PREVOST

COACH MANUFACTURER

OWNER'S MANUAL

LE MIRAGE XLII

PA1552

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

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

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

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 16 of this manual.

DEFENSIVE DRIVING PRACTICES

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

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

OTHER PRECAUTIONS

DANGER

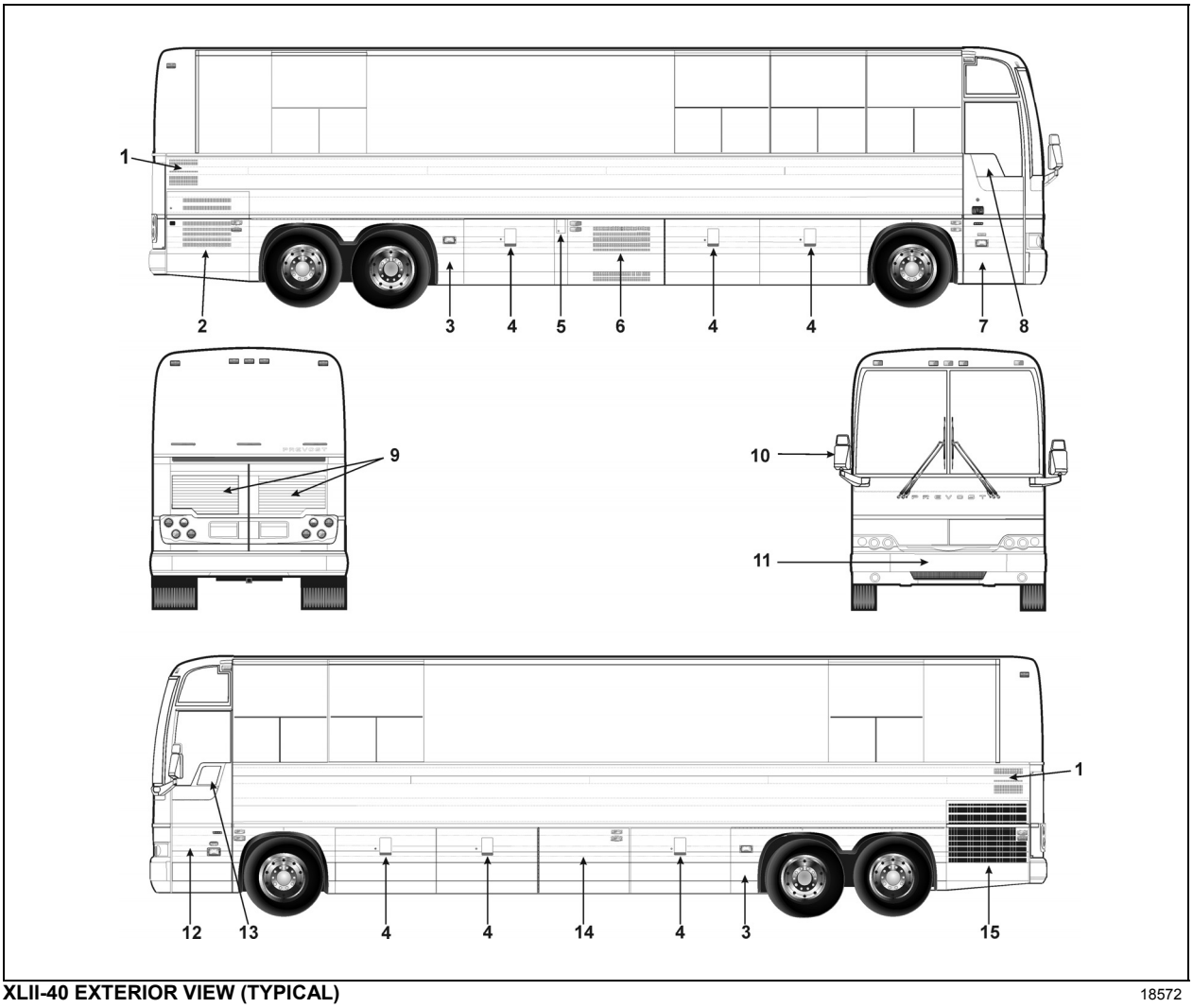
Prior to working on a system inside the vehicle, make sure to cut electrical power and air supply. A component could be supplied with electricity even if battery master switch is set to the *OFF* position and/or a component could be pressurized even if air tanks are emptied. Always refer to the appropriate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

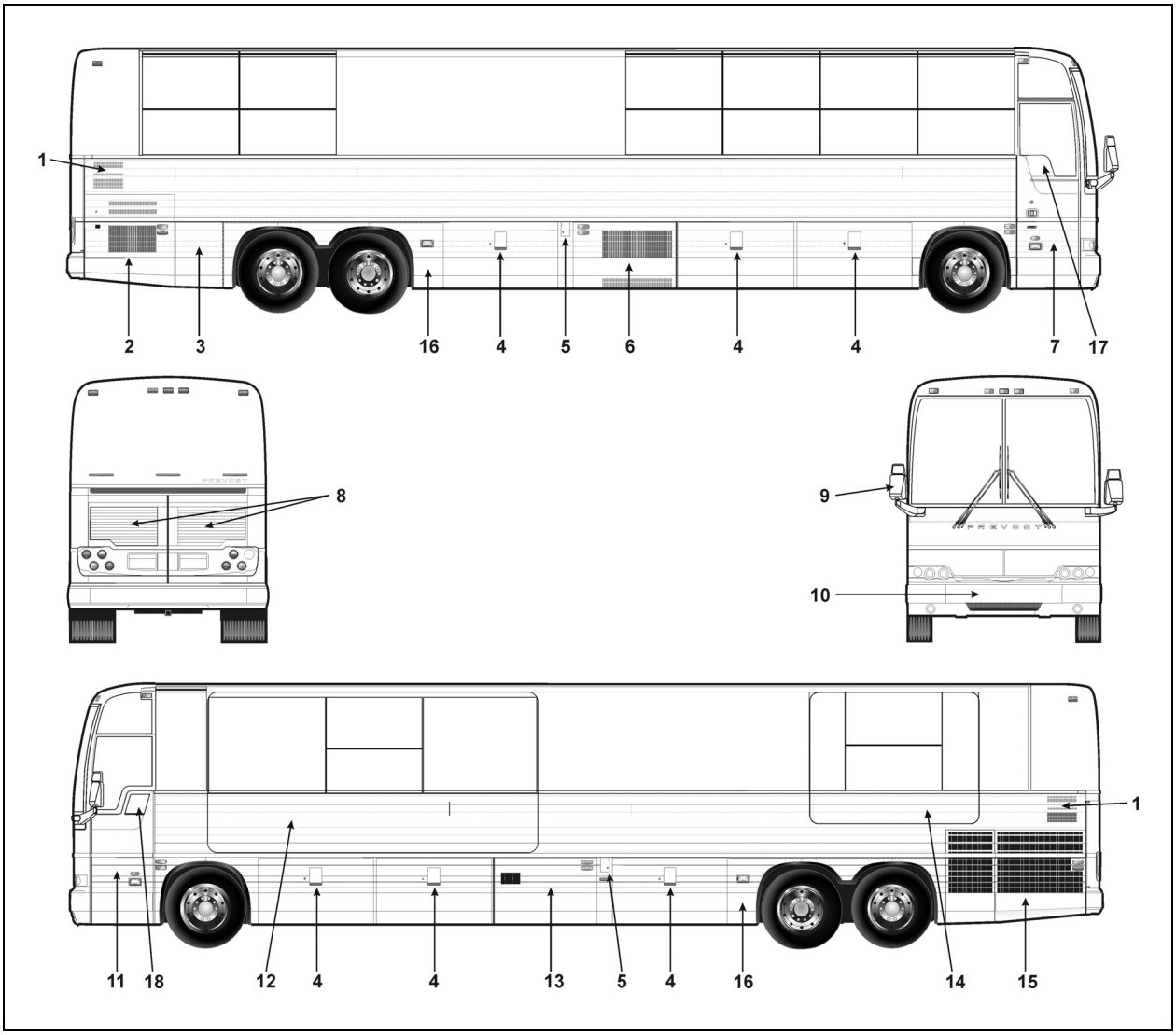
Refer to Section 00 of your maintenance manual for all related procedures.

