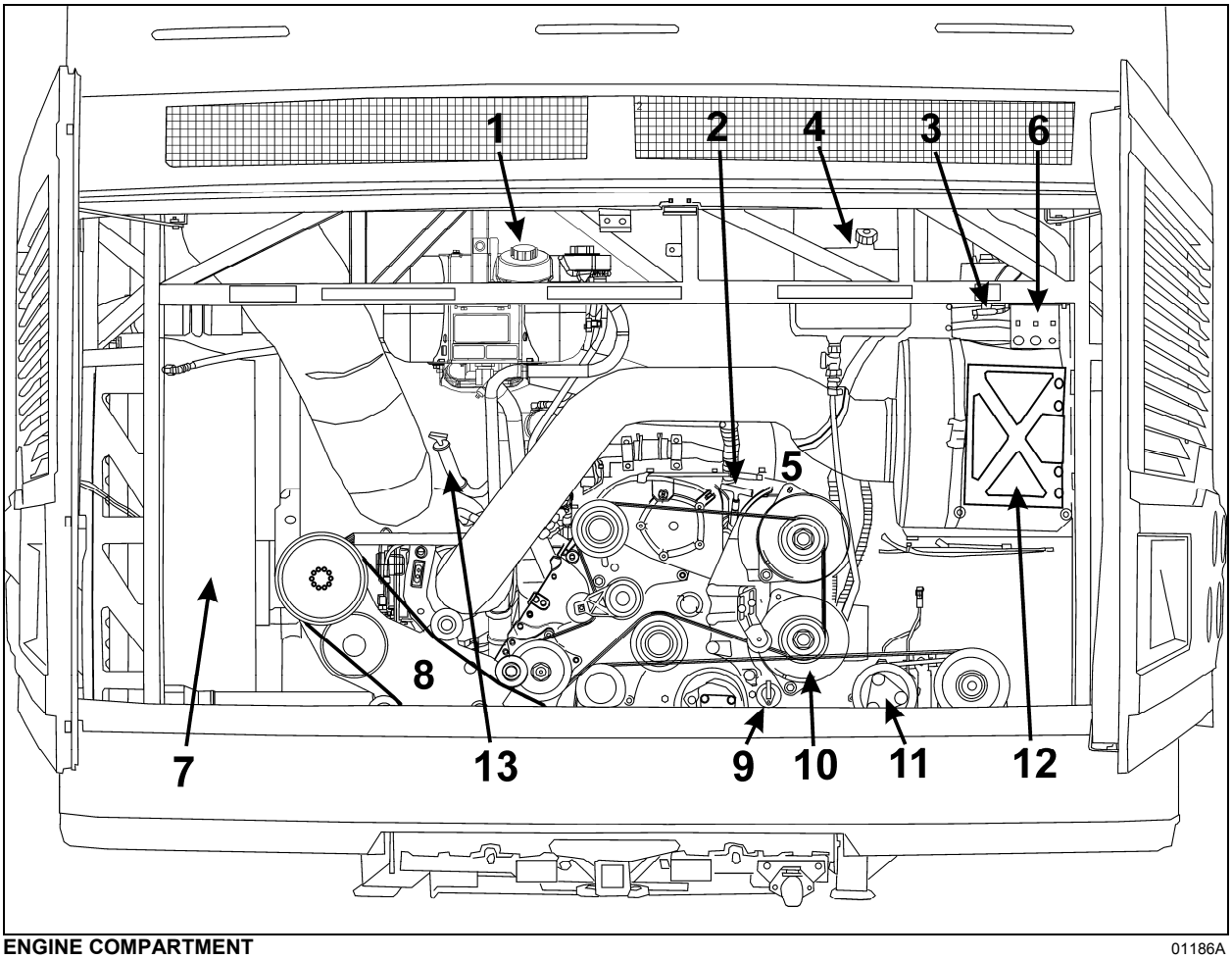


XLII-45E EXTERIOR VIEW (TYPICAL) 18622

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 electrical and service compartment
13. Driver's power window
14. Evaporator or baggage compartment
15. Radiator door
16. Diesel Particulate Filter (DPF) compartment access door
17. Front Slide-Out (Optional)

6 Vehicle Exterior

ENGINE COMPARTMENT COMPONENTS



ENGINE COMPARTMENT 01186A

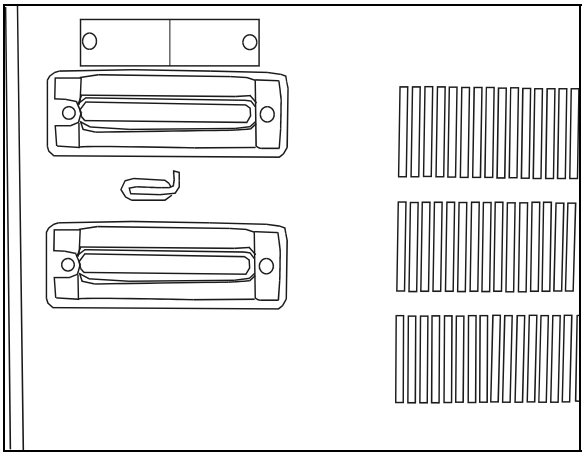
1. Coolant fluid surge tank;
2. Engine oil dipstick;
3. Belt tensioner control valve;
4. Engine oil reserve tank;
5. Hydraulic Fluid Reservoir;
6. Starter selector switch and Engine rear start push-button switch, Engine Compartment Lights Switch;
7. Radiator;
8. Radiator fan drive mechanism support;
9. Engine oil filler tube;
10. Alternator;
11. Small HVAC system compressor;
12. Air filter;
13. Transmission oil dipstick and filler tube.

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

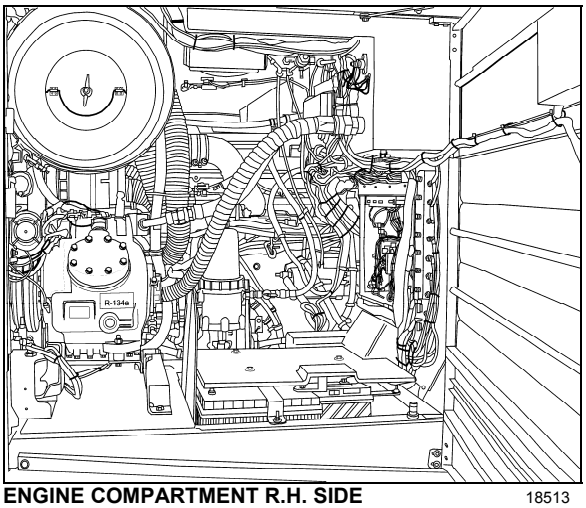
The engine compartment R.H. side door provides access to the following (if equipped):

- Engine compartment rear door release lever;
- Batteries;
- Battery equalizer;
- Voltage regulator;(w/270A alternator only)
- Circuit breakers Panel;
- Rear Junction Box;
- Booster terminals;
- Alternator(s);
- Allison Transmission Control Module (TCM);
- Primary air circuit fill valve and drain cock;
- Fuel filter/water separator;
- Cold weather starting fluid bottle;
- 110-120 volt connector.
- A/C Compressor.



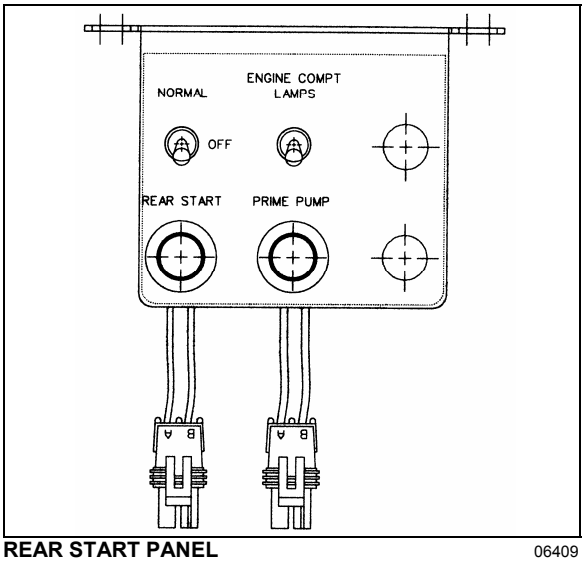
ENGINE COMPARTMENT R.H. DOOR 18559

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.



ENGINE COMPARTMENT R.H. SIDE 18513

Turn *ON* the lights in the engine compartment using a switch on the rear start panel.



REAR START PANEL 06409

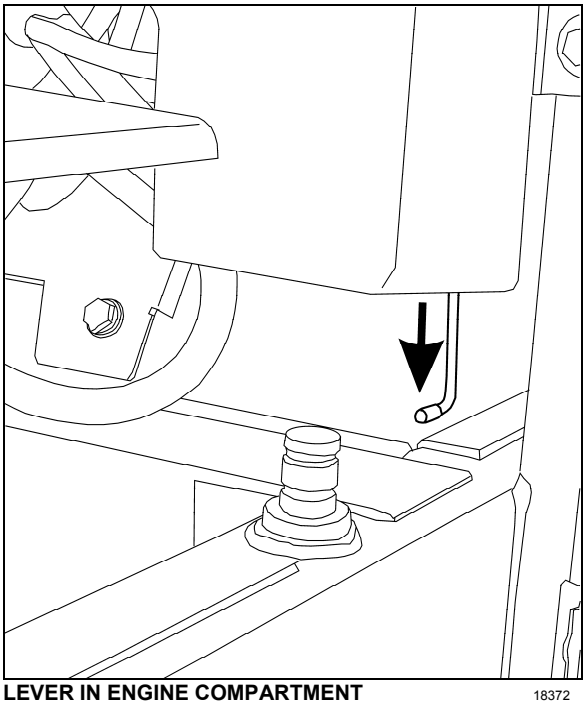
WARNING

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 (XLII-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 push the lever located near the lower door hinge down.



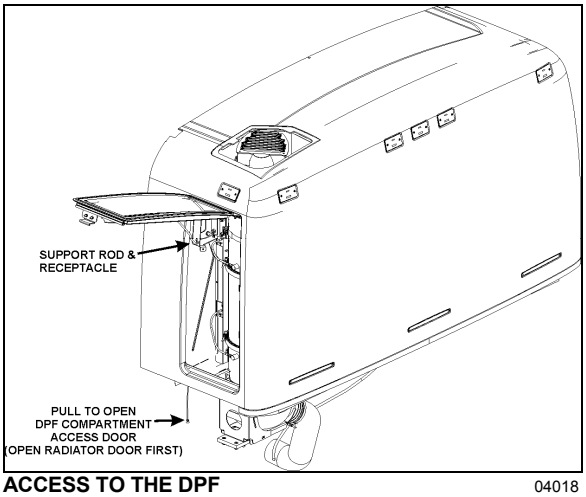
LEVER IN ENGINE COMPARTMENT 18372

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

DIESEL PARTICULATE FILTER (DPF) COMPARTMENT ACCESS DOOR

To gain access to the DPF, open the radiator door first. At the top of the radiator compartment, pull the catch connecting rod to unlock the DPF compartment access door and lift the door open.

Hold the door open by inserting the support rod free end into the receptacle located on the left side of the DPF.



ACCESS TO THE DPF 04018

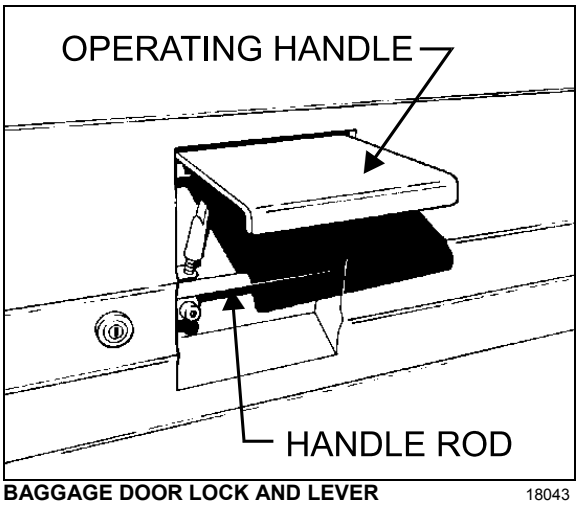
WARNING

After inserting the support rod into the receptacle, make sure the rod supports the door securely from falling down on to your head or body.

WARNING

External and internal temperatures remain hot long after engine has been shutdown. Allow the Aftertreatment Device and DPF to cool before handling. Wear protective clothing and glove while servicing.

BAGGAGE COMPARTMENTS



BAGGAGE DOOR LOCK AND LEVER 18043

The baggage compartment doors of the XLII-45 model provide 407 ft^3 (11,53 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

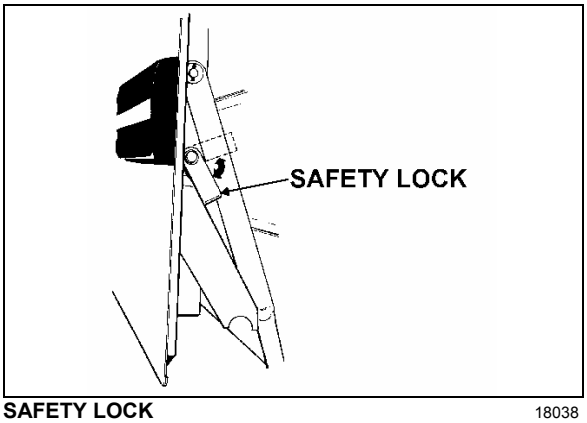
To avoid injury, keep hands clear of baggage compartment door edge and door frame when closing.

NOTE

To prevent theft and vandalism, always lock the baggage compartment doors before leaving the vehicle unattended.

NOTE

For added safety, 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. 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

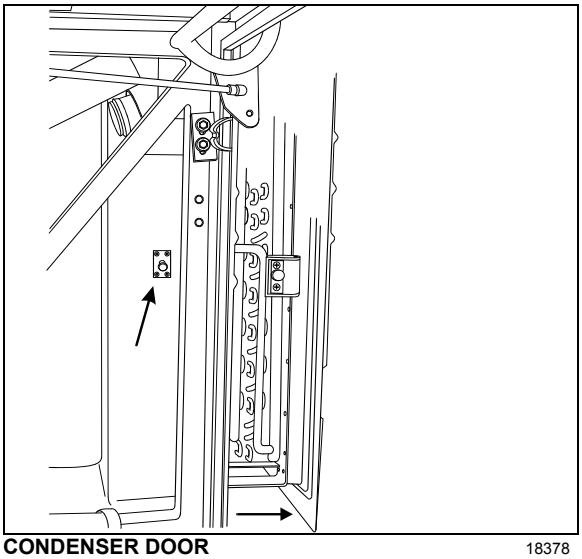
The fuel filler door locks must be in the unlocked position before closing.

CONDENSER COMPARTMENT (A/C)

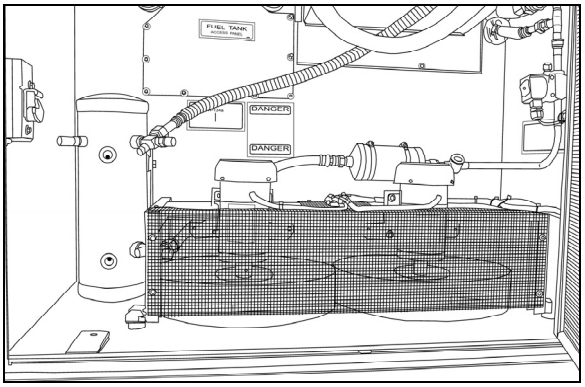
Pull the release latch located inside the adjacent baggage compartment to open the condenser door.

The condenser compartment provides access to the following:

- Condenser;
- Condenser fans and motors;
- Filter dryer and moisture indicator;
- Receiver tank.



CONDENSER DOOR 18378

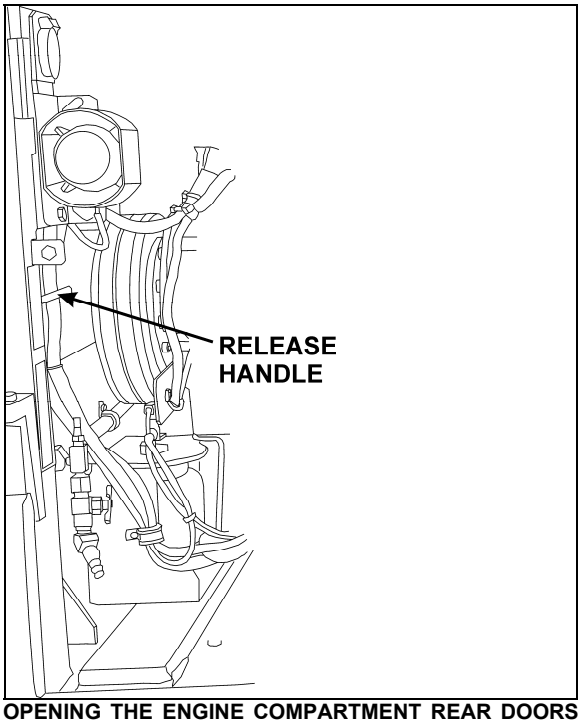


CONDENSER COMPARTMENT (A/C)

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:

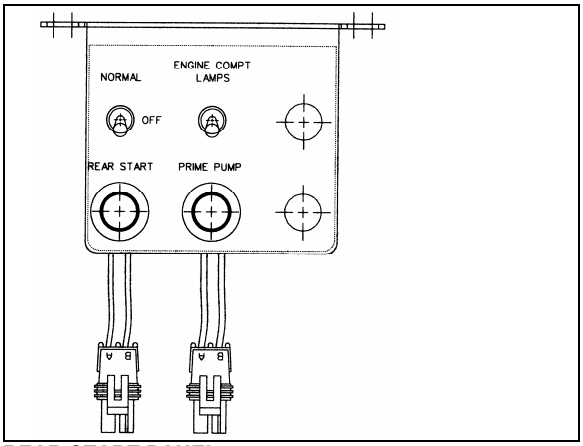
- Engine;
- Alternator(s);
- Compressor(s);



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

- Belt tension valve (refer to Care and Maintenance chapter);
- Engine starting selector (refer to Starting and Stopping Procedures chapter);
- Certification plates;
- Engine coolant surge tank;
- Air cleaner restriction indicator;
- Engine oil dipstick;
- Engine oil reserve tank;
- Power steering fluid reserve tank;
- Automatic transmission oil dipstick and filler tube;
- Engine coolant filler cap.

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 START PANEL 06409

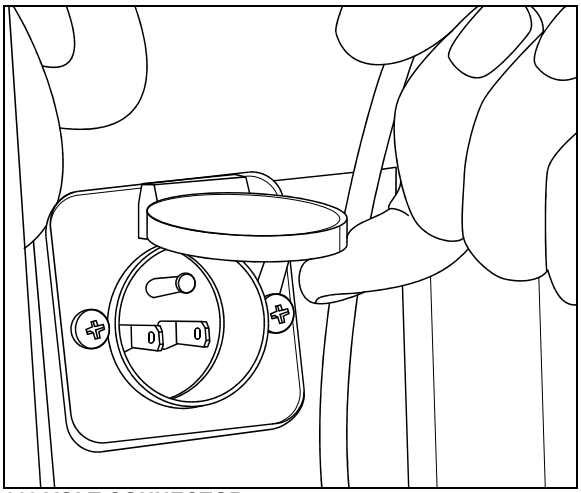
Turn the lights ON in the engine compartment using the switch on the rear start panel.

WARNING

Unless otherwise specified, do not run engine when the engine compartment rear doors are open. Close the engine compartment rear doors before starting the engine.

110-120 VOLT CONNECTOR

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



110 VOLT CONNECTOR 06390

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.

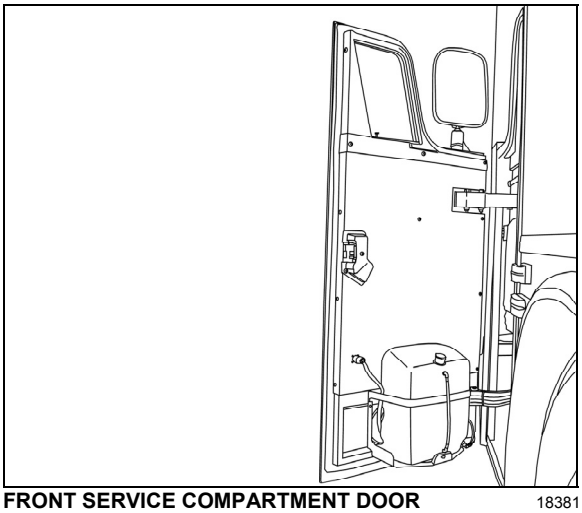
⚠ WARNING

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 ELECTRICAL AND SERVICE COMPARTMENT

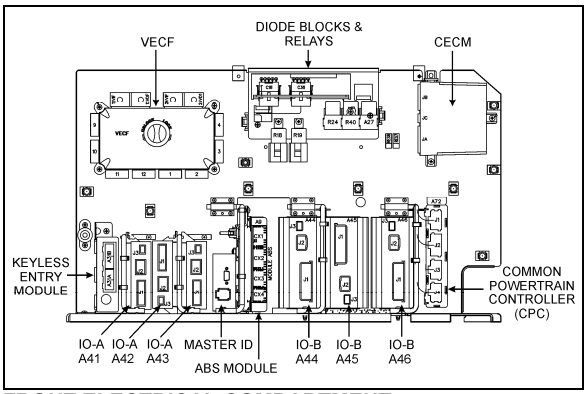
To open the front electrical and service compartment door, pull the rod inside the vehicle, next to the driver's power window or use the key to open from outside the vehicle. The front electrical and service compartment provides access to the following:



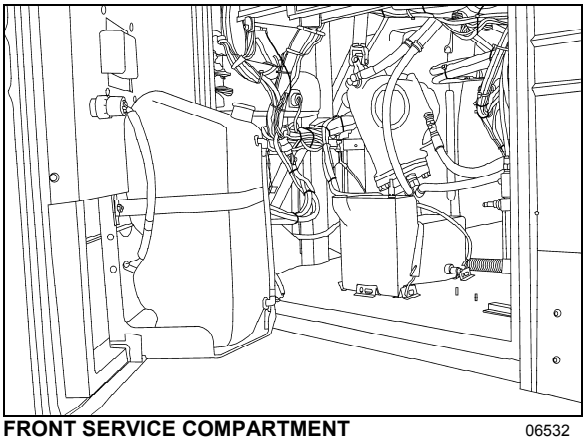
FRONT SERVICE COMPARTMENT DOOR 18381

- Front terminal block;
- CECM and CPC;
- Vehicle Electrical Center Front (VECF) and Multiplex Modules;
- Keyless module;
- Relays and fuses;
- Windshield washer reservoir & headlights washer reservoir;
- Accessory air tank drain valve;
- Accessory system fill valve;
- ABS Electronic Control Unit (ECU).

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



FRONT ELECTRICAL COMPARTMENT 06665

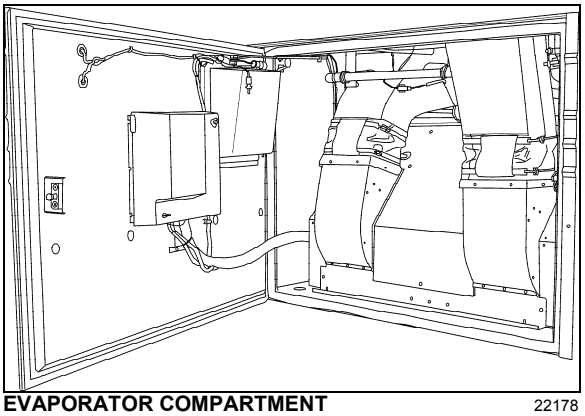


FRONT SERVICE COMPARTMENT 06532

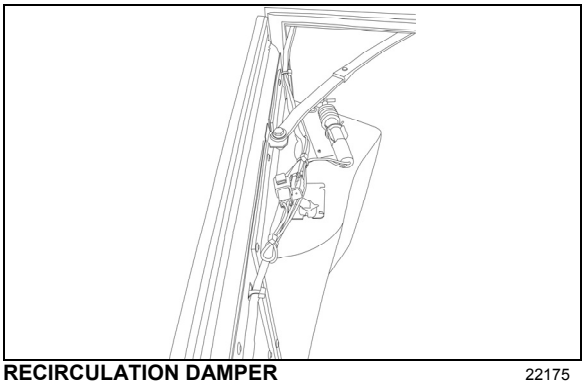
EVAPORATOR COMPARTMENT

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

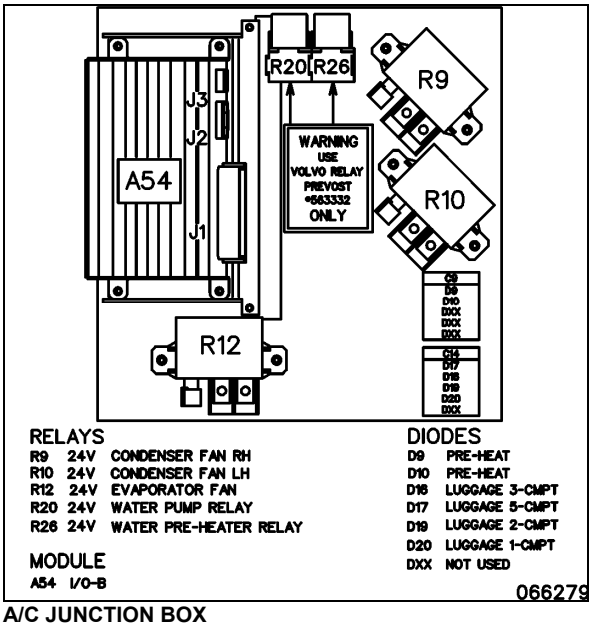
The compartment door release latch is located on the left side of the baggage compartment and to the right of the HVAC compartment door. Pull the release latch then swing the HVAC compartment door open.



EVAPORATOR COMPARTMENT 22178



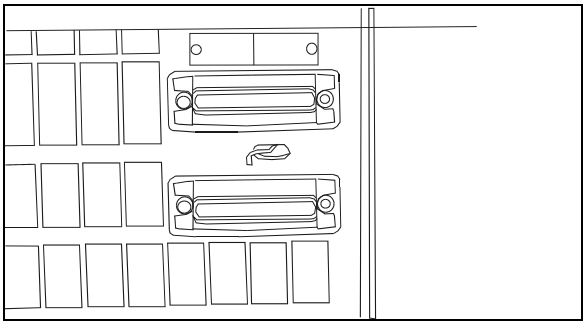
RECIRCULATION DAMPER 22175



A/C JUNCTION BOX

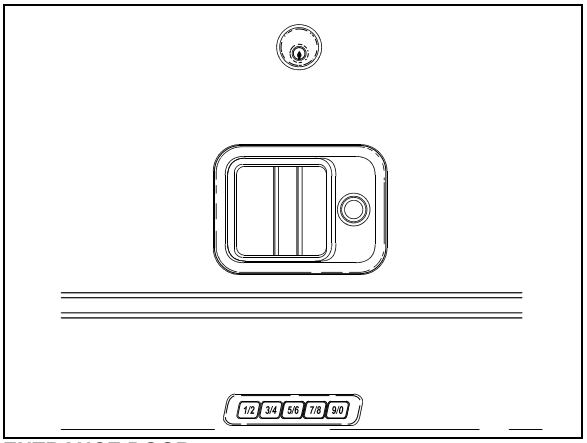
RADIATOR DOOR

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



RADIATOR DOOR 18560

ENTRANCE DOOR

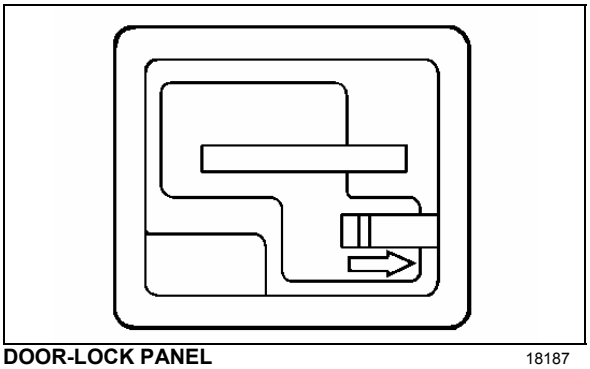


ENTRANCE DOOR 18380

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.

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.

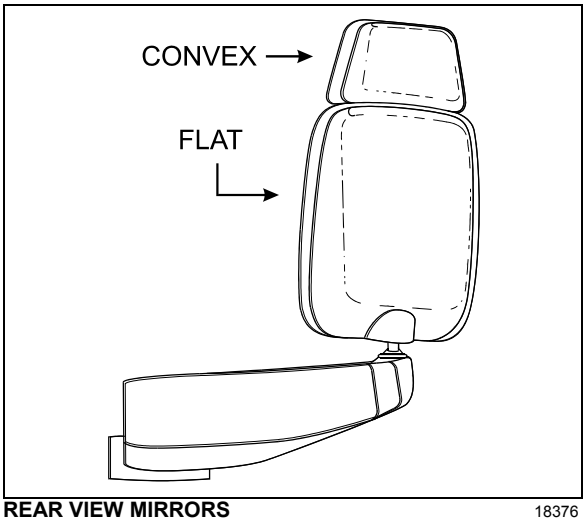
REAR VIEW MIRRORS

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.

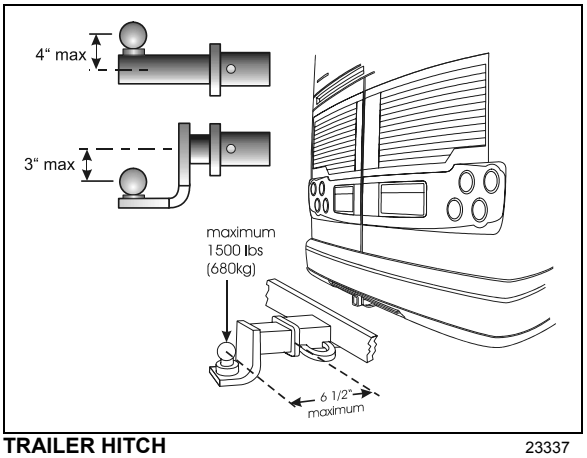
BACK-UP CAMERA

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)**

DANGER

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:

1. *Trailer must comply with **Federal Motor Carrier Safety Regulations 393.52** regarding trailer breaking capability.*
2. *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.

3. *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.

4. *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.*
5. *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).*
6. *This hitch must be used for recreational use only.*

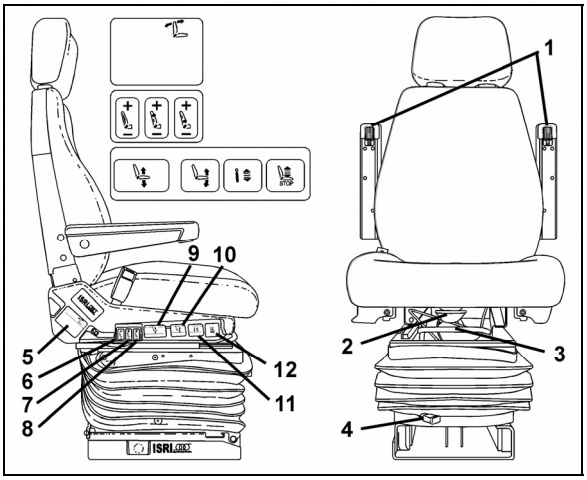
DRIVER'S SEAT - "DELIVERY"

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

DANGER

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

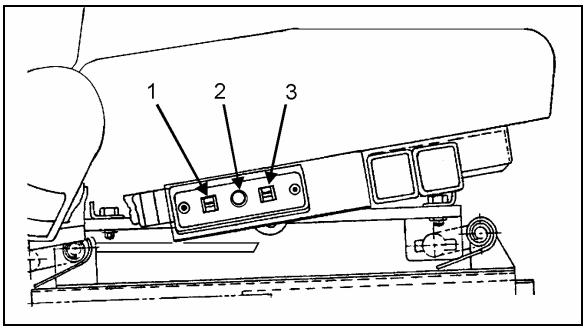
Adjust electric seats as follows:

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.



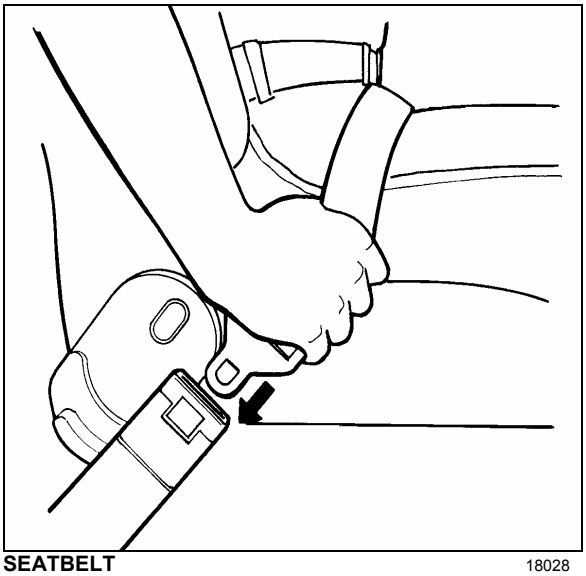
SEAT CONTROLS 18040

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.

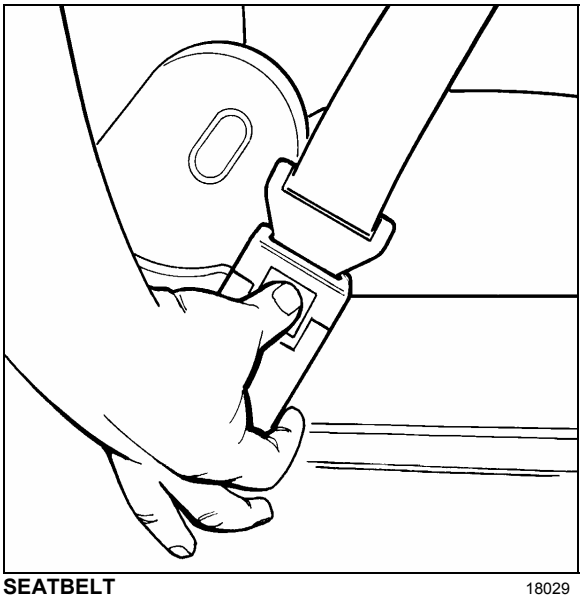
CAUTION

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.

DANGER

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

18 Vehicle Interior

STEERING WHEEL ADJUSTMENT

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

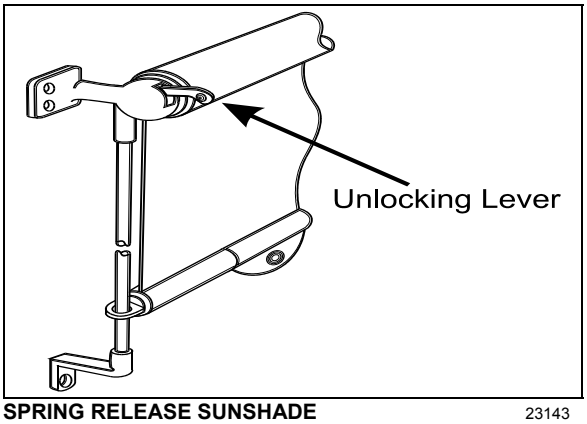
DANGER

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 on the wall, next to the window. After closing the window, maintain the rocker switch button depressed to latch the window.

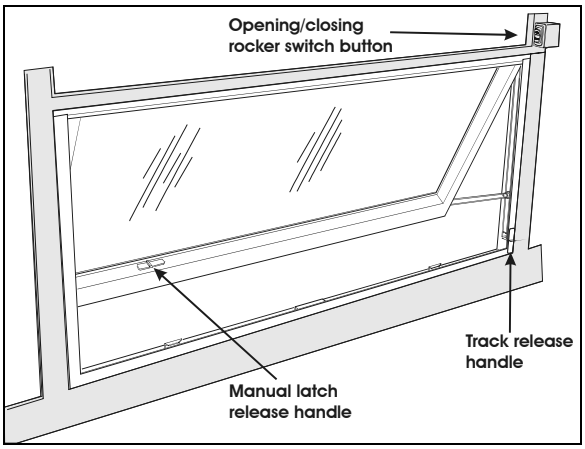
CAUTION

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

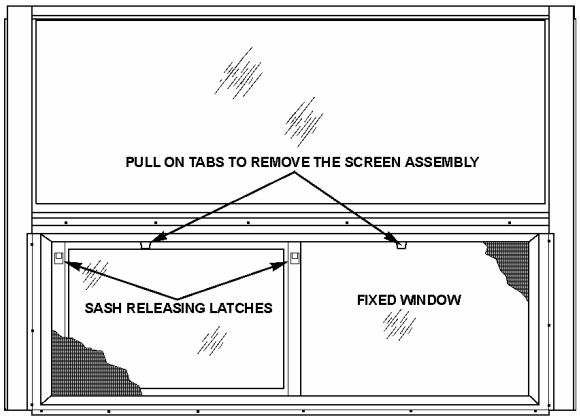
To open or close an electrically-operated sliding window, use the rocker switch button located on the wall, next to the window.

⚠ CAUTION

Never try to open or close the sliding window by pulling or pushing directly on the window; this could damage the opening mechanism gearbox.

NOTE

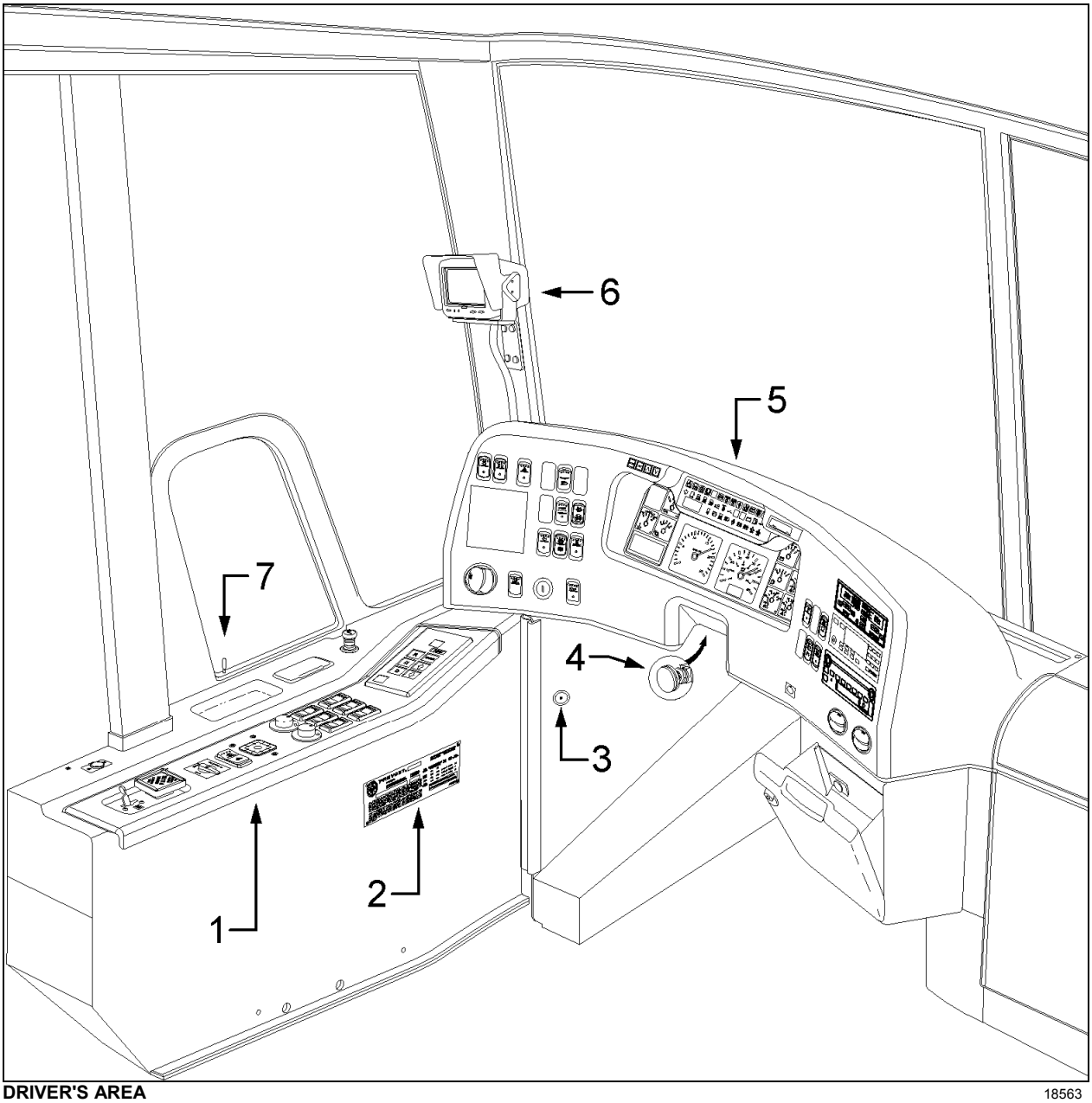
If the sliding window electrical circuit is inoperative, the power sliding window can be manually closed by removing the lateral plastic trim located on the R. H. side of the window to access the drive belt. Manually move the drive belt to close the window.



SLIDING WINDOW 18206

NOTE

The sliding window electrical circuit is equipped with a thermistor protecting the components from overheating. If the sliding 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.

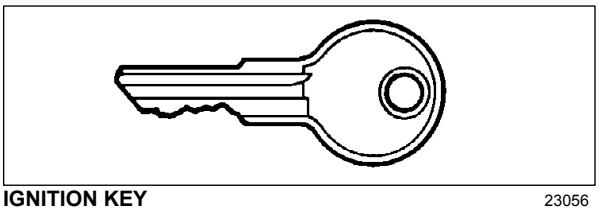


DRIVER'S AREA 18563

1. Lateral control panel
2. DOT certification plate
3. Diagnostic Data Reader (DDR) receptacle
4. Foot operated steering wheel adjustment unlock air valve
5. Dashboard
6. Rear view TV monitor (optional)
7. Front service door unlocking pull-rod

KEYS

Four different key models are provided with the vehicle:



IGNITION KEY 23056

The ignition switch doubles as the battery master switch. Any position other than OFF activates the battery electrical circuit. The battery electrical circuit is also activated when the hazard switch is depressed.

Use the ignition key to activate the battery electrical circuit by turning it counterclockwise to the *ACC* position.

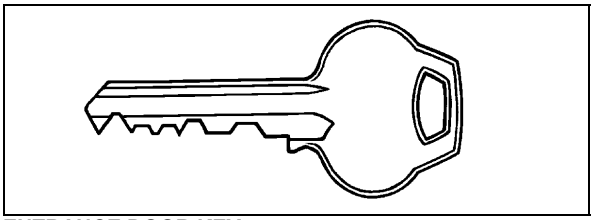
To start the engine, turn the key clockwise to the *START* position, and then release it. The key will set to *ON* position.

⚠ CAUTION

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

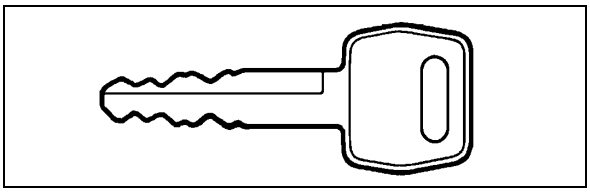
NOTE

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



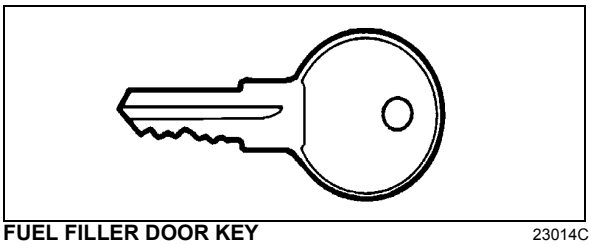
ENTRANCE DOOR KEY 23057

Use the entrance door key to lock or unlock the door from the outside. It is also possible to lock or unlock the entrance door using the exterior compartment door lock, the entrance door unlocking switch or using the keyless entry system.



EXTERIOR COMPARTMENTS KEY 23244

Use one of the two exterior compartment keys provided to lock or unlock any exterior compartment door, including the electrical or service compartment doors, but excluding the fuel tank filling access doors. It is also possible to lock or unlock the baggage compartments and service compartments from the inside by means of a switch located on the dashboard.



FUEL FILLER DOOR KEY 23014C

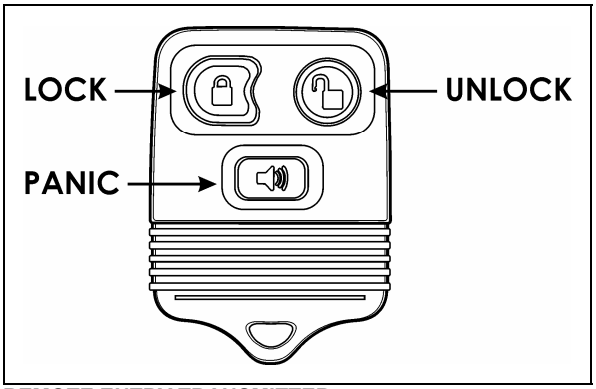
Use this key to unlock the fuel filler doors on either side of the vehicle.