4 Vehicle Exterior



XLII-40 EXTERIOR VIEW (TYPICAL) 18572

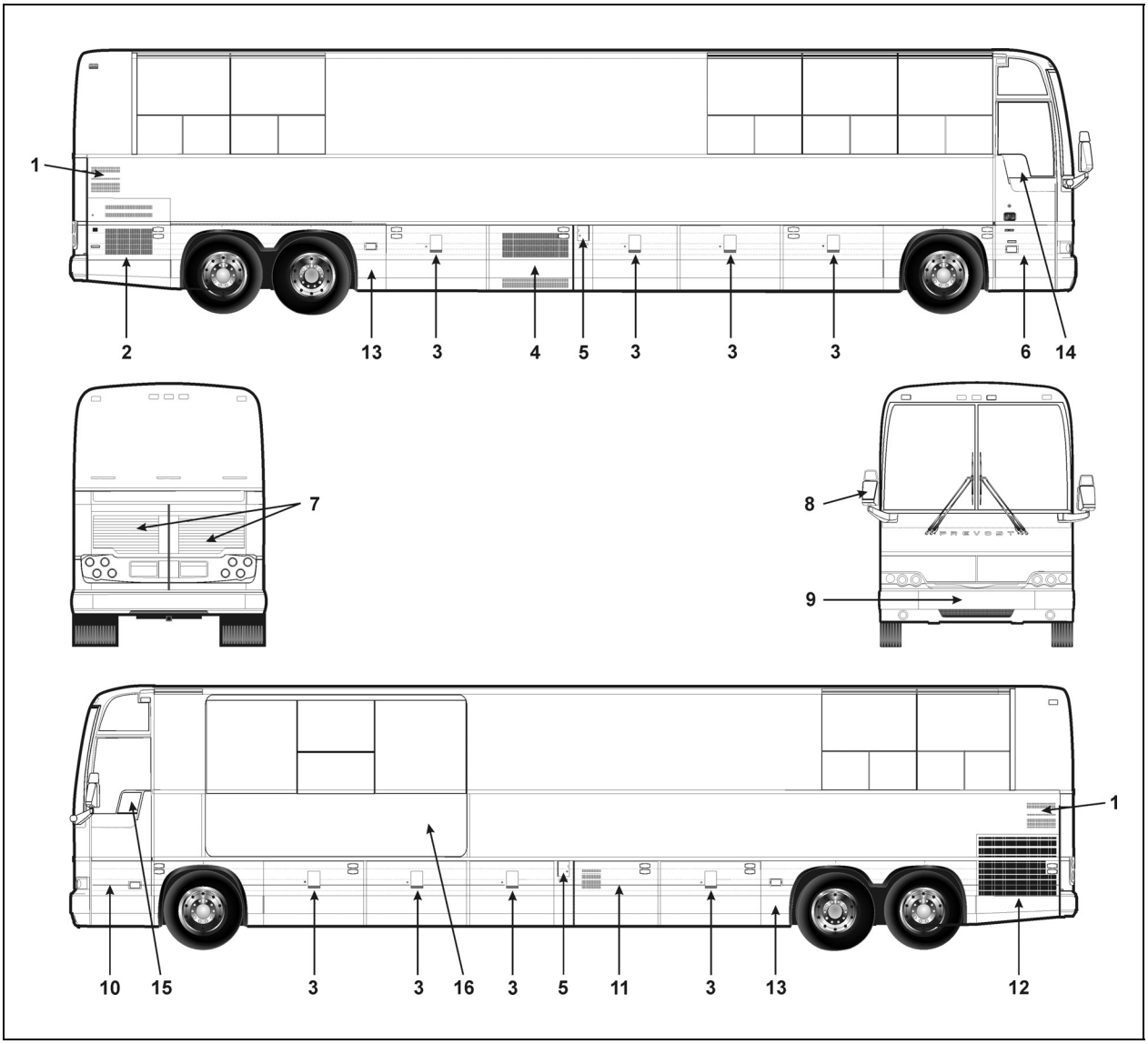
1. Engine air intake
2. Engine compartment R.H. side door
3. Hinged rear fender
4. Baggage compartment
5. Fuel filler door
6. Condenser or baggage compartment
7. Entrance door
8. Entrance door power window
9. Engine compartment rear doors
10. Rear-view mirror
11. Reclining bumper
12. Front electrical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



XLII-45 EXTERIOR VIEW (TYPICAL) 18576

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

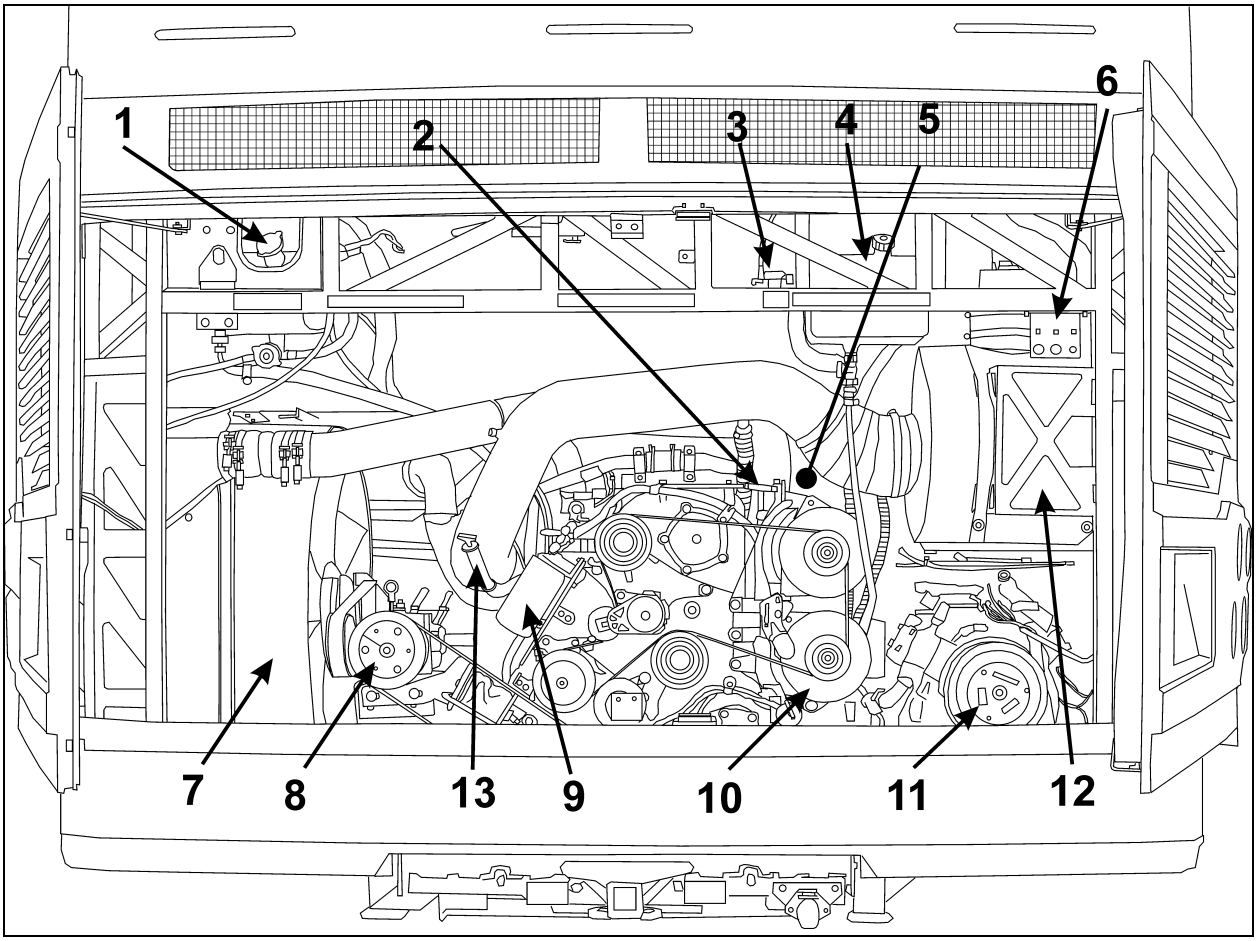
6 Vehicle Exterior



XLII-45E EXTERIOR VIEW (TYPICAL) 18622

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

ENGINE COMPARTMENT COMPONENTS



ENGINE COMPARTMENT 01171

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 transfer gearbox;
9. Engine coolant filter/conditioner;
10. Alternator;
11. Central A/C compressor;
12. Air filter;
13. Transmission oil dipstick and filler tube.

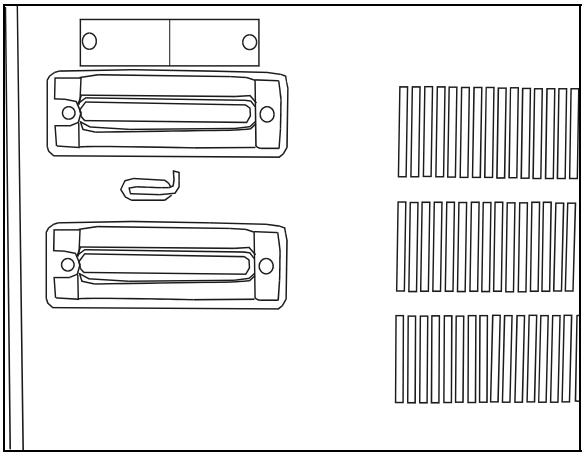
8 Vehicle Exterior

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

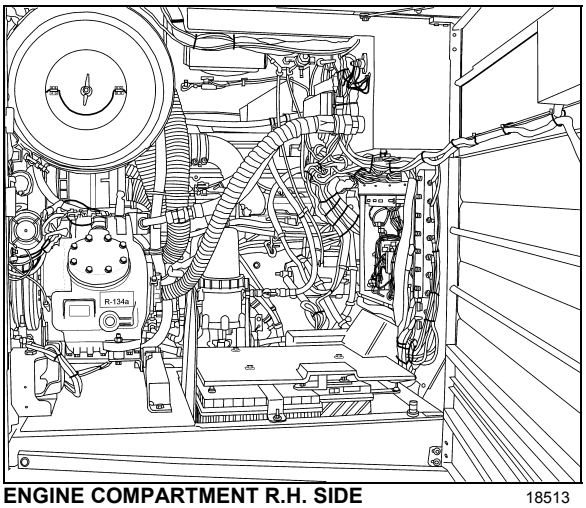
The engine compartment R.H. side door provides access to the following (if equipped):

- 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.



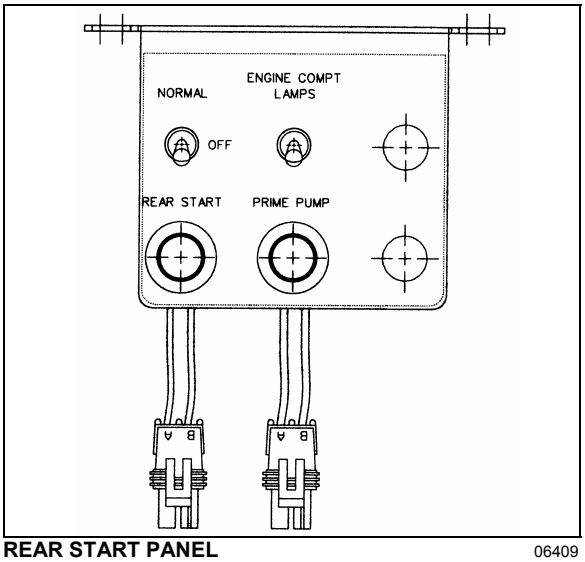
ENGINE COMPARTMENT R.H. DOOR 18559

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

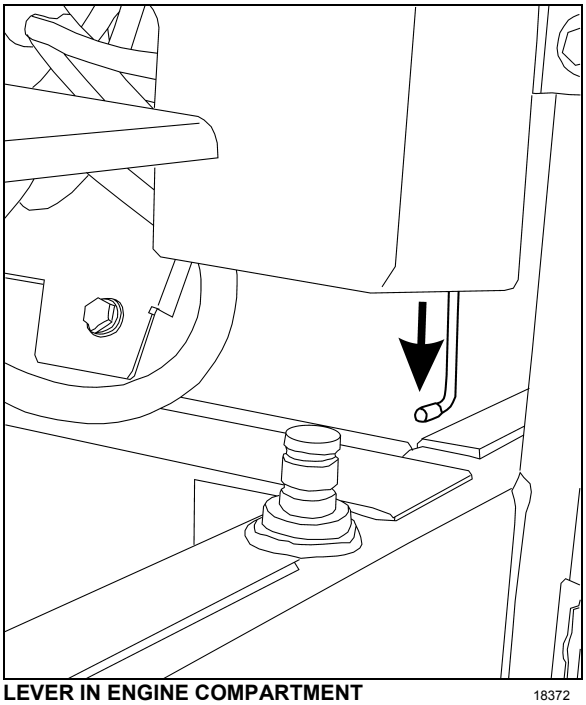
WARNING

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.

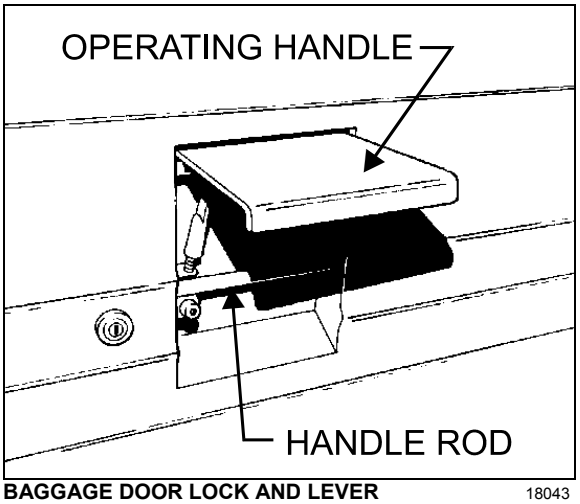
To open the door, first open the engine compartment R.H. side door and push the lever located near the lower door hinge down.