NOTE

For your protection against theft, record the key numbers and keep this information in a safe place. Do not keep these records inside vehicle. It is also advisable to deposit a duplicate of each key in a safe place, so they can be obtained without difficulty in case of an emergency or loss.

REMOTE ENTRY TRANSMITTER

Up to four hand held (electronic key) transmitters can control electronic door lock system.



REMOTE ENTRY TRANSMITTER 23383

To lock the entrance door and the baggage compartment doors simultaneously and arm the intrusion protection and anti-theft system:

- Press LOCK on the transmitter once.

NOTE
The intrusion protection and anti-theft system will be set after a 30 seconds delay.

To confirm that the entrance door and baggage compartment doors have been locked and that the intrusion protection and anti-theft system is armed:

- Press LOCK again within five seconds of the first lock. The front and rear side markers will flash once if the doors have locked. If the entrance door or one of the baggage compartment doors is open, a door ajar signal prevents arming of the system.

To unlock the entrance door:

- Press UNLOCK on the transmitter. This will unlock the door and disarm the intrusion protection and anti-theft system.

To unlock the baggage compartment doors:

- Press UNLOCK a second time within five seconds of the first unlock.

To set off the personal security alarm:

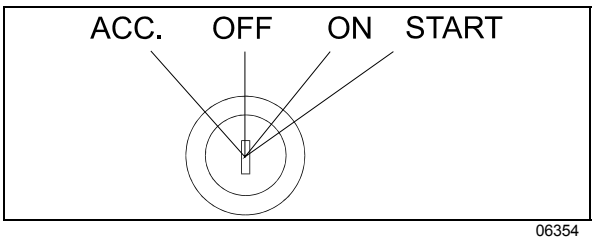
- Press the red PANIC button on any transmitter. The horn will sound and the marker lights will flash for a maximum of three minutes.

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.

IGNITION SWITCH



06354

The ignition switch is located on the lower left side of the dashboard. It has four positions:

Off

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

The electrical circuits are not activated when the switch is in this position. Only the accessories connected directly to the batteries can be activated. These are: the coolant heater and water pump, the keyless entry system and anti-theft alarm, the central locking system, entry lights electric horn and Message Center Display (MCD). Maintain the switch in this position when parked overnight or for an extended period.

Accessories

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

The battery electrical circuits are activated when the switch is in this position or when the hazard flashers are activated.

The features enabled when the key is in the ACC position are all those linked directly to the battery plus the exterior temperature display, the radio or entertainment system, exterior and interior lighting.

On

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

The electrical circuits activated are the same than when the switch is in the *ACC* position plus the transmission, engine and accessories, ABS system, wipers, level low system, dashboard cluster gauges and buzzers, air horn and air dryer heater are activated when the key is in this position. Do not leave the key in this position unless the engine is running.

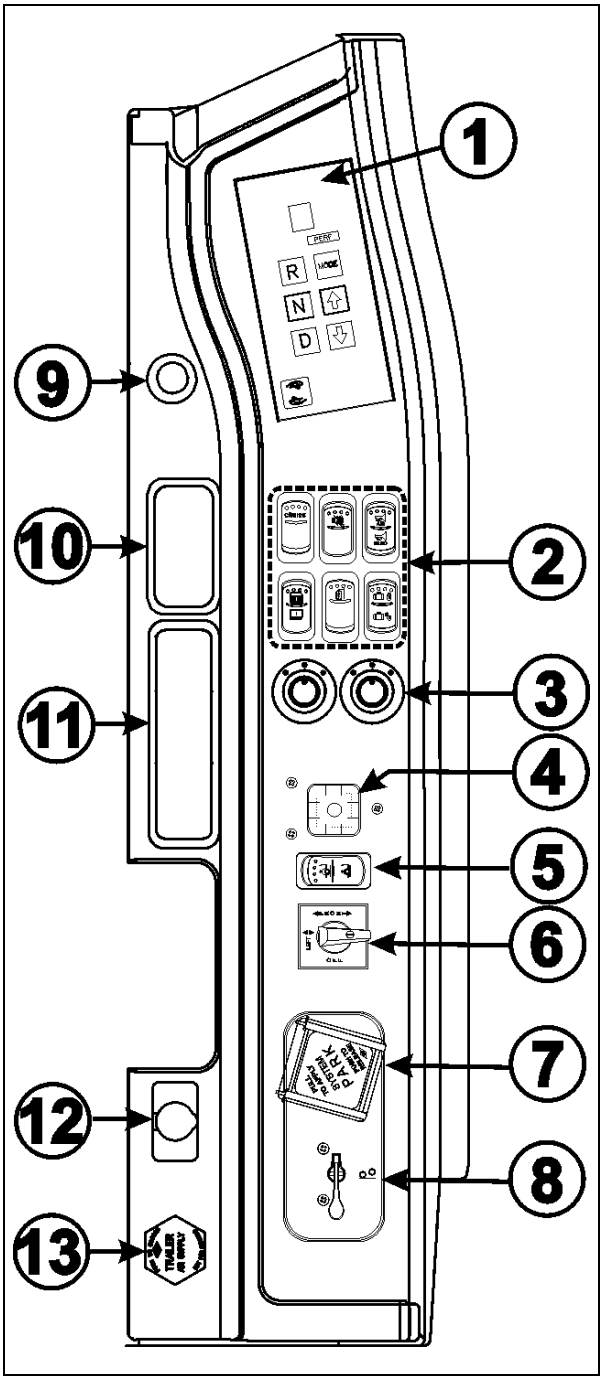
Start

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

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

The features activated when the engine is running are all those described above plus the HVAC system and day time running lights. The optional ether cold-start system is automatically deactivated once the engine runs.

LATERAL CONTROL PANEL



L.H. CONTROL PANEL 06643

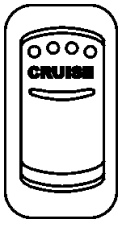
1. Transmission Control Pad
2. Control Switches
3. Mirror Controls
4. Level Indicator
5. Height Control Switch
6. Level Low Selector Switch
7. Parking Brakes Control Valve
8. Tag Axle Control Valve
9. Cigarette Lighter (Optional)
10. Accessory Pocket or Ashtray (Optional)
11. Accessory Pocket
12. 12 Volt DC Power Outlet
13. Trailer Air Supply Control Valve (Optional)

TRANSMISSION CONTROL PAD (1)

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

CONTROL SWITCHES (2)

Cruise Control Switch

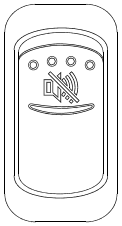


06701

Depress the **CRUISE** rocker switch to activate the cruise control. This turns the system on. A LED on the switch shows that you can now set the vehicle at a desired cruising speed.

The cruise control allows you to cruise the vehicle at a desired speed over 18 mph (30 km/h) without having to use the accelerator pedal. For operation of the cruise control, refer to “Steering Wheel Controls” paragraph in this chapter.

Back-up Alarm Cancel



06311

Press down this switch to cancel the Back-Up Alarm

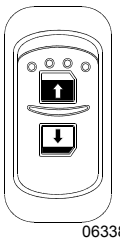
NOTE: After use, return to normal operation.

Horn Selector

06700

Use this switch the toggle between the air horn and the electric horn when pressing the steering wheel center pad.

Power Window Switch



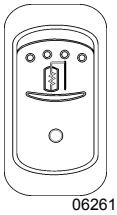
06338

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

CAUTION

Close power window when parked or leaving the coach unattended.

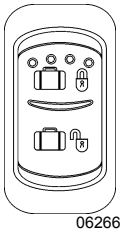
Outside Rear View Mirror Heat (Optional)



06261

Press this rocker switch to clear fog, frost or thin ice from outside mirror.

Central Locking System



06266

This system enables locking all baggage compartment doors by pressing the switch forward. To unlock, press the switch rearward.

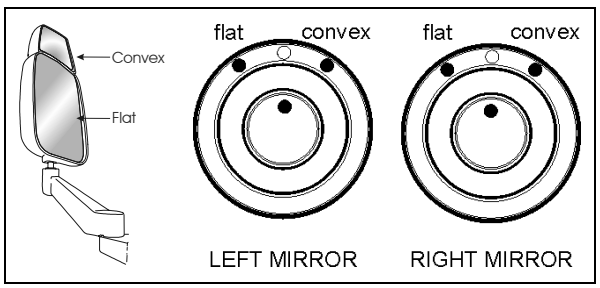
NOTE

Service compartment doors are not linked to the central locking system.

NOTE

Doors must be locked using the key first, they can then be unlocked or locked using the central locking system.

MIRROR CONTROLS (3)



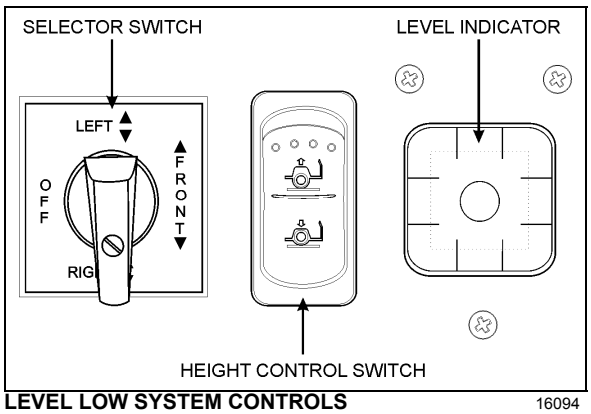
MIRROR CONTROLS 06374

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

NOTE

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

LEVEL LOW SYSTEM (4, 5, 6)



LEVEL LOW SYSTEM CONTROLS 16094

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

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

NOTE

Prévost Car vehicles are designed to operate within specific weight load/ranges for each axle (GAW) and for total vehicle weight (GVW). If the coach is heavier than the design limits, Level Low System (LLS) components damage and problems can occur.

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

NOTE

For maximum ease of ingress and egress as well as for maximum leveling range, lower the vehicle completely before leveling.

NOTE

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

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

DANGER

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

NOTE

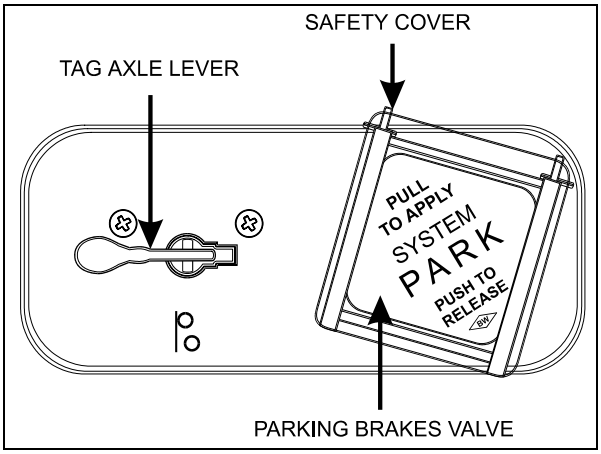
If, for any reason, you wish to start the engine without moving the vehicle (to warm up the engine for instance) while keeping the vehicle in the manually leveled position, place selector switch in any position except OFF. When ignition switch is turned to the OFF position, reset the selector switch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

PARKING BRAKES CONTROL VALVE (7)

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

TAG AXLE CONTROL VALVE (8)

Lift the tag axle by pushing the lever forward. Pulling the lever back will lower the tag axle. Refer to "Other Features" chapter for additional information.



CONTROL VALVES 12177

CIGARETTE LIGHTER (9)

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

NOTE

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

ASHTRAY (10)

If no astray is installed, the space becomes an accessory pocket.

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

WARNING

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

ACCESSORY POCKET (11)

To open the compartment, lift the cover.

12-VOLT DC POWER OUTLET (12)

This socket can be used to power small 12 volt DC appliances such as a cellular phone or a vacuum cleaner. The maximum power consumption allowed for appliances plugged in this socket is 130 watts. Make sure appliances are equipped with suitable plugs that will not damage the socket.

TRAILER AIR SUPPLY CONTROL VALVE (OPTION) (13)

The trailer air braking system is supplied by pushing this control valve.

Diagnostic Data Reader (DDR) Receptacle

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

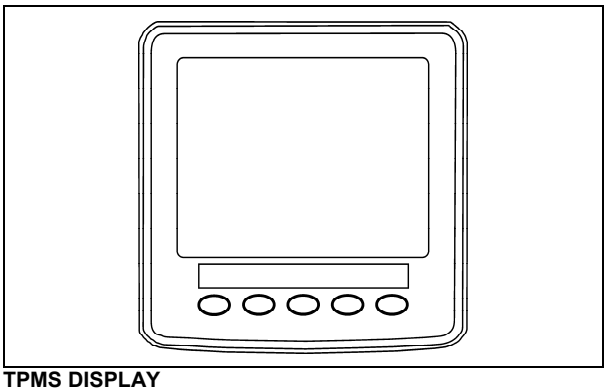
The DDR receptacle is located inside the footwell, on the upper left side wall.

TIRE PRESSURE MONITORING SYSTEM (TPMS)

This system is a sensing device designed to identify and display tire operating data and activate an alert or warning when pressure or temperature irregularities are detected.

NOTE

It is the responsibility of the driver to react promptly and with discretion to alerts and warnings. Abnormal tire inflation pressures should be corrected at the earliest opportunity.



TPMS DISPLAY

TPMS Display

The TPMS display knows where the sensors are located. It receives the raw temperature and pressure readings from the TPMS receiver, it reads several signals from the vehicle and does the calculation required to generate the various screens.

When no readings have been received for a tire location or when the received data correspond to a parameter range defined as unavailable, then the reading is considered as not available and appears as two dash lines "_ _".

The TPMS display is initially configured to define how many axles and running tires are present on the vehicle. For current Prevost vehicle models, there are two axle / tire configurations. These configurations are:

Config 1: Axle 1 (Front) Two tires, Axle 2 (Drive) 4 tires, Axle 3 (Tag) 2 tires.

Config 2: Axle 1 (Front) Two tires, Axle 2 (Drive) 2 tires (super Singles), Axle 3 (Tag) 2 tires.

The TPMS display is also configured with several other parameters, including threshold levels for the alarms.

The TPMS display power supply turns OFF when the ignition key is switched OFF.

Operation

The system will monitor all vehicle tires (6 or 8) plus the spare tire when a spare is supplied.

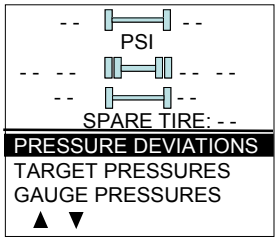
NOTE

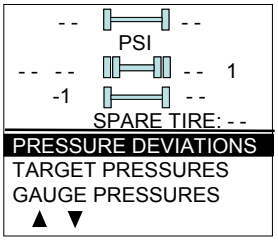
Some vehicle models do not come with a spare tire.

There are two configurations of vehicle tires to be supported. One configuration (the most common) consists of 8 tires total: two tires on the front axle, 4 tires on the drive axle and 2 tires on tag axle. All screen figures shown in this document relates to this vehicle configuration. The second tire configuration consist of 6 tires total: 2 tires on the front axle, 2 tires on the drive axle (super single tires) and 2 tires on the tag axle. The vehicle tire configuration is selected with a parameter (Refer to chapter « SAFETY FEATURES AND EQUIPMENT » for more information). When the display is configured for 6 tires, the drive axle tires appears as one large tire on both side instead of twin tires as illustrated in this document and there is one reading appearing on each side instead of two as illustrated in this document.

Start-up

When turning the ignition switch to ON, the screen shown below appears on the TPMS Display. Dash lines are displayed meaning that no pressure data have been received by the display.



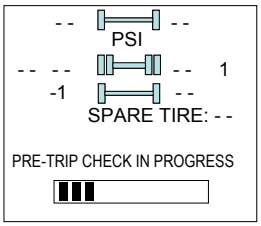


As illustrated, the pressure readings will appear replacing the dash lines as the TPMS display starts to receive pressure data from the TPMS receiver. It can take 1 minute to get all pressure readings updated since the sensors transmit at a one minute interval.

The user can flip through the menus.

Pre-Trip Check

When one of the preconditions defined to start the pre-trip check is met, the TPMS display enters into a pre-trip check routine and the screen shown below appears. The preconditions to initiate the pre-trip are: Park brake removed Or No activity on the display menu keys for a defined time (Key pressed timeout). After a pre-trip, the display is in a “drive” mode with bottom menu replaced by the alarm status. The display remains in this mode until one of the following occurs: A menu key is touched while the park brake is applied, or the park brake does a transition from released to park brake applied.

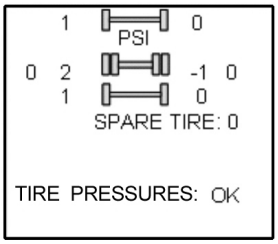


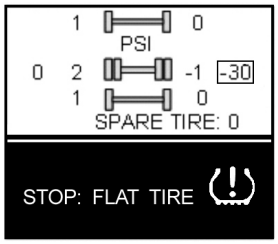
During the pre-trip check, the pressure readings for the different wheels become all available.

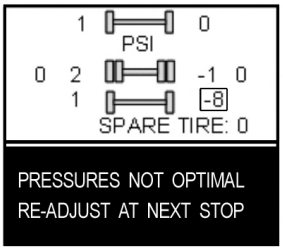
The pre-trip check ends, either when the pressure readings have been received for all running wheels or the pre-trip check maximum time has elapsed. It was selected to provide sufficient time for all wheel sensors to wake-up and send a first reading.

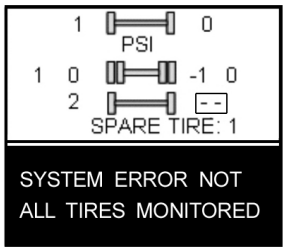
The pre-trip check is aborted and the bottom menu reappears if the park brake was active and the user press one of the menu keys.

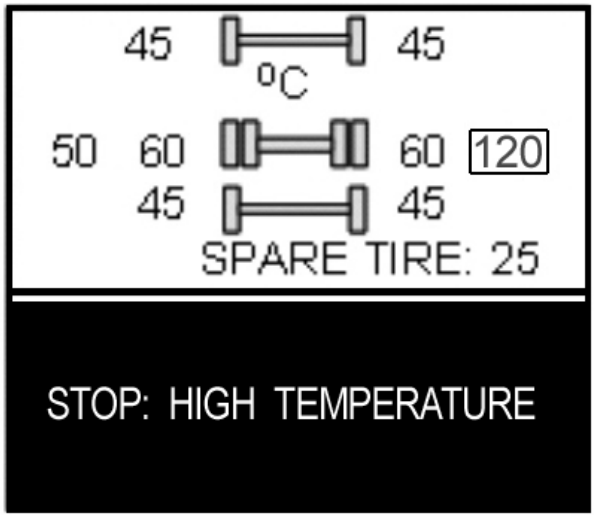
Upon completion of the pre-trip check, the TPMS display will come up with one of the screens shown hereafter:











A rectangle around each pressure / temperature reading of the tires that have an issue is blinking to draw the attention to the defective tires.

In the case of multiple errors at the same time, the highest priority error is displayed at the bottom. “Flat Tire” has the highest priority followed by “High Temperature”, “Not all tires monitored” and “Tire pressure not Optimal”.

To get the driver’s attention to the alarms, the bottom section of the screen where the alarm message appears will blink to reverse contrast at the following rate: 0.7 sec normal contrast, 0.3 sec reverse contrast. Pressing any key will acknowledge the alarms that are considered as non critical and stop the blinking of these alarms message for the remaining of the trip. The non critical alarms are: “Pressure not optimal” and “Not all tires monitored”. The “flat tires” and “high temperature” alarms are critical and will keep blinking even when a key is pressed. If a different alarm occurs, blinking will start again. The blinking rectangle around the pressure/temperature readings is not impacted by the acknowledgement and keeps blinking until the error condition disappears.

The spare tire does not contribute to alarms and so never blinks.

On the road, the TPMS display shows one of the 5 previous screens.

In the event of a temperature alarm, the display switches automatically to temperature readings.

The driver can also press any of the menu keys to momentary switch the display to temperature readings. In this case, the temperature reading appears for 15 seconds and the display returns to pressure.

The switching to temperature by pressing a key does not take place if there is an acknowledgeable alarm active, since in this case pressing the key does acknowledge the alarm.

The switching to temperature does not take place either if there is an alarm of Temperature or Flat Tire.

The switching to temperature works when the bottom message indicates either: Tire Pressure OK, Pressure Not Optimal non flashing or not all tires monitored non flashing. When the switch is done to temperature readings, the bottom portion of the screen is not affected and still shows the status message.

NOTE
High temperature is not likely to occur during the pre-trip.

The pressure and temperature readings are continuously updated with the displayed readings of the wheel having issues blinking. The bottom line message is automatically updated to the highest priority alarm prevailing. There is a hysteresis on the alarm levels to assure that the error conditions do not flicker ON and OFF.

On the occurrence of an alarm, a beep will sound. The alarm beep could be turned OFF in the alarm settings menu.

Spare tire:

The spare tire is monitored but it is not taken into account when setting the bottom alarm messages. This is to prevent unnecessary alarms that would otherwise occur, if for example, the spare tire is removed from a vehicle.

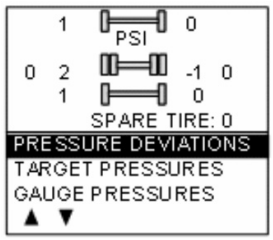
The user will have the possibility to check the pressure of the spare tire by accessing the TPMS display menu. For vehicles that have no spare tires, the title “spare tire“ will still appear on the screens but the pressure will remain with two dash lines at all time.

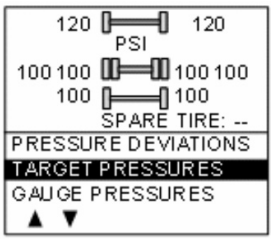
Post Trip Operation

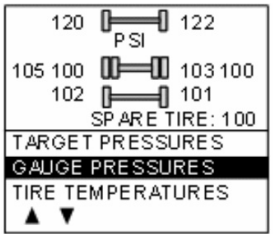
When parking the vehicle (park brake applied), the TPMS display keep the drive mode display active. The driver can press any keys to get the bottom lines showing the status information replaced with the menus.

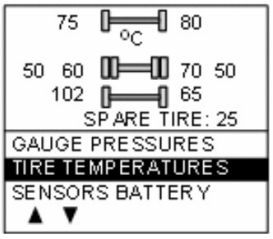
The pressure readings are still displayed and updated as new readings are received and the readings are blinking if not within the optimum pressure range.

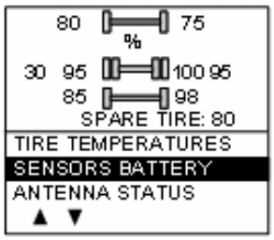
From this point the user can scroll through the menus to get more detailed information and inflate / deflate the tires to bring them back to their optimum target pressures. Scrolling through these menus is also available prior to departure.

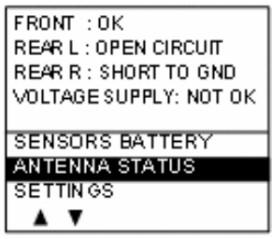










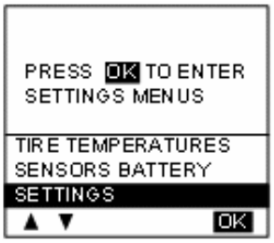


The display remains in this mode with the menus appearing at the bottom until the pre-trip check sequence starts again.

Scrolling down below the Battery life menu will show the Settings menu. Highlighting the Settings and pressing OK allows entering the settings menu. Refer to chapter “SAFETY FEATURES AND EQUIPMENT” for more information on “SETTINGS MENU”.

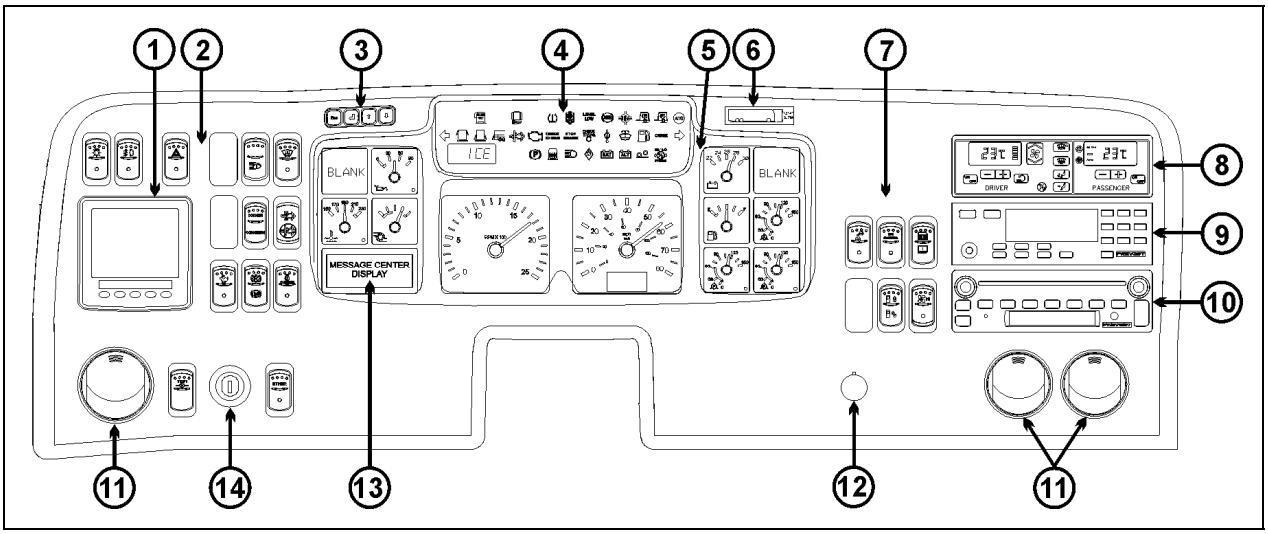
Refer to “Appendix G” for TPMS Troubleshooting Guide.

Highlighting the Exit menu and pressing OK exits the settings and comes back to the pressure display mode.



30 Controls and Instruments

DASHBOARD



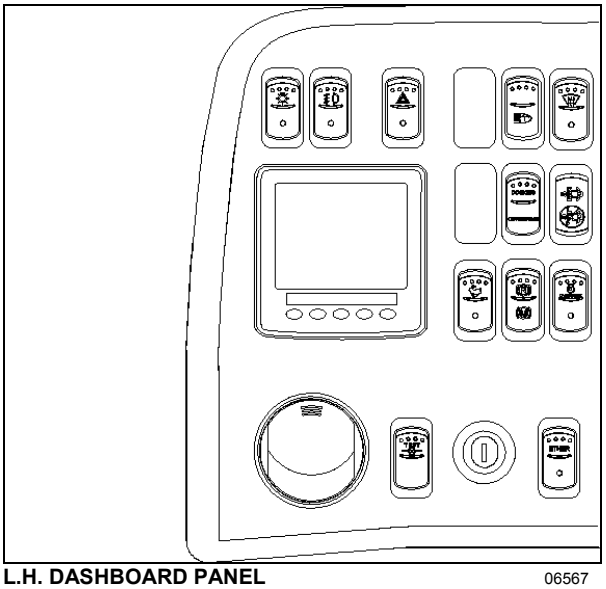
DASHBOARD

1. **Tire Pressure Monitoring System (TPMS) Display**
2. **L. H. Dashboard Panel**
3. **Message Center Display (MCD) keyboard**
4. **Telltale Panel**
5. **Gauges**
6. **Vehicle Clearance Information**
7. **R. H. Dashboard Panel**
8. **HVAC Control Unit**
9. **Audiovisual Controller**
10. **AM/FM CD Radio**
11. **Air Vents**
12. **Brightness Control**
13. **Message Center Display (MCD)**
14. **Ignition Switch**

CONTROL SWITCHES

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

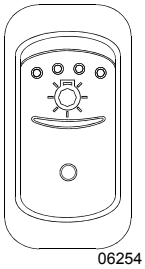
L.H. DASHBOARD PANEL



L.H. DASHBOARD PANEL 06567

The dashboard is designed with driver-exclusive controls at the left side and controls shareable with travel companions at the right side.

Headlights



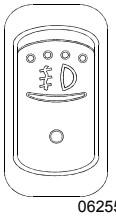
06254

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

NOTE

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

Fog Lights



06255

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

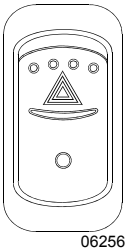
WARNING

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

NOTE

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

Hazard Warning Flashers



06256

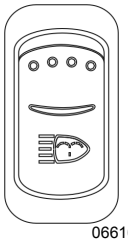
Depress the rocker switch to make all turn signal lights flash at once. The dashboard telltale lights will flash when the hazard warning flashers are *ON*.

Activating the hazard flashers also activates the vehicle's electrical circuits.

CAUTION

Do not use the hazard flashers for an extended period of time unless necessary because the electrical circuits are activated when the hazard switch is depressed.

Headlights washer



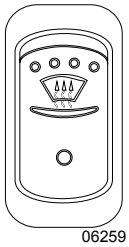
06616

Momentarily press this rocker switch downwards to spray the headlights washer fluid. Each pressing of this switch produces 2 successive jets.

CAUTION

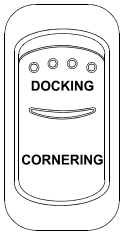
To avoid damaging the pump mechanism, do not use the windshield washer when the fluid level is very low or empty.

Windshield Upper Section De-icing


06259

Optionally on Entertainers only, the vehicle may be equipped with a de-icing system in the windshield upper section. Press the rocker switch to activate the blower in order to clear fog, frost or thin ice from either side of the windshield upper sections.

Docking/Cornering Lights



06337

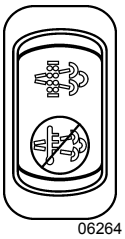
Depress the upper portion of the switch to activate both the docking and the cornering lights. Depress the lower portion of the switch to activate the cornering lights.

Two sealed beam halogen lights are installed on each side of the vehicle. One near the front and one near the rear.

When the switch is set to *DOCKING*, all four beams illuminate to ease parking.

When the switch is set to *CORNERING* and the left or right turn signal is activated, the corresponding front beam will illuminate to increase lateral visibility.

Manual Regeneration / Stop Regeneration


06264

Manual Regeneration


DPF Regeneration Lamp

The “DPF Regeneration Lamp” illuminates to notify the driver of the need and urgency of a manual stationary regeneration.

If stationary regeneration is not performed, this telltale will blink, indicating that a stationary regeneration is required immediately. If stationary regeneration is still not performed, “engine power derate and shutdown” sequence may occur.

To initiate a stationary regeneration:

- Park the vehicle in a clear area, vehicle speed must be 0 mph (0km/h);
- Engine must be on normal idle and fully warmed up (coolant temperature above 140°F/60°C);
- Apply service brakes and set the transmission to the neutral “N” position.
- While maintaining the service brakes applied, apply parking brake, release it and then apply parking brake once again (this sequence is required to enable the stationary regeneration);
- **Press** and hold for 5 seconds the top-most switch position to initiate a stationary regeneration;

The regeneration will begin. Turn off the air conditioning to reduce engine load. The engine idling speed will increase to 1600 rpm. Once the regeneration is completed, the engine speed will return to normal idle.

Stop Regeneration


Inhibit Regeneration Lamp

The “Inhibit Regeneration Lamp” illuminates to indicate the system’s acknowledgement of regeneration inhibit request and to remind the driver that regenerations have been or will be inhibited.

Press down to cancel a regeneration that is in progress or to inhibit a pending regeneration. Use this function to move the vehicle to a safe parking place. Releasing the parking brakes will also cancel the regeneration.

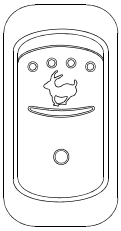
NOTE
STATIONARY REGENERATION *This process requires the vehicle to be parked while the driver or a maintenance technician initiates the regeneration process.*

NOTE
To initiate a stationary regeneration while the Engine Protection Shutdown sequence has already started, you must press and hold both the “Engine Stop Override” switch and the «Manual Regeneration» switch at the same time until the regeneration starts. Once started, the regeneration may last for only a few minutes and engine may shut down again. Repeat the operation as required until the stationary regeneration can be completed.

CAUTION

Before initiating stationary regeneration or using the inhibit regeneration function, read carefully and understand paragraph DETROIT DIESEL EXHAUST AFTERTREATMENT SYSTEM in *Chapter 4: Other Features* for complete information concerning regeneration precautions. Ignoring them could result in extensive damage and/or serious personal injury.

Fast Idle


06264

For extended idling periods, run the engine at fast idle. Press down the rocker switch to engage fast idle. This increases the engine speed to approximately 1,000 rpm. Return to slow idle before driving or when stopping engine.

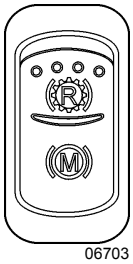
NOTE

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

CAUTION

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

Engine Brake / Transmission Retarder (Optional)



06703

Use this switch to select between the transmission retarder and the engine brake when using the vehicle speed retarding device switches on the steering wheel. Both systems cannot be in function at the same time. This rocker switch will be found on the dashboard only if the vehicle is equipped with both systems. Refer to "Transmission Retarder" heading in this chapter. Refer also to "Transmission Retarder" & "Engine Brake" in "OTHER FEATURES" chapter.

Engine Stop Override and DDEC Diagnostic Request

06265

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

CAUTION

Use sparingly and in order to move the vehicle to a safe parking place only. Excessive use can cause severe engine damage.

DDEC Diagnostic Request

CAUTION

Prior to reading blink codes, park coach and set parking brake.

With the engine at idle or *OFF* and with the ignition switch in the *ON* position, press and release the Engine Stop Override rocker switch. Active codes will be flashed on the "Stop Engine" and inactive codes on the "Check Engine" telltale lights alternately. Refer to Appendix D "DDEC VI Diagnostic Codes".

Telltale Light Test

06263

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

Ether Start Control (Optional)

06237

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

Driver Controlled Differential Lock (DCDL) (Optional)

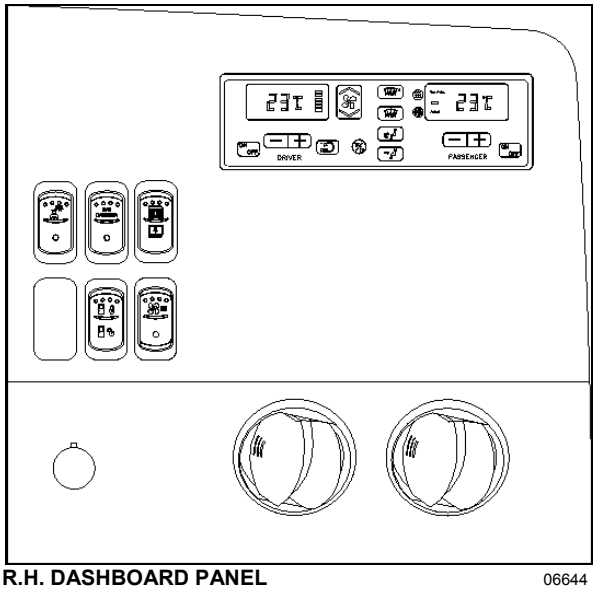
06571

Press the rocker switch to lock or unlock differential action. Refer to "Other Features" chapter for the complete operating instructions.

⚠ CAUTION

- Engage DCDL only under poor road surface conditions.
- DCDL will not engage and will disengage in speed higher than 5 MPH.
- Do not lock DCDL when one or more wheels are slipping, spinning or loosing traction. You can damage the drive axle.
- Using the rocker switch, unlock DCDL when the need for improved traction has passed otherwise it will reengage automatically as speed gets below 5 MPH. Over a prolonged period, this situation will increase tire wear and stress to the vehicle.
- Do not engage during downhill operation.

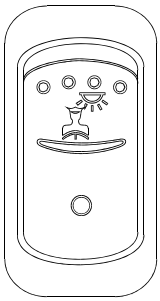
R.H. DASHBOARD PANEL



R.H. DASHBOARD PANEL 06644

The HVAC control module as well as the cluster dimmer switch, miscellaneous control switches and air vents, are located in the R.H. dashboard panel.

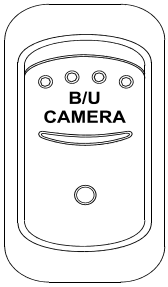
Driver's Area Lighting



06244

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

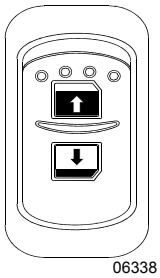
Back-Up Camera Switch



06314

Press down this switch to turn *ON* the Back-up Camera monitor when the transmission is not in reverse gear.

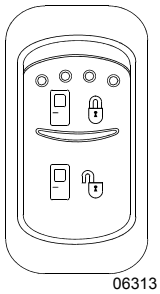
Entrance Door Power Window



06338

Use the rocker switch to open or close the power window in the entrance door. The switch for the driver's power window is on the Lateral control panel.

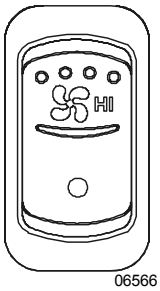
Entrance Door Switch



06313

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

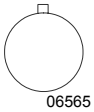
Cabin Fan Speed Control Switch



06566

Switches fan speed to HI for cabin ventilation (only available on models equipped with central HVAC).

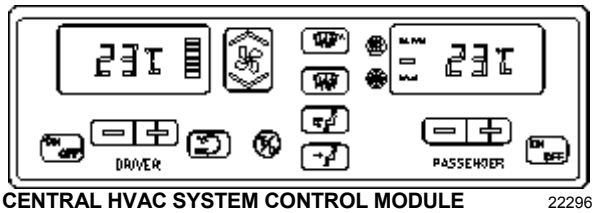
Brightness Control



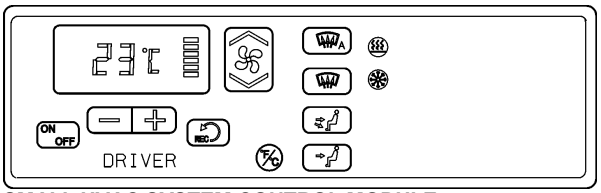
06565

Adjusts the brightness of the dashboard instruments and switches.

HVAC CONTROL MODULES



CENTRAL HVAC SYSTEM CONTROL MODULE 22296



SMALL HVAC SYSTEM CONTROL MODULE 22333

The vehicle is slightly pressurized by the central HVAC system to prevent dust and moisture from entering. Air flow and controls divide the vehicle into two areas: driver's area with defroster and cabin area.

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

WARNING

Warm temperatures may cause drowsiness and affect alertness while driving. For optimum driving conditions, keep temperature between 68°F and 72°F (20°C to 22°C).

NOTE

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

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

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

Separate driver's and passenger (cabin) heating, ventilation and air conditioning controls are located on this module. To operate, the vehicle's engine must be running.

The driver's HVAC unit or the cabin HVAC unit may be turned ON by pressing ON OFF or − + or buttons. If the vehicle is equipped with a central HVAC system, the driver's HVAC unit turns on automatically at starting of the engine and uses the settings that were kept in memory before turning off of the system.

Heating Mode Indicator

22135

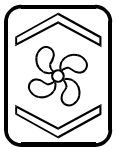
Illuminates when system is heating.

Cooling Mode Indicator

22134

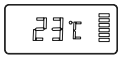
Illuminates when system is cooling.

Fan Speed


22135

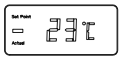
The driver's fans have six speeds. Increase speed by pressing on the upper portion of the button, decrease by pressing on the lower portion.

Driver's area temperature display



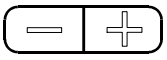
The temperature displayed on the driver's side HVAC control module is the temperature set point.

Cabin area temperature display



The temperature displayed on the passenger's side HVAC control module is the actual temperature in the cabin area.

Temperature Set Button


22132

The driver's side and the passenger's side have independent temperature controls.

These buttons determine the heating and cooling set points.

To increase the temperature set point, press on the "+" sign, to decrease the temperature set point, press on the "-" sign. Temperature range is between 55°F and 85°F (13°C to 29°C).

Air Recirculation

22138

Closes or opens the fresh air damper. A red LED in the top right corner of the button illuminates when driver's area air is recirculated. Use for faster driver's section heating.

NOTE
Upon starting of the vehicle, when the ambient temperature is very cold and so is the inside of the vehicle, the HVAC control module will permit a temperature overshoot up to 3° over the cabin area set point to help warming up of the area because some parts of the vehicle like the seats and furniture accumulate cold.

Windshield Defogger

Upon pressing this button, the dashboard damper sends air only to the lower windshield. The fan is turned on to maximum speed, the fresh air damper opens completely (REC off) and the driver set point is increased to 4°F (2°C) over the passenger's section set point.


22139

The dashboard damper sends air only to the lower windshield when activated. The footwell damper is closed also but the fan speed can be reduced or increased.

NOTE
If the windshield is continuously fogged, check that the driver's air filters are not clogged.

All Vents Open


22140

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

Panel and Footwell


22137

Air is sent to panel and footwell vents only.

Panel


22136

Air is sent to panel vents only.

Temperature Degree Selector

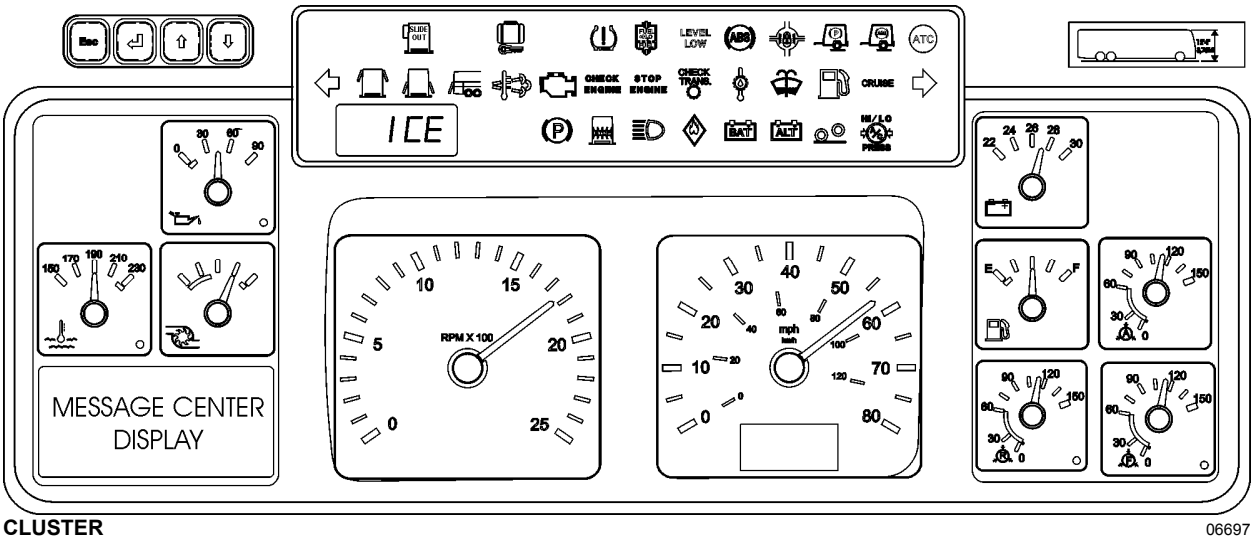
22133

Toggles between Fahrenheit and Celsius units (Driver's HVAC unit must be turned ON).

AIR VENTS

Three adjustable driver air vents in the dashboard feed air to the driver's area. Use the HVAC control module to set air temperature.

INSTRUMENT CLUSTER

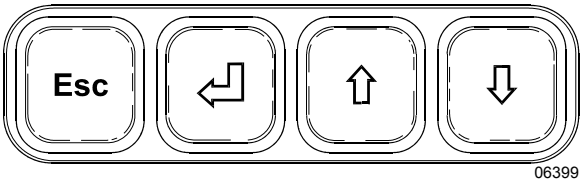


CLUSTER 06697

CLUSTER

The instrument cluster incorporates the Message Center Display, the Telltale Panel, the Gauges and Vehicle Clearance Information.

MESSAGE CENTER DISPLAY (MCD)



06399

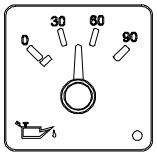
This standard feature gathers stores and displays important information about the vehicle's operation on a display screen on the lower left portion of the cluster. Refer to "Message Center Display" heading in "Other Features" chapter for a description of how to set-up and operate the Message Center Display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

DASHBOARD GAUGES

NOTE

Do not refer to dashboard instruments during adjustment procedures. Use only calibrated gauges.

Engine Oil Pressure Gauge



06229

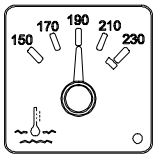
Indicates engine oil pressure. The normal reading should be between 50 and 70 psi (345 - 480 kPa) at 55 mph (90 km/h). A low oil pressure indicator LED (bottom right corner) illuminates when the oil pressure drops below 50 psi (345 kPa).

An audible alert signal also informs the driver of low oil pressure. Refer to Safety Features and Equipment chapter for table of audible alarms.

⚠ CAUTION

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

Engine Coolant Temperature Gauge

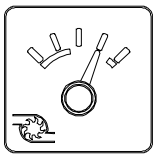


06231

Indicates the operating temperature of the engine coolant. The normal reading should be between 190°F and 222°F (88°C to 106°C).

A high coolant temperature indicator LED (bottom right corner of gauge) illuminates when the coolant temperature rises above 223°F (106°C). An audible alert signal also informs the driver of this condition. Refer to Safety Features and Equipment chapter for table of audible alarms.

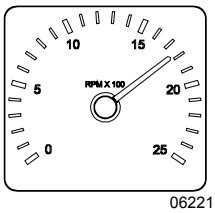
Turbo Boost Pressure Gauge



06230

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

Tachometer

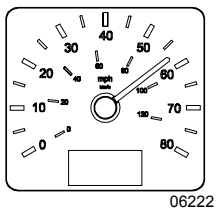


06221

Indicates the operating speed of the engine in hundreds of revolutions per minute (rpm x 100).

The tachometer serves as a guide for gear shifting and helps to prevent engine over-speeding when driving downhill with the JACOBS engine brake operating. The maximum allowed engine speed is 2,450 rpm.

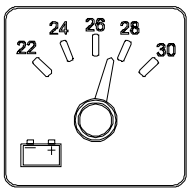
Speedometer



06222

Indicates the vehicle speed in miles per hour (mph) and kilometers per hour (km/h). The digital odometer registers the distance traveled in miles or in kilometers (units are driver selectable).

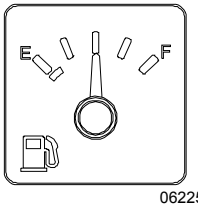
Voltmeter (24-Volt System)



06224

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

Fuel Level



06225

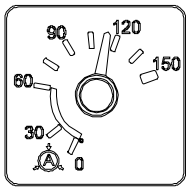
Indicates the amount of fuel remaining in the fuel tank.

A telltale light illuminates when about 12 US gallons (45 liters) of fuel remain in the fuel tank.

CAUTION

Operating the vehicle when the reading is below 1/8 full is not recommended.

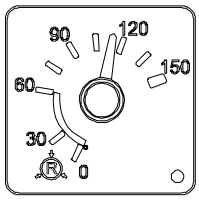
Air Pressure Gauge (Accessories)



06226

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

Air Pressure Gauge (Primary System)



06228

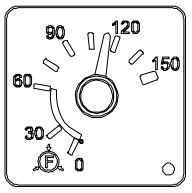
Indicates the primary air system pressure. The normal operating pressure is from 95 to 125 psi (655 to 860 kPa).

A low air pressure indicator LED (bottom right corner) illuminates when the primary air system pressure drops below 66 psi (455 kPa). An audible alarm signal also informs the driver of low air pressure. Refer to Safety Features and Equipment chapter for table of audible alarms. If the air pressure drops below 40 psi (276 kPa), the emergency brake applies at full capacity.

DANGER

Do not drive the coach when air pressure is low.

Air Pressure Gauge (Secondary System)



06227

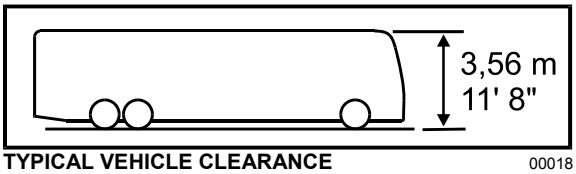
Indicates the secondary air system pressure. The normal operating pressure is from 95 to 125 psi (655 to 860 kPa).

A low air pressure indicator LED (bottom right corner) illuminates when the secondary air system pressure drops below 66 psi (455 kPa). An audible alarm signal also informs the driver of low air pressure. Refer to Safety Features and Equipment chapter for table of audible alarms. If the air pressure drops below 40 psi (276 kPa), the emergency brake applies at full capacity.

DANGER

Do not drive the coach when air pressure is low.

VEHICLE CLEARANCE INFORMATION

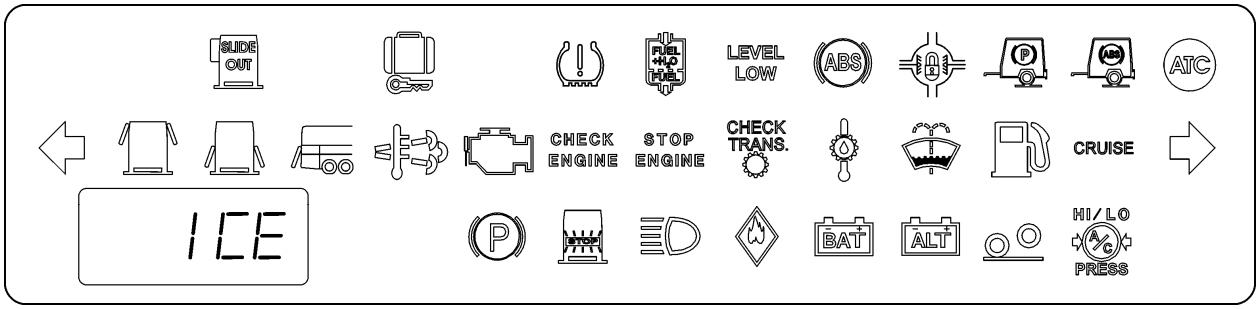


TYPICAL VEHICLE CLEARANCE 00018

WARNING

Vehicle clearance will vary depending on type of vehicle. Vehicle clearance is higher when escape hatch is open or if additional equipment is installed on the roof.

TELLTALE PANEL



TELLTALE PANEL 06593

Some telltale lights described bellow appear on the telltale panel only if the corresponding optional equipment is installed on the vehicle.

Slide-Out

06559

Illuminates when one or both slide-outs are partially or fully extended. Blinks to indicate that an error condition has been detected.

Compartments Locked Indicator

06387

Illuminates when one or more compartments are unlocked.

Flat Tire [Optional with Tire Pressure Monitoring System (TPMS)]

06694

Illuminates when a tire pressure is 25% below the target tire pressure.

Fuel Filter/Water Separator

06291

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

Level Low System Indicator

06297

Illuminates when the vehicle leveling system is activated.

Antilock Brake System

06272

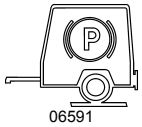
Illuminates when the ABS is not available or when the ABS is malfunctioning. Since the ABS system does not operate under 4 mph (7 km/h), the indicator will remain illuminated until the coach reaches that speed. Refer to "Other Features" chapter.

Driver Controlled Differential Lock (DCDL)

06653

Illuminates when the differential action is locked

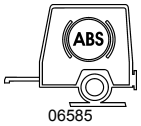
Trailer Emergency / Parking brake



06591

Illuminates when the trailer emergency/parking brake is unexpectedly applied as when the vehicle is moving and a parking brake air line rupture happens.

Trailer Antilock Brake System (ABS)



06585

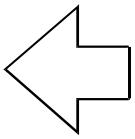
Illuminates when the trailer ABS is malfunctioning.

Automatic Traction Control (ATC)

06587

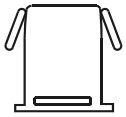
Illuminates when the automatic traction control system intervenes to prevent excess wheel spin during acceleration.

Left Turn Signal


06290

Flashes when the left turn signals are activated. Signal right and left turns by operating the multi-function lever. See “Steering Column Controls” heading in this chapter.

Emergency Window Open

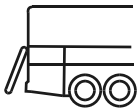

06287

Illuminates when an emergency window is open or unlocked.

Baggage Bay Door Ajar

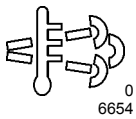
Illuminates when one or more baggage bay doors are ajar.

Engine Door Ajar



Illuminates when the engine compartment door is ajar.

High Exhaust System Temperature Lamp (HEST Lamp)


06546

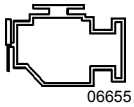
While regeneration is in progress, this indicator lamp illuminates when the vehicle speed is less than 5 mph (8 km/h) and the exhaust gas temperature at the DPF outlet is greater than 977°F (525°C).

Take note that if the vehicle is being driven, this indicator lamp will illuminate for 20 seconds as the temperature at the DPF reaches 977°F (525°C) and then, will turn off.

WARNING

During regeneration, exhaust temperature may reach up to 1200°F (650°C) at the particulate filter. Before initiating stationary regeneration, make sure that the DPF outlet diffuser is clear of objects and that no one is working near the DPF outlet diffuser.

Malfunction Indicator Lamp (MIL)


06655

Indicates a failure of an Emission Control device. May illuminate at the same time as the “Check Engine” Amber Warning Lamp. The lamp will go out when the fault is inactive. Vehicle can be driven to end of shift. Call for service.

Check Engine (Amber Warning Lamp)

06656

Indicates a minor fault detected by DDEC VI system. This warning lamp is illuminated for all active faults.

The warning lamp will remain *ON* until the malfunction has been corrected. Vehicle can be driven to end of shift. Call for service.

A diagnostic code will be stored in the memory and the lamp can be used to identify the problem. Refer to Appendix D under "DDEC VI Diagnostic Codes".

STOP Engine (Red Stop Lamp)

06657

Illuminates when a potential engine damaging fault is detected. Immediately park the coach in a safe place and stop the engine.

Flashes when Engine Protection Shutdown occurs. When a problem is detected, the engine power will automatically begin to decrease gradually, followed by full shutdown after 30 seconds. The Engine Protection Shutdown may be bypassed by using the “Engine Stop Override" switch on the L.H. lower control panel. Use only in order to move the vehicle to a safe parking place and then shutdown the engine. Call for service.

NOTE

Once the engine is stopped, it cannot be restarted until the problem has been corrected. A diagnostic code will be stored in memory.

The STOP engine indicator can be used to identify the problem. Refer to Appendix D under "DDEC VI Diagnostic Codes".

Check Transmission

06282

Illuminates when the ignition is switched *ON.* The indicator light should go out once the engine starts.

When the "CHECK TRANS" indicator is illuminated and the shift selector emits short beeps for 8 seconds, the electronic control unit (TCM) is restricting transmission shifting because special or abnormal conditions are detected. The control pad display will be blank.

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

Any time the CHECK TRANS telltale light illuminates, the TCM will register a diagnostic code. It may be identified on the display or by using a diagnostic tool. Refer to Appendix C under “Allison Transmission Diagnostic Troubleshooting Codes (DTC) and Descriptions”.

NOTE

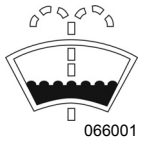
The CHECK TRANS indicator may also illuminate when starting the engine in extremely cold weather. Refer to "Starting and Stopping Procedures" under “Allison Transmission Warm-up”.

Transmission fluid Temperature


06292

Illuminates when the transmission fluid temperature is too high. An audible alert signal also informs the driver of this condition. Disengage the retarder to allow the oil temperature to cool down.

Windshield Washer or Headlights Washer Fluid Low

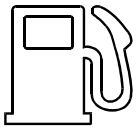

066001

Illuminates when the windshield washer or the headlights washer fluid level is low. The washer fluid containers are located inside the front service compartment.

WARNING

Do not drive without sufficient washer fluid.

Fuel Level Low


06286

Illuminates when approximately 12 US gallons (45 liters) of fuel remains in the tank. After the light comes *ON*, the remaining fuel will provide no more than 60 miles (100 km) of travel. Do not exceed this distance.

NOTE

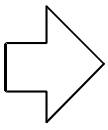
Refuel as soon as possible.

Cruise Control Enabled

06284

Illuminates when cruise control is enabled.

Right Turn Signal


06289

Flashes when the right turn signals are activated. Signal right and left turns by operating the multi-function lever. See “Steering Column Controls” in this chapter.

Freezing Conditions

06696

The word ICE is momentarily displayed when the temperature is in the range between 2°C and 1°C (35°F to 34°F), when the road is most slippery. The rest of the time, the exterior temperature is displayed at this location.

Emergency/Parking Brake

06303

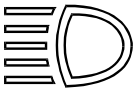
Illuminates when the emergency /parking brake is applied. The control valve is located on the L.H. control panel. An audible alert will sound if ignition is turned to *OFF* and the parking brake is not engaged.

Stoplights ON

06305

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

High Beam ON


06300

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

Fire Detected


06288

Illuminates if a fire is detected in the engine compartment while the vehicle is on the road. An audible alert informs the driver when a fire is detected. In case of fire detection when parked (parking brake applied, engine running or not), the electric horn is activated to alert the driver. Refer to « Safety Features and Equipment » chapter.

DANGER

In case of a fire, stop the vehicle immediately, stop the engine and evacuate the vehicle.

NOTE

It is possible to cancel an alarm while on the road. To do so, stop the vehicle. Cycle the ignition between the ON and OFF position and then start the vehicle normally. This can be done on a temporary basis when a false alarm is activated by a defective fire detector. The driver can go on without being annoyed by the alarm.

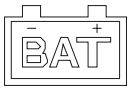
NOTE

To stop the electric horn alarm when parked, cycle the ignition between the ON and OFF position twice within 3 seconds.

NOTE

For extinguisher's location, refer to “Safety Features and Equipment” chapter.

Battery Voltage Incorrect



Illuminates when the battery voltage is too high, too low or not equalized.

NOTE

To identify the battery problem (too high, too low or not equalized voltage), using the message center display (MCD), perform a system diagnostic by selecting SYSTEM DIAGNOSTIC, FAULT DIAGNOSTIC & ELECTRICAL SYSTEM and see the fault messages.

NOTE

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

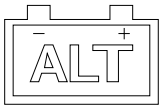
NOTE

To prevent discharge of the batteries when the engine in not running, some functions are automatically switched off if the batteries voltage drops below 24.0 volts for more than 30 seconds. The "BAT" telltale light blinks while this protection mode is active. Set the ignition key to the OFF position and then turn the ignition key to the ON position to reactivate the functions for a period of 30 seconds before they switch off again.

NOTE

If the battery equalizer indicator illuminates, make sure that the battery equalizer circuit breakers are reset before requesting breakdown assistance. Wait 15 minutes after setting breakers to allow batteries to equalize. The breakers are located on the R.H. side of the engine compartment.

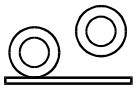
Alternator



Illuminates when the alternator or one of the alternators (twin Bosch) is not charging.

NOTE
To identify which alternator is defective (twin Bosch: 1=lower, 2=upper), using the message center display (MCD), perform a system diagnostic by selecting SYSTEM DIAGNOSTIC, FAULT DIAGNOSTIC & ELECTRICAL SYSTEM and see the fault messages.

Retracted Tag Axle


06271

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

A/C System Pressure High or Low

06658

Illuminates when the A/C system pressure is too low or too high. If the A/C pressure is too low, the compressor clutch disengages and the fan stops.

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

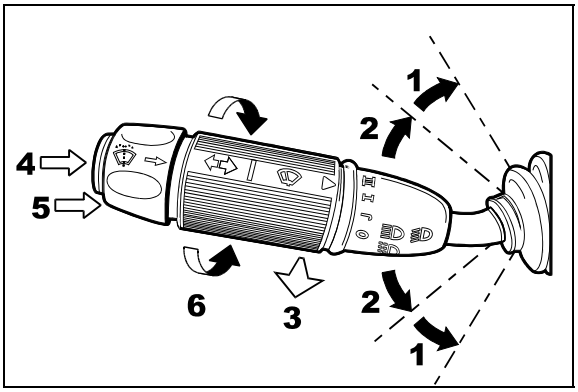
Refer to the Maintenance Manual for information on control panel troubleshooting mode.

NOTE
When outside temperature is low or high, it is possible and normal for that telltale light to come ON.

STEERING COLUMN CONTROLS

Many of the most frequently used controls are conveniently placed on the steering column or the steering wheel, just like a passenger car. The Multi-function lever is located on the left side of the steering wheel while the optional transmission retarder lever is located on the right side of the steering wheel. Switches for the electric horn and the air horn are located directly on the steering wheel.

MULTI-FUNCTION LEVER



MULTI-FUNCTION LEVER 23133

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

Turn Signal (1)

Move the lever all the way up until it locks in position to signal a right turn. Move the lever all the way down until it locks in position to signal a left turn. The lever automatically returns to the horizontal *OFF* position once the turn is completed.

Lane Change Signal (2)

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

Headlight Beam Toggle Switch (3)

Toggle between high and low beams by pulling the lever up towards you. To flash the headlights, pull the lever up halfway. The lever will spring back into normal position once released.

Courtesy Blinkers (4)

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

Windshield Washer Control (5)

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

WARNING

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

CAUTION

To avoid damaging the pump mechanism, do not use the windshield washer when the fluid level is very low or empty.

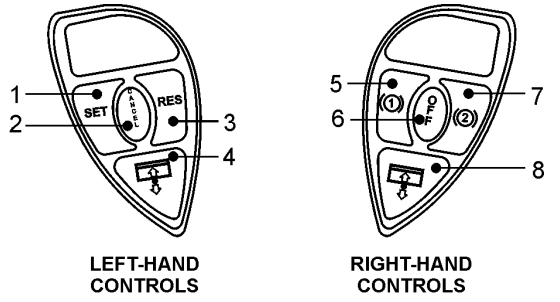
Windshield Wipers (6)

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

CAUTION

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

STEERING WHEEL CONTROLS



STEERING WHEEL CONTROLS 14069

The steering wheel controls include the following:

Cruise Control Buttons (1) SET, (2) CANCEL, (3) RES

NOTE

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

To operate the cruise control, press the **CRUISE** rocker switch located on the lateral control panel first.

- **Setting Coach Speed.** Accelerate the vehicle to the desired cruising speed using the accelerator pedal. Press and release the **SET** button then remove foot from the accelerator pedal. This will set the vehicle cruise speed and store it in memory.
- **Increasing Set Speed.** The vehicle cruise speed setting can be increased by one of the following methods.
  1. Accelerate using the accelerator pedal until the desired cruising speed is reached. Press and release the **SET** button.
  2. Press and hold the **RES** (RESUME) button until the desired cruising speed is reached. When the **RES** button is released, the new cruising speed will be stored in the cruise control memory.
  3. When driving with cruise control, each time the **RES** button is momentarily depressed, the cruising set speed is raised by 1 mph (2 km/h).

NOTE

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

- **Decreasing Set Speed.** The vehicle cruise speed setting can be decreased by one of the following methods.
  1. Press and hold the **SET** button until the desired cruising speed is reached. When the **SET** button is released, the new cruising speed will be stored in the cruise control memory.
  2. Each brief pressing of the **SET** button will decrease set cruising speed by 1 mph (2 km/h).
  3. Slightly apply the service brake and when desired cruise speed is reached, press and release the **SET** button.
- **Canceling Set Speed.** You can cancel the preset cruising speed by.
  1. Pressing momentarily the **CANCEL** button.

2. Depressing the brake pedal.

- **Resuming Set Speed.** If the preset speed is cancelled by pressing the **CANCEL** button or depressing the brake pedal, pressing the **RES** (RESUME) button will restore the speed set prior to cancellation, providing that your speed is above 9 mph (15 km/h).

NOTE

When driving downhill with the cruise control on, the engine brake or the transmission retarder engage automatically (if previously activated) when the selected cruise speed is exceeded by approximately :

- *7 km/h (4 mph) with the engine brake activated;*
- *1 km/h (0.6 mph) with the transmission retarder activated.*

The engine brake or the transmission retarder is then disengaged when speed has returned to selected cruise speed.

The engine brake will provide low braking power or high braking power depending on which of the two steering wheel engine brake control buttons is activated; (1) LOW or (2) HIGH.

The transmission retarder maximum braking level is determined by the retarder hand lever position on the steering wheel.

NOTE

To avoid sudden vehicle hesitation, slightly depress the accelerator pedal before disengaging the cruise control.

NOTE

*When the **CRUISE** rocker switch is released, the cruise control is completely shut off and the cruise speed setting is erased from the cruise control memory.*

IMPORTANT NOTE

If the engine was stopped and the CRUISE rocker switch was in the ON position, the rocker switch must be reset by turning it OFF then ON again in order for the cruise control to be reactivated.

WARNING

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

WARNING

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

(4) & (8) Left Sunshade; Right Sunshade

Press and hold the button to lower the left or right sunshade. Press twice rapidly and hold the button to raise the left or right sunshade.

CAUTION

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

(5) Retarder / Engine Brake Low

If your vehicle is equipped with a transmission retarder, press this button to simply enable the transmission retarder. Afterwards, operate the transmission retarder with the hand lever mounted on the steering wheel or the brake pedal. For more information about the operation of this system, refer to “Transmission Retarder” heading in this chapter.

On vehicles equipped with an engine brake, the engine brake provides two levels of braking power. Press this button for low engine braking power (about 70 % of full braking power). Refer to “OTHER FEATURES” chapter for more information about the engine brake operation.

WARNING

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

(6) Retarder / Engine Brake OFF

Press this button to cancel operation of the transmission retarder or the engine brake.

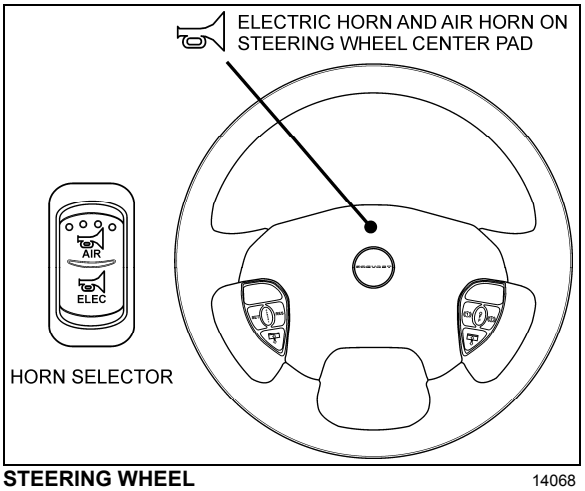
(7) Retarder / Engine Brake High

If your vehicle is equipped with a transmission retarder, this button has the same effect than the Retarder/Engine Brake Low button.

On vehicles equipped with engine brake, pressing this button will permit full application of engine brake (100% of braking power). Refer to "OTHER FEATURES" chapter for more information about the engine brake operation.

WARNING

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



STEERING WHEEL 14068

HORNS

The electric horn (city horn) and air horn (highway horn) are operated from the steering wheel center pad. Use the Horn Selector switch located on the lateral control panel to select the appropriate horn type.

NOTE

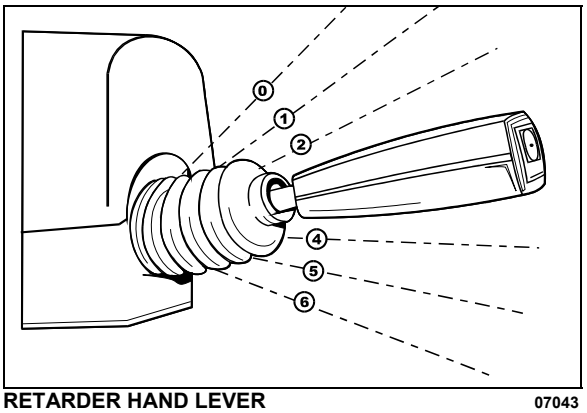
When the vehicle is stationary, the electric horn will sound to inform the driver that a fire is detected in the engine compartment.

TRANSMISSION RETARDER

The retarder can be operated using a hand lever mounted on the steering wheel column or using the service brake pedal.

To use the transmission retarder, it must be activated first by pressing one of the two Retarder/Engine Brake buttons on the steering wheel.

Operating the Retarder Using the Hand Lever



RETARDER HAND LEVER 07043

With the retarder enabled and the accelerator pedal released, move the output retarder lever clockwise from the first to the sixth position. The braking level for each position is as follows:

Position	Braking level (up to)
Initial ⓪	Varies with brake pedal
①	16%
②	33%
③	49%
④	71%
⑤	89%
⑥	100%

NOTE

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

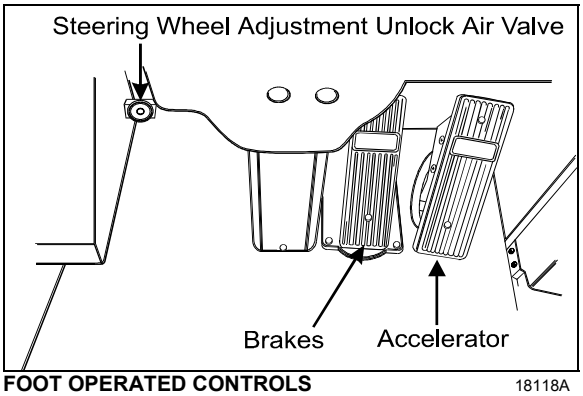
Operating the Retarder Using the Brake Pedal

With the retarder enabled, the accelerator pedal released and the output retarder lever in the initial position ⓪, depressing the brake pedal will engage both the service brake and the transmission retarder. This is referred to as retarder-brake blending. The further the pedal is depressed, the more total braking power is provided. Refer to "OTHER FEATURES" chapter for further information about the transmission retarder.

NOTE

If the wheels start to lock up on slippery roads, the output retarder will automatically deactivate until the wheels start to turn.

FOOT-OPERATED CONTROLS



FOOT OPERATED CONTROLS 18118A

SERVICE BRAKES

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

The dual braking system becomes a modulated emergency system if a pressure drop occurs in the rear brake system. Only the drive and tag axles are equipped with parking brakes.

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

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

A warning light and a buzzer will sound when the air pressure in either the primary or secondary circuits drops below 70 psi (483 kPa). If this occurs, stop the coach; determine the cause of the pressure loss before proceeding. The brake pedal can be used in conjunction with the transmission retarder. Refer to Transmission Output Retarder in this section.

DANGER

Immediately report any brake system problem to the nearest Prévost or Prévost-authorized service center.

DANGER

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

CAUTION

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

ACCELERATOR PEDAL

Controls engine RPM as needed.

NOTE

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

CAUTION

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

STEERING WHEEL ADJUSTMENT UNLOCK AIR VALVE

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

DANGER

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.

ALLISON AUTOMATIC TRANSMISSION

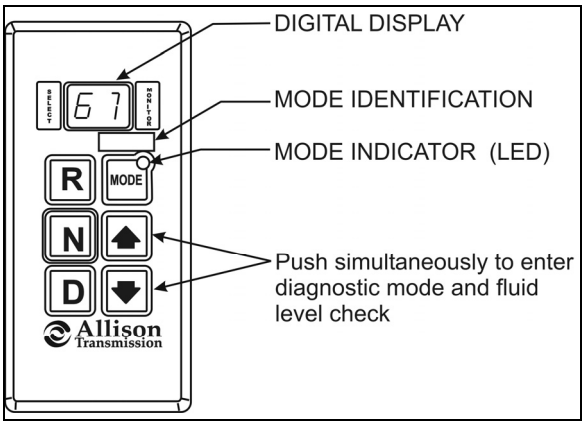
The transmission is fully automatic: Proper ranges should be automatically selected according to driving speeds to improve vehicle performance and control. The speed ratio of the power converter changes automatically as vehicle speed increases and direct-drive goes in and out as necessary. The speed ratio is modulated by vehicle speed and accelerator pedal position. You will find the complete transmission operation instructions and driving tips in the **Allison Bus Series Operator's Manual** included in your vehicle's publication box.

OPERATION

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

NOTE

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



ALLISON PUSHBUTTON SHIFT SELECTOR 07134

PUSHBUTTON SHIFT SELECTOR

The pushbutton shift selector has the following elements:

R (Reverse) — Press this button to select Reverse.

N (Neutral) — Press this button to select Neutral.

D (Drive) — Press this button to select Drive. The highest forward range available will appear in the digital display window under SELECT. The transmission will start out in the lowest available forward range, displayed under MONITOR, and advance automatically to the highest range.

▲ ▼ — Press respectively the ▲ (Upshift) or ▼ (Downshift) arrow button when in DRIVE to request the next higher or lower range. One press changes gears by one range. If the button is held down, the selection will scroll up or down until the button is released or until the highest or lowest possible range is selected. Protection mechanisms inhibit selecting ranges that are not appropriate for the current speed or which may damage driveline components.

MODE — The MODE button can allow the driver to enable a secondary shift mode that has been programmed into the TCM unit. The name of the secondary mode appears on the MODE IDENTIFICATION label adjacent to the MODE button. Pressing the MODE button activates the PERFORMANCE shift schedule and illuminates the mode indicator (LED).

NOTE

When the diagnostic display mode has been entered, the MODE button is used to view and toggle through diagnostic code information. Refer to Appendix C for more details about ***diagnostic code display procedure*** *and* ***fluid level check*** *using the pushbutton shift selector.*

FUNCTIONS OF THE "MODE" BUTTON

Both ECONOMY (default mode at starting of the engine) and PERFORMANCE (secondary shift mode) modes are equivalent from the first to the fourth gear as the transmission upshifts at around 2000 rpm.

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

The PERFORMANCE mode keeps upshifts at 2000 rpm in fifth and sixth gears. This makes for better performance than the economy mode but with higher fuel consumption. It is recommended this mode be selected while driving up or down grades. The mode indicator (LED) is illuminating when PERFORMANCE mode is selected.

DESCRIPTION OF AVAILABLE RANGES

Reverse (R)

Use this position to back-up the vehicle. Stop completely before shifting from forward to reverse or from reverse to forward. Touch the

reverse (R) button, ‘‘R’’ will be displayed and the reverse warning signal will be activated.

Neutral (N)

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

NOTE

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

DANGER

Always apply parking brake before leaving driver's seat.

CAUTION

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

CAUTION

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

Drive (D)

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

IMPORTANT NOTE

Brake pedal must be applied when selecting Drive (D) otherwise the transmission will stay in neutral (N).

- First range (1):

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

NOTE

The transmission should normally be allowed to shift by itself, but manual shifting can be done as described below.

- Second range (2)

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

- Third and fourth ranges (3 and 4)

Select these ranges when driving on moderate grades or when load and traffic conditions limit speed.

WARNING

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

CAUTION

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

EXHAUST AFTERTREATMENT SYSTEM

AFTERTREATMENT DEVICE

Detroit Diesel's workhorse behind clean emissions technology is an exhaust Aftertreatment Device (ATD) which replaces today's muffler. The ATD primary function is to capture and oxidize (regenerate) the particulate matter (soot) in the engine exhaust gas. The ATD is split into two main sections. The exhaust gas first enters the Diesel Oxidation Catalyst (DOC) and then flow through the Diesel Particulate Filter (DPF); together they capture and regenerate the soot on a regular or passive basis. Through constant monitoring of the exhaust gas temperature and the system back pressure, DDEC VI is able to manage regeneration.

PASSIVE REGENERATION

Passive regeneration is the process by which the particulate matter is oxidized due to the heat generated by the engine internal combustion process. However, exhaust temperature must be above 572°F (300°C) to initiate the oxidation catalyst that precedes the filter substrate. During normal highway operation, exhaust temperatures alone are usually high enough to oxidize accumulating soot. In low ambient temperatures, however, or in some stop-and-go applications, the system needs a little help to regenerate, or clean itself. This process is called "active" regeneration.

ACTIVE REGENERATION

When required, DDEC VI activates two key upstream systems that assist in a process called "active" regeneration when the engine internal combustion process alone does not generate enough heat. The first is an Intake Throttle Valve which can be actuated to help increase the Aftertreatment Device temperature which speeds the regeneration. The second system is the Dosing System, which injects a mist of diesel fuel into the exhaust system to increase and maintain the Aftertreatment temperature. Exhaust temperature must again be above 572°F (300°C) to initiate the oxidation catalyst, which in turn oxidizes the injected diesel fuel molecules to achieve up to 1200°F (650°C) exhaust temperature at the particulate filter.

This process of "active regeneration" takes place during the normal operation cycle of the vehicle without charges in performance or control for the operator.

STATIONARY (PARKED) REGENERATION

In a small number of specific engine duty cycles, DDEC VI may not be capable of completing an active regeneration. In these situations, the operator will be notified that a "stationary" regeneration may be required. A DPF telltale light will illuminate indicating the need for user interaction. The lamp gives the operator a grace period to allow this process to take place at a time when most convenient for the operator. This process requires the vehicle to be parked while a driver or maintenance technician initiates the regeneration process. Once initiated, the stationary regeneration process will be complete in about 20 to 45 minutes.

The driver will be notified of the need for a stationary regeneration (parked) by illumination of the "DPF Regeneration Lamp".

The sequence of indicator lamp(s) is as follow:

LEVEL 1  (steady)

REGENERATION NEEDED

Diesel particulate filter is becoming full.

The "DPF Regeneration Lamp" will be illuminated prior to any engine protection measures being taken. Once this lamp is lit, the stationary regeneration (parked) process should be initiated.

LEVEL 2  (flashing)

REGENERATION REQUIRED

Diesel particulate filter is full.

If no DPF regeneration occurs after the initial "DPF Regeneration Lamp" illumination, the lamp will begin blinking and a stationary regeneration should be initiated as soon as possible in order to prevent from entering into Level 3.

LEVEL 3  (flashing) + CHECK ENGINE

ATD SERVICE REQUIRED

ENGINE DERATE ACTIVE

Diesel particulate filter is overfull.

If the flashing “DPF Regeneration Lamp” is still ignored, the “Check Engine” will illuminate at that time, engine performance is limited. Perform a parked regeneration IMMEDIATELY to avoid further derate and prevent from entering into Level 4.

LEVEL 4  (flashing) + STOP ENGINE

ATD SERVICE REQUIRED

ENGINE DERATE ACTIVE

A serious engine problem has occurred. The DPF may be over its maximum capacity.

If a stationary regeneration is still not initiated, a standard Engine Protection Shutdown sequence will occur. All of the following dashboard lamps will be present:

Blinking “DPF Regeneration Lamp”;
Steady “Check Engine” lamp;
Steady “Stop Engine” lamp.

Once engine derate and/or shutdown sequence is completed, a stationary regeneration must occur to continue vehicle operation. If the driver continues to operate the vehicle without a regeneration, additional measures will be taken to protect the engine and ATD from damage, up to and including engine shutdown. Parked regeneration might no longer be possible.

NOTE

At starting of the engine, if a stationary regeneration is required, the engine coolant temperature must reach 140°F (60°C) before any stationary regeneration may be initiated and completed. Permit the engine to idle for a short while or drive the vehicle until engine temperature increases sufficiently.

WARNING

Do not initiate a stationary regeneration in a closed area like a garage. Stationary regenerations must be undertaken outdoors only.

WARNING

During stationary regeneration, exhaust temperature may reach up to 1200°F (650°C) at the particulate filter.

Before initiating stationary regeneration, make sure that the DPF outlet diffuser is clear of objects and that no one is working near the DPF outlet diffuser.

WARNING

Hot surfaces. Keep yourself clear of all hot Aftertreatment Device components, particularly during and after active or stationary regeneration. Hot surfaces can cause serious burns.

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.

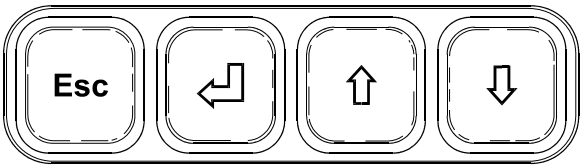
Should an alert message be sent out by the ECM, the driver will be shown what is wrong via an error code. Symbols may be displayed on the screen when a condition occurs or as a reminder that a feature is enabled. These symbols include a bell when the reminder alarm is on, “PTO” when fast idle is activated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



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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

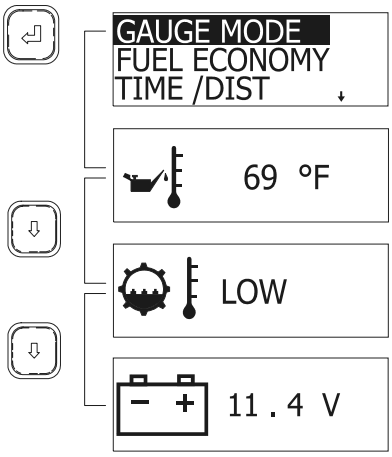
Transmission fluid temperature, engine oil temperature and battery voltage can be displayed in this mode.

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.



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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.

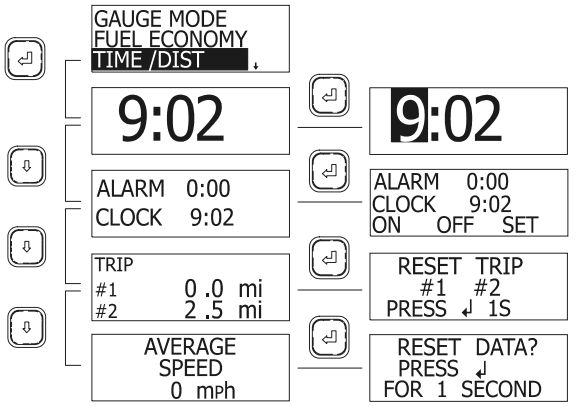
To display the digital clock.

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.



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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.

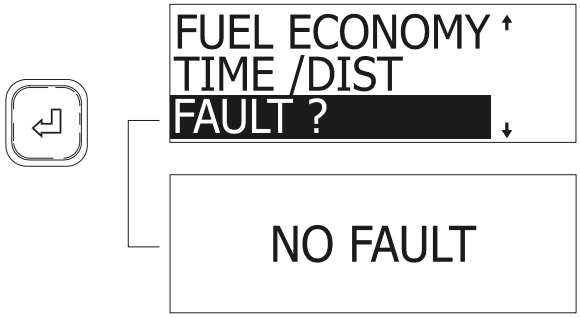
To reset:

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).



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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:

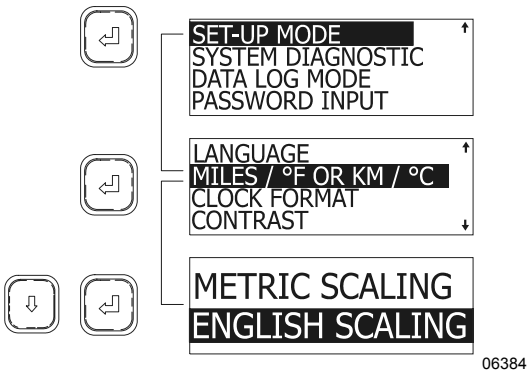
1. In SET UP MODE, highlight LANGUAGE using the arrow keys.
2. Press the enter key (⏎).
3. Highlight the desired language using the arrow keys.
4. Press enter key (⏎) to confirm the language choice.

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.

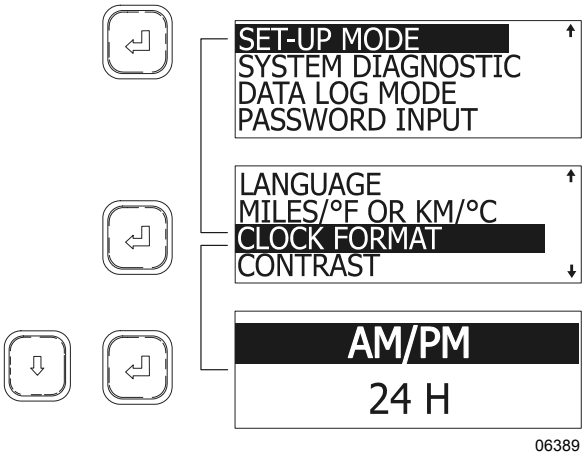
The MCD returns to SET UP MODE menu.



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.

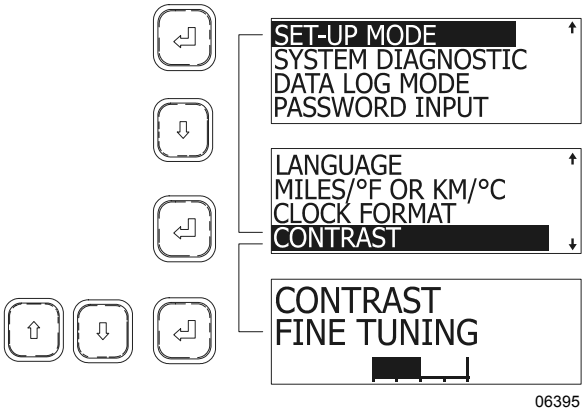
The MCD returns to SET UP MODE.



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.

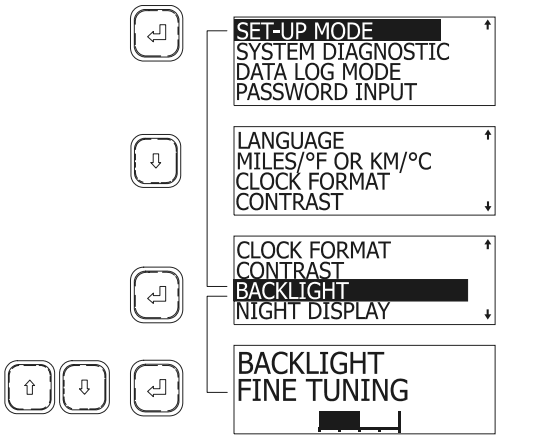
The MCD returns to SET UP MODE.



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.

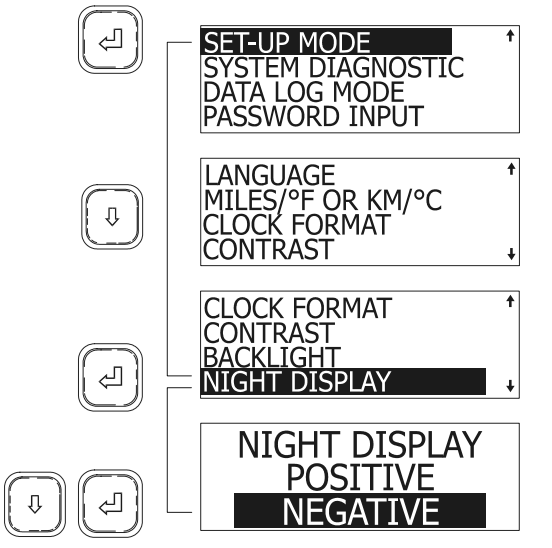


Setting Night Display

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.

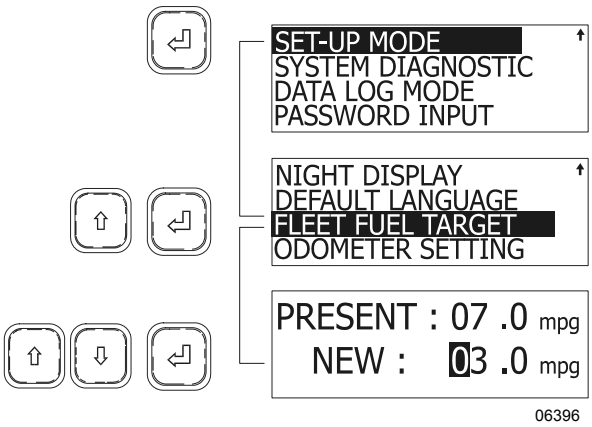
The MCD returns to SET UP MODE.

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 ECM or ECU 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 ECM or ECU.

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:

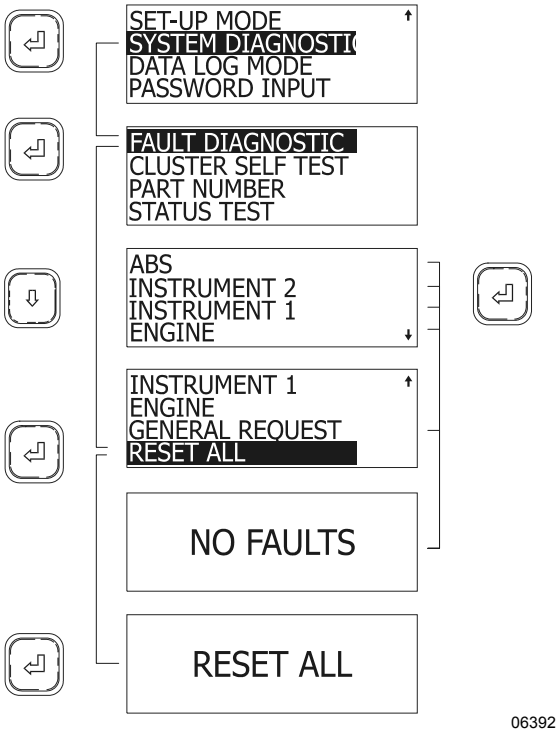
1. Highlight FAULT DIAGNOSTIC with the arrow keys.
2. Press the enter key (⏎) to confirm.
3. Highlight the component to request a diagnostic using the arrow keys.
4. Press the enter key (⏎).

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.



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

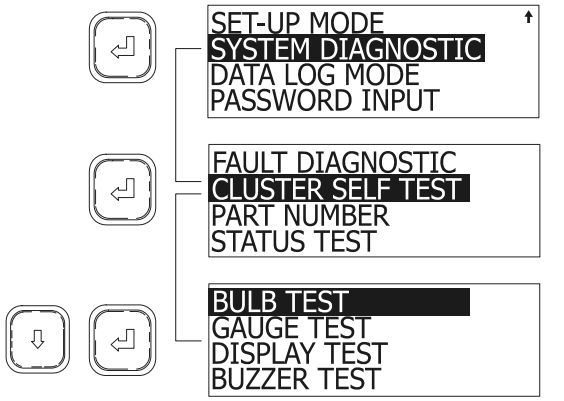
Tests cluster light bulbs, gauges, MCD display and buzzers.

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 ECM data link is disconnected. Therefore, the gauges will not function until the cluster is out of the self test mode. To interrupt any test, cycle the ignition key off and on.