LEVER IN ENGINE COMPARTMENT 18372

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

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

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

CAUTION

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

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

WARNING

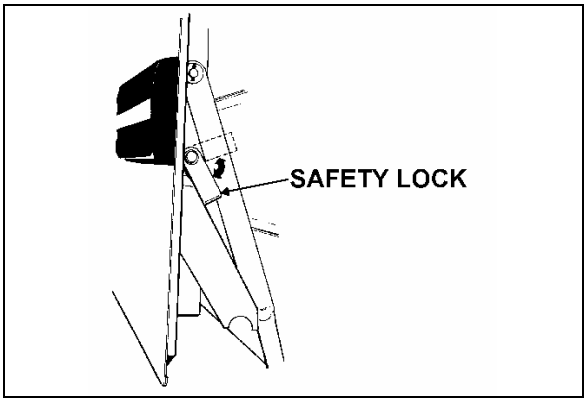
To avoid injury, keep hands clear of baggage compartment door edge and door frame when closing.

NOTE

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

NOTE

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.

10 Vehicle Exterior

FUEL FILLER DOOR

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

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

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

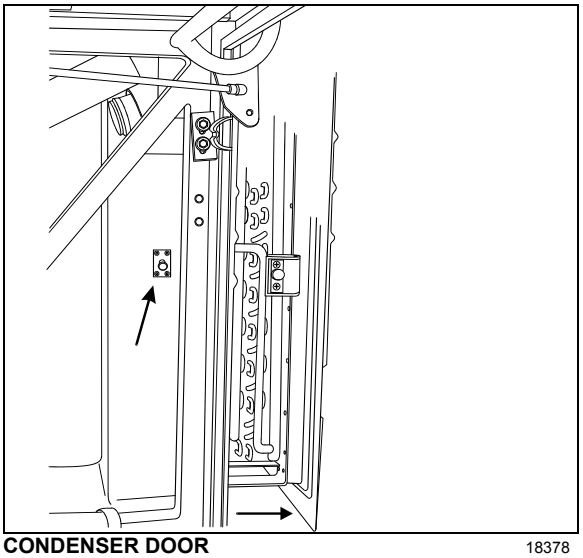
NOTE
The fuel filler door locks must be in the unlocked position before closing.

CONDENSER COMPARTMENT (A/C)

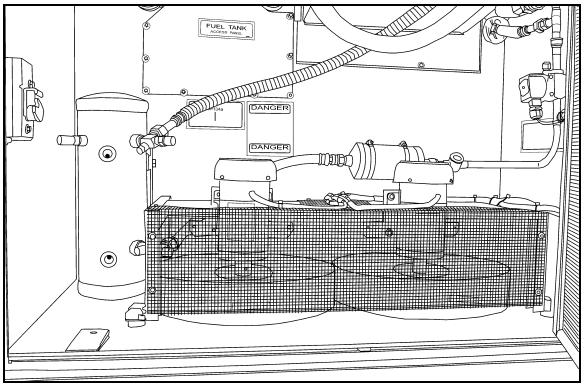
Pull the release latch located inside the adjacent baggage compartment to open the condenser door.

The condenser compartment provides access to the following:

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



CONDENSER DOOR 18378

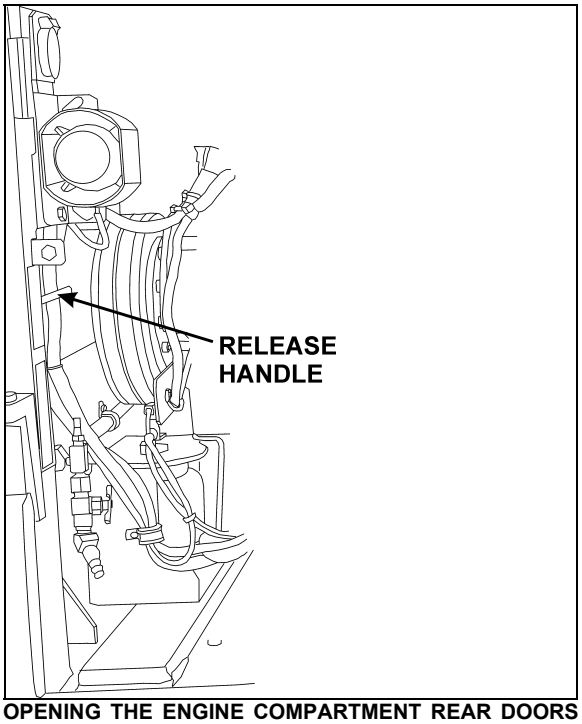


CONDENSER COMPARTMENT (A/C)

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);

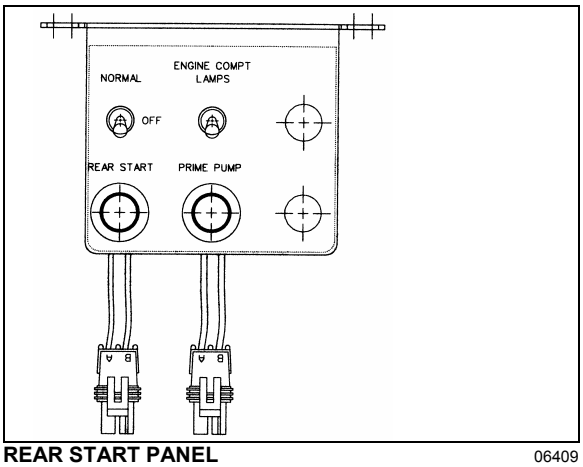


OPENING THE ENGINE COMPARTMENT REAR DOORS FROM R.H. SIDE DOOR 18547

- 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

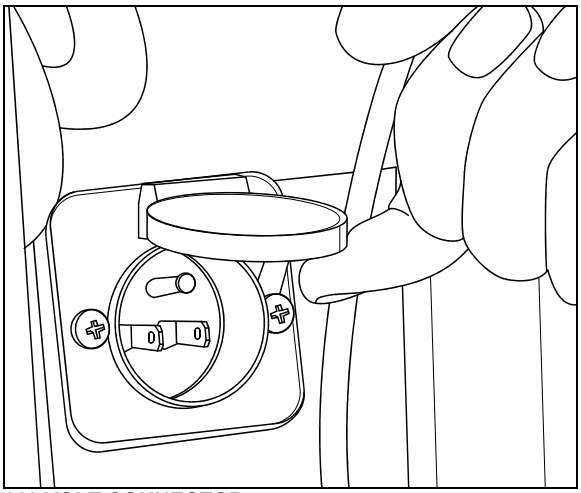
Turn the lights ON in the engine compartment using the switch on the rear start panel.

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.