BULB TEST

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

GAUGE TEST

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

DISPLAY TEST

To help identify defects in the graphic display, the display goes from dark to bright in about ten seconds.

BUZZER TEST

Sounds each of the buzzer signals for ten seconds each. The name of the buzzer is written on the display as the test runs.

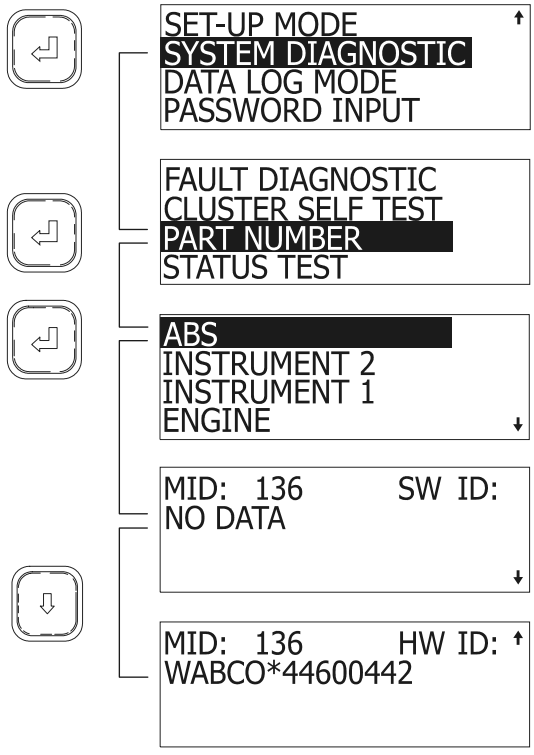
PART NUMBER

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.



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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)

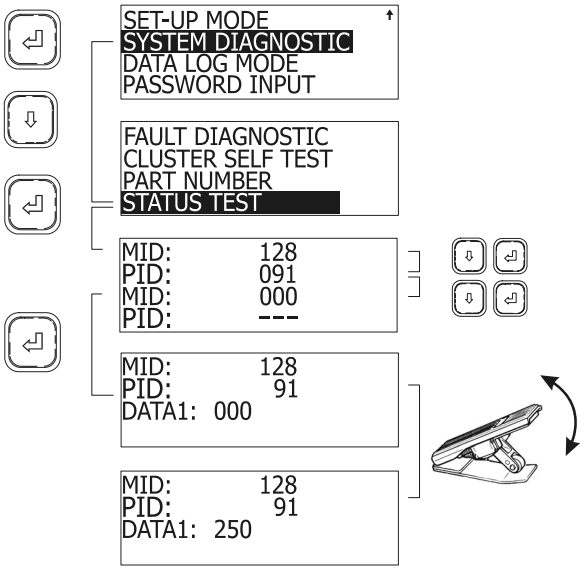
In Status Test mode, the MCD will monitor the system and display the data on the screen. Up to two components can be monitored at once.

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.



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In this example, a throttle pedal in good working order will send a linear and continuous (no jumps) signal to the ECM, 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.

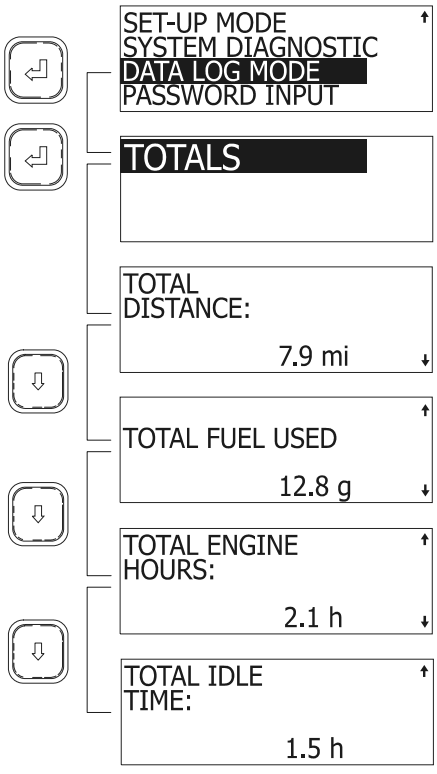
To access data log:

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".

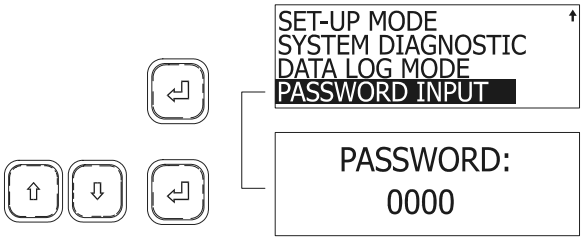
The owner's password is initially set to "1234".

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.



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Changing passwords

To change any password, owner's password must be entered first.

To change passwords:

1. Using the arrow keys, highlight SET UP MODE.
2. Press enter key (⏎) to confirm.
3. Using the arrow keys, highlight PASSWORD CONFIG.
4. Press enter key (⏎) to confirm.
5. Using the arrow keys, select MECHANIC or OWNER.
6. Press enter key (⏎) to confirm.
7. Set new password.

ALLISON TRANSMISSION ELECTRONIC CONTROLS

The Allison Transmission electronic controls have four major elements: The Transmission Control Module (TCM), 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 TCM. The TCM 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 transmission electronic controls monitor the system for abnormal conditions.

When one of these conditions is detected, the Allison electronic control system is programmed to automatically respond in a manner which is safe for the driver, the vehicle and the transmission. The Allison 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 TCM 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 Appendix C, "Allison Transmission Diagnostic Troubleshooting Codes (DTC)".

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 control buttons on the steering wheel and a lever on the steering column (refer to "CONTROLS AND 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.

ENGINE BRAKE

WARNING

A vehicle speed retarding device (such as engine brake) is not intended to replace the service brake systems on your vehicle nor intended to bring your vehicle to a stop. A vehicle speed retarding device is only intended to reduce the speed of your vehicle under certain conditions.

Several types of engine brake can be installed or are standard on certain engines. All are used to reduce wear on the vehicle brake linings.

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.

NOTE

Jacobs engine brake is only engaged when the accelerator pedal is fully released, the engine speed exceeds 750 rpm and one of the two engine brake control buttons is activated; (1) LOW or (2) HIGH. When this system is in operation, the stoplights automatically illuminate.

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) – AUTOMATIC TRACTION CONTROL (ATC) – ELECTRONIC STABILITY PROGRAM (ESP)

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.

In addition to the ABS function, advanced models of Bendix controllers provide an **Automatic Traction Control (ATC)** feature. Bendix ATC can improve vehicle traction during acceleration, and lateral stability while accelerating through curves. ATC utilizes **Engine Torque Limiting (ETL)** where the ECU communicates with the engine's controller and/or **Differential Braking (DB)** where individual wheel brake applications are used to improve vehicle traction.

Advanced models of Bendix controllers also provide ABS-based stability features referred to as **ESP® Electronic Stability Program**.

The Bendix ESP system is an ABS-based stability system that enhances vehicle stability by both reducing engine throttle and by applying vehicle braking based on actual vehicle dynamics. Accordingly, the ESP system is available only on specific approved vehicle platforms after vehicle application and development efforts and validation testing. Only certain limited variations of an approved vehicle platform are permitted without further validation of the ESP system application.

DANGER

In the case where a vehicle equipped with the ESP system pulls a trailer, the latter must be equipped with ABS.

ESP stability system consists of Yaw Control (YC) and Roll Stability Program (RSP) features.

> **CAUTION**
>
> Even with ESP-equipped vehicles, the driver remains responsible for ensuring vehicle stability during operation.

DRIVER CONTROLLED DIFFERENTIAL LOCK (DCDL)

By actuating the electric switch, the driver can lock or unlock differential action.

The purpose of the DCDL is to provide maximum vehicle traction and control on unfavorable road or highway surfaces. When the DCDL is actuated, a clutch collar completely locks the differential case, gearing, and axle shafts together. This feature maximizes traction to both wheels. The lock position will also protect against spinout damage to the differential. The DCDL should not be actuated when favorable road conditions exist.

OPERATION TIPS

1. The DCDL can be locked or unlocked if the vehicle is standing still or moving at a constant low speed when the wheels are not spinning, slipping, or losing traction.
2. When the DCDL is locked, operate the vehicle at low speeds. DCDL will not engage and will disengage in speed higher than 5 MPH (8 km/h).
3. When the DCDL is locked, the vehicle's turning radius will increase. This condition is called "understeer." The driver must use caution, good judgment and drive at low speeds when operating the vehicle with the DCDL locked.
4. Always unlock the DCDL as soon as the need for maximum traction has passed and the vehicle is traveling on a good road or highway.
5. Do not lock the DCDL when the wheels are slipping or losing traction, or damage to the axle can result.
6. Do not lock the DCDL when the vehicle is traveling down steep grades, or potential loss of vehicle stability could occur.

LOCKING THE DCDL

When encountering poor road or highway conditions where maximum traction is needed, follow the recommended procedures:

1. Without the wheels spinning, slipping or losing traction, flip the DCDL control switch to the "LOCK" position while maintaining a constant vehicle speed.
2. Let up momentarily on the accelerator to relieve torque on the gearing, allowing the DCDL to lock.
3. When the DCDL is fully locked, the vehicle will have an "understeer" condition when making turns. Proceed cautiously over poor road or highway conditions.

UNLOCKING THE DCDL

When the vehicle can safely operate and driving conditions have improved, disengage the DCDL following the recommended procedures:

1. Flip the control switch to the "UNLOCK" position, when the vehicle is stopped or when traveling at low speed while the wheels are not spinning, slipping or losing traction.
2. Let up momentarily on the accelerator to relieve torque on the gearing, allowing the DCDL to unlock.
3. Resume driving at normal speed using good driving judgment.

RETRACTABLE TAG AXLE

The standard 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 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. 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

Do not use tag axle in raised position for an extended period. Raising tag axle increases load on the drive axle, suspension and tires.

Do not drive vehicle with tag axle raised when speed is exceeding 12 mph (20 Km/h).

In order to prevent damage to the suspension, always raise the tag axle before lifting the coach.

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 lock the entrance door and the baggage compartment doors simultaneously and arm the intrusion protection and anti-theft system:

- Press LOCK on the transmitter once.

NOTE
The intrusion protection and anti-theft system will be set after a 30 seconds delay.

To confirm that the entrance door and baggage compartment doors have been locked and that the intrusion protection and anti-theft system is armed:

- Press LOCK again within five seconds of the first lock. The front and rear side markers will flash once if the doors have locked. If the entrance door or one of the baggage compartment doors is open, a door ajar signal prevents arming of the system.

To unlock the entrance door:

- Press UNLOCK on the transmitter. This will unlock the door and disarm the intrusion protection and anti-theft system.

To unlock the baggage compartment doors:

- Press UNLOCK a second time within five seconds of the first unlock.

To set off the personal security alarm:

- Press the red PANIC button on any transmitter. The horn will sound and the marker lights 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:

- Make sure that the anti-theft system is not armed or triggered.
- Turn the ignition key from OFF to ON and wait about 10 seconds. If you do not respect this 10 seconds delay, the remote entry transmitters reprogram will not be possible.
- On the dashboard, press the Central Locking System switch 4 times (to lock position) slowly to enter programming mode.
- If the system has successfully entered programming mode, the horn will beep one time.
- Press UNLOCK on the transmitter. The horn will beep to confirm that the transmitter has been programmed.
- Repeat step 4 for each other transmitters (up to 3 other transmitters).
- Turn ignition OFF to exit programming mode.
- Test each transmitter separately (try all the functions).

SLIDE-OUT OPERATION

SAFETY PRECAUTIONS

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

- Make sure that the area outside 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***.

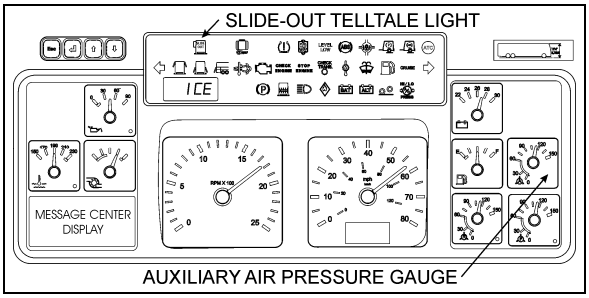
- Make sure that the area inside the motor home where the room retracts (30" for the front and 24" for the rear slide-out) is free of people or obstacles. ***Serious personal injury or damage to the vehicle components may occur***.
- In temperatures below freezing point, make sure that the entire sliding 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 must be in the "NEUTRAL" position.
- Open a window to avoid slide-out movement restriction.
- Level the vehicle.

FRONT AND REAR SLIDE-OUT OPERATION

Preliminary condition for the slide-out operation

Before extending or retracting the 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.
2. Make sure the parking brake is applied and that transmission is in the "NEUTRAL" position.

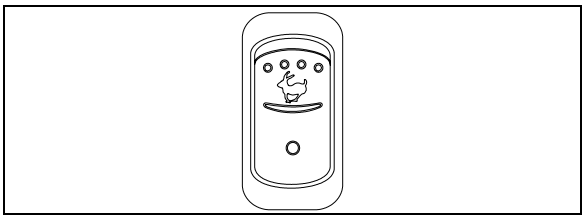


VEHICLE INSTRUMENT CLUSTER 261XX

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

⚠ CAUTION

Before extending or retracting the slide-out, always open a window to avoid movement restriction and to prevent the motor from stopping in overcurrent because of a vacuum or pressure build up inside the vehicle.



FAST IDLE BUTTON 06264

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
- 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

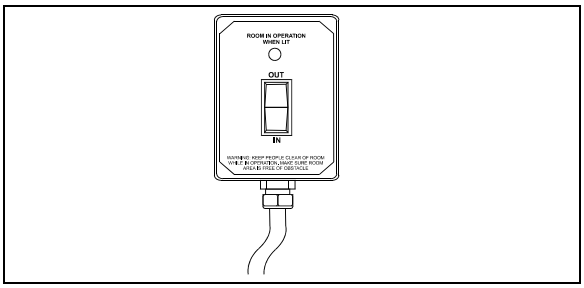
When the rocker switch is released, the green indicator light goes out. Note that for safety reasons, releasing the rocker switch will stop the slide-out movement instantly. At any time, releasing the rocker switch from the "OUT" position and pressing it to the "IN" position will reverse the operation.

⚠ CAUTION

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.

NOTE

Handheld control green indicator light blinking. A green light blinking indicates an error condition or missing operation condition on the slide-out operated by this handheld control. Refer to SLIDE-OUT TROUBLESHOOTING at the end of this section if that situation occurs.



SLIDE-OUT HANDHELD CONTROL **26034**

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.

CAUTION

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.

SLIDE-OUT MANUAL OVERRIDE PROCEDURE

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

The manual override procedure consist in rotating the slide-out motor shaft extension using a cordless power drill with a 3/8" hexagonal bit.

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

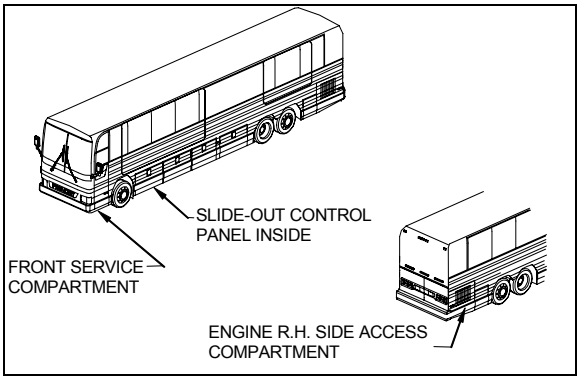
Preliminary conditions for manual override procedure

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

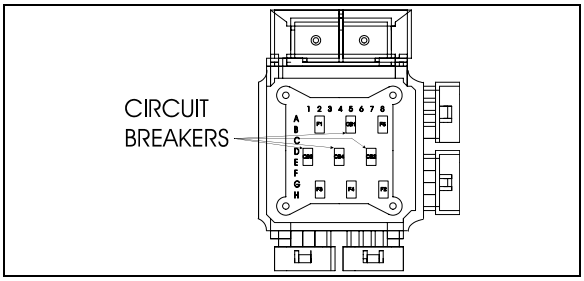
- Make sure that none of the breakers are tripped (the breakers are located inside the VEC on the slide-out control panel and the main slide-out breaker is located in the engine R.H. side access compartment).
- Make sure the barking brake is applied and that transmission is in the "NEUTRAL" position.
- Make sure the voltage is high enough by running the engine at fast idle or having the battery charger connected.

CAUTION

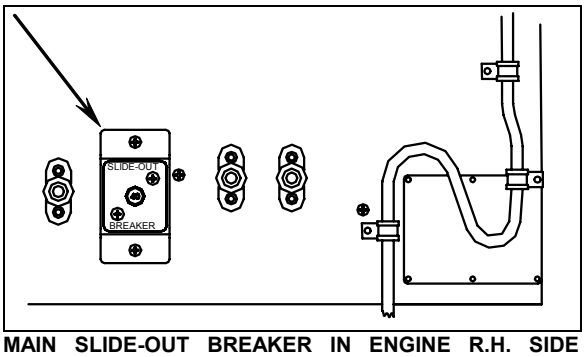
Before extending or retracting the slide-out, always open a window to avoid movement restriction and to prevent the motor from stopping in overcurrent because of a vacuum or pressure build up inside the vehicle.



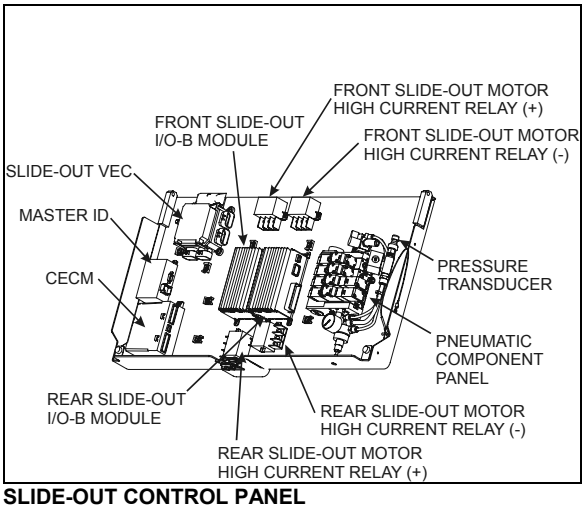
COMPARTMENTS LOCATION



VEC CIRCUIT BREAKERS ON SLIDE-OUT CONTROL PANEL



MAIN SLIDE-OUT BREAKER IN ENGINE R.H. SIDE ACCESS COMPARTMENT



SLIDE-OUT CONTROL PANEL

Manual retracting procedure – Front and rear slide-out

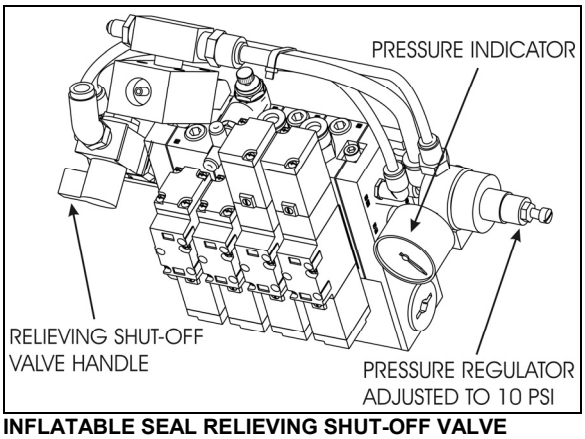
1. Turn the ignition switch to the "OFF" position, and remove the ignition key for more safety.
2. Deflate the inflatable seal by using the relieving shut-off valve located on the slide-out control panel. Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is "0 psi".

⚠ CAUTION

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

NOTE

When air pressure is relieved using the shut-off valve, the normal extending and retracting operation cycle is disabled, for that reason the slide-out cannot be moved using the handheld control.

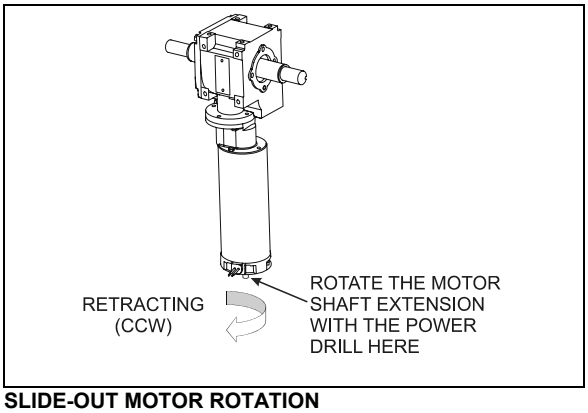


INFLATABLE SEAL RELIEVING SHUT-OFF VALVE

3. To move the slide-out, use a cordless power drill with a 3/8" hexagonal bit on the shaft extension of the slide-out motor.
4. Rotate the slide-out motor shaft extension with the power drill until the slide-out comes to its closed position.
5. Once the slide-out room is lined up to its closed position, remove the tool from the motor.

NOTE

*The **front slide-out motor** is located inside the 2nd baggage compartment while the **rear slide-out motor** is accessible from inside the vehicle, under the bed structure.*

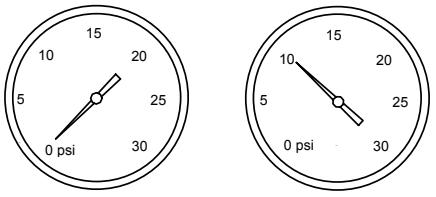


SLIDE-OUT MOTOR ROTATION

⚠ CAUTION

Slow down on the closing speed as the slide-out approaches its closed position. As soon as the “in limit” stoppers come in contact with their bearing surface, stop immediately the power drill rotating movement. Not doing so could overload the drive mechanism and cause damage to the reduction gearbox.

6. 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 to see if the pressure is increasing to 10 psi.



INFLATABLE SEAL PRESSURE GAGE

NOTE

The slide-out control system inhibits transmission range selection to prevent the vehicle from moving if the slide-out is not in its full "IN" position.

Manual extending procedure – Front and rear slide-out

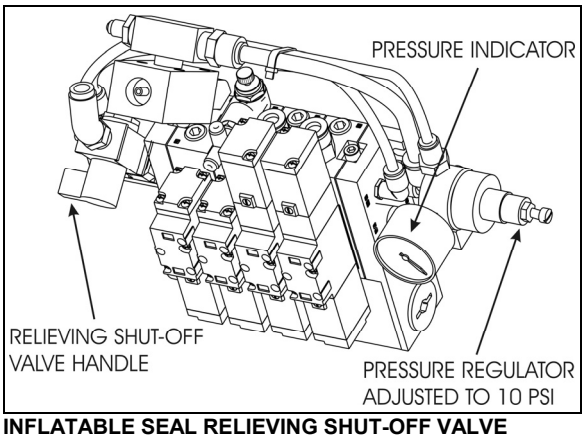
1. Apply barking brake to disengage the security pin from the receptacle.
2. Turn the ignition switch to the "OFF" position, and remove the ignition key for more safety.
3. Deflate the inflatable seal by using the relieving shut-off valve located in the slide-out control panel. Turn the handle clockwise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

CAUTION

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

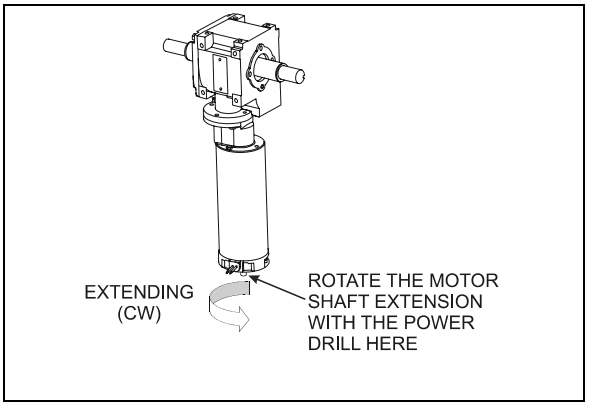
NOTE

When air pressure is relieved using the shut-off valve, the normal extending and retracting operation cycle is disabled, for that reason the slide-out cannot be moved with the handheld control.



INFLATABLE SEAL RELIEVING SHUT-OFF VALVE

4. To move the slide-out, use a cordless power drill with a 3/8" hexagonal bit on the shaft extension of the slide-out motor.
5. Rotate the slide-out motor shaft extension with the power drill until the slide-out comes to its opened position.
6. Once the slide-out is lined up to its opened position, remove the tool from the motor.



SLIDE-OUT MOTOR ROTATION

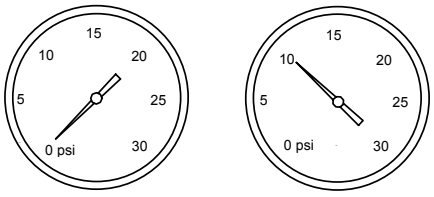
NOTE

*The **front slide-out motor** is located inside the 2nd baggage compartment while the **rear slide-out motor** is accessible from inside the vehicle, under the bed structure.*

CAUTION

Slow down on the closing speed as the slide-out approaches its extended position. As soon as the “out limit” stoppers come in contact with their bearing surface, stop immediately the power drill rotating movement. Not doing so could overload the drive mechanism and cause damage to the reduction gearbox.

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 to see if the pressure is increasing to 10 psi.



0 psi
SEAL DEFLATED

10 psi
SEAL INFLATED

INFLATABLE SEAL PRESSURE GAGE

NOTE

The slide-out control system inhibits transmission range selection to prevent the vehicle from moving if the slide-out is not in its full "IN" position.

SLIDE-OUT TROUBLESHOOTING

Error condition or missing operation condition

When an error condition or a missing operation condition is present on a slide-out, the green indicator light on its respective handheld control starts blinking upon releasing of the IN/OUT rocker switch.

Turning the ignition OFF and ON again, will stop the blinking and reset the fault. If the error condition or a missing operation condition is still present, the blinking will start again the next time that the slide-out is operated. So, to get a fault diagnostic, use the MCD right after operating the slide-out without cycling the ignition switch.

Fault diagnostic

To get more specific information about the error condition or the missing operation condition, request a diagnostic from the slide-out CECM using the dashboard message center display (MCD). Check if there are active errors in the slide-out electrical system. With the SYSTEM DIAGNOSTIC menu, highlight FAULT DIAGNOSTIC and then highlight ELECTRICAL SYSTEM to request a diagnostic of the electrical system from the CECM. Press the enter key.

If applicable, the MCD shows the device ID, the fault messages or fault codes recorded. When more than one fault is recorded, an arrow pointing down appears on the right of the display. Use the down arrow to see all the fault messages.

Once the problem corrected, the MCD still shows the fault as being active. You have to leave the FAULT DIAGNOSTIC menu, wait approximately 20 to 30 seconds and then return to FAULT DIAGNOSTIC to request a new diagnostic of the ELECTRICAL SYSTEM from the CECM. The MCD should display the fault as being inactive.

TROUBLESHOOTING – OPERATING CONDITIONS, CONTROL & MECHANICAL COMPONENTS

PROBLEM	CAUSE	CORRECTIVE ACTION
The slide-out functions normally but the handheld control green indicator light blinks	A. Something is defective and may eventually create an issue if not repaired. The problem may be: B. Faulty limit sensor causing the slide-out to stop in overcurrent; C. CAN network problem causing the transmission inhibit safety to be non-operational; D. Vacuum pressure transducer disconnected or damaged (vacuum is applied for a fixed time of 7 seconds); E. Seal inflating valve solenoid open circuit (the seal is not re-inflated and water can penetrate in the vehicle); F. Security pin valve solenoid open circuit (the security pin is not extended while vehicle is riding).	Request a diagnostic from the electrical system using the MCD SYSTEM DIAGNOSTIC menu.
The slide-out does not extend	A. The parking brake is not seen by the controller as being applied; B. Not enough air pressure in the accessory air tank to permit proper operation of the vacuum generator; C. Faulty vacuum generator, connection to the vacuum generator open, seal deflating valve solenoid open circuit; D. I/O-B module output defective, regulated 5-volt supply to sensors shorted to ground, “out limit” sensor shorted to ground, connection to the motor negative relay solenoid open circuit;	A. Make sure the parking brake is applied. Confirm parking brake application with the parking brake light on the telltale panel. B. Run the engine at fast idle a few minutes to increase air pressure in the accessory air tank and try again. C. Turn the relieving shut-off valve handle clockwise to deflate the inflatable seal, disconnect the pressure transducer. Do not forget to reconnect the pressure transducer and to close the relieving shut-off valve. Failure to do so could damage the seal and lead to water infiltration; D. Operate the slide-out with the manual override procedures.
The slide-out does not retract	A. Not enough air pressure in the accessory air tank to permit proper operation of the vacuum generator; B. Faulty vacuum generator, connection to the vacuum generator open, seal deflating valve solenoid open circuit; C. I/O-B module output defective, “in limit” sensor shorted to ground, connection to the motor positive relay solenoid open circuit;	A. Run the engine at fast idle a few minutes to increase air pressure in the accessory air tank and try again. B. Turn the relieving shut-off valve handle clockwise to deflate the inflatable seal, disconnect the pressure transducer. CAUTION, do not forget to reconnect the pressure transducer and to close the relieving shut-off valve. Failure to do so could damage the seal and lead to water infiltration; C. Operate the slide-out with the manual override procedures.

70 Other Features

PROBLEM	CAUSE	CORRECTIVE ACTION
When extending, the slide-out stops after having extended by 1 inch	The security pin valve solenoid circuit is shorted to (+) 24-volt and the pin remains engaged;	Disconnect air supply from the safety pin cylinder;
Transmission DRIVE range or REVERSE cannot be selected (the slide-out telltale light is illuminating).	A. Slide-out not in full "in" position; B. Faulty “in limit” sensor. The slide-out is retracted but the controller doesn’t not see it as retracted.	A. Retract slide-out. B. Confirm that all slide-outs are retracted. On the slide-out control panel, disconnect the 5 pins green connector on the I/O-B module to disable the transmission inhibit. CAUTION, this is a temporary measure, the vehicle must be serviced as soon as possible.
Slide-out does not retract or extend when depressing the control switch.	A. Electrical motor failure; B. Speed reduction gearbox failure; C. Security pin still engaged in receptacle;	A. Replace motor. B. Inspect gearbox components, particularly: bronze wheel or first reduction stage output shaft. Replace damaged components. C. Disengage pin and check if air cylinder is damaged.
Slide-out is not straight once retracted or during retracting or extending operation.	A. Broken rack tooth; B. Faulty rack attachment; C. Faulty shaft key at speed reduction gearbox or jaw coupling; D. Pinion keyless bushing slipping; E. Shaft breaking; F. Flange bearing attachment loosen;	A. Replace rack. B. Tighten mounting bolts, apply proper torque and use Loctite threadlocker (replace rack if necessary). C. Replace key or component having a damaged keyway. D. Realign slide-out and apply proper torque to keyless bushing. E. Replace shaft. F. Reposition shaft and tighten flange bearing mounting bolts.
Slide-out moves out slightly when vehicle is traveling.	Lower "in limit" stoppers are not leaning against the structure at the moment when the "in limit" sensor detects the magnet;	Adjust the sensor position in order to have contact of the stoppers against the structure at the time when the system stops the slide-out retraction.
Slide-out moves when vehicle is moving.	Inflatable seal not inflated	Check seal condition and seal air supply system.
Slide-out retracts or extends with difficultly.	Foreign matters accumulated in the linear bearing;	Inspect the linear bearing end seals to see if they are in good condition. If not, replace the end seals and clean the inside of linear bearing.

PROBLEM	CAUSE	CORRECTIVE ACTION
Slide-out oscillates vertically when retracting or extending	A. Linear bearing balls hardened due to a too heavy load; B. Linear bearing mounting bolts loosen;	A. If balls clearance is excessive, replace linear bearing. B. Tighten mounting bolts.
Slide-out vibrating or noisy when extending or retracting	A. Acetal plastic block rubbing against the slide-out structure; B. Worn-out anti-friction coating on wiper seal around slide-out; C. Lower acetal plastic block rubbing against rail;	A. Realign acetal plastic block. B. Replace wiper seal. C. Remove lower acetal plastic block and machine down 1mm (0.039").
Top of slide-out moves sideways when vehicle is moving	Roof reinforcing rod misadjusted;	Readjust as per procedure.
Slide-out does not retract up to its full "in" position	Interference between the exterior extrusion and the vehicle upper horizontal member above the slide-out;	A. Check for straightness of horizontal member and adjust the roof reinforcing rod. B. Check for outer wiper seal lip straightness on the slide-out roof.
Bottom of slide-out not flush with vehicle body	A. Broken or misadjusted lower "in limit" stopper; B. Lower "in limit" stoppers are not leaning against the structure at the moment when the "in limit" sensor detects the magnet; C. Acetal plastic block serving as leaning surface for lower "in limit" stopper broken or moved;	A. Replace or adjust lower "in limit" stopper. B. Adjust the sensor position in order to have contact of the stoppers against the structure when slide-out is stopped. C. Replace or adjust acetal plastic block proper position.
Top of slide-out not flush with vehicle body	A. Broken or misadjusted leveling or retaining screw; B. Faulty upper “in limit" stopper;	A. Check and replace screw. B. Replace upper “in limit" stopper.
Lower edge of slide-out not parallel with vehicle body opening	Faulty leveling and retaining screw (8 screws on each side).	Inspect screws, replace and adjust slide-out level.
Watertightness problem	A. Inflatable seal and/or wiper seal damaged or unstuck; B. Insufficient air pressure in the seal; C. No air pressure in the slide-out pneumatic system; D. Sealant missing;	A. Check both seals condition. B. Check the pressure regulator, the relieving shut-off valve and the seal valve condition. C. Check the slide-out air pressure inlet valve condition and the accessory air tank pressure. D. Check the exterior extrusion screws, the windows and the exterior panels sealant condition.

PROBLEM	CAUSE	CORRECTIVE ACTION
	E. Wiper seal draining hole clogged; F. Faulty water recovery pan; G. Faulty internal gutter;	E. Unclog draining hole. F. Check the recovery pan. G. Check internal gutter.
Knocking sound at end of travel when extending slide-out	Inner stoppers misadjusted;	Readjust the inner stoppers.
Knocking sound when parking brake is released	Security pin retracts too rapidly;	Adjust security pin air flow regulator.
Inflatable seal damaged or removed, or wiper seal unstuck from the structure.	A. Slide-out has been retracted or extended with the manual procedure with the inflatable seal not deflated; B. Pressure transducer malfunction; C. Faulty roof reinforcing rod adjustment; D. Seal valve malfunction; E. Excessive load in the slide-out; F. Slide-out not centered in the structure opening;	A. Always deflate the seal when manually retracting or extending the slide-out. B. Check the pressure transducer condition, replace if necessary. C. Readjust the roof reinforcing rod. D. Check the seal valve condition. E. Reduce load or distribute load evenly in order to respect the deflection criterion and slide-out load capacity. F. Readjust the slide-out height and center horizontally in opening.
Friction at end of travel when in full OUT position or at beginning of retraction	Interference between upper structure key and upper inner stopper;	Readjust the upper inner stopper.

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;
- 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.

STARTING FROM THE ENGINE COMPARTMENT

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

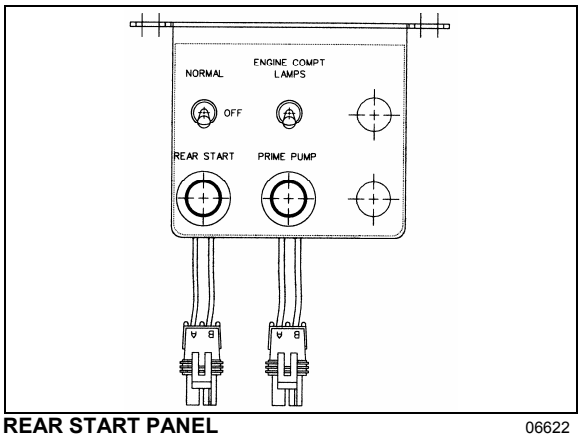
DANGER

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

Turn the ignition key to the *ON* position;

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

Press the *REAR START* push-button switch. Release push-button after the engine starts.



REAR START PANEL 06622

DANGER

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

DANGER

Rotating shafts can be dangerous. You can snag cloths, skin, hair, hands, etc. This can cause a serious injury or death. Do not work on a shaft (with or without a guard) when the engine is running.

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

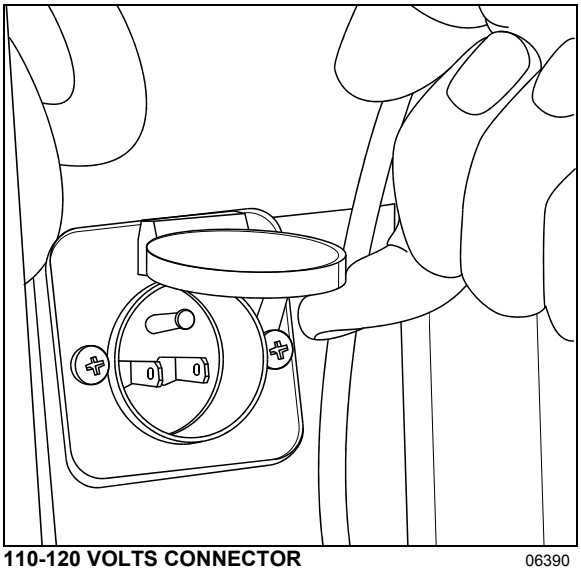
Use the cold starting aid only when absolutely necessary. Excessive use of starter fluid could result in serious engine damage.

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.

DANGER

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).

ALLISON TRANSMISSION 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.

DANGER

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 jewelry and watches with metal bands.

DANGER

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.

DANGER

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.

WARNING

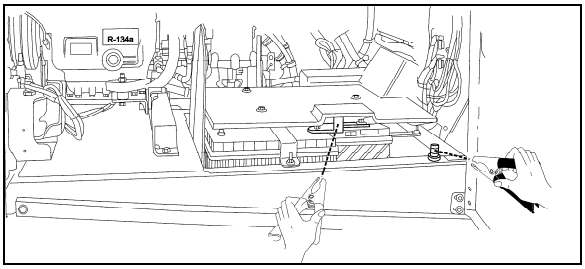
Before attempting to jump start, make sure the parking brake is applied and the transmission is in neutral (N). Turn off all lights, heaters and other electrical accessories.

To jump start, proceed as follows:

1. 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;
2. Connect the other end of the same red jumper cable to the positive (+) terminal bar on the battery;
3. Connect one end of the black jumper cable to the negative (-) post on the booster power source;
4. Connect the other end of the same black jumper cable to the negative (-) terminal on the structure; If the good battery is in another vehicle, start that vehicle's engine;
5. Let the engine run for a few minutes, then start the vehicle with the run-down battery;
6. Disconnect the jumper cables in reverse order given in steps 1 through 4.

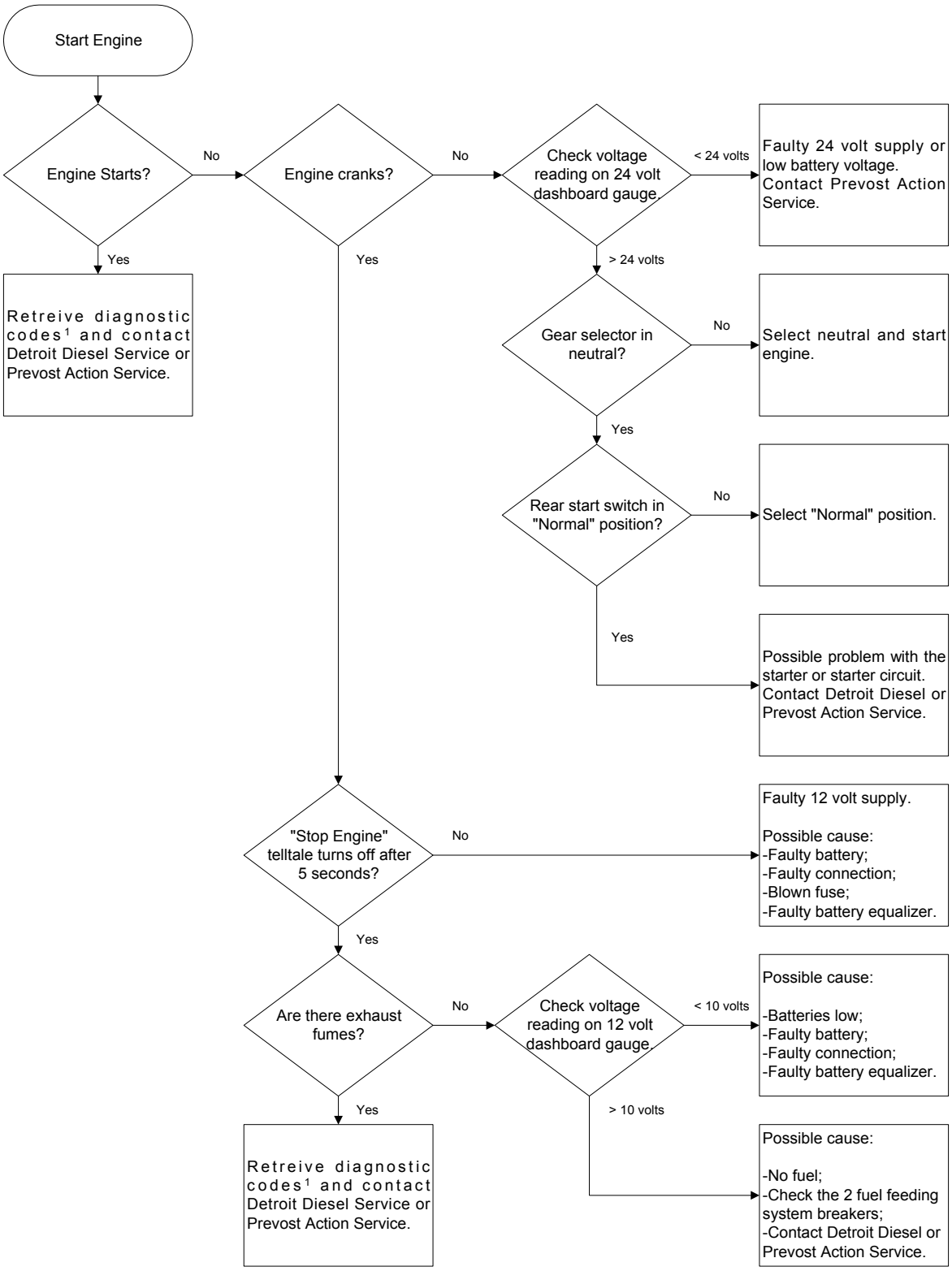
NOTE

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.



JUMP STARTING 06645

ENGINE TROUBLESHOOTING FLOWCHART



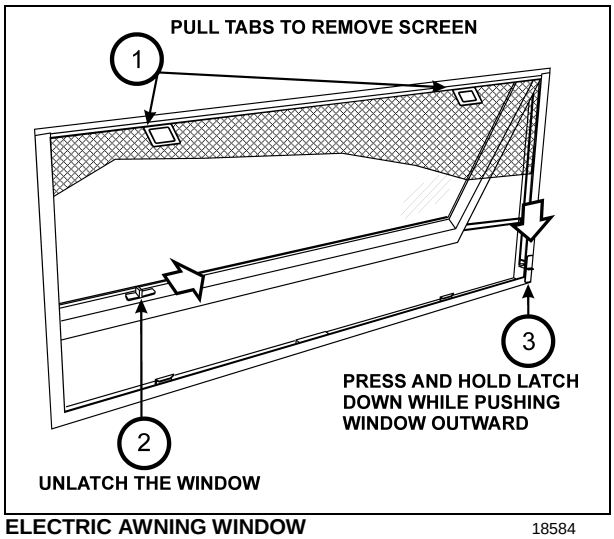
(1) Refer to DDEC VI Diagnostic Codes in appendix D.

01093

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

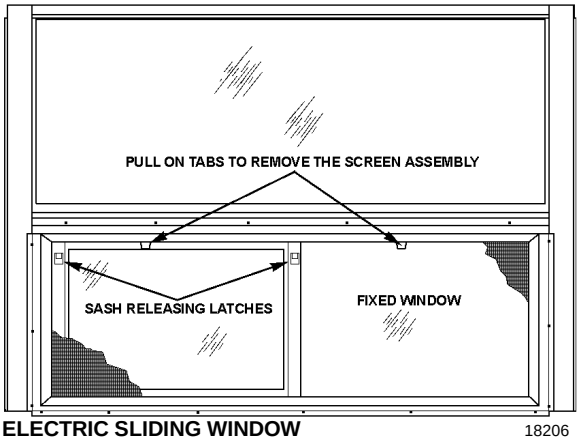


ELECTRIC AWNING WINDOW 18584

ELECTRIC SLIDING WINDOWS

Electric (power) sliding windows can be used as emergency exits.

- Remove the screen assembly,
- Pull down on both red release latches simultaneously and rotate the sash inwards approximately 10 degrees.
- Lift the sash up and out to disengage the bottom of the sash from the window frame.



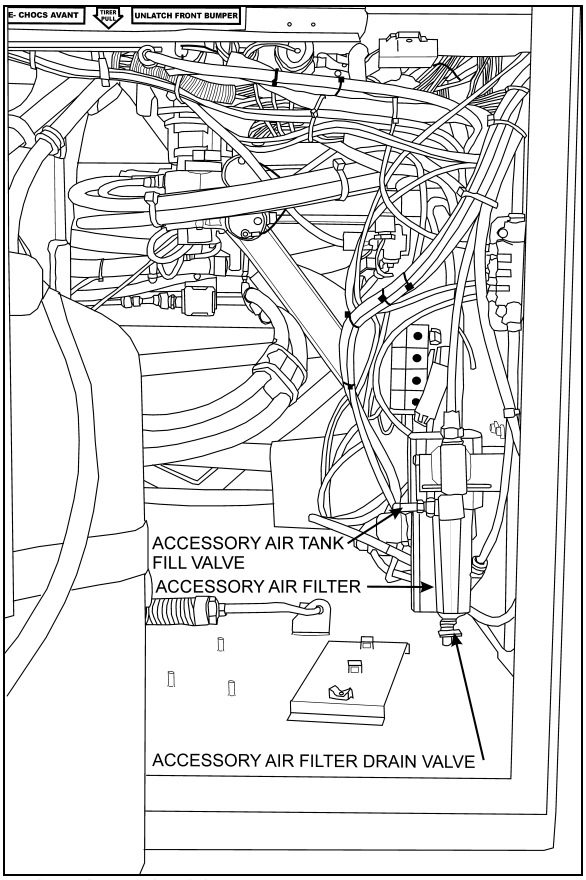
ELECTRIC SLIDING WINDOW 18206

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.

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.

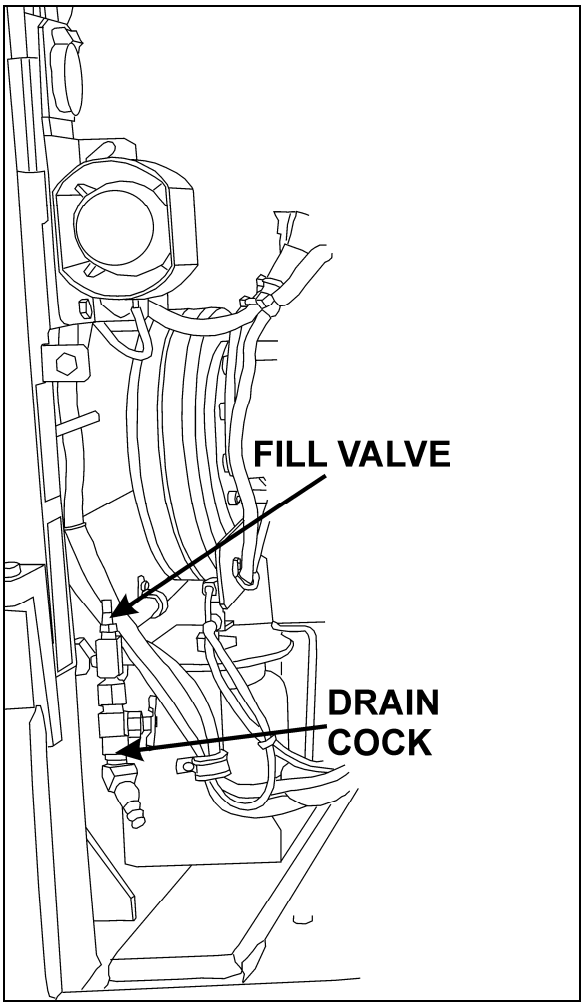


FRONT SERVICE COMPARTMENT 12218

Both air system emergency fill valves are fitted with standard tire valve stems. The air systems can be filled using any standard external air supply line. The fill valve located in the engine compartment supplies air for all systems (brakes, suspension and accessories). The fill valve located in the service compartment supplies air for accessories only.

CAUTION

Air filled through the two emergency fill valves will pass through the standard air filtering system. Do not fill air at any other location. Do not exceed 120 psi (827 kPa).



FILL VALVE IN ENGINE COMPARTMENT 12162

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.

DANGER

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

TIRE PRESSURE MONITORING SYSTEM (TPMS) (OPTIONAL)

The vehicle may be equipped with the optional Tire Pressure Monitoring System (TPMS).

Description

System includes the following elements:

- Special tire valves;
- RF sensor inside each tire, fixed to the valve;
- 3 antennas to receive the sensors RF signal (one in the front spare tire compartment, one above the L.H. side rear wheels and one above the R.H. side rear wheels);

- A TPMS receiver connected to the antennas and located in the front electrical compartment, above the CECM;
- A TPMS display built in the L.H. dashboard panel;
- A “FLAT TIRE” telltale panel indicator.

The section of the special tire valves located inside the tire is dome-shaped to allow fixing the sensor.

Sensors provide continuous tire pressure and temperature reading.

The normal sensor battery lifespan is 5 years. The remaining lifespan is displayed as a percentage in the TPMS display.

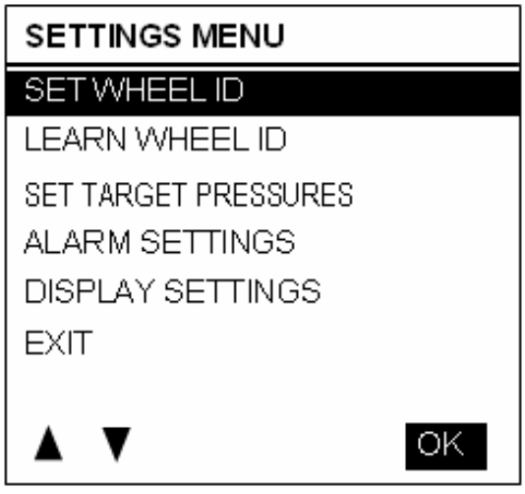
NOTE
It is recommended to check the remaining battery lifespan when changing the tires in order to replace the sensors at the same time if they are due for replacement before the next change.

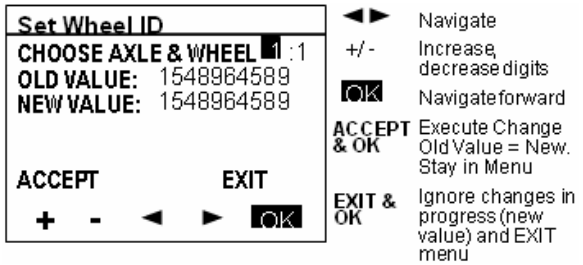
The screw fixing the sensor to the valve can only be used once because the threads are powder-coated to lock the sensor in place and prevent unfastening.

The telltale panel indicator illuminates for 3 seconds when the ignition switch is turned ON to check the display operation and the communication between the display and the vehicle multiplex system. This confirms the communication between the TPMS display and CECM.

Settings Menu

- Set Wheel ID





- Learn Wheel ID

This menu allows learning new wheel sensors ID. The user can learn only one wheel, several wheels or all wheels of the vehicle. The sequence automatically jumps to the next wheel such that a user can initiate all wheels without having to come back to the display between each wheel.

The display uses a pressure change as the criteria to recognize which wheel sensor the operator wants to get assigned to a given location. The amount of pressure change required is established at 2 PSI.

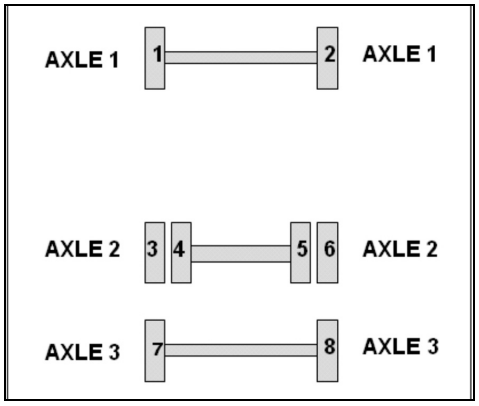
A pressure change of about 3 PSI is needed to wake up a sensor and then an extra amount of pressure change of 2 PSI is needed to trigger the display. The operator has to create a pressure change by at least 6 PSI and then wait for the display to recognize the pressure change. The wait time correspond to the sensor sampling rate.

When entering the menu, the axle 1, wheel 1 is selected by default as a starting point for the learning. The user can select another axle with +/- , move the cursor to the wheel number with the right arrow and select another wheel with the +/- or move the cursor down to the start learning button.

After the start learning button is selected, the display stores the first transmission it gets from each sensor ID into the “initial pressure” for that sensor ID. Then it compares each subsequent pressures received for that sensor ID with the initial one and when the comparison shows a delta pressure exceeding the defined level required, this sensor ID is assigned to the selected tire location.

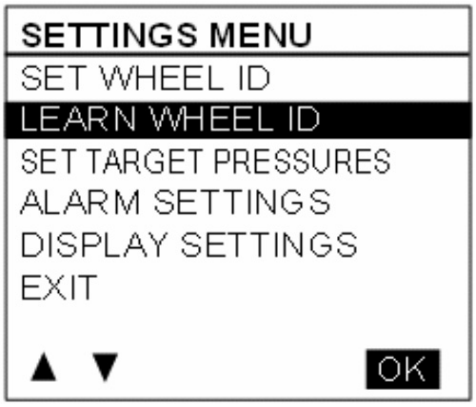
Once a wheel ID has been assigned, the display increments the number of Wheels done and it moves the axle/wheel to the next one in the sequence waiting for another sensor to come up with a pressure change. Within one learning session, the display remembers which sensor has been assigned and it will not assign it twice.

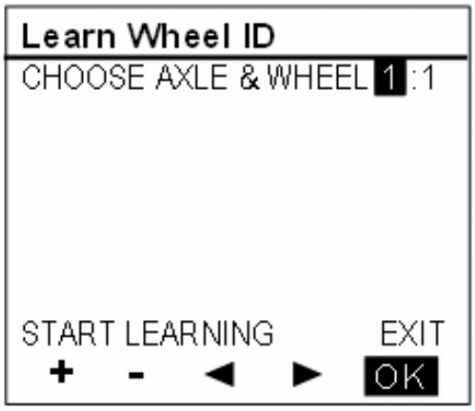
The sequence increments to the next wheel on the same axle counting wheels from left to right and then moves to the next axle counting axles from front to rear.

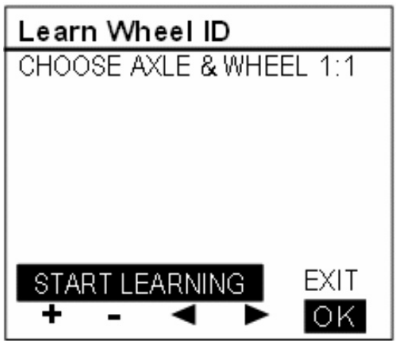


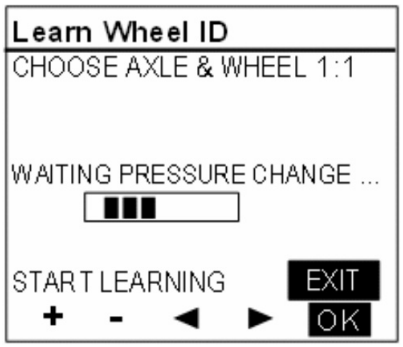
The display activates the next wheel parameter each time a wheel is done. This parameter is use by the vehicle electronic to activate an audible signal on the vehicle thus providing a feedback to the user that he can move to the next wheel.

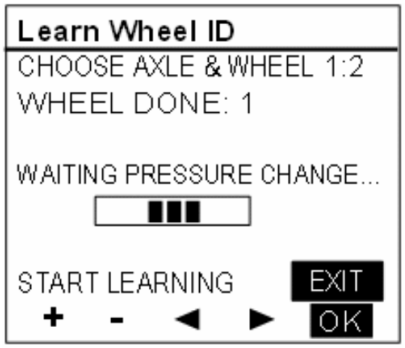
The spare Tire can be done by selecting the axle/wheel “spare” which is internally encoded to 15:1.

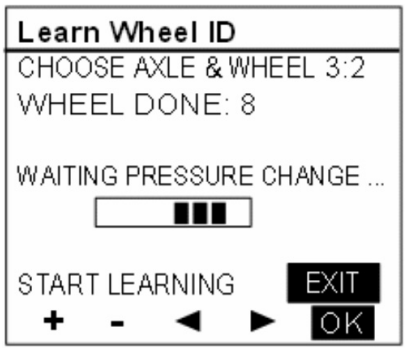










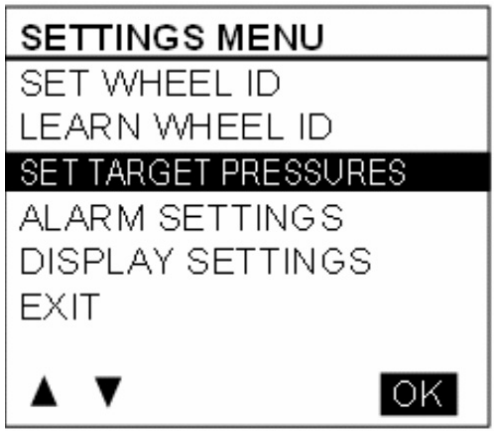


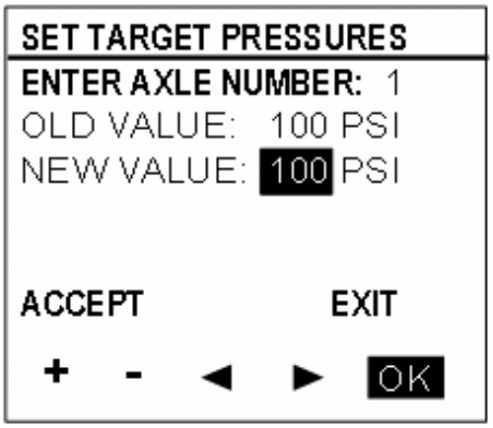
- Set Target Pressures

This menu allows the end user fine tuning the target pressure setting to account for the specific operating conditions (cold weather operation or unloaded operation). The end user can readjust the target pressure within +30% and -20% of the factory set target pressure but not outside this range.

The factory set target pressure is always kept in permanent memory into the TPMS display and cannot be edited by the end user.

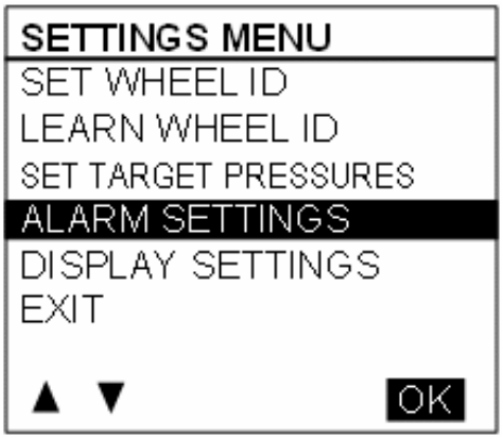
When the user enters a new target value, the user cannot select values outside the valid range.

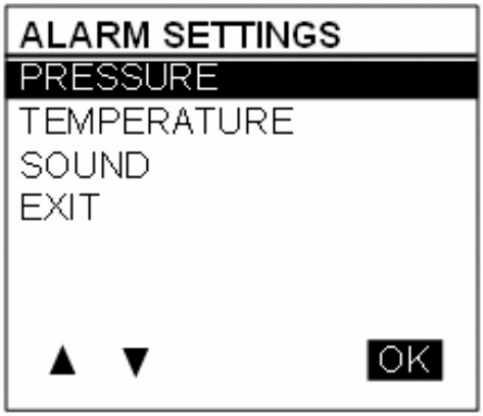




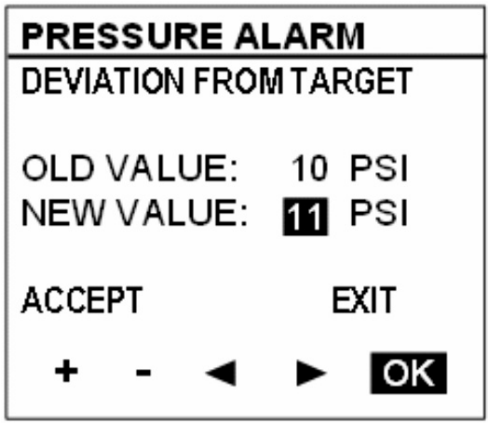
- Alarm Settings

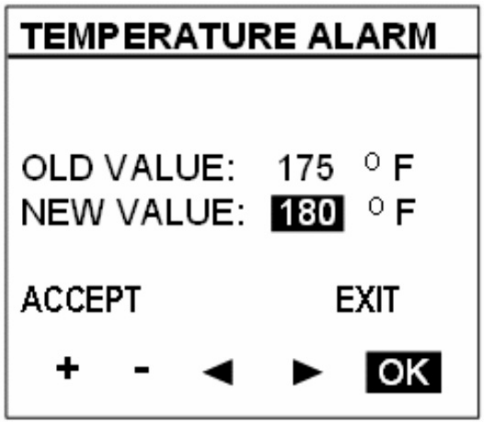
When selecting the Alarm Settings Menu, a sub menu containing Pressure Alarm and Temperature Alarm appears.

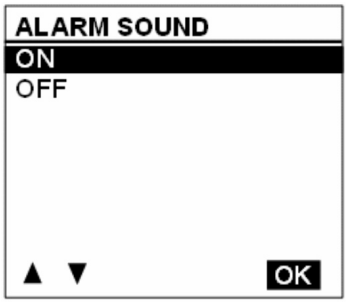




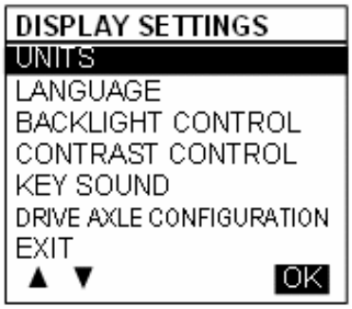
When selecting Pressure Alarm the screen pressure alarm shown below appears. A similar screen is defined for temperature settings. The cursor can be moved to highlight the number beside “new value”, “ACCEPT” or “EXIT”. +/- allows increasing or decreasing the numbers. Pressure alarms changes are allowed in steps of 1 PSI in the range from 5 to 20 PSI. Temperature alarms in steps of 5°F (2°C) in the range from 150 to 180 °F (64 to 82 °C). Pressing OK with “ACCEPT” highlighted applies the change and exits to the previous menu. Pressing OK when “EXIT” is highlighted exits without changes.



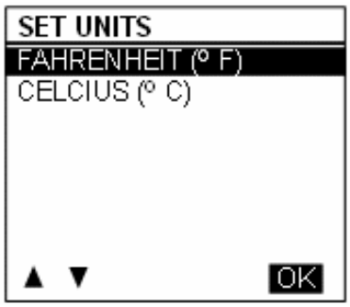




- Display Settings

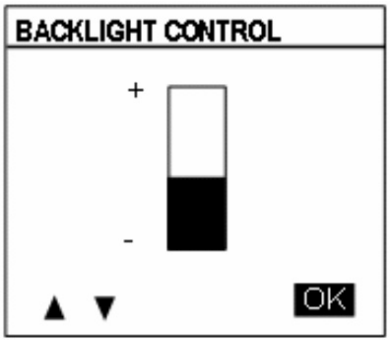


Units



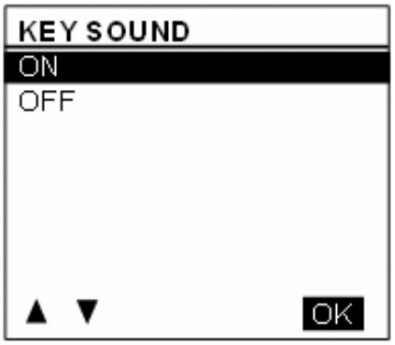
Languages

Backlight Intensity



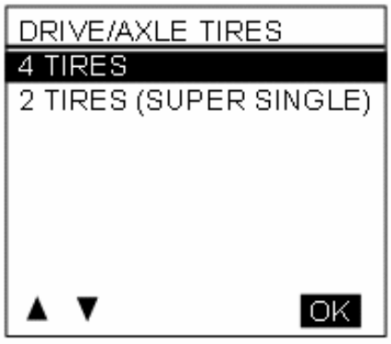
Key Sound

Turns key press sound ON/OFF.



Tire / Axle Configuration

Pressing the up down arrow when the number of tires is highlighted allows flipping the number to 2 or 4 which are the only valid choices.



Refer to “Appendix G” for Troubleshooting Guide on TPMS system.

FIRE EXTINGUISHERS

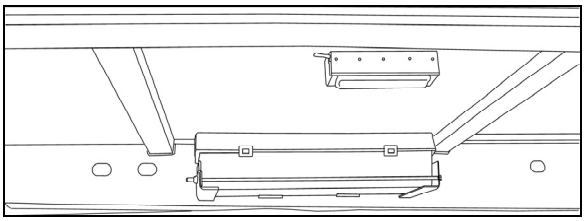
Two fire extinguishers are located on the vehicle L.H. side just behind the driver’s seat. Instructions for use are found on the extinguishers. Make sure you know how to operate fire extinguishers in case of an emergency.

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.

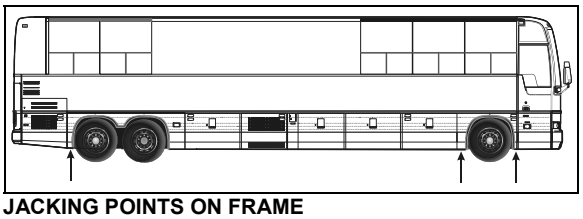
CHANGING WHEELS

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.

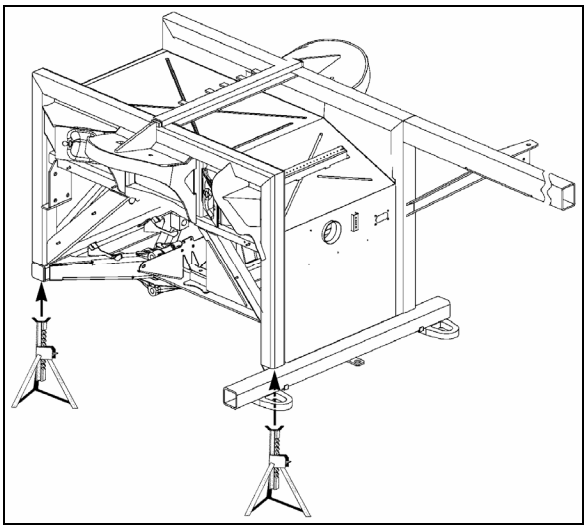
We suggest that you **do not** attempt to change a wheel. First, the wheel and tire are very heavy and usually there is no space available to put the removed flat. Second, the wheel nuts, especially those on inner dual, can become very tight after being on for only a short time. Often a heavy air wrench 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

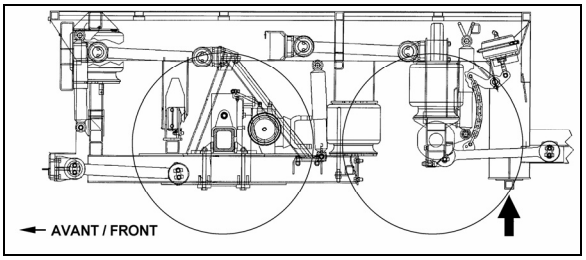
Twelve jacking points are located on the vehicle: three are located on each side of the frame and two are located under each axle. Refer to the following illustrations for the location of jacking points.



JACKING POINTS ON FRAME



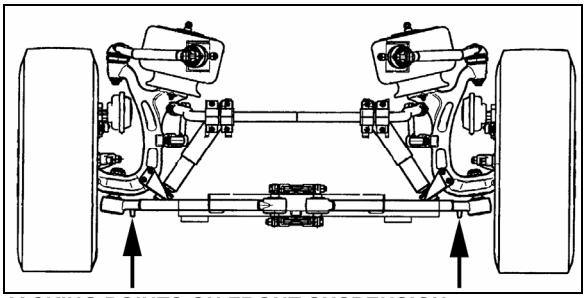
FRONT SUB-FRAME JACKING POINTS 18645



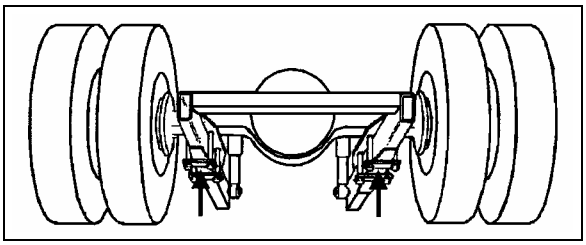
REAR SUB-FRAME JACKING POINTS

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.



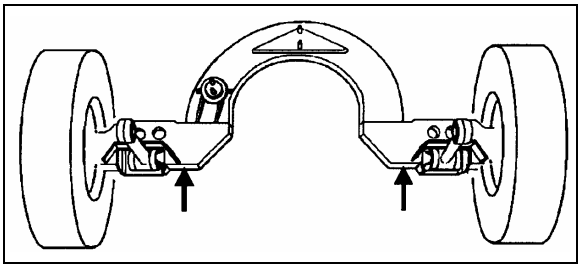
JACKING POINTS ON FRONT SUSPENSION 16139



JACKING POINTS ON DRIVE AXLE 11005

WARNING

Always 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.

DANGER

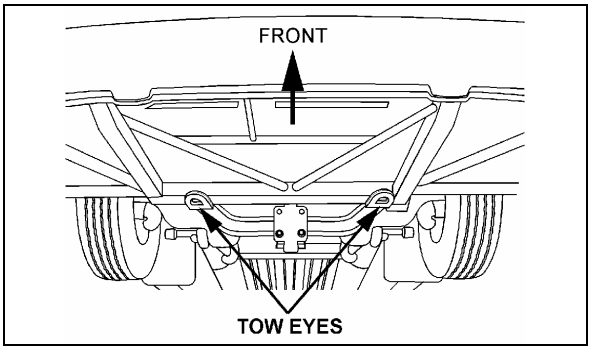
Jack is intended for lifting only. Do not get under the vehicle or load for any reason unless it is properly supported with safety stands and securely blocked.

DANGER

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

DANGER

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.

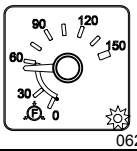
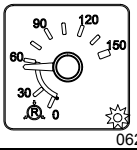
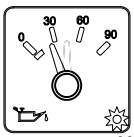
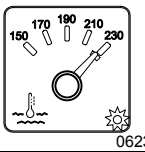
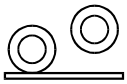
BACK-UP ALARM CANCEL SWITCH

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 MCM

Indicator Light	Audible Alarm	Condition
 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.

DANGER

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.

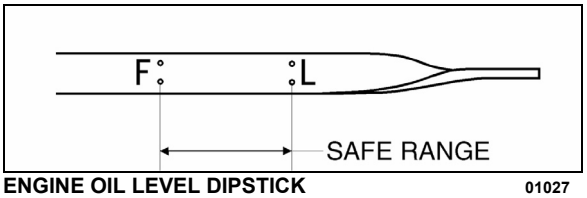
FLUID LEVEL VERIFICATION

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.

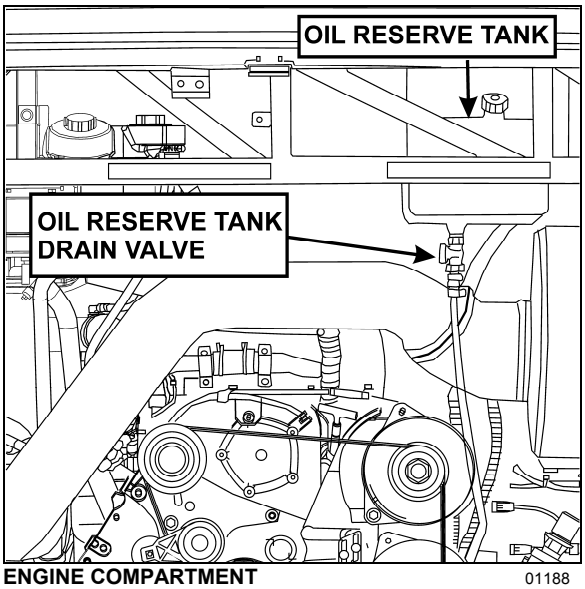
The oil level must be maintained between the two marks indicated on the dipstick. Do not let the oil level drop below the L mark. Add oil by opening the oil reserve tank drain valve or through the oil filler tube. Use the markings on the tank to check the quantity of oil added. Close the oil reserve 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.



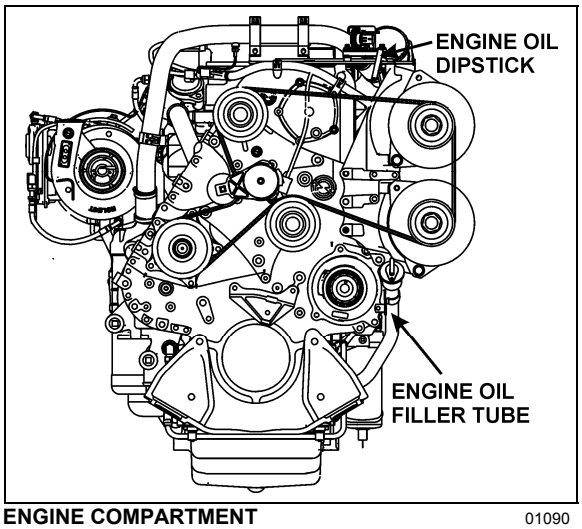
ENGINE OIL LEVEL DIPSTICK 01027

CAUTION

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



ENGINE COMPARTMENT 01188



ENGINE COMPARTMENT 01090

AUTOMATIC TRANSMISSION OIL LEVEL

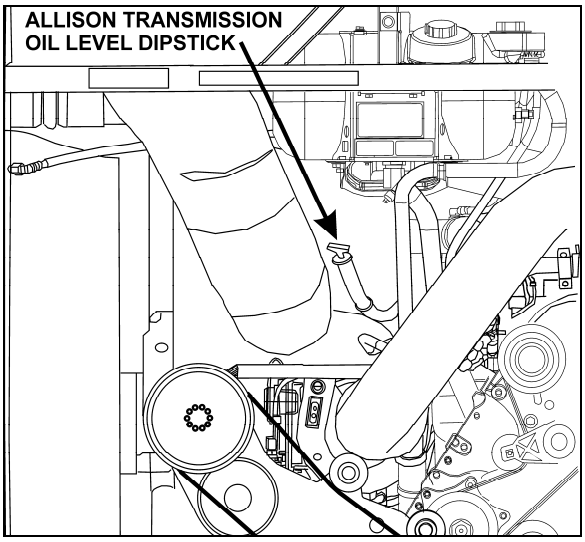
Transmission fluid level may be checked using dipstick or transmission control pad display. Refer to section ”Technical Information” in this manual for how to use the control pad as a transmission oil level indicator.

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).

NOTE

Perform the cold check first to verify the transmission oil level before performing the hot check.



AUTOMATIC TRANSMISSION OIL LEVEL DIPSTICK 01189

DANGER

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.

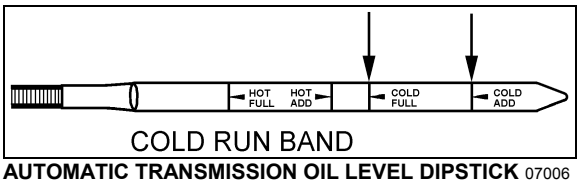
CAUTION

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.



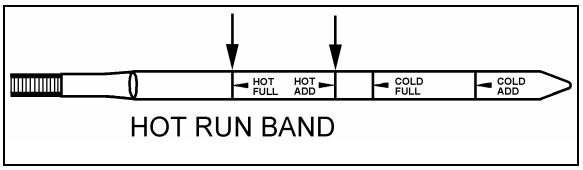
AUTOMATIC TRANSMISSION OIL LEVEL DIPSTICK 07006

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.

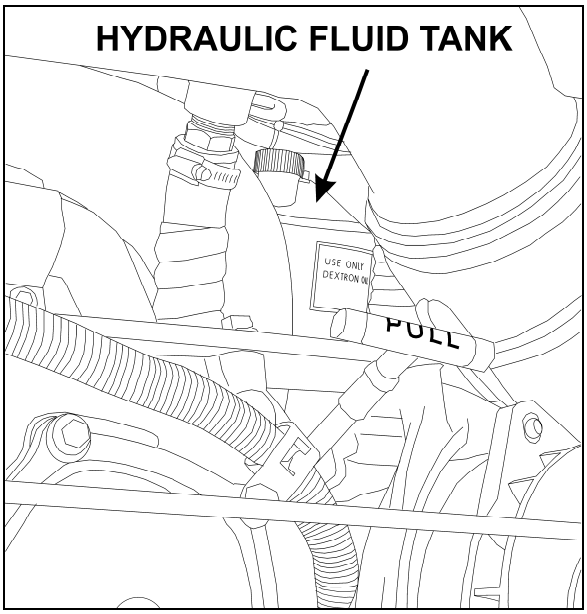
Replace dipstick and tighten the filler tube cap until the rubber seal is correctly seated.

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 14059

Check fluid level as follows:

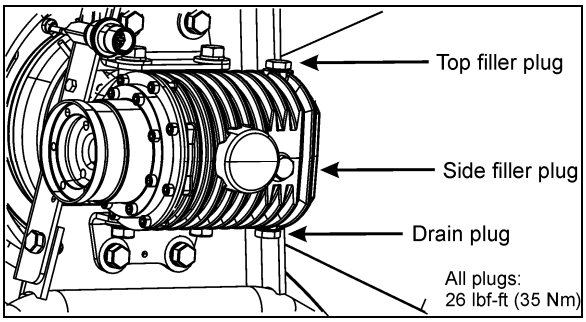
1. Stop engine, open engine compartment doors and place rear start switch to *OFF* position;
2. Unscrew and remove the dipstick located on top of the fluid tank and wipe with a clean rag;
3. Replace dipstick in tank, then remove to check fluid level;
4. Add hydraulic fluid until it reaches the FULL mark 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.

COOLING FAN RIGHT ANGLE GEARBOX OIL LEVEL

Check cooling fan right angle gearbox oil level as follows:

1. Stop engine, open engine compartment doors and place engine rear start switch to *OFF* position;
2. Remove side oil filler plug;
3. Add oil through the top or side oil filling point if the oil level has fallen below the side oil filling point;
4. The oil level is correct once the top of the oil has reached the bottom of the side oil filling point or once oil has already started to escape from the side oil filling point;

5. Replace the seal and screw the side and top filler plugs back in;
6. Place engine rear start switch to *NORMAL* position. Close engine compartment door.



RIGHT ANGLE GEARBOX OIL LEVEL CHECK 05118

DRIVE AXLE WHEEL BEARING OIL LEVEL

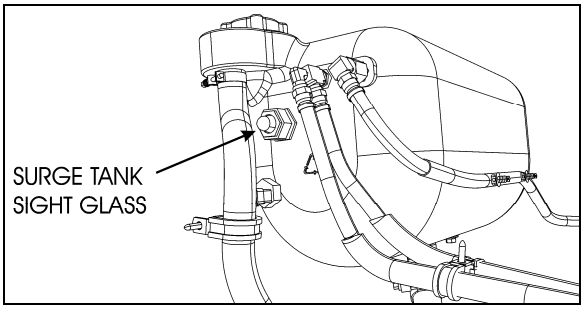
Drive axle wheel bearings are lubricated by the differential oil. Maintain differential oil at correct level to ensure adequate lubrication of drive axle wheel bearings at all times.

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.



COOLANT LEVEL SIGHT GLASS 05094

⚠ WARNING

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

⚠ 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.

WINDSHIELD WASHER & HEADLIGHTS WASHER RESERVOIRS

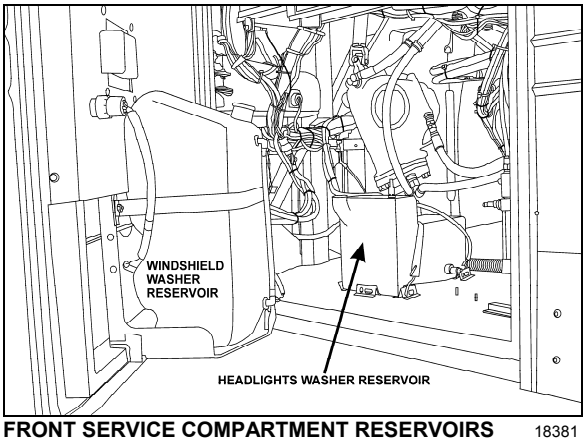
The windshield washer reservoir and headlights washer reservoir are located in the front service compartment. The windshield washer reservoir has a capacity of 5.3 US gallons (20 liters) while the headlights washer reservoir has a capacity of 2.6 US gallons (10 liters). Check fluid level regularly.

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

Adjust the headlights washer nozzles according to the instructions found in section 23 of the maintenance manual. You may use water or windshield washer fluid as well.

⚠ CAUTION

During cold weather days, use windshield washer fluid suitable for freezing temperature only.

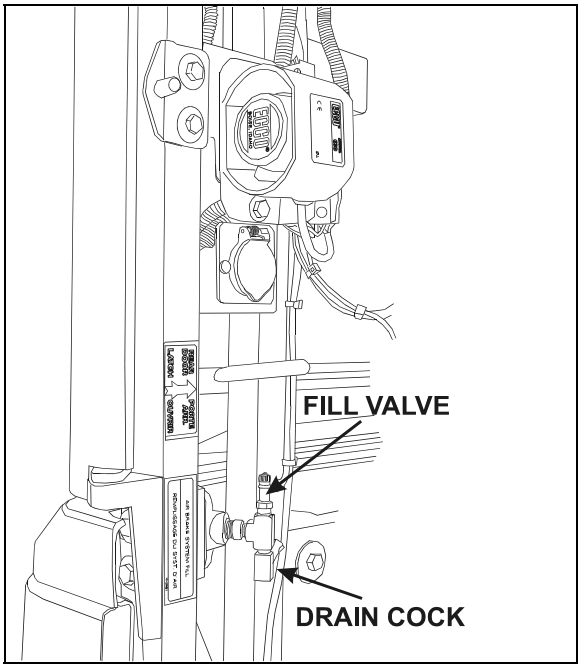


FRONT SERVICE COMPARTMENT RESERVOIRS 18381

OTHER VERIFICATIONS

AIR TANK PURGE

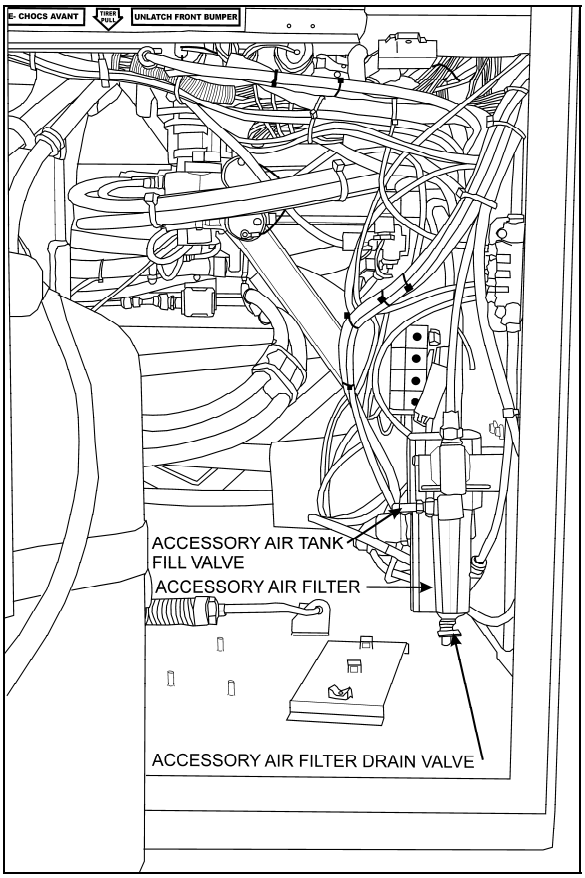
The vehicle may be equipped with up to twelve air tanks. Purge accessory and wet air tanks before each trip. The primary and secondary air tanks must be purged at every oil change. Oil changes should be scheduled at least every 12,500 miles (20 000 km).



ENGINE COMPARTMENT 12130

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 12218

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;

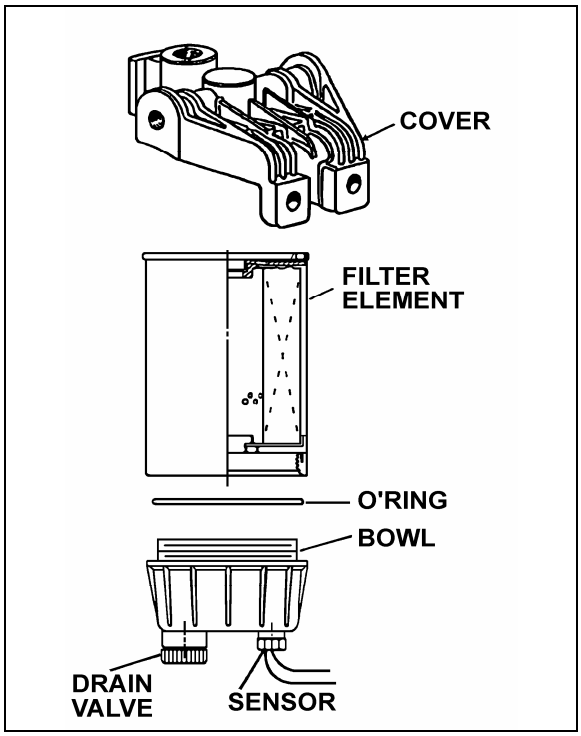
Check that seal on handle is intact;

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

Keep fire extinguishers clean.

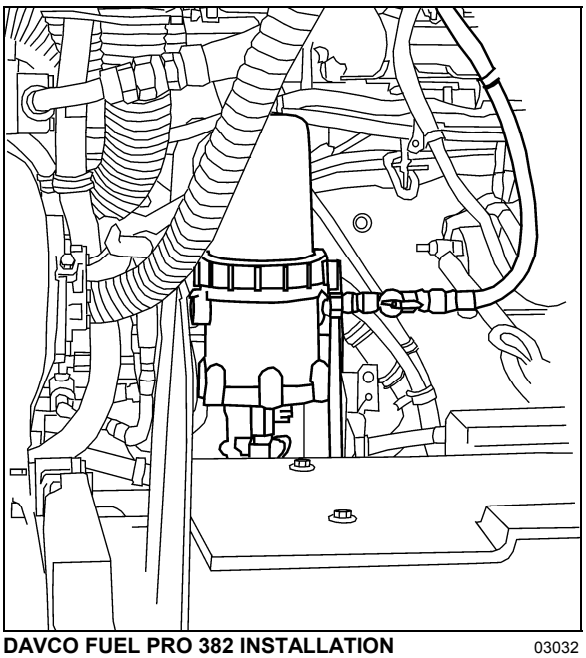
FUEL FILTER / WATER SEPARATOR

The fuel system is equipped with primary and secondary fuel filters for additional protection of the injectors. A fuel filter/water-separator may be installed in primary fuel-filter location, to prevent water infiltration in engine fuel system. It should be drained periodically, or when the water separator telltale light on the dashboard illuminates. To drain, loosen positive seal drain valve below separator, and tighten after water has been flushed out.



FUEL FILTER/WATER SEPARATOR 03025

The optional Fuel Pro 382 diesel fuel filter system consists of a permanently mounted fuel processor, a replaceable filter element, a filter element cover and collar and a fluid filter base assembly. This system is installed between the fuel tank and the fuel pump and replaces the primary fuel filter. The filter serves as a water separator as well as a fuel filter. To drain, turn ¼ turn the drain valve below filter, close when water has been flushed out.

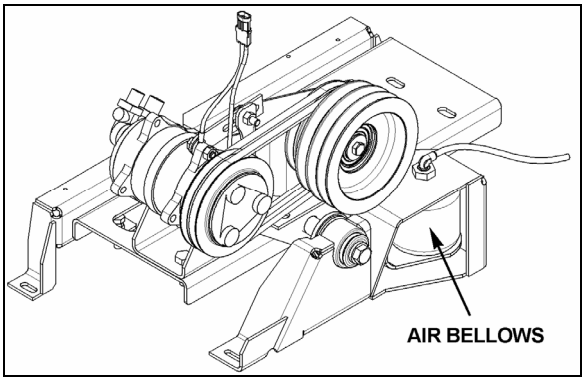


DAVCO FUEL PRO 382 INSTALLATION 03032

A/C COMPRESSOR BELT TENSION ADJUSTMENT

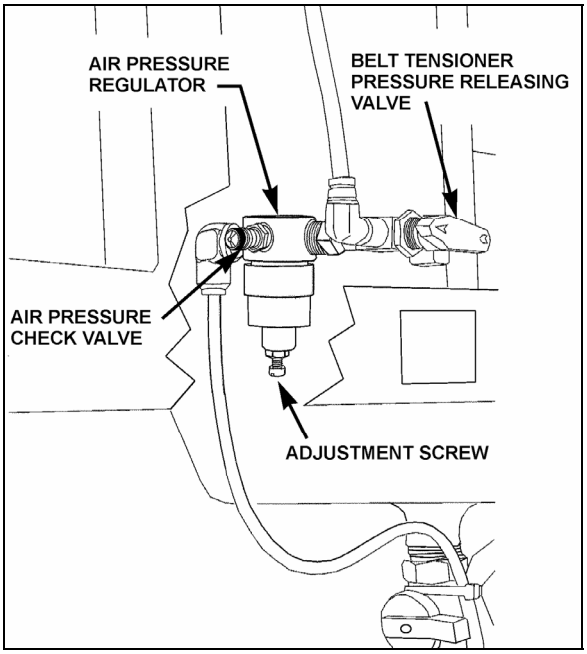
The air conditioning compressors are driven by V-belts.