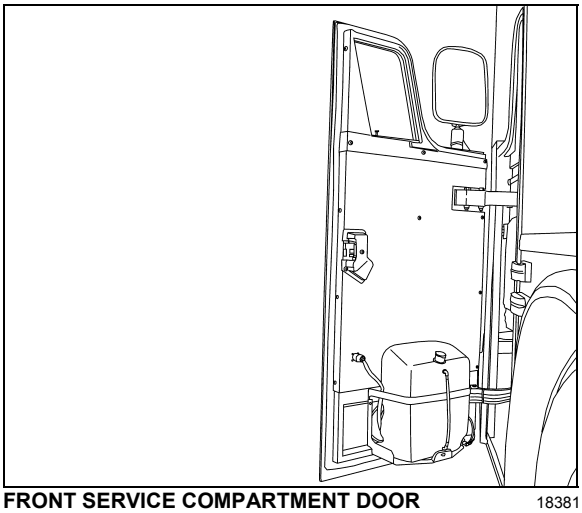
WARNING

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

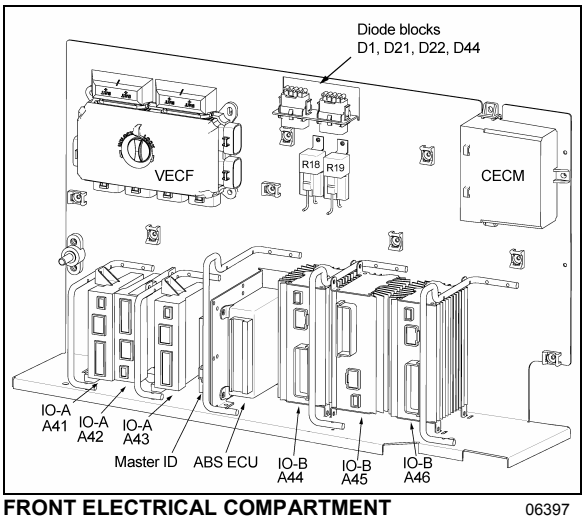
To open the front electrical and service compartment door, pull the rod inside the vehicle, next to the driver's power window or use the key to open from outside the vehicle. The front electrical and service compartment provides access to the following:



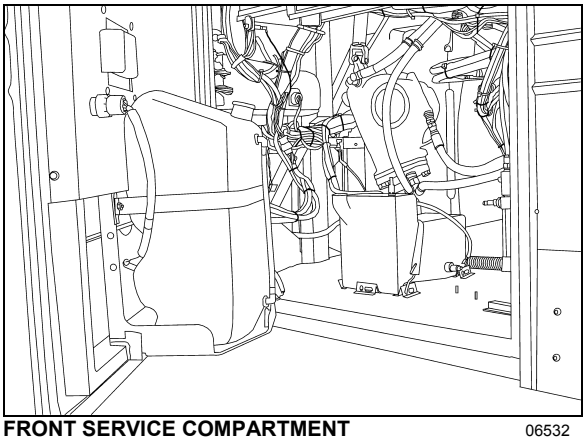
FRONT SERVICE COMPARTMENT DOOR 18381

- Front terminal block;
- CECM;
- 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 06397

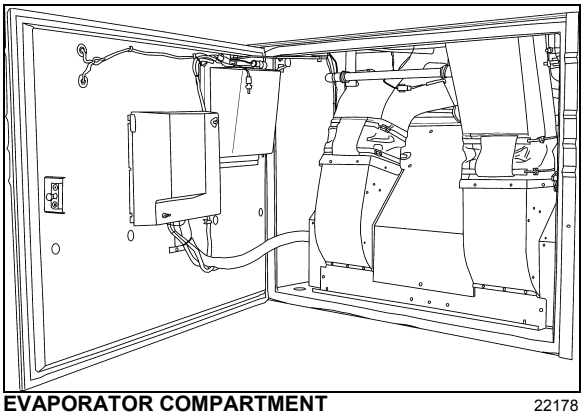


FRONT SERVICE COMPARTMENT 06532

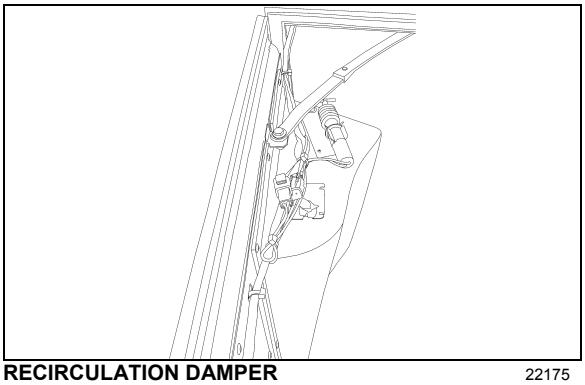
EVAPORATOR COMPARTMENT

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

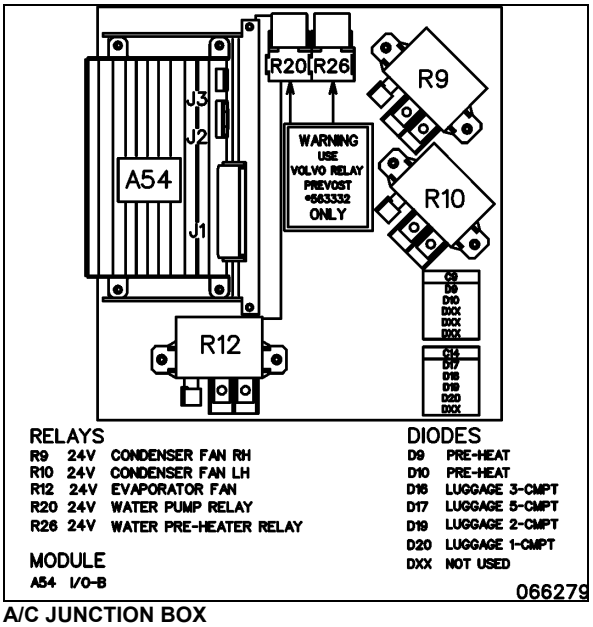
The compartment door release latch is located on the left side of the baggage compartment and to the right of the HVAC compartment door. Pull the release latch then swing the HVAC compartment door open.



EVAPORATOR COMPARTMENT 22178



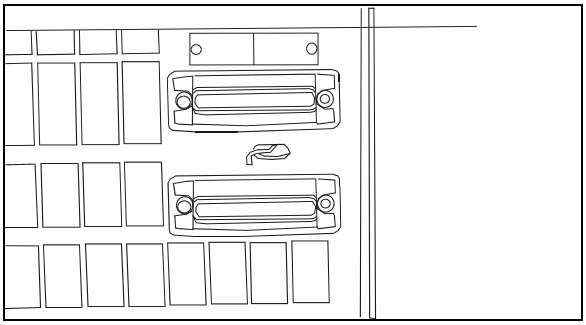
RECIRCULATION DAMPER 22175



A/C JUNCTION BOX

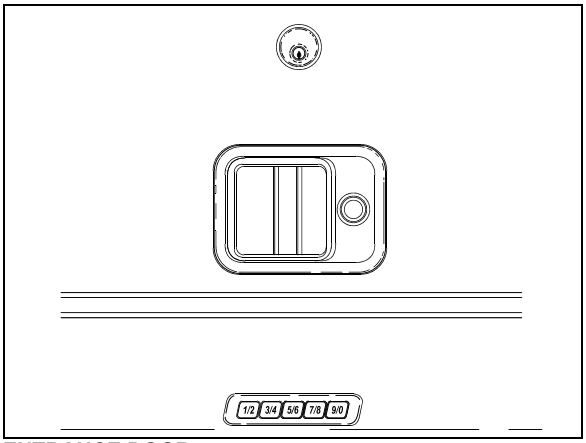
RADIATOR DOOR

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



RADIATOR DOOR 18560

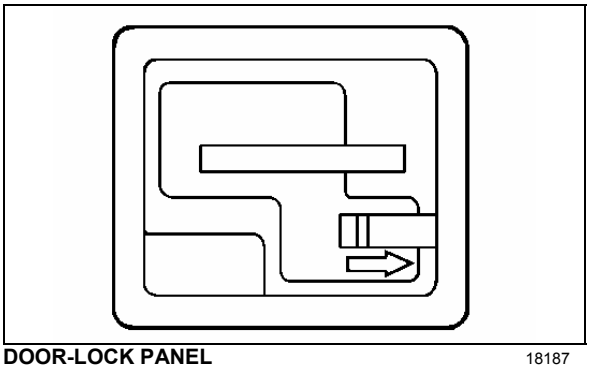
ENTRANCE DOOR



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.