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 35 psi (241 kPa) is set at the factory. Periodically verify the pressure at the regulating valve using a tire pressure gauge and correct if necessary.



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.

FAN AND ALTERNATOR DRIVE BELTS

These belts have automatic belt tensioner to keep the correct tension without adjustment.

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.

DANGER

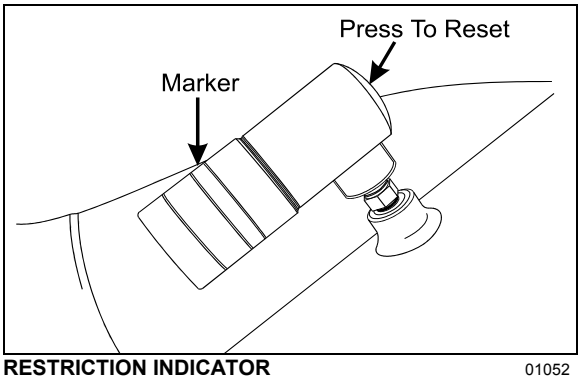
To avoid injury, do not clean camera with transmission in reverse (R). Shut off engine and apply parking brake before cleaning.

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.



RESTRICTION INDICATOR 01052

The filter restriction indicator is located on the engine air intake duct.

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

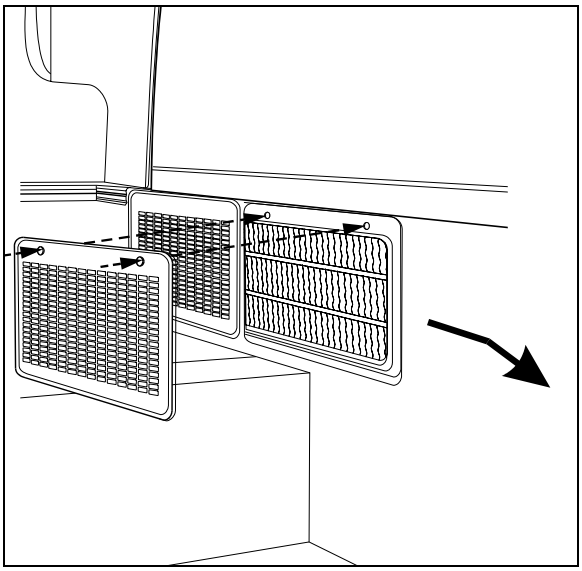
Be sure not to reverse filter upon installation.

Driver's HVAC Unit Air Filters

The driver's HVAC unit 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 filters are not clogged.



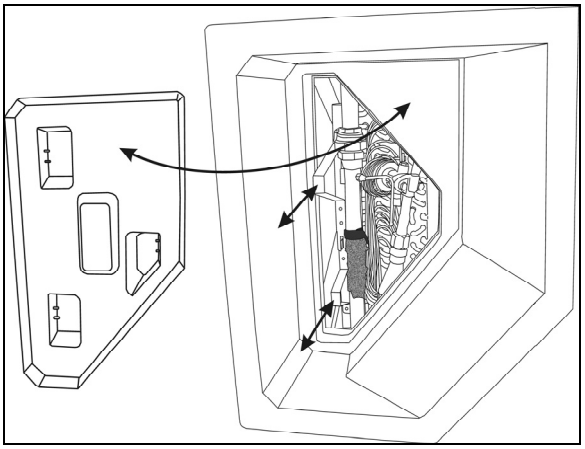
ACCESS TO DRIVER'S HVAC UNIT AIR FILTERS 22172

Cabin HVAC Unit Air Filters

The cabin HVAC unit air filters are located in the evaporator compartment on driver's side of the vehicle. To access, open the baggage compartment forward of the evaporator compartment. An access door held shut by three retaining tabs is located in the wall separating the baggage compartment and the evaporator compartment. Remove the access door, slide out the top then bottom filter for maintenance purposes.

CAUTION

Be sure not to install filters in inverted position.



CABIN HVAC UNIT ACCESS DOOR & AIR FILTERS REMOVAL 22178

HOSE INSPECTION

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

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.

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.

LUBRICATION

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

WHEELS AND TIRES

Check for loose wheel nuts. Both aluminum alloy and steel wheel nuts should be tightened to 450 to 500 foot-pounds (610 to 680 Nm.) torque.

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.

WHEEL BEARINGS

Check wheel bearing cover for overheating (especially after brake work) during fuel stops by touching the wheel bearing cover.

SERVICE BRAKE TEST

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).

PARKING / EMERGENCY BRAKE TEST

Release parking/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.

Driving the vehicle while the parking brake is applied should not be possible.

EXTERIOR LIGHTING VERIFICATION

Exterior Lighting Test Mode

This useful function allows quick verification of the vehicle exterior lights.

Activating the test mode:

When the vehicle is stationary (parking brake applied), pull up the multi-function lever 3 times within 3 seconds to activate the test mode. This test can be done when the engine is not running providing that the battery charge is sufficient (above 24.0 volts).

The telltale panel alarm emits a sound each second to remind that the test mode is in progress.

Stopping the test mode:

To stop the test mode, pull up the multi-function lever once or turn the ignition OFF or remove the parking brake.

IMPORTANT NOTE
The test mode is useful to check the functioning of the multiplex outputs and the exterior lights. It doesn't test the functionality of the commands related to the exterior lighting. For a complete testing, the directional signal commands, the headlights commands and the brake pedal have to be checked before. Once these commands tested, activate the test mode to check the exterior lighting.

Using the test mode:

First, test the functionality of the commands related to the exterior lighting:

- Activate the right directional signal and check that the corresponding telltale light illuminates.
- Activate the left directional signal and check that the corresponding telltale light illuminates.
- Press on the brake pedal and check that the STOP telltale light illuminates.

Once these commands tested, activate the test mode to check the exterior lighting by pulling up the multi-function lever 3 times within 3 seconds.

Go to the front of the vehicle and check the lights:

- First the left and right directional signals.
- Identification lights and clearance lights.
- Low beams.
- High beams.

Go to the left side of the vehicle:

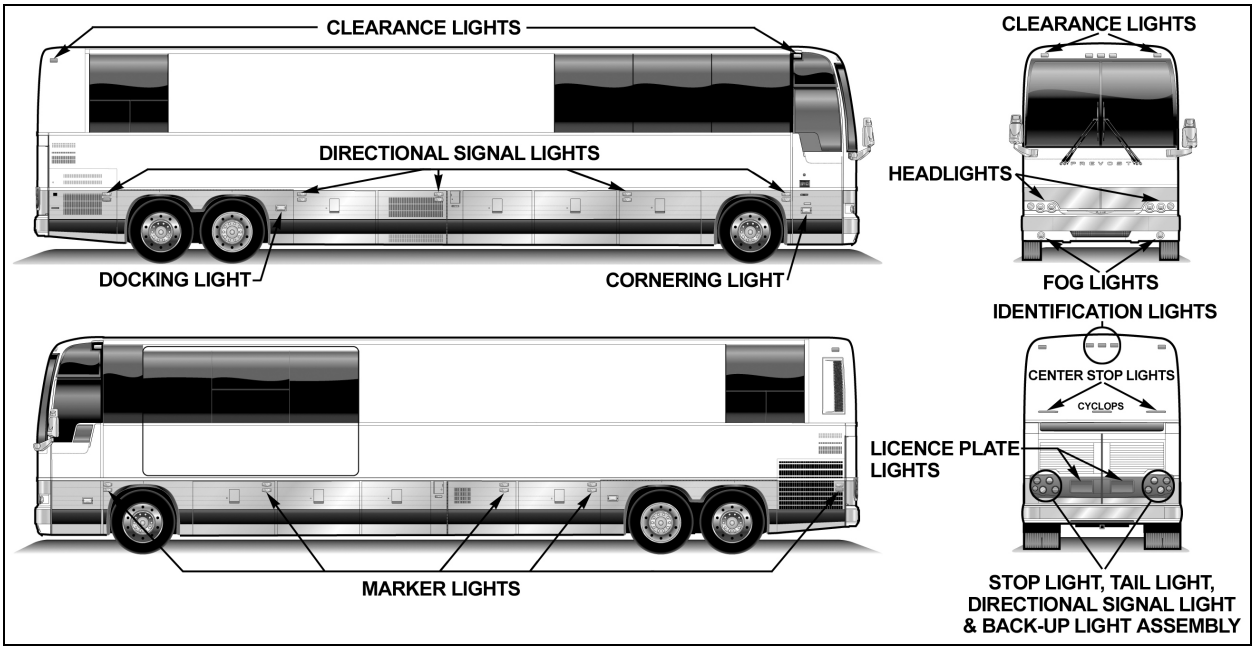
- Directional signals.
- Marker lights.
- Directional signals.
- Marker lights.

Go to the rear of the vehicle:

- Directional signals.
- Identification lights and clearance lights.
- Stoplights and taillights.
- Back-up lights and back-up alarm (option).

IMPORTANT NOTE
To check the back-up lights and back-up alarm, you must flip the starter selector switch to REAR START position. (If the engine is running, do this quick enough so that the engine does not stop).

Go to the right side of the vehicle (same sequence as left side).



VARIOUS LIGHTS LOCATION

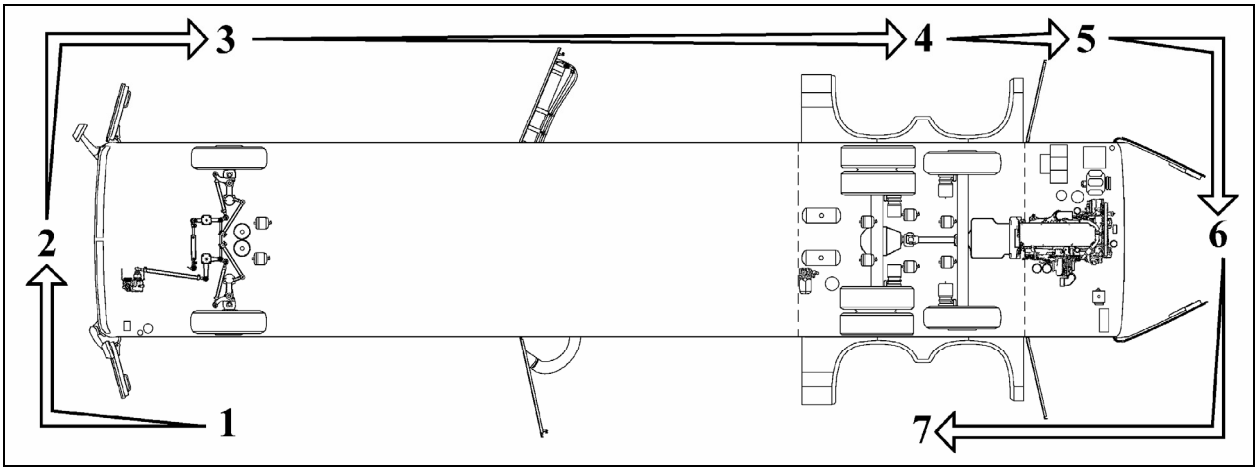
GENERAL RECOMMENDATIONS

- 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.

WALK-AROUND INSPECTION (BEFORE EVERY TRIP)



NOTE
Inspect the vehicle in a circular manner as shown in the illustration.

Approaching the Vehicle

- Check under the vehicle for oil, fuel, coolant leaks or other signs of damage.
- Check exterior body surfaces for signs of breaks or damage.
- Check that baggage and service compartment doors are properly closed.

Preparation

- Drain accumulated water from accessory and wet air tanks.
- Close air tank drain valves.
- Start the engine and let the air pressure build up to normal. Stop engine.
- Switch on hazard warning flashers.
- Make sure parking brakes are applied.

Step 1: Front Left Side of the Vehicle

- Check condition of wheel rim. Especially look for cracks, missing nuts, bent or broken studs.
- Check condition of tire: properly inflated, no serious cuts, bulges, tread wear or any signs of misalignment; valve stem not touching wheel or rim; valve cap in place.
- Check windshield and headlights washer reservoir fluid level and add if necessary.

Step 2: Front of the Vehicle

- Check for damage and clean if dirty.
- Check windshield wiper arms for proper spring tension.
- Check wiper blades for any damage, “dead” rubber and attachment to arm.
- Check clearance and identification lights, they should be clean, operating and of the proper color. Refer to “Exterior Lighting Verification” in Care and Maintenance chapter.
- Turn on headlights. High and low beams should be operating and lenses clean. If equipped, check fog lights. Refer to “Exterior Lighting Verification” in Care and Maintenance chapter.
- Left and right front turn signal lights clean, operating and proper color. Refer to “Exterior Lighting Verification” in Care and Maintenance chapter.

Step 3: Front Right Side of the Vehicle

- Check condition of wheel rim. Especially look for cracks, missing nuts, bent or broken studs.

- Check condition of tire: properly inflated, no serious cuts, bulges, tread wear or any signs of misalignment; valve stem not touching wheel or rim; valve cap in place.

Step 4: Rear Right Side of the Vehicle

- Check condition of wheels and rims. Especially look for cracks, missing nuts, bent or broken studs.
- Check condition of tires: properly inflated, no serious cuts, bulges, tread wear or any signs of misalignment; valve stems not touching wheels or rims; valve caps in place and no objects stuck between the wheels.

Step 5: Engine Compartment Right Side Area

- Check engine and surrounding areas for coolant, oil and fuel leaks.
- Check fuel/filter water separator and drain if necessary. Check for leaks.
- Check wiring harness for signs of damage.

Step 6: Engine Compartment

- Check engine and surrounding areas for coolant, oil and fuel leaks.
- Check wiring harness for signs of damage.
- Check condition of drive belts.
- Check engine crankcase oil level, add if necessary.
- Check Allison transmission fluid level (can also be checked from push-button shift selector), add if necessary.
- Check power steering reservoir fluid level, add if necessary.
- Check coolant surge tank fluid level, add if necessary.
- Check air cleaner restriction indicator, replace air cleaner when red signal locks in full view.
- Check stop light, tail light, directional signal light and back-up light assembly; operating, clean and proper color. Refer to “Exterior Lighting Verification” in Care and Maintenance chapter.

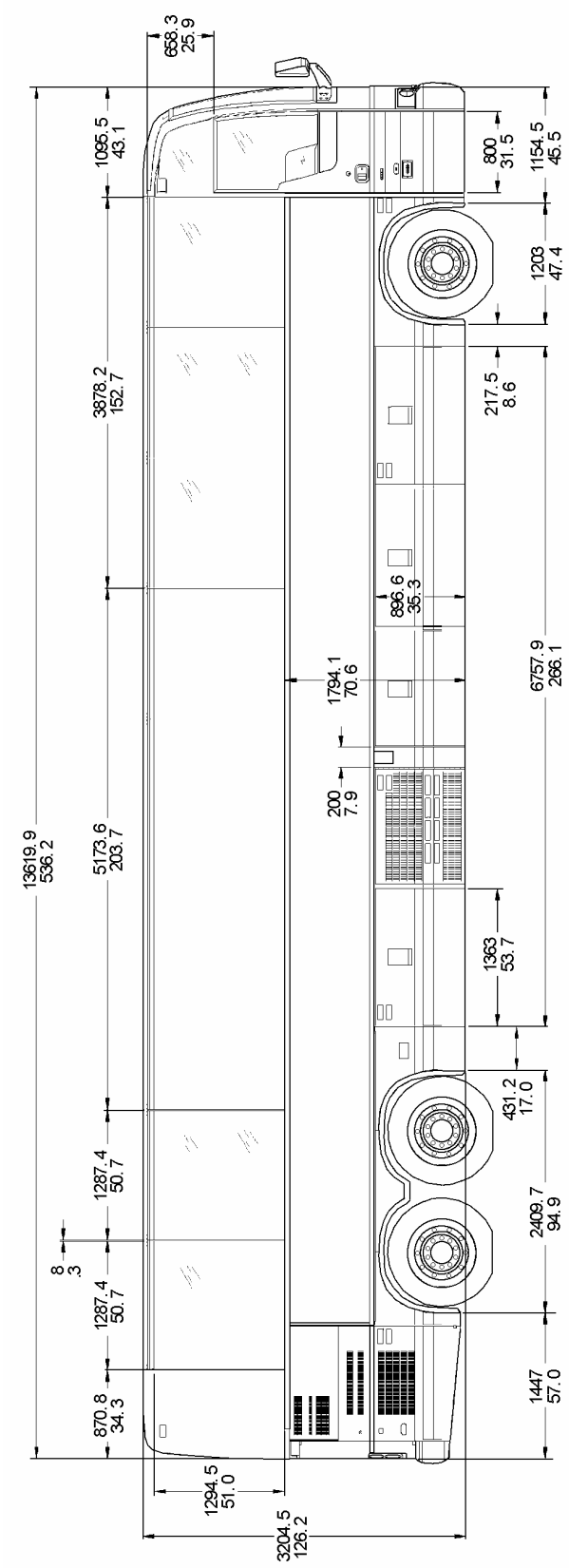
Step 7: Rear Left Side of the Vehicle

- Check condition of wheels and rims. Especially look for cracks, missing nuts, bent or broken studs.
- Check condition of tires: properly inflated, no serious cuts, bulges, tread wear or any signs of misalignment; valve stems not touching wheels or rims; valve caps in place and no objects stuck between the wheels.

Inside the Vehicle

- Check for proper operation of the entrance door.
- Check steps; clean them if there is any substance that makes them slippery, which makes vehicle entry/exit hazardous.
- Check that emergency exit windows can be opened then close all windows securely.
- Verify proper operation of windshield wiper/ washer.
- Adjust and clean 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.

Perform a brake test. Check both primary and secondary pressure gauges.



MTH XLII-45E OVERALL DIMENSIONS

DIMENSIONS AND WEIGHTS	W5-45 WE-45	
Overall length (including bumpers)	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)	W5-45: 314" (7976 mm) WE-45: 339" (8611 mm)	
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	89" (2261 mm)	
Entrance door opening width	30" (762 mm)	
Front overhang	68¾" (1746 mm)	
Rear overhang	W5-45: 107 ¾" (2736 mm) WE-45: 82¾" (2102 mm)	
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)	W5-45: 41'-10" (12751 mm) WE-45: 44'-3" (13487 mm)	
	WE-45	**W5-45**
Curb weight (before conversion)	N/A	N/A
Gross Vehicle Weight Rating (G.V.W.R.)	51,400 lb (22 861 kg)	54,500 lb (24 721 kg)
Front axle Gross Axle Weight Rating (G.A.W.R.)	18,000 lb (8 165 kg)	18,000 lb (8 165 kg)
Drive axle (G.A.W.R.)	21,400 lb (9 253 kg)	22,500 lb (10 206 kg)
Tag axle (G.A.W.R.)	12,000 lb (5 443 kg)	14,000 lb (6 350 kg)

The Gross Vehicle Weight Rating (G.V.W.R.) and the Gross Axle Weight Rating (G.A.W.R.) for front, drive and tag axles are listed on a certification plate located on the L.H. control panel in driver's section.

CAPACITIES	WE-45	W5-45
Engine oil (in crankcase)	41 U.S. qts (39 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	24 U.S. gal. (91 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

EPA-07 engines like the DDC 2007 Series 60 are designed to run on **Ultra Low Sulfur Diesel** (ULSD) fuel, which can contain no more than 15 ppm sulfur.

CAUTION

ULSD fuel is necessary to avoid fouling the engine's Aftertreatment Device (ATD).

CAUTION

Owners of 2007 and later model year on-highway diesel engine must refuel only with ULSD fuel.

BIODIESEL FUELS

ULSD-B5 biodiesel may be used. B5 tells you the percentage of biodiesel mixed in with ULSD. B5 is 5% biodiesel and 95% ULSD.

Biodiesel fuels meeting ASTM D6751 specification, prior to blending can be mixed up to 5% maximum by volume in petroleum diesel fuel. Biodiesel fuels made from soybean or rapeseed oil are recommended. Other feedstock source of biodiesel fuels such as animal fat and used cooking oils are not recommended.

WHEELS AND TIRES

Drive Axle Aluminum forged wheels ... 9" X 22½"

Drive Axle Super Single Aluminum forged wheels ..... 14" 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.

NOTE

Bus Shells vehicles, before being converted, are not at their maximum weight and tire pressures are adjusted at lower level than the maximum allowed appearing on the DOT plate. Tires pressure must be re-adjusted once converted.

WARNING

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

Vehicles equipped with TPMS: The TPMS target pressures are factory set to equal the prevailing tire pressure at delivery time. When tire pressures are increased to account for higher vehicle weight, the TPMS set point need to be increased accordingly.

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	Model	Qty
Cooling fan drive belt (MTH-45')	Poly-Rib 14PK2310	1
Cooling fan drive belt (MTH-45E)	Poly-Rib 14PK2605	1
A/C system 05G compressor (MTH-45')	V Belt BX-100	2
A/C system 05G compressor (MTH 45E with 2 Bosch)	V Belt BX-100	2
A/C system Seltec compressor	V Belt A35	1
Alternator Delco 1X 24V, 270 Amp	Poly-V 10/2232	1
Alternator Bosch 2X 28V, 140 Amp	Poly-V 10/2232	1

ENGINE

The engine is a Detroit Diesel DDEC V Series 60, displacing 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 45E ..... 455 HP @ 1 800 rpm
MTH 45' ..... 515 HP @ 1 800 rpm

Peak torque

MTH 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 Transmission MH4000 electronically controlled six speed automatic transmission (MH4000R 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

PROPELLER SHAFT

Dana 1810 series heavy-duty type universal joints, 4" outside diameter.

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 Knoor air operated disc type brakes with ABS and automatic slack adjusters on front drive and tag axles. Model 24/24 spring brakes on drive axle provide emergency and parking brakes. Emergency brake application will be automatic if pressure drops below 40 psi. At 60 psi a warning light and buzzer will come on so the driver can bring the vehicle to a safe stop simply by a conventional application of the foot brake pedal.

BRAKE CHAMBER EFFECTIVE AREA:

Front axle .....24 in^2 (service)

Drive axle .....24 in^2 (service)

..... 24 in^2 (emergency/parking)

Tag axle.....16 in^2 (service)

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 Unit (ECU) 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".

AUTOMATIC TRACTION CONTROL (ATC) – ELECTRONIC STABILITY PROGRAM (ESP)

In addition to the ABS function, vehicle may be equipped with an advanced model of Bendix EC-60 controller to provide an **Automatic Traction Control (ATC)** feature. Bendix ATC can improve vehicle traction during acceleration, and lateral stability while accelerating through curves. ATC utilizes **Engine Torque Limiting (ETL)** where the ECU communicates with the engine's controller and/or **Differential Braking (DB)** where individual wheel brake applications are used to improve vehicle traction.

The EC-60 advanced model controller also provides ABS-based stability features referred to as **ESP® Electronic Stability Program**.

Refer to Maintenance Manual, Section 12: Brake and Air System for more information on this system.

⚠ CAUTION

Even with ESP-equipped vehicles, the driver remains responsible for ensuring vehicle stability during operation.

⚠ DANGER

ESP may reduce the vehicle speed automatically.

ESP can make the vehicle **decelerate automatically.** ESP can slow the vehicle with or **without the operator applying the brake,** and **even when the throttle is being applied.**

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 950 amps (each battery) 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:

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		0.10		0.12	

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

COOLING SYSTEM

- Copper fin radiator and aluminum charge air cooler arranged one behind the other, Valeo made.
- 3 speed fan clutch DDEC controlled.
- Rubber insulated from the body.
- Expansion tank above radiator and remote mounted.
- System pressure 14 psi.
- One (1) 185^{o} F thermostat.
- System capacity 24 us gal (DDC S60).
- Coolant filter.
- Radiator fan: 34 inches (WE) or 36 inches (W5) fan, belt and shaft driven.

FUEL SYSTEM

208 US gallons (W5) polyethylene fuel tank or 180 US gallons plus 70 US gallons (WE) polyethylene fuel tanks equipped with:

- Anti-spill device.
- Two Safety filler cap, providing filling access on each side of vehicle.
- Pressure relief valve.
- Electric fuel gage.
- Fuel cooler.
- Low level signal at 26 us gallon/98 liters.
- Primary filter 25 microns (standard).
- Fuel pro 382 filter available as an option as a primary filter.
- Secondary filter 3 to 5 microns.
- Shut-off valve on fuel supply line.

EXHAUST SYSTEM

One all stainless steel exhaust system including:

- Meritor After Treatment Device (ATD) made of a DPF (Diesel Particulate Filter) and a DOC (Diesel Oxidation Catalyst). Noise, vibration and heat insulated. This ATD is mounted to the bus structure and is accessible through an exterior access door.
- Tail pipe diffuser and rain deviation device.
- Exhaust pipe with Insulation and a flexible section.
- Exhaust to rear left hand top of rear cap.

HEATING AND AIR CONDITIONING

Two air conditioning systems are available: the large capacity (central HVAC system) or the small capacity A/C (small HVAC system). 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 HVAC SYSTEM	
Air conditioning capacity	2 tons
Refrigerant type	134a
Air flow	450 cfm (12,7 m^3/min)

COMPRESSOR (For small HVAC system)	
Number of cylinders	7
Operating speed	700 to 6 000 rpm
Oil capacity	6.0 U.S. oz (0,18 l)
Approved oil	SP-20 (PAG)

CENTRAL HVAC SYSTEM	
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 central HVAC system)	
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 previously mentioned oils are suitable for use with reciprocating compressors using refrigerant R-134a and with evaporator temperatures above -40°F (-40°C).

OIL SPECIFICATIONS

ENGINE

Low ash oil formulation designated API CJ-4 is required in EPA-07 engines. Prevost Car and Detroit Diesel Corporation recommend Chevron Delo® 400 LE™ SAE 15W-40. CJ-4 oil contains less than 1.0wt % sulfated ash.

NOTE

Reduce inventory costs. Chevron Delo® 400 LE™ SAE 15W-40 is backwards compatible with all previous API Oil Service Categories and engine models.

Chevron Delo® 400 LE™ SAE 15W-40 meets API Service Categories CJ-4, CI-4 PLUS, CI-4, CH-4, CF, SM, SL.

CAUTION

CJ-4 contains less than 1% ash which is key to achieving maximum diesel particulate filter cleaning intervals. Use of high ash engine oils will reduce the cleaning interval on the Diesel Particulate Filter (DPF). DPF regenerates the combustible soot, but the ash (a product of the oil lubricant package) slowly accumulates in the channels of the DPF.

AUTOMATIC TRANSMISSION

Allison Transmission recommends the following fluids:

- Castrol TranSynd™ or TES-295 specification equivalent fluid;
- Dexron-III® automatic transmission fluid;

Dexron-VI® automatic transmission fluid or TES-389 specification equivalent 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 RIGHT ANGLE GEARBOX

Use Synthetic Gear Lubricant SAE 75W-90.

POWER STEERING RESERVOIR

Use Dexron III/VI automatic transmission fluid for this system.

110 Technical Information

LIGHT BULB DATA

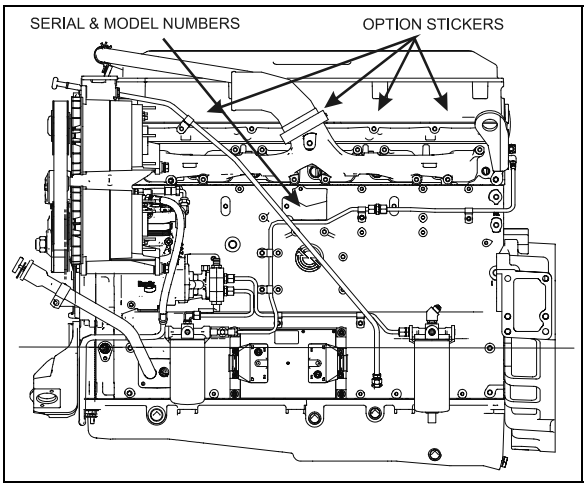
Please, refer to your vehicle Parts Manual for selection of replacement light bulbs.

PLATES AND CERTIFICATION

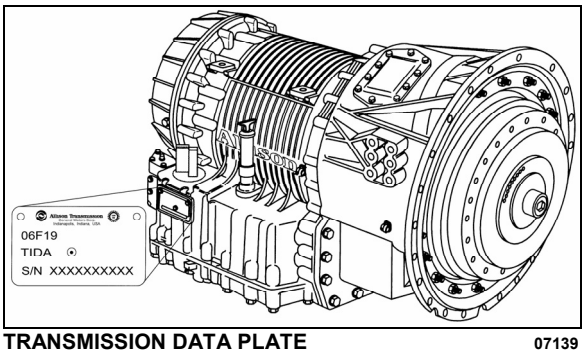
The main components of the vehicle such as engine, transmission, axles and chassis are identified by different serial numbers. It may be necessary to locate these numbers for warranty purposes.

The engine serial and model number are laser etched 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 "".

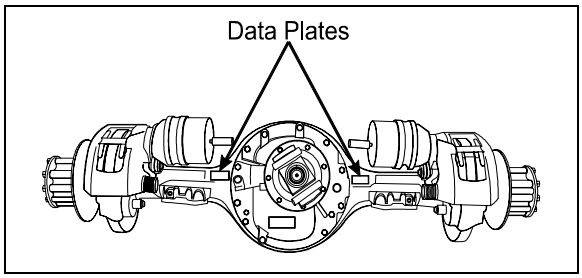
In addition, option decals are located on the rocker cover (starter side). The engine serial and model number and a list of the optional engine equipment are written on these decals. Refer to this information when ordering replacement parts.



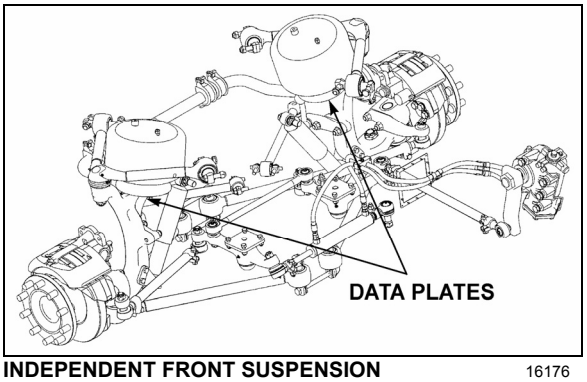
SERIES 60 ENGINE 00043



TRANSMISSION DATA PLATE 07139



DRIVE AXLE 11019



INDEPENDENT FRONT SUSPENSION 16176

SAFETY CERTIFICATION

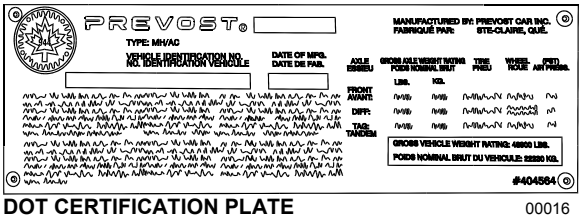
Vehicle components meet specifications and standards as follows:

- 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

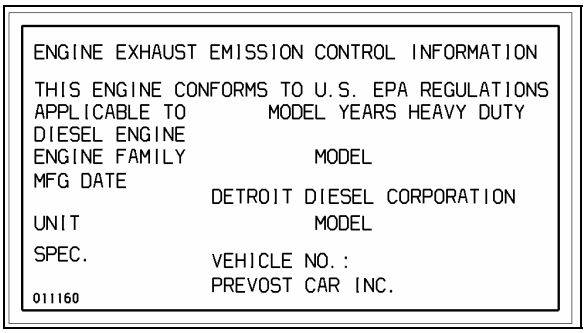
This certifies that vehicles manufactured by Prévost Car Inc. comply with all Federal Motor Vehicle Safety Standards at the time of manufacture. Information such as gross vehicle weight rating and tire pressure is also marked on this plate. The DOT Certification plate is affixed to L.H. control panel.



DOT CERTIFICATION PLATE 00016

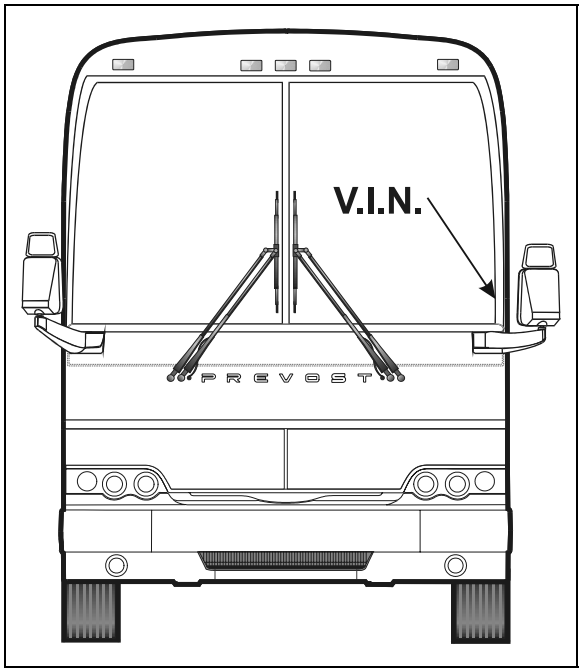
EPA ENGINE LABEL

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



ENGINE COMPARTMENT 011160

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, QC G1X 3W1
CANADA

Please specify the complete vehicle serial number.
Allow 30 days for delivery.

114 Appendix A – Service Literature

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, ON 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 Olivier Road

St-Nicolas, QC G7A 2N1

CANADA

Troubleshooting

Problem/Symptom	Probable Causes	Actions
Vehicle does not Start	Rear Start selector switch is not in the NORMAL position.	1. Check that the rear start selector switch is flipped up to NORMAL start position and retry cranking. 2. Flip the rear start selector switch to "Rear Start" and start the vehicle from the rear.
	CAN network problem (Multiplex) Module A53 not powered or is defective Engine MCM does not receive the ignition signal Engine MCM is not powered	If the vehicle does not start from the rear: 1. Verify that module A53 is powered: a) Check the SYSTEM DIAGNOSTIC menu of the message center display (MCD). Select FAULT DIAGNOSTIC and ELECTRICAL SYSTEM. The message "No Response ModA53, Active", indicates a power problem on the module or a CAN network problem. b) Check / reset circuit breakers CB1 and CB9. c) Check / replace fuse F74 and F80. d) Probe gray connector on module to see if it is powered. 2. Verify that the engine MCM is powered and get the ignition signal. Check / replace fuse F78 and F79.
None of the Multiplexed functions are operating, including the basic limp-home functions (door opening, flashers, wipers in speed 1) Three dashes "---" appear in the telltale panel instead of the outside temperature *Note: The sunshades are still functioning since these are not multiplexed*	The program version in the CECM is different than the program in the I/O modules and the CECM is forcing all I/O modules to stay inactive	1. Engage the auto-programming of the I/O modules: Turn the ignition key to the OFF position then turn the ignition key ON. The letters CAN will appear in the telltale LCD panel for about 3 minutes. Everything shall get back to normal once the letters CAN are replaced with outside temperature display. 2. Try disconnecting the green connector on the CECM and reconnect. 3. If step 1 and 2 are ineffective, try disconnecting the Master ID module completely and repeat step 1. 4. Try disconnecting the CECM completely, leave it disconnected and see if the limp-home functions (start of the vehicle from the engine compartment, wipers speed 1, flashers, etc) are functioning.

Problem/Symptom	Probable Causes	Actions
Many secondary functions (not essential for driving) not functioning (interior lighting, driver's area lighting, wiper speed 2 and intermittent). Outside temperature display in the telltale LCD panel displays three dashes "---" Marker lights and clearance lights are turned ON when setting ignition to the ON position.	The CECM module does not receive 24 V power. The CAN network is not working. It could be caused by a short on the network, an open circuit, a problem with the CECM or the CECM being disconnected from the network.	1. Check / reset circuit breaker CB2 (2nd from the bottom. Check / replace fuse F1. 2. Operate in limp-home mode by starting the vehicle from the engine compartment (REAR START). All functions essential to drive are available.
No temperature control in the cabin area. Cabin temperature display indicates two dashes "--"	Problem with the temperature sensor located in the evaporator compartment air intake or the sensor wiring.	Manually control the temperature by playing with the cabin (passenger) set point. Set above 22°C (72°F) to heat and below 22° C (72°F) to cool.
Defroster fan not functioning Windshield wipers not functioning in speed 1 or intermittent	Module A47 is not powered or is faulty	1. Check the SYSTEM DIAGNOSTIC menu of the message center display (MCD). Select FAULT DIAGNOSTIC and ELECTRICAL SYSTEM. The message “No Response ModA47, Active” indicates a power problem on the module. (A CAN network problem would show the same message but doesn't produce these symptoms). 2. Check / reset circuit breaker CB3. 3. Check / replace fuse F5 and F16. 4. Probe gray connector on module to see if it is powered.
Windshield wipers not functioning in speed 1 or intermittent	No power on R23	Check / replace fuse F82
HVAC condenser fans not functioning in speed 1	Circuit breaker CB7 tripped and not reset	Check / reset circuit breaker CB8
HVAC condenser fans not functioning in speed 2	Circuit breaker CB7 tripped and not reset	Check / reset circuit breaker CB5
Windshield washer not functioning	Module A46 is not powered or is faulty	1. Check the SYSTEM DIAGNOSTIC menu of the message center display (MCD). Select FAULT DIAGNOSTIC and ELECTRICAL SYSTEM.

Problem/Symptom	Probable Causes	Actions
Defroster fan is functioning but no heat or cooling available in the driver area.		The message “No Response ModA46, Active” indicates a power problem on the module. (A CAN network problem would show the same message but doesn't produce these symptoms). 2. Check / reset circuit breaker CB3. 3. Check / replace fuse F12 or F13. 4. Probe gray connector on module to see if it is powered.
Low beam headlights and front flasher on left side not functioning Electric horn not functioning	Module A45 is not powered or is faulty	1. Check the SYSTEM DIAGNOSTIC menu of the message center display (MCD). Select FAULT DIAGNOSTIC and ELECTRICAL SYSTEM. The message “No Response ModA45, Active” indicates a power problem on the module. (A CAN network problem would show the same message but doesn't produce these symptoms). 2. Check / reset circuit breaker CB1. 3. Check / replace fuse F33 and F34. 4. Probe gray connector on module to see if it is powered.
Low beam headlights and flasher on right side not functioning	Module A48 is not powered or is faulty	1. Check the SYSTEM DIAGNOSTIC menu of the message center display (MCD). Select FAULT DIAGNOSTIC and ELECTRICAL SYSTEM. The message “No Response ModA48, Active” indicates a power problem on the module. (A CAN network problem would show the same message but doesn't produce these symptoms). 2. Check / reset circuit breaker CB1. 3. Check / replace fuse F33 and F34. 4. Probe gray connector on module to see if it is powered.
Rear flashers not functioning Stoplights and center stoplights not functioning	Module A51 is not powered or is faulty	1. Check the SYSTEM DIAGNOSTIC menu of the message center display (MCD). Select FAULT DIAGNOSTIC and ELECTRICAL SYSTEM. The message “No Response ModA51, Active” indicates a power problem on the module. (A CAN network problem would show the same message but doesn't produce this symptom).

Problem/Symptom	Probable Causes	Actions
		2. Check / reset circuit breaker CB1. 3. Check / replace fuse F80. 4. Probe gray connector on module to see if it is powered.
Engine is overheating and radiator fan clutch does not engage The A/C compressor clutch does not engage	Module A52 is not powered or is faulty	1. Check the SYSTEM DIAGNOSTIC menu of the message center display (MCD). Select FAULT DIAGNOSTIC and ELECTRICAL SYSTEM. The message “No Response ModA52, Active” indicates a power problem on the module. (A CAN network problem would show the same message but doesn't produce this symptom). 2. Check / reset circuit breaker CB7. 3. Check / replace fuse F65. 4. Probe gray connector on module to see if it is powered.
Evaporator fan not functioning	Circuit breaker CB4 tripped Module A54 is not powered or is faulty	1. Check / reset circuit breaker CB4. 2. Check the SYSTEM DIAGNOSTIC menu of the message center display (MCD). Select FAULT DIAGNOSTIC and ELECTRICAL SYSTEM. The message “No Response ModA54, Active” indicates a power problem on the module. (A CAN network problem would show the same message but doesn't produce this symptom). 3. Check / reset circuit breaker CB7. 4. Check / replace fuse F67, F68. 5. Probe gray connector on module to see if it is powered.
HVAC condenser fans not functioning in speed 1	Module A54 is not powered or is faulty	1. Check the SYSTEM DIAGNOSTIC menu of the message center display (MCD). Select FAULT DIAGNOSTIC and ELECTRICAL SYSTEM. The message “No Response ModA54, Active” indicates a power problem on the module. (A CAN network problem would show the same message but doesn't produce this symptom). 2. Check / reset circuit breaker CB7. 3. Check / replace fuse F67, F68. 4. Probe gray connector on module to see if it is powered.

Problem/Symptom	Probable Causes	Actions
Fire alarm telltale light and audible alarm always ON and there is no fire or high temperature in the engine compartment	Short-circuited fire sensor or defective sensor	Prior to start the vehicle, cycle the ignition key to the ON position, OFF position and then ON position again and then start the vehicle. This will deactivate the fire alarm function. This has to be repeated each time the vehicle is re-started.
The vehicle is parked and the electrical horn is activated to indicate a fire in the engine compartment but there is no fire	Short-circuited fire sensor or defective sensor	Cycle the ignition key between the ON and OFF position twice within 3 seconds. This will deactivate the fire alarm function. This has to be repeated each time the vehicle is parked.
A single light, a group of LED lights or another function of the vehicle is not functioning	The multiplex outputs are protected in current by an internal “soft-fuse”. When an output is shorted, it turns OFF and stays OFF until the "soft-fuse" is reset	Turn the ignition key to the OFF position and turn to the ON position again. This resets all "soft –fuses".
No backlighting in the instrument cluster	Circuit breaker CB9 is tripped or fuse F21 blown.	Check / reset circuit breaker CB9 Check / replace fuse F21.
The radiator fan clutch does not function and the engine is overheating		1. Set the ignition key to the ON position. 2. Activate the dashboard Telltale Light Test switch 3 times within 4 seconds. 3. In the engine compartment, set the starter selector switch to REAR START and then start the engine from the rear. While in this mode, the rear start push-button can be used to manually engage the fan clutch. The Multiplex system knows when the engine is already running, and it will not activate the starter. 4. Press the push-button one time to engage the clutch in 1st speed, press a second time to engage in 2nd speed, press a third time to stop the fan, press once again to return to 1st speed. If the fan clutch does not engage using this procedure then the clutch is faulty or the wiring between the multiplex module and the clutch is faulty. Mechanically lock the fan clutch as described in section 05: COOLING SYSTEM of the maintenance manual.

DIAGNOSTIC TROUBLESHOOTING CODES (DTC) — ALLISON 4TH GENERATION CONTROLS

DIAGNOSTIC TROUBLESHOOTING CODES (DTC) OVERVIEW

Diagnostic codes (DTC) are numerical indications relating to a malfunction in transmission operation. These codes are logged in a list in the TCM memory with the most severe or most recent code listed first. A maximum of five codes (numbered d1 to d5) may be listed in memory at one time. As codes are added, the oldest inactive code is dropped from the list. If all codes are active, the code with the lowest priority that is not included on the severity list is dropped from the list.

Diagnostic codes (DTC) and code information may be accessed through the pushbutton shift selector or using an Allison DOC™ diagnostic tool.

The TCM separately stores the active and inactive codes. An active code is any code that is current in the TCM decision-making process. Inactive codes are codes that are retained in the TCM memory and will not necessary affect the TCM decision-making process. Inactive codes are useful in determining if a problem is:

- Isolated ;
- Intermittent ;
- Result from a previous malfunction.

The TCM may automatically delete a code from memory if it has not recurred. If the MODE INDICATOR (LED) is not illuminated, the displayed code is not active. An illuminated MODE INDICATOR (LED) during normal operation signifies secondary shift mode operation.	

DIAGNOSTIC CODES – ALLISON 4TH GENERATION CONTROLS

When the diagnostic mode is entered, the first code (position d1) is displayed as follows:

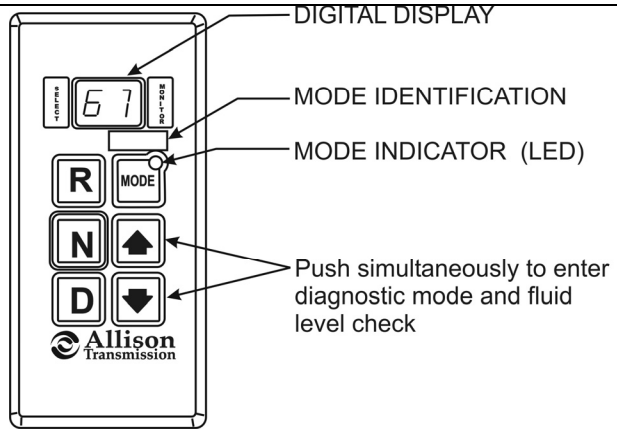
Exemple: Code P0722

Displayed as: **d1**…**P**…**07**…**22**

The code list position is the first item displayed, followed by the DTC. Each item is displayed for about one second. The display cycles continuously until the next code list position is accessed by pressing the **MODE** button. The following example shows how DTC P0722 is displayed on the pushbutton shift selector.