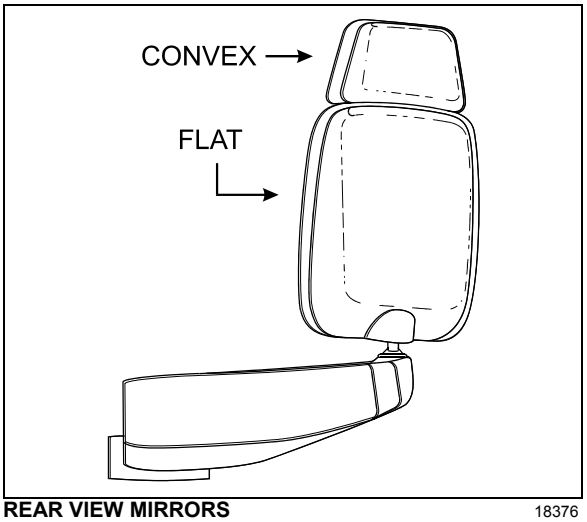
REAR VIEW MIRRORS

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.

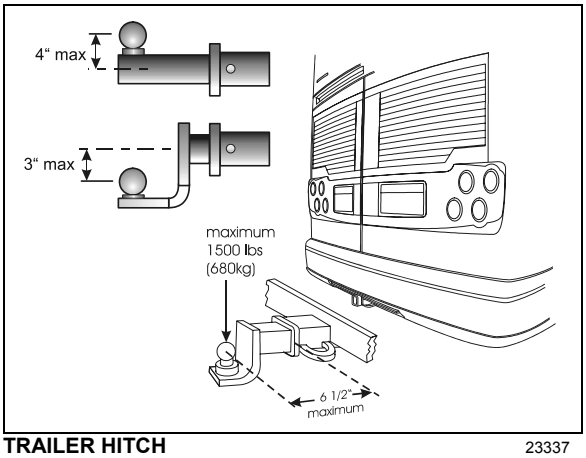
BACK-UP CAMERA

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.*

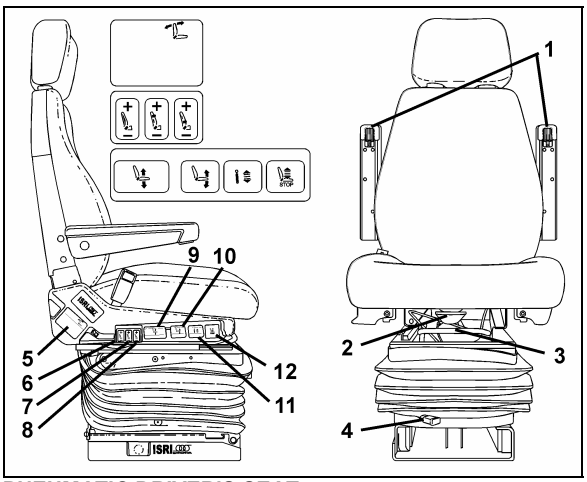
DRIVER'S SEAT - "DELIVERY"

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

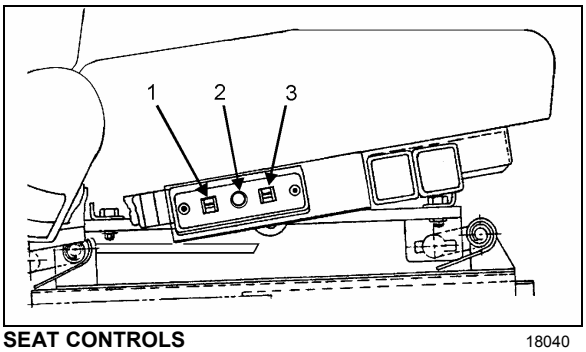
Adjust electric seats as follows:

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.



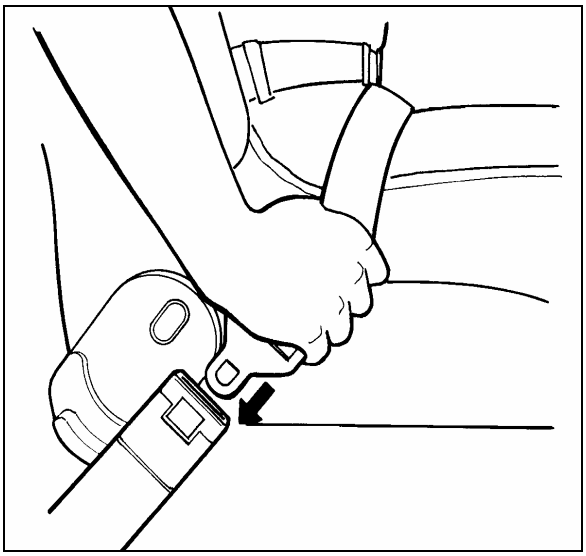
SEAT CONTROLS 18040

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.

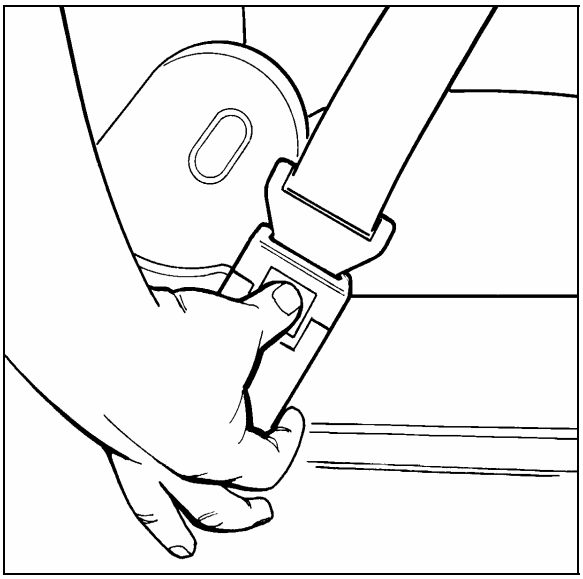
CAUTION

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.

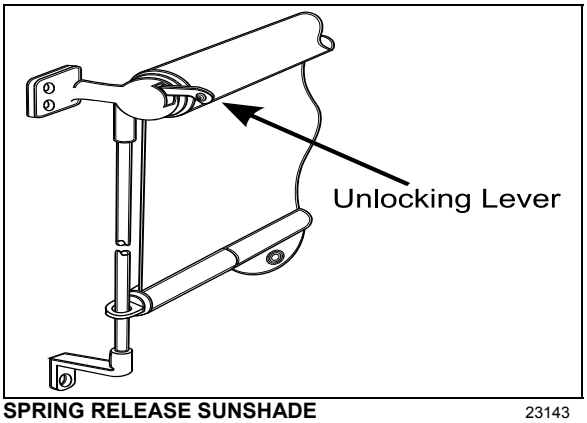
DANGER

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.