SELECT			MONITOR
	d	1	
		P	
	0	7	
	2	2	

- d1 (code list position) – The position which a code occupies in the list. Positions are displayed as « d1 » through « d5 » (code list position 1 through code list position 5).
- P0722 (DTC) – The diagnostic troubleshooting code number referring to the general condition or area of fault detected by the TCM.



122 Appendix C – Allison Diagnostic Troubleshooting Codes

DIAGNOSTIC CODE DISPLAY AND CLEARING PROCEDURE – ALLISON 4TH GENERATION CONTROLS

Diagnostic codes can be read and cleared by two methods:

- Using an Allison DOC™ diagnostic tool. For specific instructions on how to use an Allison DOC™ diagnostic tool, refer to the User Guide.
- Using the pushbutton shift selector.

To begin the diagnostic process:

1. Bring the vehicle to a stop at a safe location.
2. Apply the parking brake.

To display stored codes:

1. Simultaneously press the ▲ (Up) and ▼ (Down) arrow buttons twice to access the Diagnostic Display Mode.

NOTE
To access the Oil Level Display Mode, simultaneously press the ▲ *(Up) and* ▼ *(Down)* arrow buttons *once. Consult paragraph: « ALLISON TRANSMISSION OIL LEVEL CHECK USING THE PUSHBUTTON SHIFT SELECTOR » at the end of this section.*

2. Observe the digital display for code (d1).
3. Press the MODE button to see the next code (d2) – repeat for subsequent codes (d3, d4 & d5).

NOTE
Be sure to record all codes displayed before they are cleared. This is essential for troubleshooting.

NOTE
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

Active indicators (MODE INDICATOR LED) and inactive codes can be cleared manually, while in the diagnostic display mode, after the condition causing the code is identified.

To clear active indicators and inactive codes:

1. While in Diagnostic Display Mode, press and hold the MODE button for 10 seconds to clear both active indicators and inactive codes.
2. Begin operating as normal. Have the transmission checked at the earliest opportunity by an Allison Transmission distributor or dealer.

NOTE
All active indicators are cleared at TCM power down. *Some codes will clear their active indicator when the condition causing the code is no longer detected by the TCM.*

The Diagnostic Display Mode can be exited by any of the following methods:

- Press simultaneously the ▲ (Up) and ▼ (Down) arrow buttons at the same time on the pushbutton shift selector.

- Press any range button «D», «N» or «R» on the pushbutton shift selector (the shift will be commanded if it is not inhibited by an active code).
- 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 TCM (shut off the engine using the ignition key).

NOTE
If clearing a code while locked in a «D» (Drive) or «R» (Reverse) position (fail-to-range), the transmission will still be in «D» (Drive) or «R» (Reverse) when the clearing procedure is completed. «N» (Neutral) must be manually selected.

DIAGNOSTIC CODE RESPONSE

The following responses are used in the "Diagnostic Troubleshooting Code List and Inhibited Operation Description" table to command safe operation when diagnostic codes are sent.

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 shift selector.

DNA - Do Not Adapt Response

The TCM 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 TCM 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 TCM commands a neutral condition with no clutches applied.

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ALLISON TRANSMISSION DIAGNOSTIC TROUBLESHOOTING CODES (DTC) AND DESCRIPTIONS

DTC	Description	CHECK TRANS Light	Inhibited Operation Description
C1312	Retarder Request Sensor Failed Low	No	May inhibit retarder operation if not using J1939 datalink
C1313	Retarder Request Sensor Failed High	No	May inhibit retarder operation if not using J1939 datalink
P0122	Pedal Position Sensor Low Voltage	No	Use default throttle values. Freezes shift adapts.
P0123	Pedal Position Sensor High Voltage	No	Use default throttle values. Freezes shift adapts.
P0218	Transmission Fluid Over Temperature	No	Use hot mode shift schedule. Holds fourth range. TCC is inhibited. Freezes shift adapts.
P0602	TCM Not Programmed	Yes	Lock in Neutral
P0610	TCM Vehicle Options (Trans ID) Error	Yes	Use TID A calibration
P0613	TCM Processor	No	All solenoids off
P0614	Torque Control Data Mismatch - ECM/TCM	Yes	Allows operation only in reverse and second range.
P0634	TCM Internal Temperature Too High	Yes	SOL OFF (hydraulic default)
P063E	Auto Configuration Throttle Input Not Present	Yes	Use default throttle values
P063F	Auto Configuration Engine Coolant Temp Input Not Present	No	None
P0658	Actuator Supply Voltage 1 (HSD1) Low	Yes	DNS, SOL OFF (hydraulic default)
P0659	Actuator Supply Voltage 1 (HSD1) High	Yes	DNS, SOL OFF (hydraulic default)
P0702	Transmission Control System Electrical (TransID)	Yes	Use TID A calibration
P0703	Brake Switch Circuit Malfunction	No	No Neutral to Drive shifts for refuse packer. TCM inhibits retarder operation if a TPS code is also active.
P0708	Transmission Range Sensor Circuit High Input	Yes	Ignore defective strip selector inputs
P070C	Transmission Fluid Level Sensor Circuit – Low Input	No	None
P070D	Transmission Fluid Level Sensor Circuit – High Input	No	None
P0711	Transmission Fluid Temperature Sensor Circuit Performance	Yes	Use default sump temp
P0712	Transmission Fluid Temperature Sensor Circuit Low Input	Yes	Use default sump temp
P0713	Transmission Fluid Temperature Sensor Circuit High Input	Yes	Use default sump temp
P0716	Turbine Speed Sensor Circuit Performance	Yes	DNS, Lock in current range
P0717	Turbine Speed Sensor Circuit No Signal	Yes	DNS, Lock in current range
P0719	Brake Switch ABS Input Low	No	TCM assumes ABS is OFF
P071A	RELS Input Failed On	Yes	Inhibit RELS operation
P071D	General Purpose Input Fault	Yes	None
P0721	Output Speed Sensor Circuit Performance	Yes	DNS, Lock in current range
P0722	Output Speed Sensor Circuit No Signal	Yes	DNS, Lock in current range
P0726	Engine Speed Sensor Circuit Performance	No	Default to turbine speed
P0727	Engine Speed Sensor Circuit No Signal	No	Default to turbine speed
P0729	Incorrect 6^{th} Gear Ratio	Yes	DNS, Attempt 5^{th}, then 3^{rd}
P0731	Incorrect 1^{st} Gear ratio	Yes	DNS, Attempt 2^{nd}, then 5^{th}
P0732	Incorrect 2^{nd} Gear ratio	Yes	DNS, Attempt 3^{rd}, then 5^{th}

DTC	Description	CHECK TRANS Light	Inhibited Operation Description
P0733	Incorrect 3rd Gear ratio	Yes	DNS, Attempt 4th, then 6th
P0734	Incorrect 4th Gear ratio	Yes	DNS, Attempt 5th, then 3rd
P0735	Incorrect 5th Gear ratio	Yes	DNS, Attempt 6th, then 3rd, then 2nd
P0736	Incorrect Reverse Gear ratio	Yes	DNS, Lock in Neutral
P0741	Torque Converter Clutch System Stuck Off	Yes	None
P0776	Pressure Control Solenoid 2 Stuck Off	Yes	DNS, RPR
P0777	Pressure Control Solenoid 2 Stuck On	Yes	DNS, RPR
P0796	Pressure Control Solenoid 3 Stuck Off	Yes	DNS, RPR
P0797	Pressure Control Solenoid 3 Stuck On	Yes	DNS, RPR
P0842	Transmission Pressure Switch 1 Circuit Low	Yes	DNS, Lock in current range
P0843	Transmission Pressure Switch 1 Circuit High	Yes	DNS, Lock in current range
P0880	TCM Power Input Signal	No	None
P0881	TCM Power Input Signal Performance	No	None
P0882	TCM Power Input Signal Low	Yes	DNS, SOL OFF (hydraulic default)
P0883	TCM Power Input Signal High	No	None
P0894	Transmission Component Slipping	Yes	DNS, Lock in first
P0960	Pressure Control Solenoid Main Mod Control Circuit Open	Yes	None
P0962	Pressure Control Solenoid Main Mod Control Circuit Low	Yes	DNS, SOL OFF (hydraulic default)
P0963	Pressure Control Solenoid Main Mod Control Circuit High	Yes	None
P0964	Pressure Control Solenoid 2 (PCS2) Control Circuit Open	Yes	DNS, SOL OFF (hydraulic default)
P0966	Pressure Control Solenoid 2 (PCS2) Control Circuit Low	Yes	DNS, SOL OFF (hydraulic default)
P0967	Pressure Control Solenoid 2 (PCS2) Control Circuit High	Yes	DNS, SOL OFF (hydraulic default)
P0968	Pressure Control Solenoid 3 (PCS3) Control Circuit Open	Yes	DNS, SOL OFF (hydraulic default)
P0970	Pressure Control Solenoid 3 (PCS3) Control Circuit Low	Yes	DNS, SOL OFF (hydraulic default)
P0971	Pressure Control Solenoid 3 (PCS3) Control Circuit High	Yes	DNS, SOL OFF (hydraulic default)
P0973	Shift Solenoid 1 (SS1) Control Circuit Low	Yes	DNS, SOL OFF (hydraulic default)
P0974	Shift Solenoid 1 (SS1) Control Circuit High	Yes	DNS, SOL OFF (hydraulic default)
P0975	Shift Solenoid 2 (SS2) Control Circuit Open	Yes	7-speed: Allow 2 through 6, N, R
P0976	Shift Solenoid 2 (SS2) Control Circuit Low	Yes	7-speed: Allow 2 through 6, N, R Inhibit TCC operation
P0977	Shift Solenoid 2 (SS2) Control Circuit High	Yes	7-speed: Allow 2 through 6, N, R
P0989	Retarder Pressure Sensor Failed Low	No	None
P0990	Retarder Pressure Sensor Failed High	No	None
P1739	Incorrect Low Gear Ratio	Yes	Command 2nd and allow shifts 2 through 6, N, R
P1891	Throttle Position Sensor PWM Signal Low Input	No	Use default throttle values
P1892	Throttle Position Sensor PWM Signal High Input	No	Use default throttle values
P2184	Engine Coolant Temperature Sensor Circuit Low Input	No	Use default engine coolant values
P2185	Engine Coolant Temperature Sensor Circuit High Input	No	Use default engine coolant values
P2637	Torque Management Feedback Signal (SEM)	Yes	Inhibit SEM
P2641	Torque Management Feedback Signal (LRTP)	Yes	Inhibit LRTP
P2670	Actuator Supply Voltage 2 (HSD2) Low	Yes	DNS, SOL OFF (hydraulic default)
P2671	Actuator Supply Voltage 2 (HSD2) High	Yes	DNS, SOL OFF (hydraulic default)
P2685	Actuator Supply Voltage 3 (HSD3) Low	Yes	DNS, SOL OFF (hydraulic default)

DTC	Description	CHECK TRANS Light	Inhibited Operation Description
P2686	Actuator Supply Voltage 3 (HSD3) High	Yes	DNS, SOL OFF (hydraulic default)
P2714	Pressure Control Solenoid 4 (PCS4) Stuck Off	Yes	DNS, RPR
P2715	Pressure Control Solenoid 4 (PCS4) Stuck On	Yes	DNS, SOL OFF (hydraulic default)
P2718	Pressure Control Solenoid 4 (PCS4) Control Circuit Open	Yes	DNS, SOL OFF (hydraulic default)
P2720	Pressure Control Solenoid 4 (PCS4) Control Circuit Low	Yes	DNS, SOL OFF (hydraulic default)
P2721	Pressure Control Solenoid 4 (PCS4) Control Circuit High	Yes	DNS, SOL OFF (hydraulic default)
P2723	Pressure Control Solenoid 1 (PCS1) Stuck Off	Yes	DNS, RPR
P2724	Pressure Control Solenoid 1 (PCS1) Stuck On	Yes	DNS, RPR
P2727	Pressure Control Solenoid 1 (PCS1) Control Circuit Open	Yes	DNS, SOL OFF (hydraulic default)
P2729	Pressure Control Solenoid 1 (PCS1) Control Circuit Low	Yes	DNS, SOL OFF (hydraulic default)
P2730	Pressure Control Solenoid 1 (PCS1) Control Circuit High	Yes	DNS, SOL OFF (hydraulic default)
P2736	Pressure Control Solenoid 5 (PCS5) Control Circuit Open	Yes	Inhibit retarder operation
P2738	Pressure Control Solenoid 5 (PCS5) Control Circuit Low	Yes	Allow 2 through 6, N, R. Inhibit retarder and TCC operation
P2739	Pressure Control Solenoid 5 (PCS5) Control Circuit High	Yes	Inhibit retarder operation
P2740	Retarder Oil Temperature Hot	No	None
P2742	Retarder Oil Temperature Sensor Circuit – Low Input	No	Use default retarder temp values
P2743	Retarder Oil Temperature Sensor Circuit – High Input	No	Use default retarder temp values
P2761	TCC PCS Control Circuit Open	Yes	Inhibit TCC operation
P2763	TCC PCS Control Circuit High	Yes	Inhibit TCC operation
P2764	TCC PCS Control Circuit Low	Yes	7-speed: Allow 2 through 6, N, R. Inhibit TCC operation
P278A	Kickdown Input Failed ON	No	Inhibit kickdown operation
P2793	Gear Shift Direction Circuit	Yes	Ignores PWM input from shift selector
P2808	Pressure Control Solenoid 6 (PCS6) Stuck Off	Yes	DNS, RPR
P2809	Pressure Control Solenoid 6 (PCS6) Stuck On	Yes	DNS, RPR
P2812	Pressure Control Solenoid 6 (PCS6) Control Circuit Open	Yes	DNS, SOL OFF (hydraulic default)
P2814	Pressure Control Solenoid 6 (PCS6) Control Circuit Low	Yes	DNS, SOL OFF (hydraulic default)
P2815	Pressure Control Solenoid 6 (PCS6) Control Circuit High	Yes	DNS, SOL OFF (hydraulic default)
U0001	Hi Speed CAN Bus Reset Counter Overrun (IESCAN)	No	Use default values, inhibit SEM
U0010	CAN BUS Reset Counter Overrun	No	Use default values, inhibit SEM
U0100	Lost Communications with ECM/PCM (J1587)	Yes	Use default values
U0103	Lost Communication with Gear Shift Module (Shift Selector) 1	Yes	Maintain range selected, observe gear shift direction circuit
U0115	Lost Communication with ECM	Yes	Use default values
U0291	Lost Communication with Gear Shift Module (Shift Selector) 2	Yes	Maintain range selected, observe gear shift direction circuit
U0304	Incompatible Gear Shift Module 1 (Shift Selector) ID	Yes	Ignore shift selector inputs
U0333	Incompatible Gear Shift Module 2 (Shift Selector) ID	Yes	Ignore shift selector inputs
U0404	Invalid Data Received From Gear Shift Module (Shift Selector) 1	Yes	Maintain range selected, observe gear shift direction circuit
U0592	Invalid Data Received From Gear Shift Module (Shift Selector) 2	Yes	Maintain range selected, observe gear shift direction circuit

ALLISON TRANSMISSION OIL LEVEL CHECK USING THE PUSHBUTTON SHIFT SELECTOR

Oil level codes are obtained as follows:

1. Park vehicle on a level surface, select «N» (neutral) on the pushbutton shift selector and apply parking brake.

2. Press simultaneously the ▲ (Up) and ▼ (Down) arrow buttons once.

3. Oil level codes are displayed in 2 minutes (e.g. display will flash and 8, 7, 6, 5, ...; 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 «N» (Neutral);**
- **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
OL…-…0X	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».

DDEC VI DIAGNOSTIC CODES

DIAGNOSTIC SYSTEM

Diagnostics is a standard feature of DDEC VI. The purpose of this feature is to provide information for problem identification and problem solving in the form of a code. The MCM and CPC continuously perform self diagnostic checks and monitor the other system components. Information for problem identification and problem solving is enhanced by the detection of faults, retention of fault codes and separation of active from inactive codes.

The engine-mounted MCM includes control logic to provide overall engine management. System diagnostic checks are made at ignition on and continue throughout all engine operating modes.
Sensors provide information to the MCM and CPC regarding various engine and vehicle performance characteristics. The information is used to regulate engine and vehicle performance, provide diagnostic information, and activate the engine protection system.

The DDEC VI on-board diagnostic system accessories include the following:

- Check Engine telltale light (AWL);
- Stop Engine telltale light (RSL);
- Stop Engine Override switch (SEO);
- Diagnostic Data Link (DDL) connectors.

The AWL is illuminated and a code is stored if an electronic system fault occurs. This indicates the problem should be diagnosed as soon as possible. The CPC illuminates the AWL and RSL and stores a malfunction code if a potentially engine damaging fault is detected. These codes can be accessed in one of four ways:

- Commercially available J1587/J1939 diagnostic tools.
- Detroit Diesel Diagnostic Link® (DDDL 7.0).
- Flashing the AWL and RSL with the SEO/Diagnostic Request Switch.
- Dashboard's Message Center Display (MCD).

READING DIAGNOSTIC CODES – FLASHING LIGHT METHOD

DDEC VI makes use of two types of codes: Active and inactive. The difference between the two types of codes is as follows:

Active Codes: Codes that are currently keeping the Check Engine or Stop Engine telltale light illuminated. Active codes are flashed via the Stop Engine Light when checked with the stop-engine-override switch.

Inactive Codes: These are all the codes logged in the CPC, which have previously occurred, (whether or not they are currently turning on the Stop or Check Engine Light). Inactive codes are flashed via the Check Engine telltale light when checked with the stop-engine-override switch.

In most instances, only the DDR can provide the information necessary for a quick diagnosis of the problem. If you just need to read out codes, however, and do not have a DDR available, the following procedure will let you read out codes. Make sure the rear-starting switch (located in the engine compartment) is in the normal position. With the ignition ON, the engine idling or engine shut-off, momentarily depress the Stop Engine Override (SEO) switch. Active codes will be flashed on the stop engine telltale, followed by the inactive codes being flashed on the check-engine telltale panel. The cycle repeats itself until the operator depresses the stop engine override switch again.

130 Appendix D – DDEC VI Diagnostic Codes

Flashing codes provide a four digit number. Each fault code is flashed twice in order to help with counting the flashes. If there are no active faults or if there are no inactive faults the number “3” is flashed once followed by an ~3s delay.

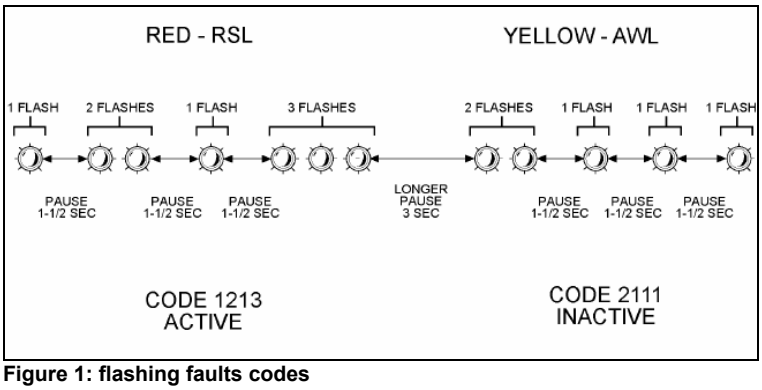


Figure 1: flashing faults codes

Refer to DDEC Troubleshooting Manual 6SE567 for more information and SAE codes.

NOTE
Active codes are flashed in ascending numerical flash code order. Inactive codes are flashed in most recent to least recent order.

DDEC VI CPC DIAGNOSTIC CODES LIST

SPN	FMI	PID/SID	PID/SID ID	FLASH CODES	FAULT DESCRIPTION
70	2	PID	70	2111	Park Brake Status Not Plausible (Vehicle Moving)
70	19	SID	234	2112	J1939 Park Brake Switch Signal from Source #1 is erratic
70	13	SID	234	2112	J1939 Park Brake Switch Signal from Source #1 is missing
70	19	SID	234	2112	J1939 Park Brake Switch Signal from Source #2 is erratic
70	13	SID	234	2112	J1939 Park Brake Switch Signal from Source #2 is missing
70	19	SID	234	2112	J1939 Park Brake Switch Signal from Source #3 is erratic
70	13	SID	234	2112	J1939 Park Brake Switch Signal from Source #3 is missing
84	21	PID	84	2113	Vehicle Speed Failure
84	3	PID	84	2113	Vehicle Speed Sensor Circuit Failed High
84	4	PID	84	2113	Vehicle Speed Sensor Circuit Failed Low
84	2	PID	84	2113	VSS Anti Tamper Detection via Virtual Gear Ratio
84	8	PID	84	2113	VSS Anti Tamper Detection via Fixed Frequency Device

SPN	FMI	PID/SID	PID/SID ID	FLASH CODES	FAULT DESCRIPTION
84	6	PID	84	2113	VSS Anti-Tamper Detection via ABS Vehicle Speed Comparison
84	19	PID	84	2113	J1939 Wheel-Based Vehicle Speed Signal from Source#1 is erratic
84	13	PID	84	2113	J1939 Wheel-Based Vehicle Speed Signal from Source#1 is missing
84	19	SID	84	2113	J1939 Wheel-Based Vehicle Speed Signal from Source#2 is erratic
84	13	PID	84	2113	J1939 Wheel-Based Vehicle Speed Signal from Source#2 is missing
84	19	PID	84	2113	J1939 Wheel-Based Vehicle Speed Signal from Source#3 is erratic
84	13	PID	84	2113	J1939 Wheel-Based Vehicle Speed Signal from Source#3 is missing
84	20	PID	84	2113	Vehicle Speed Sensor Drifted High Error (VSS signal not plausible)
91	13	PID	91	2114	Accelerator Pedal Learn Error
91	3	PID	91	2114	Accelerator Pedal Circuit Failed High
91	4	PID	91	2114	Accelerator Pedal Circuit Failed Low
91	8	PID	91	2114	Pwm Accelerator Pedal Signal 1 Frequency Out Of Range
91	14	PID	91	2114	Pwm Accelerator Pedal Not Learned
91	7	PID	91	2114	Pwm Accelerator Pedal Idle Not Recognized
91	31	PID	91	2114	Pwm Accelerator Pedal Learned Range to Large
91	3	PID	91	2114	Accelerator Pedal Signal Circuit Failed High
91	9	SID	231	2615	J1939 EEC2 Message is missing
98	0	PID	98	2115	Oil Level High
98	18	PID	98	2115	Oil Level Low
98	1	PID	98	2115	Oil Level Very Low
100	18	PID	100	2121	Oil Pressure Low
100	1	PID	100	2121	Oil Pressure Very Low
107	0	PID	107	2122	Air Filter Restriction High
107	4	PID	107	2122	Air Filter Signal Circuit Failed Low
107	3	PID	107	2122	Air Filter Signal Circuit Failed High
110	16	PID	110	2123	Coolant Temperature High
110	0	PID	110	2123	Coolant Temperature Very High
111	18	PID	111	2124	Coolant Level Low
111	3	PID	111	2124	Coolant Level Circuit Failed High
111	4	PID	111	2124	Coolant Level Circuit Failed Low
111	1	PID	111	2124	Coolant Level Very Low
168	0	PID	168	2125	Battery Voltage Very Low

SPN	FMI	PID/SID	PID/SID ID	FLASH CODES	FAULT DESCRIPTION
168	0	PID	168	2125	Battery Voltage High
168	18	PID	168	2125	Battery Voltage Low
168	14	PID	168	2125	Opt Idle Detected Charging System or Battery Failure
168	14	PID	168	2125	ECU powerdown not completed (Main Battery Terminal Possibly Floating)
171	2	PID	171	2131	Ambient Temperature Sensor Data Erratic
171	14	PID	171	2131	J1587 Ambient Air Temp Sensor Data Not Received This Ign Cycle
171	9	PID	171	2131	J1587 Ambient Air Temp Sensor Data Message Stopped Arriving
191	9	SID	231	2615	J1939 ETC1 Message is missing
191	19	SID	231	2132	J1939 Transmission Output Shaft Speed Signal is erratic
191	13	SID	231	2132	J1939 Transmission Output Shaft Speed Signal is missing
247	9	PID	247	2615	MCM Engine Hours Data not received or stopped arriving
247	10	PID	247	2615	MCM Engine Hours Data increasing at an implausible rate
247	0	PID	247	2615	MCM Engine Hours Data higher than expected
247	1	PID	247	2615	MCM Engine Hours Data lower than expected
523	19	PID	163	2133	J1939 Transmission Current Gear Signal is erratic
523	13	PID	163	2133	J1939 Transmission Current Gear Signal is missing
524	9	SID	231	2615	J1939 ETC2 Message is missing
527	9	SID	231	2615	J1939 CCVS Message from Source #1 is missing
527	9	SID	231	2615	J1939 CCVS Message from Source #2 is missing
527	9	SID	231	2615	J1939 CCVS Message from Source #3 is missing
558	2	SID	230	2134	Idle Validation Switch Inputs Reversed
558	5	SID	230	2134	Idle Validation Switch 2 Circuit Failed Low
558	6	SID	230	2134	Idle Validation Switch 2 Circuit Failed High
558	4	SID	230	2134	Idle Validation Switch 1 Circuit Failed Low
558	3	SID	230	2134	Idle Validation Switch 1 Circuit Failed High
596	19	SID	244	2135	J1939 Cruise Control Enable Switch Signal from Source #1 is erratic
596	13	SID	244	2135	J1939 Cruise Control Enable Switch Signal from Source #1 is missing
596	19	SID	244	2135	J1939 Cruise Control Enable Switch Signal from Source #2 is erratic
596	13	SID	244	2135	J1939 Cruise Control Enable Switch Signal from Source #2 is missing

SPN	FMI	PID/SID	PID/SID ID	FLASH CODES	FAULT DESCRIPTION
596	19	SID	244	2135	J1939 Cruise Control Enable Switch Signal from Source #3 is erratic
596	13	SID	244	2135	J1939 Cruise Control Enable Switch Signal from Source #3 is missing
597	2	SID	246	2141	Service Brake Status Not Plausible
597	19	SID	246	2141	J1939 Service Brake Switch Signal from Source #1 is erratic
597	13	SID	246	2141	J1939 Service Brake Switch Signal from Source #1 is missing
597	19	SID	246	2141	J1939 Service Brake Switch Signal from Source #2 is erratic
597	13	SID	246	2141	J1939 Service Brake Switch Signal from Source #2 is missing
597	19	SID	246	2141	J1939 Service Brake Switch Signal from Source #3 is erratic
597	13	SID	246	2141	J1939 Service Brake Switch Signal from Source #3 is missing
599	4	SID	243	2142	Cruise Control SET and RESUME Circuits Failed Low
600	19	SID	243	2143	J1939 Cruise Control Coast Switch Signal from Source #1 is erratic
600	13	SID	243	2143	J1939 Cruise Control Coast Switch Signal from Source #1 is missing
600	19	SID	243	2143	J1939 Cruise Control Coast Switch Signal from Source #2 is erratic
600	13	SID	243	2143	J1939 Cruise Control Coast Switch Signal from Source #2 is missing
600	19	SID	243	2143	J1939 Cruise Control Coast Switch Signal from Source #3 is erratic
600	13	SID	243	2143	J1939 Cruise Control Coast Switch Signal from Source #3 is missing
602	19	SID	242	2144	J1939 Cruise Control Accelerate Switch Signal from Source #1 is erratic
602	13	SID	242	2144	J1939 Cruise Control Accelerate Switch Signal from Source #1 is missing
602	19	SID	242	2144	J1939 Cruise Control Accelerate Switch Signal from Source #2 is erratic
602	13	SID	242	2144	J1939 Cruise Control Accelerate Switch Signal from Source #2 is missing
602	19	SID	242	2144	J1939 Cruise Control Accelerate Switch Signal from Source #3 is erratic
602	13	SID	242	2144	J1939 Cruise Control Accelerate Switch Signal from Source #3 is missing
608	14	SID	250	2145	J1708 Data Link Failure
609	12	SID	233	2145	CPC2 Hardware Failure
615	9	SID	231	2615	J1939 DM1 Message from Transmission is missing

SPN	FMI	PID/SID	PID/SID ID	FLASH CODES	FAULT DESCRIPTION
625	13	SID	248	2151	ECAN ID_1629 Diagnostic Message Not Received This Ignition Cycle
625	9	SID	248	2151	ECAN ID_1629 Diagnostic Message No Longer Being Received
625	10	SID	248	2151	ECAN ID_1629 Reporting Inconsistent Number of Frames
625	2	SID	248	2151	ECAN ID_1629 Diagnostic Message Reporting Data Not Available
625	14	SID	248	2151	ECAN ID_1629 Diagnostic Message Reporting an Unknown MUID
625	9	SID	248	2151	Incorrect MCM System ID Received
625	9	SID	248	2151	MCM System ID Not Received or Stopped Arriving
625	4	SID	248	2151	ECAN Link Circuit Failure
628	14	SID	254	2151	XFLASH Static Fault Code Memory Page Read Write Failure
628	13	SID	155	2615	20ms ECU OS Task Locked in an Endless Loop
628	13	SID	155	2615	20ms ECU OS Task Timed out Prior to Completion
628	13	SID	155	2615	1000ms ECU OS Task Locked in an Endless Loop
628	13	SID	155	2615	1000ms ECU OS Task Timed out Prior to Completion
629	2	SID	254	2151	CPC Hardware/Software Mismatch
629	12	SID	254	2151	DDEC Data Xflash Write Error. Replace CPC2.
630	2	SID	253	2152	EEPROM Checksum Failure
630	2	SID	253	2152	EEPROM Checksum Failure for the SCR Block
630	13	SID	253	2152	SCR Number Out of Range
630	14	SID	155	2615	MCM Fault Codes Unavailable via J1939 and J1587
630	14	SID	155	2615	MCM Fault Code Table Inconsistant - Upgrade MCM Software
630	14	SID	155	2615	Insufficient Static Fault Code Storrage Memory - Upgrade CPC Software
630	14	SID	155	2615	MCM Fault Code Table Inconsistant - Upgrade MCM Software
639	14	SID	231	2153	J1939 Data Link Failure
701	3	SID	26	2211	Digital Output 4 09 Circuit Failed High
701	4	SID	26	2211	Digital Output 4 09 Circuit Failed Low
702	3	SID	40	2212	Digital Output 3 17 Circuit Failed High
702	4	SID	40	2212	Digital Output 3 17 Circuit Failed Low
703	3	SID	51	2213	Digital Output 3 09 Circuit Failed High
703	4	SID	51	2213	Digital Output 3 09 Circuit Failed Low

SPN	FMI	PID/SID	PID/SID ID	FLASH CODES	FAULT DESCRIPTION
704	3	SID	52	2214	Digital Output 4 07 Circuit Failed High
704	4	SID	52	2214	Digital Output 4 07 Circuit Failed Low
705	3	SID	53	2215	Digital Output 1 13 Circuit Failed High
705	4	SID	53	2215	Digital Output 1 13 Circuit Failed Low
706	3	SID	54	2221	Digital Output 3 10 Circuit Failed High
706	4	SID	54	2221	Digital Output 3 10 Circuit Failed Low
707	3	SID	55	2222	Digital Output 2 10 Circuit Failed High (CEL / AWL Lamp)
707	4	SID	55	2222	Digital Output 2 10 Circuit Failed Low (CEL / AWL Lamp)
708	3	SID	56	2223	Digital Output 3 12 Circuit Failed High
708	4	SID	56	2223	Digital Output 3 12 Circuit Failed Low
709	3	SID	257	2224	Digital Output 3 16 Circuit Failed High
709	4	SID	257	2224	Digital Output 3 16 Circuit Failed Low
710	3	SID	258	2225	Digital Output 4 06 Circuit Failed High
710	4	SID	258	2225	Digital Output 4 06 Circuit Failed Low
711	3	SID	259	2231	Digital Output 1 05 Circuit Failed High
711	4	SID	259	2231	Digital Output 1 05 Circuit Failed Low
712	3	SID	260	2232	Digital Output 1 04 Circuit Failed High
712	4	SID	260	2232	Digital Output 1 04 Circuit Failed Low
713	3	SID	261	2234	Digital Output 3 07 Circuit Failed High
713	4	SID	261	2234	Digital Output 3 07 Circuit Failed Low
713	5	SID	261	2234	Digital Output 3 07 Open Circuit
713	7	SID	261	2234	TOP2 Shift Failure
714	3	SID	262	2235	Digital Output 3 08 Circuit Failed High
714	4	SID	262	2235	Digital Output 3 08 Circuit Failed Low
714	5	SID	262	2235	Digital Output 3 08 Open Circuit
715	3	SID	263	2241	Digital Output 4 10 Circuit Failed High
904	9	SID	231	2615	J1939 EBC2 Message from ABS is missing
904	19	SID	231	2242	J1939 Front Axle Speed Signal is erratic
904	13	SID	231	2242	J1939 Front Axle Speed Signal is missing
972	2	SID	203	2243	Throttle inhibit switch signal not plausible due to excess vehicle speed
973	9	SID	231	2615	J1939 EBC1 Message is missing
973	13	SID	231	2244	J1939 Engine Retarder Selection Signal Missing
973	19	SID	231	2244	J1939 Engine Retarder Selection Signal Erratic
974	2	PID	372	2245	Remote Accelerator Pedal Supply Voltage Out of Range
974	3	PID	372	2245	Remote Accelerator Pedal Circuit Failed High
974	4	PID	372	2245	Remote Accelerator Pedal Circuit Failed Low
981	0	SID	155	2311	PTO CC+ and CC- Switches Pressed Simultaneously
986	9	SID	231	2615	J1939 CM1 Message is missing

SPN	FMI	PID/SID	PID/SID ID	FLASH CODES	FAULT DESCRIPTION
1267	4	SID	123	2312	Digital Output 4 10 Circuit Failed Low
1267	3	SID	123	2312	Digital Output 4 10 Circuit Failed Open
1321	4	SID	128	2314	Starter Lockout Output Shorted to Ground
1321	3	SID	128	2314	Starter Lockout Output Open Circuit
1590	19	SID	155	2615	Adaptive Cruise Control Message Not Received
1590	9	SID	231	2615	Adaptive Cruise Control Device Reporting Error
1624	9	SID	231	2615	J1939 TCO1 Message is missing
1624	19	SID	231	2315	J1939 Tachograph Vehicle Speed Signal is erratic
1624	13	SID	231	2315	J1939 Tachograph Vehicle Speed Signal is missing
1663	7	SID	123	2321	Optimized Idle Safety Loop Faulted
1716	9	SID	231	2615	J1939 ERC1 Message is missing
1845	9	SID	231	2615	J1939 TCFG2 Message is missing
2623	14	PID	91	2322	Pwm Accelerator Pedal GAS1 and GAS2 Signal Missing
2623	8	PID	91	2322	Pwm Accelerator Pedal Signal 2 Frequency Out Of Range
2900	9	SID	231	2615	J1939 ETC7 Message is missing
3510	3	SID	211	2333	Accelerator Pedal Supply Voltage Circuit Failed High
3510	4	SID	211	2333	Accelerator Pedal Supply Voltage Circuit Failed Low
3510	4	SID	211	2333	Pwm Accelerator Pedal Supply Voltage Missing
3510	3	SID	211	2333	Accelerator Pedal Supply Voltage Circuit Failed High
3606	9	SID	231	2615	J1939 ESS Message is missing
3695	2	SID	155	2334	Manual DPF Regen and DPF Inhibit Switch Rationality Fault
3695	19	SID	155	2334	DPF Regen Inhibit MUX Switch Message Contains Data Error Indicator
3695	13	SID	155	2334	DPF Regen Inhibit MUX Switch Message Contains SNV Indicator
3695	9	SID	155	2334	DPF Regen Inhibit MUX Switch Message Stopped Arriving
3695	14	SID	155	2334	DPF Regen Inhibit MUX Switch Message Not Received this Ign Cycle
3696	19	SID	155	2335	DPF Regen Force MUX Switch Message Contains Data Error Indicator
3696	13	SID	155	2335	DPF Regen Force MUX Switch Message Contains SNV Indicator
3696	9	SID	155	2335	DPF Regen Force MUX Switch Message Stopped Arriving
3696	14	SID	155	2335	DPF Regen Force MUX Switch Message Not Received this Ign Cycle

DDEC VI MCM DIAGNOSTIC CODES LIST

SPN	FMI	PID/ SID	PID/SID ID	FLASH CODE	FAULT DESCRIPTION
27	4	PID	27	1111	EGR Valve Position Circuit Failed Low
27	3	PID	27	1111	EGR Valve Position Circuit Failed High
27	2	PID	27	1111	EGR Valve Position Feedback Failed
27	0	PID	27	1111	EGR Valve Position Feedback Failed (High Box)
27	1	PID	27	1111	EGR Valve Position Feedback Failed (Low Box)
27	14	PID	27	1111	EGR Valve Position Positive Torque Error
27	7	PID	27	1111	EGR Valve Stuck Open
27	19	PID	27	1521	Smart Actuator Indicates EGR Position Error
51	4	SID	51	1112	Intake Air Throttle Circuit Failed Low
51	3	SID	51	1112	Intake Air Throttle Circuit Failed High
51	2	PID	51	1112	Intake Throttle Position Deviation Error
51	0	PID	51	1112	Intake Air Throttle Position High
51	1	PID	51	1112	Intake Air Throttle Position Low
51	7	PID	51	1112	Intake Throttle Auto Calibration Error
94	4	PID	94	1112	Fuel Compensation Pressure Sensor Circuit Failed Low
94	3	PID	94	1112	Fuel Compensation Pressure Sensor Circuit Failed High
94	1	PID	94	1112	Fuel Pressure Too High/Too Low
97	4	PID	97	1615	Water in Fuel Circuit Failed Low
97	3	PID	97	1615	Water in Fuel Circuit Failed High
98	1	PID	98	1114	Oil Level Circuit Failed Low
98	0	PID	98	1114	Oil Level Circuit Failed High
98	13	PID	98	1634	Oil Level Mesaurement, Configuration Error
98	14	PID	98	1634	Oil Level Mesaurement, Oil Level Too Low or Too High
100	4	PID	100	1114	Engine Oil Pressure Circuit Failed Low
100	3	PID	100	1114	Engine Oil Pressure Circuit Failed High
100	1	PID	100	1114	Engine Oil Pressure Low
100	2	PID	100	1114	Oil Pressure Plausibility - Engine Running
100	2	PID	100	1114	Oil Pressure Plausibility - Stop
103	2	PID	103	1115	Turbocharger Speed Not Plausible
103	1	PID	103	1115	Turbo Charger Speed Below Threshold (High Box)
103	0	PID	103	1115	Turbo Charger Speed Above Threshold (Low Box)
103	4	PID	103	1115	Turbo Charger Speed Sensor Circuit Failed Low
103	3	PID	103	1115	Turbo Charger Speed Sensor Circuit Failed High
108	4	PID	108	1211	Barometric Pressure Circuit Failed Low
108	3	PID	108	1211	Barometric Pressure Circuit Failed High
108	2	PID	108	1211	Ambient Pressure Plausibility Fault (Low Box)
108	20	PID	108	1211	Ambient Pressure Plausibility Fault (High Box)
110	4	PID	110	1212	Engine Coolant Outlet Temperature Circuit Failed Low
110	3	PID	110	1212	Engine Coolant Outlet Temperature Circuit Failed High
110	0	PID	110	1212	Coolant Temperature High
110	14	PID	110	1212	Coolant Temperature / Engine Oil Temperature Plausibility Fault
110	2	PID	110	1212	Engine Coolant Sensor (OUT), General Temp. Plausibility Error
132	7	PID	132	1213	Intake Air Throttle Valve Closure Detection- Positive Torque
132	14	PID	132	1213	Intake Air Throttle Valve Closure Detection -Braking Condition
132	14	PID	322	1635	HC-Doser Fuel Pressure Not Plausible
132	1	PID	322	1213	Air Mass Flow Too Low
132	13	PID	132	1213	Air Mass Auto Calibration Failed
158	2	PID	43	1214	Ignition Switch Not Plausible
164	4	PID	164	1215	Rail Pressure Governor Sensor Circuit Failed Low
164	3	PID	164	1215	Rail Pressure Governor Sensor Circuit Failed High
164	0	PID	164	1215	Rail Pressure Governor (High Side) Error

SPN	FMI	PID/ SID	PID/SID ID	FLASH CODE	FAULT DESCRIPTION
164	0	PID	164	1215	Rail Pressure Governor (Low Side) Error
168	1	PID	168	1221	Battery Voltage Low
168	0	PID	168	1221	Battery Voltage High
171	4	PID	171	1222	Ambient Temperature Circuit Failed Low
171	3	PID	171	1222	Ambient Temperature Circuit Failed High
174	4	PID	174	1223	Fuel Temperature Circuit Failed Low
174	3	PID	174	1223	Fuel Temperature Circuit Failed High
174	2	PID	174	1223	Fuel Temperature Sensor, General Temp. Plausibility
174	0	PID	174	1223	Fuel Temperature Too High
175	4	PID	175	1224	Engine Oil Temperature Circuit Failed Low
175	3	PID	175	1224	Engine Oil Temperature Circuit Failed High
175	14	PID	175	1224	Engine Oil Temperature Sensor Plausibility Fault
175	2	PID	175	1224	Engine Oil Temperature Sensor, General Temp. Plausibility
190	2	PID	190	1225	Engine Speed High
354	4	PID	354	1231	Relative Humidity Circuit Failed Low
354	3	PID	354	1231	Relative Humidity Circuit Failed High
411	4	PID	411	1232	EGR Delta Pressure Sensor Circuit Low
411	3	PID	411	1232	EGR Delta Pressure Sensor Circuit High
411	0	PID	411	1232	EGR Differential Pressure Failed (High Box)
411	1	PID	411	1232	EGR Differential Pressure Failed (Low Box)
411	5	PID	411	1232	EGR Sampling Range Failed
411	13	PID	411	1232	EGR Delta Pressure Sensor Out Of Calibration
411	13	PID	411	1232	EGR Delta Pressure Sensor Out Of Calibration
412	3	PID	412	1233	EGR Temperature Sensor Circuit Failed High
412	4	PID	412	1233	EGR Temperature Sensor Circuit Failed Low
412	20	PID	412	1233	EGR Temperature Drift (High Box)
412	21	PID	412	1233	EGR Temperature Drift (Low Box)
412	2	PID	412	1233	EGR Temperature Sensor, General Temp. Plausibility Error
412	0	PID	412	1512	EGR Temperature Very High
412	16	PID	412	1233	EGR Temperature Sensor / Temperature Too High
615	4	SID	155	1615	Reserved Monitoring Unit For Temperature Diagnostics, Circuit Failed Low MU_ISP_T_TBD4_SRL
615	3	SID	155	1615	Reserved Monitoring Unit For Temperature Diagnostics, Circuit Failed High MU_ISP_T_TBD4_SRH
615	4	SID	155	1615	Reserved Monitoring Unit For Temperature Diagnostics, Circuit Failed Low MU_ISP_T_TBD1_SRL
615	3	SID	155	1615	Reserved Monitoring Unit For Temperature Diagnostics, Circuit Failed High MU_ISP_T_TBD1_SRH
615	4	SID	155	1615	Reserved Monitoring Unit For Temperature Diagnostics, Circuit Failed Low MU_ISP_T_TBD2_SRL
615	3	SID	155	1615	Reserved Monitoring Unit For Temperature Diagnostics, Circuit Failed High MU_ISP_T_TBD2_SRH
615	4	SID	155	1615	Reserved Monitoring Unit For Temperature Diagnostics, Circuit Failed Low MU_ISP_T_TBD3_SRL
615	3	SID	155	1615	Reserved Monitoring Unit For Temperature Diagnostics, Circuit Failed High MU_ISP_T_TBD3_SRH
615	4	SID	155	1615	Catalyst Temperature Sensor Circuit High Input (Bank 1 Sensor 1)
615	3	SID	155	1615	Catalyst Temperature Sensor Circuit Low Input (Bank 1 Sensor 1)
615	4	SID	155	1615	Catalyst Temperature Sensor Circuit High (Bank 1 Sensor 2)
615	3	SID	155	1615	Catalyst Temperature Sensor Circuit Low (Bank 1 Sensor 2)
615	4	SID	51	1322	Water Pump 1 Circuit Failed Low
615	3	SID	51	1322	Water Pump 1 Circuit Failed High
615	5	SID	51	1322	Water Pump 1 Circuit Failed Open
615	4	SID	55	1331	Turbo Compound Valve Circuit Failed Low

SPN	FMI	PID/ SID	PID/SID ID	FLASH CODE	FAULT DESCRIPTION
615	3	SID	55	1331	Turbo Compound Valve Circuit Failed High
615	5	SID	55	1331	Turbo Compound Valve Circuit Failed Open
615	4	SID	259	1335	Turbo Brake Sleeve Circuit Failed Low
615	3	SID	259	1335	Turbo Brake Sleeve Circuit Failed High
615	5	SID	259	1335	Turbo Brake Sleeve Circuit Failed Open
615	4	SID	261	1355	Function 20 Circuit Failed Low
615	3	SID	261	1355	Function 20 Circuit Failed High
615	5	SID	261	1355	Function 20 Circuit Failed Open
615	3	SID	155	1451	Service Push Button Circuit Failed High
615	14	SID	155	1615	Turbocharger/Supercharger Boost System Performance
615	14	SID	155	1615	Starter Electronic Fault / ECU internal (Res)
615	14	SID	155	1615	Starter Jammed (Tooth to Tooth Jam)
615	14	SID	155	1615	Rail Pressure Governor, Valve Stays Open
615	14	SID	155	1615	MU_RPG_INT_MON_SRH, I Term Value Too High
615	14	SID	155	1615	Rail Pressure Governor, Leakage in High Pressure Too High
615	14	SID	155	1615	Rail Pressure Governor Sensor, Signal Drift
615	14	SID	155	1615	Rail Pressure Governor Sensor, Sensor Supply Line Broken
615	4	SID	155	1615	Compressor Differential Pressure Outlet Failed Low
615	3	SID	155	1615	Compressor Differential Pressure Outlet Failed High
615	14	SID	155	1615	Doser Metering and Safety Unit Valve Seals Check
615	14	SID	155	1615	High Pressure Pump, Leakage or TDC Position Wrong
615	4	SID	155	1615	Flap In Front of EGR Cooler Circuit Failed Low
615	3	SID	155	1615	Flap In Front of EGR Cooler Circuit Failed High
615	5	SID	155	1615	Flap In Front of EGR Cooler Circuit Failed Open
615	4	SID	155	1615	Water Pump 2 Circuit Failed Low
615	3	SID	155	1615	Water Pump 2 Circuit Failed High
615	5	SID	156	1615	Water Pump 2 Circuit Failed Open
615	4	SID	157	1615	RCP Test Function 1 Circuit Failed Low
615	3	SID	158	1615	RCP Test Function 1 Circuit Failed High
615	5	SID	159	1615	RCP Test Function 1 Circuit Failed Open
615	4	SID	160	1615	RCP Test Function 2 Circuit Failed Low
615	3	SID	161	1615	RCP Test Function 2 Circuit Failed High
615	5	SID	162	1615	RCP Test Function 2 Circuit Failed Open
615	4	SID	163	1615	Volute Control Valve, Shorted to Ground
615	3	SID	164	1615	Volute Control Valve, Shorted to Battery
615	5	SID	165	1615	Volute Control Valve, Open Load
615	4	SID	166	1615	Volute Shut Off Valve, Shorted to Ground
615	3	SID	167	1615	Volute Shut Off Valve, Shorted to Battery
615	5	SID	168	1615	Volute Shut Off Valve, Open Load
615	4	SID	169	1615	Function 30 Circuit Failed Low
615	3	SID	170	1615	Function 30 Circuit Failed High
615	5	SID	171	1615	Function 30 Circuit Failed Open
615	4	SID	172	1615	Function 31 Circuit Failed Low
615	3	SID	173	1615	Function 31 Circuit Failed High
615	5	SID	174	1615	Function 31 Circuit Failed Open
615	14	SID	155	1453	Smart Remote Actuator 2, No Failsafe Mode, Motor Off
615	9	SID	155	1453	Smart Remote Actuator 2, Failsafe Mode, Motor Off
615	16	SID	155	1453	Smart Remote Actuator 2, Temperature Fault
615	7	SID	155	1453	Smart Remote Actuator 2, Failsafe Mode, Motor On

SPN	FMI	PID/ SID	PID/SID ID	FLASH CODE	FAULT DESCRIPTION
615	11	SID	155	1453	Smart Remote Actuator 2, Restricted Operability
615	15	SID	155	1453	Smart Remote Actuator 2, Temperature Warning
615	8	SID	155	1453	Smart Remote Actuator 2, Internal Test Running
615	31	SID	155	1453	Smart Remote Actuator 2, Unknown Error Code
615	13	SID	155	1454	Turbocharger Compressor Outlet Differential Pressure Sensor Out Of Calibration
615	13	SID	155	1454	Turbocharger Compressor Outlet Differential Pressure Sensor Out Of Calibration
615	19	SID	155	1637	Smart Actuator Indicates Actuator Position Error
625	2	SID	248	1234	Invalid Data on Engine CAN Link
625	9	SID	248	1234	No Data Received from Engine CAN Link
625	9	SID	248	1234	Engine CAN Low Wire Defect - (wire 1)
625	9	SID	248	1234	Engine CAN High Wire Defect - (wire 2)
630	12	SID	253	1452	EEPROM Read / Write Operation Failed
630	13	SID	253	1455	Calibration Data Not Plausible
630	13	SID	253	1455	Calibration Data Not Plausible (CPLD)
634	4	SID	40	1321	Constant Throttle Valve Circuit Failed Low
634	3	SID	40	1321	Constant Throttle Valve Circuit Failed High
634	5	SID	40	1321	Constant Throttle Valve Circuit Failed Open
636	1	SID	21	1235	Crankshaft Position Sensor Signal Voltage Too Low
636	3	SID	21	1235	Crankshaft Position Sensor Open Circuit
636	4	SID	21	1235	Crankshaft Position Sensor Short to Ground
636	8	SID	21	1235	Crankshaft Position Sensor Time Out
636	14	SID	21	1235	Crankshaft Position Sensor Pins Swapped
636	2	SID	21	1235	No Match of Camshaft and Crankshaft Signals
641	4	SID	27	1542	Turbo Control Circuit Failed Low
641	3	SID	27	1542	Turbo Control Circuit Failed High
641	5	SID	27	1542	Turbo Control Circuit Open
641	14	SID	147	1241	Smart Remote Actuator 5 (VGT), No Failsafe Mode, Motor Off
641	9	SID	147	1241	Smart Remote Actuator 5 (VGT), Failsafe Mode, Motor Off
641	7	SID	147	1241	Smart Remote Actuator 5 (VGT), Failsafe Mode, Motor On
641	11	SID	147	1241	Smart Remote Actuator 5 (VGT), Restricted Operability
641	8	SID	147	1241	Smart Remote Actuator 5 (VGT), Internal Test Running
641	31	SID	147	1241	Smart Remote Actuator 5 (VGT), Unknown Error Code
647	4	SID	33	1334	Fan Stage 1 Circuit Failed Low
647	3	SID	33	1334	Fan Stage 1 Circuit Failed High
647	5	SID	33	1334	Fan Stage 1 Circuit Failed Open
651	14	SID	1	1242	Injector Cylinder #1 Needle Control Valve Abnormal Operation
651	10	SID	1	1242	Injector Cylinder #1 Needle Control Valve Abnormal Rate of Change
651	5	SID	1	1242	Injector Cylinder 1, Nozzle Control Valve or Spill Control Valve, Jammed Closed
651	7	SID	1	1242	Injector Cylinder 1, Nozzle Control Valve or Spill Control Valve, Jammed Open or Leakage
651	6	SID	1	1242	Injector Cylinder #1 Needle Control Valve, Valve Shorted Circuit
651	31	SID	1	1242	Engine Smoothness Control / Cylinder #1 Value Out of Range
652	14	SID	2	1243	Injector Cylinder #2 Needle Control Valve Abnormal Operation
652	10	SID	2	1243	Injector Cylinder #2 Needle Control Valve Abnormal Rate of Change

SPN	FMI	PID/ SID	PID/SID ID	FLASH CODE	FAULT DESCRIPTION
652	5	SID	2	1243	Injector Cylinder 2, Nozzle Control Valve or Spill Control Valve, Jammed Closed
652	7	SID	2	1243	Injector Cylinder 2, Nozzle Control Valve or Spill Control Valve, Jammed Open or Leakage
652	6	SID	2	1243	Injector Cylinder #2 Needle Control Valve, Valve Shorted Circuit
652	31	SID	2	1243	Engine Smoothness Control / Cylinder #2 Value Out of Range
653	14	SID	3	1244	Injector Cylinder #3 Needle Control Valve Abnormal Operation
653	10	SID	3	1244	Injector Cylinder #3 Needle Control Valve Abnormal Rate of Change
653	5	SID	3	1244	Injector Cylinder 3, Nozzle Control Valve or Spill Control Valve, Jammed Closed
653	7	SID	3	1244	Injector Cylinder 3, Nozzle Control Valve or Spill Control Valve, Jammed Open or Leakage
653	6	SID	3	1244	Injector Cylinder #3 Needle Control Valve, Valve Shorted Circuit
653	31	SID	3	1244	Engine Smoothness Control / Cylinder #3 Value Out of Range
654	14	SID	4	1245	Injector Cylinder #4 Needle Control Valve Abnormal Operation
654	10	SID	4	1245	Injector Cylinder #4 Needle Control Valve Abnormal Rate of Change
654	5	SID	4	1245	Injector Cylinder 4, Nozzle Control Valve or Spill Control Valve, Jammed Closed
654	7	SID	4	1245	Injector Cylinder 4, Nozzle Control Valve or Spill Control Valve, Jammed Open or Leakage
654	6	SID	4	1245	Injector Cylinder #4 Needle Control Valve, Valve Shorted Circuit
654	31	SID	4	1245	Engine Smoothness Control / Cylinder #4 Value Out of Range
655	14	SID	5	1251	Injector Cylinder #5 Needle Control Valve Abnormal Operation
655	10	SID	5	1251	Injector Cylinder #5 Needle Control Valve Abnormal Rate of Change
655	5	SID	5	1251	Injector Cylinder 5, Nozzle Control Valve or Spill Control Valve, Jammed Closed
655	7	SID	5	1251	Injector Cylinder 5, Nozzle Control Valve or Spill Control Valve, Jammed Open or Leakage
655	6	SID	5	1251	Injector Cylinder #5 Needle Control Valve, Valve Shorted Circuit
655	31	SID	5	1251	Engine Smoothness Control / Cylinder #5 Value Out of Range
656	14	SID	6	1252	Injector Cylinder #6 Needle Control Valve Abnormal Operation
656	10	SID	6	1252	Injector Cylinder #6 Needle Control Valve Abnormal Rate of Change
656	5	SID	6	1252	Injector Cylinder 6, Nozzle Control Valve or Spill Control Valve, Jammed Closed
656	7	SID	6	1252	Injector Cylinder 6, Nozzle Control Valve or Spill Control Valve, Jammed Open or Leakage
656	6	SID	6	1252	Injector Cylinder #6 Needle Control Valve, Valve Shorted Circuit
656	31	SID	6	1252	Engine Smoothness Control / Cylinder #6 Value Out of Range
657	14	SID	7	1253	Injector Cylinder #7 Needle Control Valve Abnormal Operation
657	10	SID	7	1253	Injector Cylinder #7 Needle Control Valve Abnormal Rate of Change
657	6	SID	7	1253	Injector Cylinder #7 Needle Control Valve, Valve Shorted Circuit
657	31	SID	7	1253	Engine Smoothness Control / Cylinder #7 Value Out of Range
658	14	SID	8	1254	Injector Cylinder #8 Needle Control Valve Abnormal Operation
658	10	SID	8	1254	Injector Cylinder #8 Needle Control Valve Abnormal Rate of Change
658	6	SID	8	1254	Injector Cylinder #8 Needle Control Valve, Valve Shorted Circuit
658	31	SID	8	1254	Engine Smoothness Control / Cylinder #8 Value Out of Range
677	2	SID	39	1255	Starter Switch Inconsistent
677	5	SID	39	1255	Engine Starter Relay Circuit Failed Low
677	4	SID	39	1255	Engine Starter Relay Open Circuit

SPN	FMI	PID/ SID	PID/SID ID	FLASH CODE	FAULT DESCRIPTION
677	14	SID	39	1255	Starter Electronic Fault / ECU internal (Main)
677	7	SID	39	1255	Engine Starter Relay - Starter Does Not Engage
677	3	SID	39	1255	Engine Starter Relay Shorted to High Source
677	7	SID	39	1255	Engine Starter Relay Jammed
698	4	SID	58	1312	Gridheater Circuit Failed Low
698	3	SID	58	1312	Gridheater Circuit Failed High
698	5	SID	58	1312	Gridheater Circuit Failed Open
715	4	SID	263	1412	High Side Digital Output # 1 Circuit Failed Low
715	3	SID	263	1412	High Side Digital Output # 1 Circuit Failed High
715	5	SID	263	1412	High Side Digital Output # 2 Circuit Failed Open
716	4	SID	264	1413	High Side Digital Output # 2 Circuit Failed Low
723	1	SID	64	1415	Camshaft Position Sensor Signal Voltage Too Low
723	3	SID	64	1415	Camshaft Position Sensor Open Circuit
723	4	SID	64	1415	Camshaft Position Sensor Short to Ground
723	8	SID	64	1415	Camshaft Position Sensor Time Out
723	14	SID	64	1415	Camshaft Position Sensor Pins Swapped
729	4	PID	45	1421	Grid Heater Circuit Failed Low
729	14	PID	45	1421	Grid Heater Special Instructions
729	3	PID	45	1421	Grid Heater Circuit Failed High
729	7	PID	45	1421	Grid Heater Defect
729	0	PID	45	1421	Grid Heater Permanently On
1071	4	SID	60	1314	Fan Stage 2 Circuit Failed Low
1071	3	SID	60	1314	Fan Stage 2 Circuit Failed High
1071	5	SID	60	1314	Fan Stage 2 Circuit Failed Open
1072	4	SID	79	1422	Jake Brake Stage 1 Circuit Failed Low
1072	3	SID	79	1422	Jake Brake Stage 1 Circuit Failed High
1072	5	SID	79	1422	Jake Brake Stage 1 Circuit Failed Open
1073	4	SID	80	1315	Jake Brake Stage 2 Circuit Failed Low
1073	3	SID	80	1315	Jake Brake Stage 2 Circuit Failed High
1073	5	SID	80	1315	Jake Brake Stage 2 Circuit Failed Open
1074	4	SID	81	1345	Exhaust Brake Circuit Failed Low
1074	3	SID	81	1345	Exhaust Brake Circuit Failed High
1074	5	SID	81	1345	Exhaust Brake Circuit Failed Open
1077	14	PID	164	1241	Rail Pressure Governor Error, Open Loop Error
1077	5	PID	164	1423	Rail Pressure Governor Error, Current Governor, Current Too Low
1077	7	PID	164	1423	Rail Pressure Governor Error, Pressure Governor, Pressure Not Plausible
1077	6	SID	155	1423	Rail Pressure Governor Error, Current Too High
1127	4	SID	273	1424	Turbocharger Compressor Outlet Pressure Circuit Failed Low
1127	3	SID	273	1424	Turbocharger Compressor Outlet Pressure Circuit Failed High
1172	4	PID	351	1425	Turbocharger Compressor Inlet Temperature Circuit Failed Low
1172	3	PID	351	1425	Turbocharger Compressor Inlet Temperature Circuit Failed High
1172	2	PID	351	1425	Coolant Temp/Compressor Inlet Temp Plausibility Error
1172	2	PID	351	1425	Turbocharger Compressor Inlet Temp. Sensor, General Temp. Plausibility Error
1176	4	SID	314	1431	Turbocharger Compressor Inlet Pressure Circuit Failed Low
1176	3	SID	314	1431	Turbocharger Compressor Inlet Pressure Circuit Failed High
1176	2	PID	314	1431	Compressor Pressure Plausibility Fault (High Box)
1176	5	PID	314	1431	Compressor Inlet Pressure Plausibility Fault (Delta)
1176	20	SID	314	1431	Compressor Inlet Pressure Plausibility Error, Pressure Too High (High Box)
1188	4	SID	32	1325	Waste Gate Circuit Failed Low
1188	3	SID	32	1325	Waste Gate Circuit Failed High

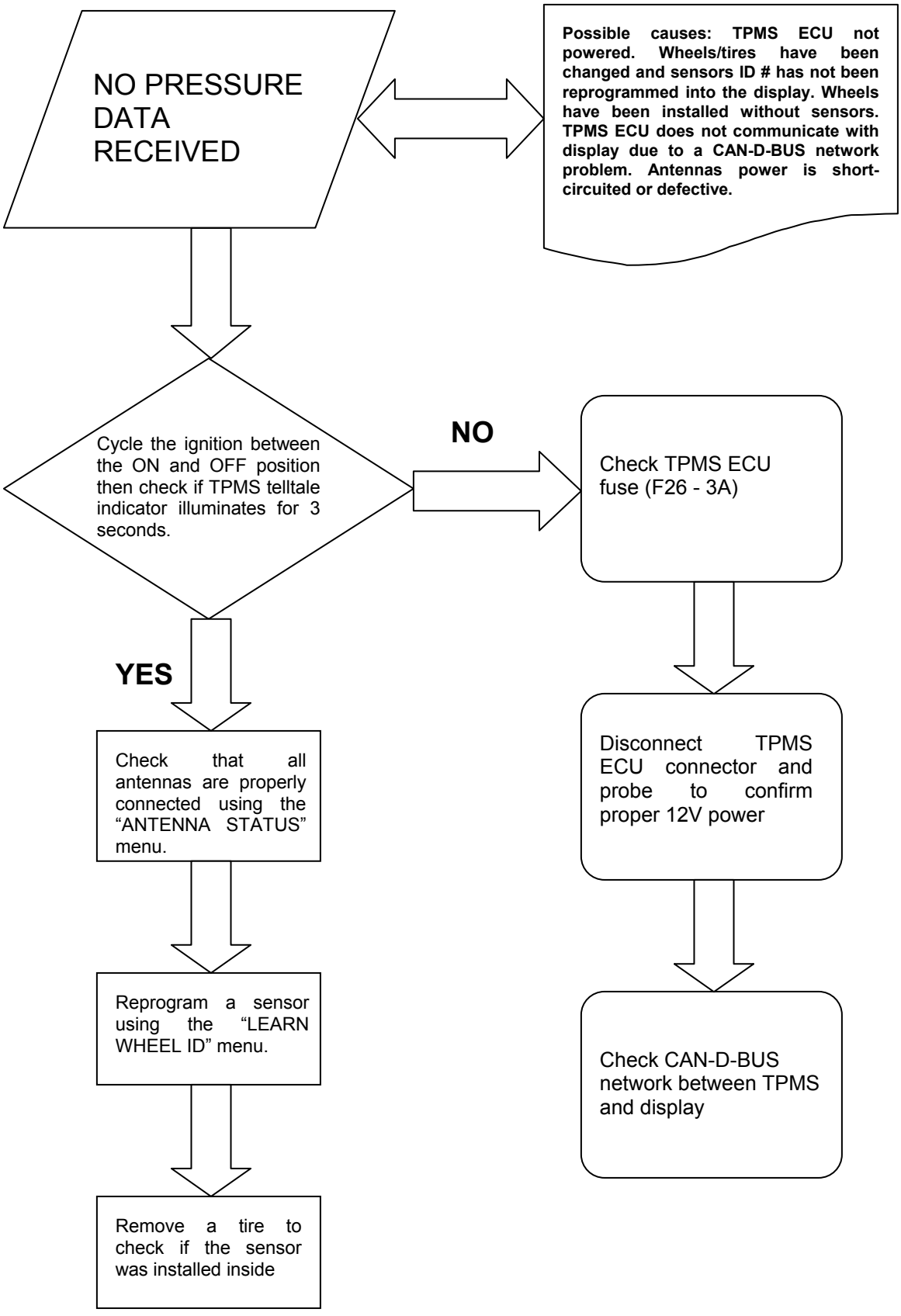
SPN	FMI	PID/ SID	PID/SID ID	FLASH CODE	FAULT DESCRIPTION
1188	5	SID	32	1325	Waste Gate Circuit Failed Open
1188	14	SID	32	1432	Smart Remote Actuator 1 (Wastegate), No Failsafe Mode, Motor Off
1188	9	SID	32	1432	Smart Remote Actuator 1 (Wastegate), Failsafe Mode, Motor Off
1188	16	SID	32	1432	Smart Remote Actuator 1 (Wastegate), Temperature Fault
1188	7	SID	32	1432	Smart Remote Actuator 1 (Wastegate), Failsafe Mode, Motor On
1188	11	SID	32	1432	Smart Remote Actuator 1 (Wastegate), Restricted Operability
1188	15	SID	32	1432	Smart Remote Actuator 1 (Wastegate), Temperature Warning
1188	8	SID	32	1432	Smart Remote Actuator 1 (Wastegate), Internal Test Running
1188	31	SID	32	1432	Smart Remote Actuator 1 (Wastegate), Unknown Error Code
1188	19	SID	32	1432	Smart Actuator Indicates Turbocharger Wastegate Position Error
1213	4	SID	257	1333	MIL Lamp Circuit Failed Low
1213	3	SID	257	1333	MIL Lamp Circuit Failed High
1213	5	SID	257	1333	MIL Lamp Circuit Failed Open
1323	31	SID	155	1433	Cylinder 1 Misfire detected
1323	14	SID	156	1434	Misfire Detected
1324	31	SID	155	1435	Cylinder 2 Misfire detected
1325	31	SID	155	1441	Cylinder 3 Misfire detected
1326	31	SID	155	1442	Cylinder 4 Misfire detected
1327	31	SID	155	1443	Cylinder 5 Misfire detected
1328	31	SID	155	1444	Cylinder 6 Misfire Detected
1329	31	SID	155	1445	Cylinder 7 Misfire Detected
1330	31	SID	155	1446	Cylinder 8 Misfire Detected
1351	4	SID	155	1615	Switchable Air Compressor Circuit Failed Low
1351	3	SID	155	1615	Switchable Air Compressor Circuit Failed High
1351	5	SID	155	1615	Switchable Air Compressor Circuit Failed Open
1636	4	PID	105	1511	Intake Manifold Temperature Circuit Failed Low
1636	3	PID	105	1511	Intake Manifold Temperature Circuit Failed High
1636	2	PID	105	1511	Intake Manifold Temperature Plausibility Error
1636	21	PID	105	1511	Difference Intake Manifold Temperature and EGR Temp. Less Than Threshold (Low Box)
1636	2	PID	105	1511	Difference Intake Manifold and I Cooler Temperature Out Less Than Threshold (Low Box)
1636	2	PID	105	1511	Difference Intake Manifold and I Cooler Temperature Out Less Than Threshold (High Box)
1636	20	PID	105	1511	Intake Manifold Temperature Drift (Low Box)
1636	21	PID	105	1511	Intake Manifold Temperature Drift (High Box)
2629	4	PID	404	1513	Turbocharger Compressor Outlet Temperature Circuit Failed Low
2629	3	PID	404	1513	Turbocharger Compressor Outlet Temperature Circuit Failed High
2629	20	PID	404	1513	Turbocharger Out Temperature, Temperature Too High (Low Box)
2629	21	PID	404	1513	Turbocharger Out Temperature, Temperature Too Low (High Box)
2629	2	PID	404	1513	Turbocharger Compressor Outlet Temp. Sensor, General Temp. Plausibility Error
2630	4	SID	272	1514	Charge Air Cooler Outlet Temperature Circuit Failed Low
2630	3	SID	272	1514	Charge Air Cooler Outlet Temperature Circuit Failed High
2630	2	SID	272	1514	Charge Air Cooler Outlet Temperature Sensor Plausibility Error
2630	20	SID	272	1514	Charge Air Outlet Temperature Drift (Low box)
2630	21	SID	272	1514	Charge Air Outlet Temperature Drift (High box)
2631	4	SID	273	1515	Charge Air Cooler Outlet Pressure Circuit Failed Low
2631	3	SID	273	1515	Charge Air Cooler Outlet Pressure Circuit Failed High
2659	1	SID	277	1515	EGR Flow Target Error Diagnostic - Low Flow
2659	0	SID	277	1515	EGR Flow Target Error Diagnostic - High Flow

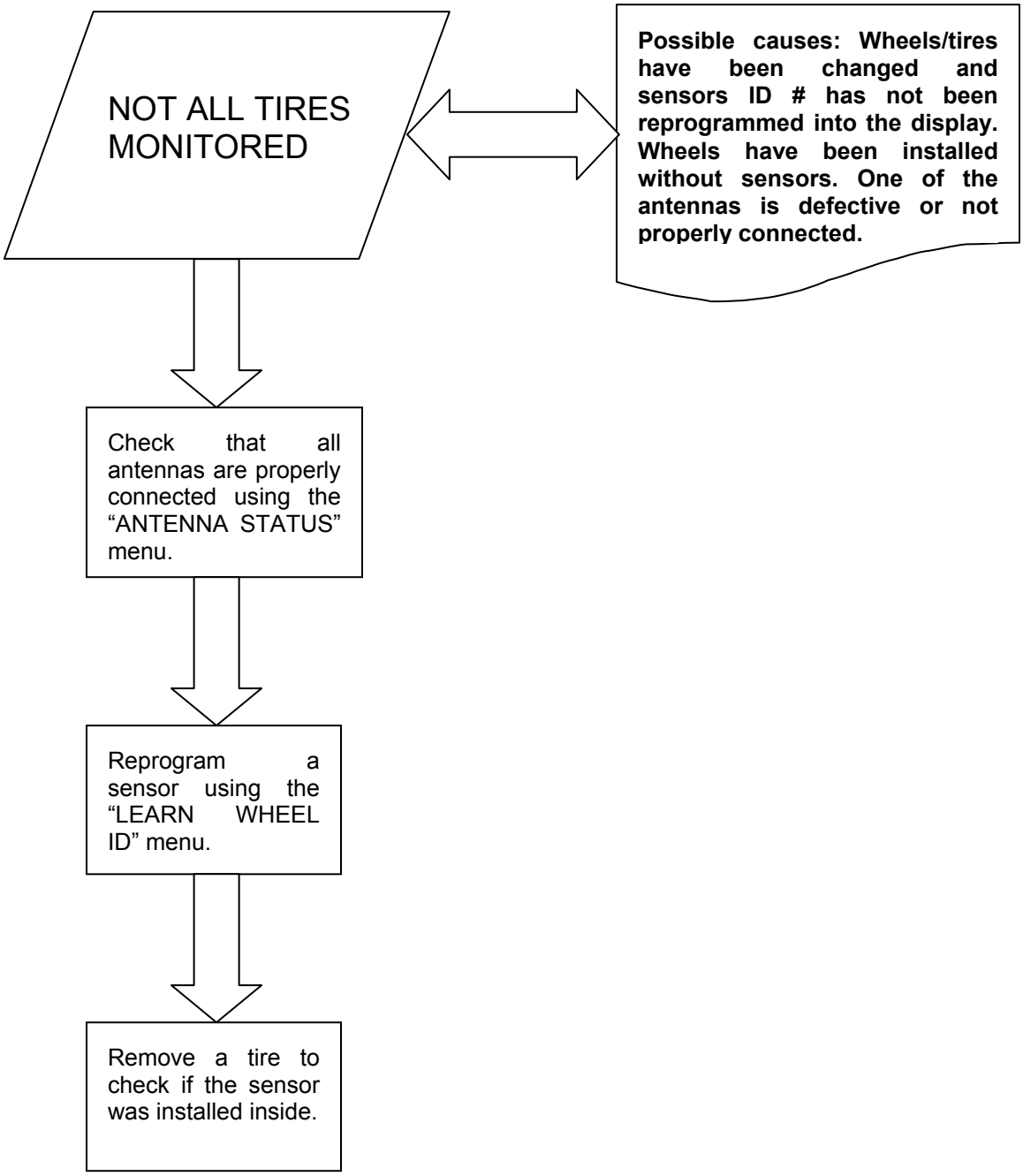
SPN	FMI	PID/ SID	PID/SID ID	FLASH CODE	FAULT DESCRIPTION
2791	4	PID	146	1521	EGR Valve Circuit Failed Low
2791	3	PID	146	1521	EGR Valve Circuit Failed High
2791	5	PID	146	1521	EGR Valve Circuit Failed Open
2791	7	SID	146	1521	EGR Valve Position Incorrect
2791	14	SID	146	1521	Smart Remote Actuator 3 (EGR), No Failsafe Mode, Motor Off
2791	9	SID	146	1521	Smart Remote Actuator 3 (EGR), Failsafe Mode, Motor Off
2791	16	SID	146	1521	Smart Remote Actuator 3 (EGR), Temperature Fault
2791	7	SID	146	1521	Smart Remote Actuator 3 (EGR), Failsafe Mode, Motor On
2791	11	SID	146	1521	Smart Remote Actuator 3 (EGR), Restricted Operability
2791	15	SID	146	1521	Smart Remote Actuator 3 (EGR), Temperature Warning
2791	8	SID	146	1521	Smart Remote Actuator 3 (EGR), Internal Test Running
2791	31	SID	146	1521	Smart Remote Actuator 3 (EGR), Unknown Error Code
2795	9	SID	269	1241	CAN3 Communication Error
2795	4	SID	269	1522	Position Waste Gate (VNT) Failed Low
2795	3	SID	269	1522	Position Waste Gate (VNT) Failed High
2795	2	SID	269	1522	VNT Valve Position Feedback Failed
2795	0	SID	269	1522	VNT Valve Position Feedback, Position Too Low (High Box)
2795	1	SID	269	1522	VNT Valve Position Feedback, Position Too High (Low Box)
2795	19	SID	147	1522	Smart Actuator Indicates Turbocharger Vane Position Error
2797	4	SID	317	1523	Injector Needle Control Valve Cylinder 1, 2, 3 Shorted to Ground
2797	4	SID	317	1524	Injector Needle Control Valve Cylinder 4, 5, 6 Shorted to Ground
2797	4	SID	317	1615	Injector Needle Control Valve Bank 3, Shorted to Ground
2797	3	SID	317	1523	Injector Needle Control Valve Cylinder 1,2,3 Shorted to Battery
2797	3	SID	317	1524	Injector Needle Control Valve Cylinder 4,5,6, Shorted to Battery
2797	3	SID	317	1615	Injector Needle Control Valve Bank 3, Shorted to Battery
2798	4	SID	317	1615	Injector Spill Control Valve Cylinder 1, 2, 3 Shorted to Ground
2798	4	SID	317	1615	Injector Spill Control Valve Cylinder 4, 5, 6 Shorted to Ground
2798	4	SID	317	1615	Injector Spill Control Valve ("Amplifier") Bank 6, Shorted to Ground
2798	3	SID	317	1615	Injector Spill Control Valve Cylinder 1,2,3, Shorted to Battery
2798	3	SID	317	1615	Injector Spill Control Valve Cylinder 4,5,6, Shorted to Battery
2798	3	SID	317	1615	Injector Spill Control Valve ("Amplifier") Bank 6, Shorted to Battery
2988	4	SID	262	1411	EGR Water Cooling Regulator Circuit Failed Low
988	3	SID	262	1411	EGR Water Cooling Regulator Circuit Failed High
2988	5	SID	262	1411	EGR Water Cooling Regulator Circuit Failed Open
3050	0	SID	155	1525	Engine Air Flow Out of Range Low
3050	1	SID	324	1525	Active Regen Temp Out of Range Low
3058	13	PID	146	1615	EGR System Parametrization Failure
3064	13	SID	155	1615	DPF System Parametrization Failure
3242	4	PID	318	1531	DOC Inlet Temperature Circuit Failed Low
3242	3	PID	318	1531	DOC Inlet Temperature Circuit Failed High
3242	10	SID	318	1531	DOC Inlet Temperature Sensor Stuck
3242	2	SID	318	1531	DOC Inlet Temperature Sensor - Plausibility Error
3246	4	SID	320	1532	DPF Oulet Temperature Circuit Failed Low
3246	3	SID	320	1532	DPF Oulet Temperature Circuit Failed High
3246	14	SID	320	1532	Abnormal DPF Temperature Rise b)

SPN	FMI	PID/ SID	PID/SID ID	FLASH CODE	FAULT DESCRIPTION
3246	0	SID	320	1532	DPF Outlet Temperature High
3246	10	SID	320	1532	DPF Outlet Temperature Sensor Stuck
3246	2	SID	320	1532	DPF Outlet Sensor, General Temp. Plausibility
3246	31	SID	323	1532	Abnormal DPF Temperature Rise
3250	4	PID	322	1533	DOC Outlet Temperature Circuit Failed Low
3250	3	PID	322	1533	DOC Outlet Temperature Circuit Failed High
3250	14	PID	322	1533	Abnormal DOC Temperature Rise
3250	10	SID	322	1533	DOC Outlet Temperature Sensor Stuck
3250	2	SID	322	1533	DOC Outlet Temperature Sensor - Plausibility Error
3250	31	PID	322	1533	Abnormal DOC Temperature Rise
3250	0	PID	322	1533	DOC Outlet Temperature High
3251	0	SID	324	1534	DPF Pressure - Out of Range Very High
3251	1	SID	324	1534	DPF Pressure - Out of Range Low
3251	9	SID	324	1534	Abnormal Soot Rate
3251	16	SID	324	1534	DPF Pressure - Out of Range High
3358	4	SID	155	1535	EGR Pressure Failed Low
3358	3	SID	155	1535	EGR Pressure Failed High
3464	4	SID	59	1313	Intake Throttle Valve Circuit Failed Low
3464	3	SID	59	1313	Intake Throttle Valve Circuit Failed High
3464	5	SID	59	1313	Intake Throttle Valve Circuit Failed Open
3464	14	SID	59	1615	Intake Air Throttle Control Electrical Fault
3464	2	PID	51	1541	Intake Throttle Valve, Spring Response Time Not Plausible
3464	7	PID	51	1541	Intake Throttle Valve, Stuck
3464	14	PID	51	1541	Intake Throttle Valve, Integrated Absolute Error Plausibility
3464	8	PID	51	1541	Intake Throttle Valve, Current Deviation Too High
3470	4	SID	57	1311	Actuator Turbo Compound Bypass Circuit Failed Low
3470	3	SID	57	1311	Actuator Turbo Compound Bypass Circuit Failed High
3470	5	SID	57	1311	Actuator Turbo Compound Bypass Circuit Failed Open
3471	4	SID	334	1323	HC Doser Circuit Failed Low
3471	3	SID	334	1323	HC Doser Circuit Failed High
3471	5	SID	334	1323	HC Doser Circuit Failed Open
3471	1	SID	155	1542	EDV Failed Self Test
3480	2	SID	332	1543	Doser Fuel Line Pressure Abnormal
3480	1	SID	332	1543	Doser Fuel Supply Pressure Abnormal
3480	14	SID	332	1543	Doser FLP Sensors Failed Self Test
3482	4	SID	56	1332	Fuel Cut Off Valve Circuit Failed Low
3482	3	SID	56	1332	Fuel Cut Off Valve Circuit Failed High
3482	5	SID	56	1332	Fuel Cut Off Valve Circuit Failed Open
3482	7	SID	155	1544	FCV Failed Self Test
3509	3	SID	212	1631	Multiplexer 1 Channel 1, Shorted High
3509	3	SID	212	1631	Multiplexer 1 Channel 2, Shorted High
3510	3	SID	211	1632	Multiplexer 2 Channel 1, Shorted High
3510	3	SID	211	1632	Multiplexer 2 Channel 2, Shorted High
3511	3	SID	211	1633	Multiplexer 3 Channel 1, Shorted High
3511	3	SID	211	1633	Multiplexer 3 Channel 2, Shorted High
3556	1	SID	155	1545	Regen Temperature - Out of Range Low
3556	0	SID	155	1551	Regen Temperature - Out of Range High
3563	4	PID	106	1551	Intake Manifold Pressure Circuit Failed Low
3563	3	PID	106	1551	Intake Manifold Pressure Circuit Failed High
3563	20	PID	106	1551	Ambient and Inlet Manifold Pressure Difference (Low Box)
3563	21	PID	106	1551	Ambient and Inlet Manifold Pressure Difference (High Box)

SPN	FMI	PID/ SID	PID/SID ID	FLASH CODE	FAULT DESCRIPTION
3563	1	PID	106	1551	Inlet Manifold Pressure Failed Low
3563	0	PID	106	1551	Inlet Manifold Pressure Failed High
3563	3	PID	106	1551	Inlet Manifold Pressure Sampling Range Failed
3563	20	PID	106	1551	Intake Manifold Pressure Plausibility (Low Box)
3563	21	PID	106	1551	Intake Manifold Pressure Plausibility Error, Pressure Too Low (High Box)
3588	4	SID	156	1552	Ether Start, Shorted to Ground
3588	3	SID	157	1552	Ether Start, Shorted to Battery
3588	5	SID	158	1552	Ether Start, Open Load
3597	3	SID	155	1553	Proportional Valve Bank 1 Circuit Failed Low
3597	3	SID	155	1615	Proportional Valve Bank 1 Circuit Failed High
3597	6	SID	155	1325	Current Flow on HS1 IM1 Too High
3598	4	SID	155	1615	Proportional Valve Bank 2 Circuit Failed Low
3598	3	SID	155	1615	Proportional Valve Bank 2 Circuit Failed High
3599	4	SID	317	1615	Switching Power Supply Voltage Failed Low
3599	3	SID	317	1615	Switching Power Supply Voltage Failed High
3609	4	PID	370	1554	DPF Inlet Pressure Circuit Failed Low
3609	3	PID	370	1554	DPF Inlet Pressure Circuit Failed High
3609	10	SID	370	1554	DPF Inlet Pressure Sensor Stuck
3609	20	SID	370	1554	DPF Inlet Pressure Sensor Drifted High In Range Fault (Low Box)
3609	2	SID	370	1554	DPF Inlet Pressure Sensor Drifted High In Range Fault (High Box)
3609	21	SID	370	1554	DPF Inlet Pressure Sensor Drifted Low In Range Fault (Low Box)
3609	21	SID	370	1554	DPF Inlet Pressure Sensor Drifted Low In Range Fault (High Box)
3610	3	SID	371	1555	DPF Outlet Pressure Circuit Failed High
3610	4	SID	371	1555	DPF Outlet Pressure Circuit Failed Low
3610	0	SID	371	1334	DPF System Back Pressure Too High
3610	10	SID	371	1555	DPF Outlet Pressure Sensor Stuck
3610	2	SID	371	1555	DPF Pressure Sensors - Plausibility Error
3610	20	SID	371	1555	DPF Outlet Pressure Sensor Drifted High In Range Fault (Low Box)
3610	14	SID	371	1555	DPF Outlet Pressure Sensor Drifted High In Range Fault (High Box)
3610	21	SID	371	1555	DPF Outlet Pressure Sensor Drifted Low In Range Fault (Low Box)
3610	31	SID	371	1555	DPF Outlet Pressure Sensor Drifted Low In Range Fault (High Box)
3659	14	SID	362	1611	Injector Cylinder #1 Spill Control Valve Abnormal Operation
3659	10	SID	362	1611	Injector Cylinder #1 Spill Control Valve ("Amplifier") Abnormal Rate of Change
3659	6	SID	362	1611	Injector Cylinder #1 Spill Control Valve ("Amplifier"), Valve Shorted Circuit
3660	14	SID	363	1612	Injector Cylinder #2 Spill Control Valve Abnormal Operation
3660	10	SID	363	1612	Injector Cylinder #2 Spill Control Valve ("Amplifier") Abnormal Rate of Change
3660	6	SID	363	1612	Injector Cylinder #2 Spill Control Valve ("Amplifier"), Valve Shorted Circuit
3661	14	SID	364	1613	Injector Cylinder #3 Spill Control Valve Abnormal Operation
3661	10	SID	364	1613	Injector Cylinder #3 Spill Control Valve ("Amplifier") Abnormal Rate of Change
3661	6	SID	364	1613	Injector Cylinder #3 Spill Control Valve ("Amplifier"), Valve Shorted Circuit
3662	14	SID	365	1614	Injector Cylinder #4 Spill Control Valve Abnormal Operation
3662	10	SID	365	1614	Injector Cylinder #4 Spill Control Valve ("Amplifier") Abnormal Rate of Change
3662	6	SID	365	1614	Injector Cylinder #4 Spill Control Valve ("Amplifier"), Valve Shorted Circuit
3663	14	SID	366	1615	Injector Cylinder #5 Spill Control Valve Abnormal Operation
3663	10	SID	366	1615	Injector Cylinder #5 Spill Control Valve ("Amplifier") Abnormal Rate of Change

SPN	FMI	PID/ SID	PID/SID ID	FLASH CODE	FAULT DESCRIPTION
3663	6	SID	366	1615	Injector Cylinder #5 Spill Control Valve ("Amplifier"), Valve Shorted Circuit
3664	14	SID	367	1621	Injector Cylinder #6 Spill Control Valve Abnormal Operation
3664	10	SID	367	1621	Injector Cylinder #6 Spill Control Valve ("Amplifier") Abnormal Rate of Change
3664	6	SID	367	1621	Injector Cylinder #6 Spill Control Valve ("Amplifier"), Valve Shorted Circuit
3665	14	SID	368	1622	Injector Cylinder #7 Spill Control Valve Abnormal Operation
3665	10	SID	368	1622	Injector Cylinder #7 Spill Control Valve ("Amplifier") Abnormal Rate of Change
3665	6	SID	368	1622	Injector Cylinder #7 Spill Control Valve ("Amplifier"), Valve Shorted Circuit
3666	14	SID	369	1623	Injector Cylinder #8 Spill Control Valve Abnormal Operation
3666	10	SID	369	1623	Injector Cylinder #8 Spill Control Valve ("Amplifier") Abnormal Rate of Change
3666	6	SID	369	1623	Injector Cylinder #8 Spill Control Valve ("Amplifier"), Valve Shorted Circuit
3719	16	SID	155	1624	Soot Level High
3719	0	SID	155	1624	Soot Level Very High
3719	31	SID	155	1635	DPF Zone 2 Condition
3719	15	SID	155	1636	DPF Zone 3 Condition
3720	15	SID	155	1625	DPF Ash Clean Request
3720	16	SID	155	1625	DPF Ash Clean Request - Derate
4076	4	PID	110	1212	Engine Coolant Inlet Temperature Circuit Failed Low
4076	3	PID	110	1212	Engine Coolant Inlet Temperature Circuit Failed High
4076	2	SID	155	1615	Engine Coolant Sensor (IN), General Temp. Plausibility Error
4077	4	SID	332	1543	Doser Fuel Line Pressure Sensor Circuit Failed Low
4077	3	SID	332	1543	Doser Fuel Line Pressure Sensor Circuit Failed High
4077	14	SID	332	1543	Doser Fuel Line Pressure Failed Self Test
4226	4	SID	155	1615	Compressor Differential Pressure Inlet Failed Low
4226	3	SID	155	1615	Compressor Differential Pressure Inlet Failed High
4226	0	SID	155	1615	Turbocharger Compressor Inlet Differential Pressure Too High (Low Box)
4226	1	SID	155	1615	Turbocharger Compressor Inlet Differential Pressure Too Low (High Box)
4226	5	SID	155	1615	Turbocharger Compressor Inlet Differential Pressure Sampling Range Failure
4226	13	SID	155	1454	Turbocharger Compressor Inlet Differential Pressure Sensor Out Of Calibration
4226	13	SID	155	1454	Turbocharger Compressor Inlet Differential Pressure Sensor Out Of Calibration
4227	4	SID	53	1324	Electrostatic Oil Separator Circuit Failed Low
4227	3	SID	53	1324	Electrostatic Oil Separator Circuit Failed High
4227	5	SID	53	1324	Electrostatic Oil Separator Circuit Failed Open
4227	4	SID	155	1615	Oil Separator Circuit Failed Low
4227	3	SID	155	1615	Oil Separator Circuit Failed High
4227	7	SID	155	1615	Oil Separator, Max. Duration Time Reached
4228	16	SID	147	1241	Smart Remote Actuator 5 (VGT), Temperature Fault
4228	15	SID	147	1241	Smart Remote Actuator 5 (VGT), Temperature Warning


NO PRESSURE DATA RECEIVED
Possible causes: TPMS ECU not powered. Wheels/tires have been changed and sensors ID # has not been reprogrammed into the display. Wheels have been installed without sensors. TPMS ECU does not communicate with display due to a CAN-D-BUS network problem. Antennas power is short-circuited or defective.
Cycle the ignition between the ON and OFF position then check if TPMS telltale indicator illuminates for 3 seconds.
NO
Check TPMS ECU fuse (F26 - 3A)
Disconnect TPMS ECU connector and probe to confirm proper 12V power
Check CAN-D-BUS network between TPMS and display
YES
Check that all antennas are properly connected using the "ANTENNA STATUS" menu.
Reprogram a sensor using the "LEARN WHEEL ID" menu.
Remove a tire to check if the sensor was installed inside


NOT ALL TIRES MONITORED
Possible causes: Wheels/tires have been changed and sensors ID # has not been reprogrammed into the display. Wheels have been installed without sensors. One of the antennas is defective or not properly connected.
Check that all antennas are properly connected using the "ANTENNA STATUS" menu.
Reprogram a sensor using the "LEARN WHEEL ID" menu.
Remove a tire to check if the sensor was installed inside.

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