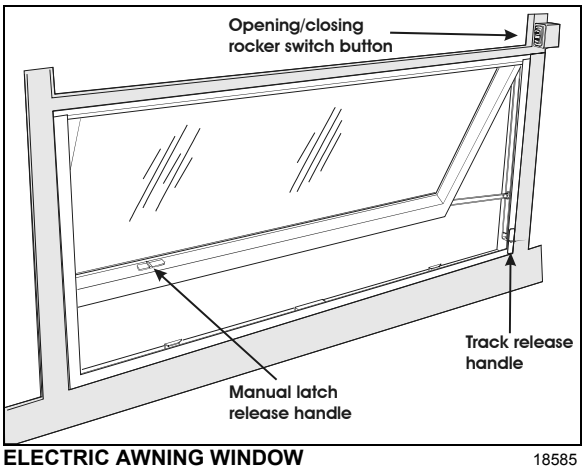
CAUTION

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

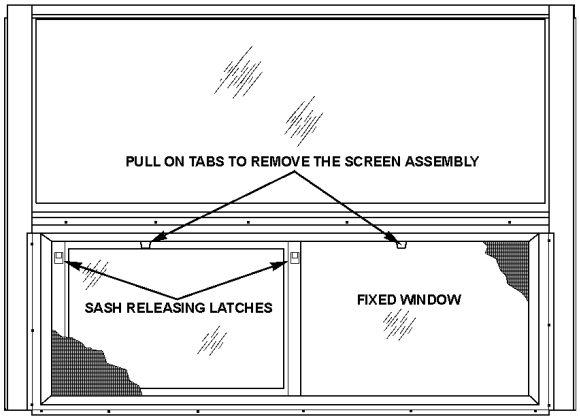
To open or close an electrically-operated sliding window, use the rocker switch button located on the wall, next to the window.

⚠ CAUTION

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

NOTE

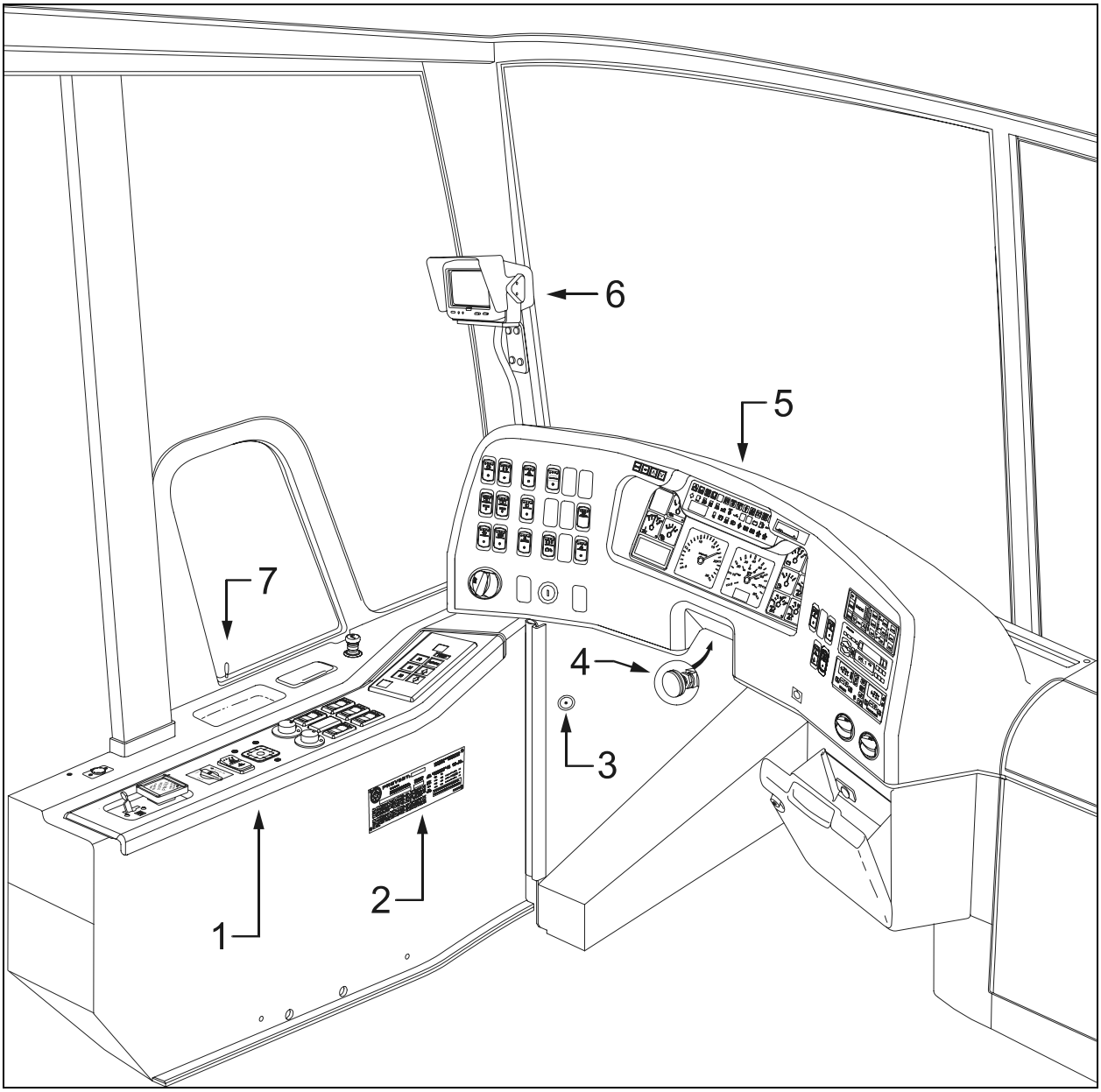
If the sliding window electrical circuit is inoperative, the power sliding window can be manually closed by removing the lateral plastic trim located on the R. H. side of the window to access the drive belt. Manually move the drive belt to close the window.



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.

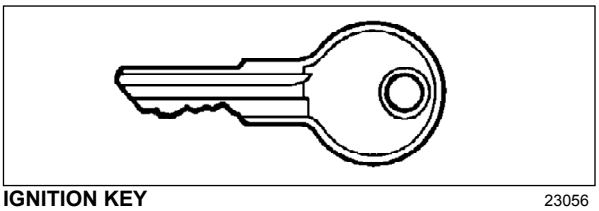


DRIVER'S AREA 18563

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.

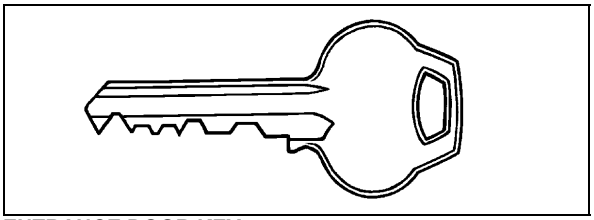
To start the engine, turn the key clockwise to the *START* position, and then release it. The key will set to *ON* position.

⚠ 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.

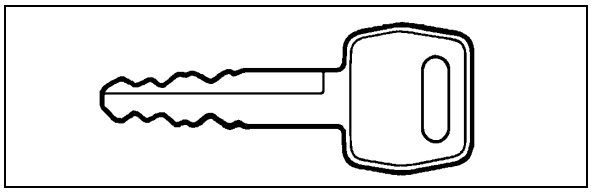
NOTE

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.



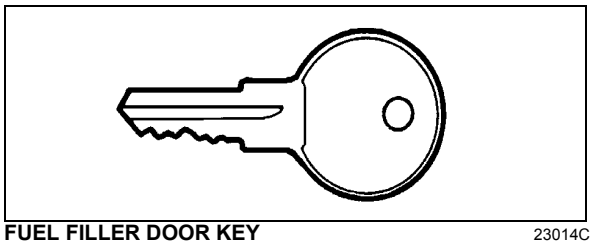
ENTRANCE DOOR KEY 23057

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

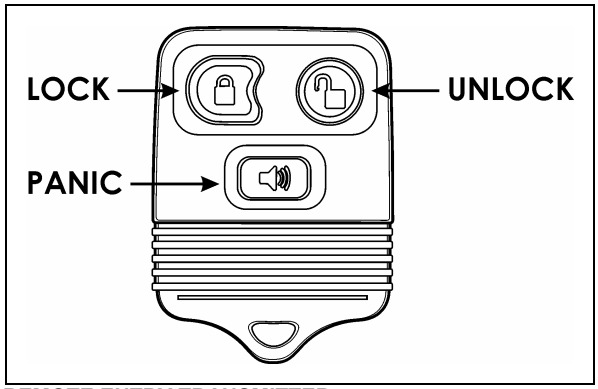
Use this key to unlock the fuel filler doors on either side of the vehicle.

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:

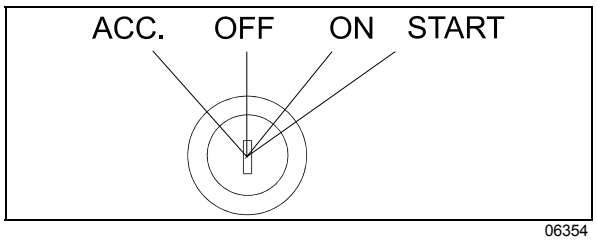
- Press the red PANIC button on any transmitter. The horn will sound and the marker lights will flash for a maximum of three minutes.

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.

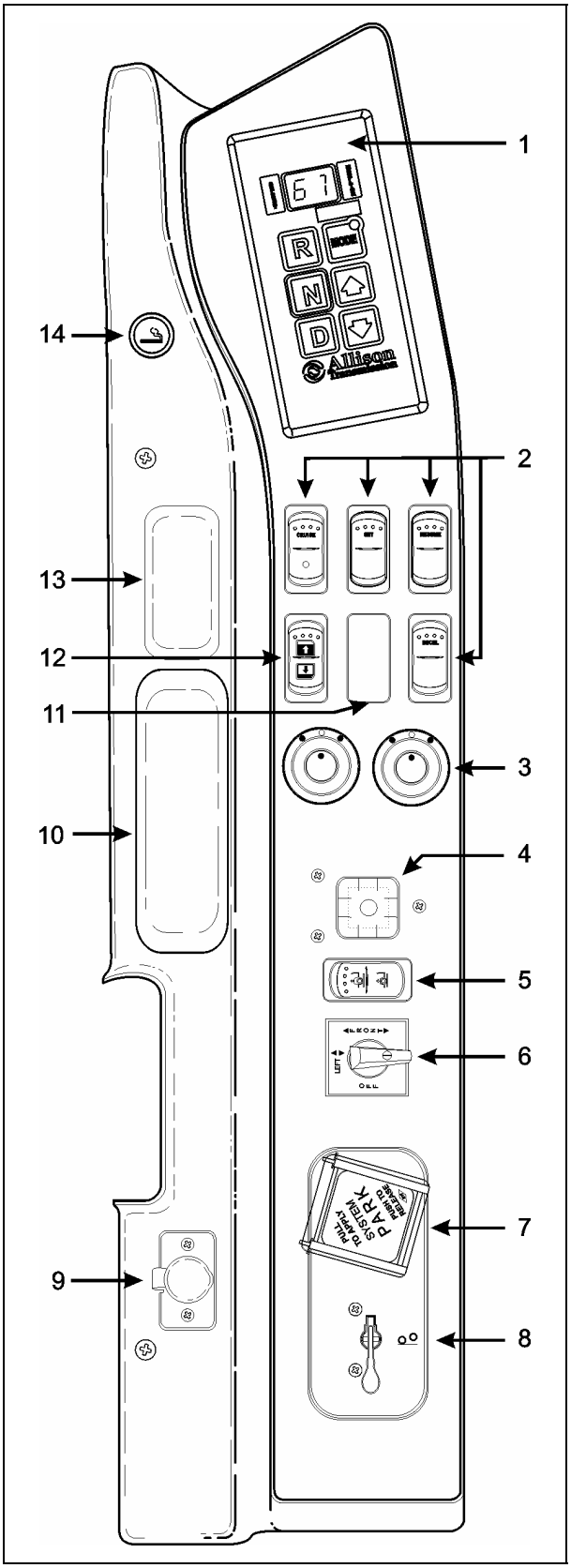
Start

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. Cruise 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. 12 Volt DC Power Outlet
10. Accessory Pocket
11. Blank
12. Driver's Power Window Switch
13. Accessory Pocket or Ashtray (Optional)
14. Cigarette Lighter (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.

CRUISE CONTROL SWITCHES (2)

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

WARNING

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

WARNING

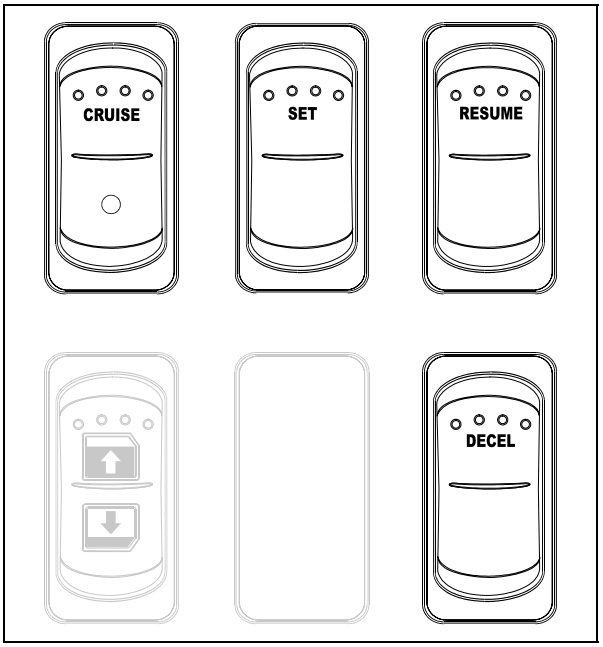
Do not put the transmission in the neutral (N) position while driving with cruise control. This will cause the engine to over-speed and may result in a loss of driving control.

Setting Coach Speed

Depress the CRUISE rocker switch to activate the cruise control. A LED on the switch illuminates when the cruise control is activated. Accelerate the vehicle to the desired cruising speed using the accelerator pedal. Depress and release the **SET** switch then remove foot from the accelerator pedal. This will set the vehicle cruise speed and store it in memory.

NOTE

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



CRUISE CONTROL SWITCHES 06233

Increasing Set Speed

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

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

When driving with cruise control ON, each time either the RESUME switch is momentarily depressed, the cruising set speed is raised by 0.6 mph (1.0 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 cruise speed setting can be decreased by one of the following methods:

- Depress and hold the SET switch until the desired cruising speed is reached. When the SET switch is released, the new cruising speed will be stored in the cruise control memory.
- Depressing momentarily the SET switch will decrease set cruising speed by 0.6 mph (1.0 km/h).
- Slightly apply the service brake.
- Depress and release the DECEL switch.

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

NOTE

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

NOTE

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

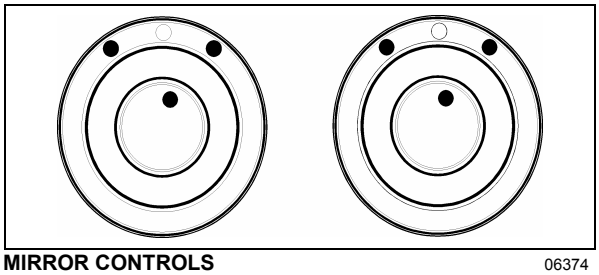
IMPORTANT NOTE

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.

IMPORTANT NOTE

Every time the SET or the RESUME switch is depressed results in a decrease or increase (respectively) in cruising set speed of 0.6 mph (1.0 km/h).

MIRROR CONTROLS (3)



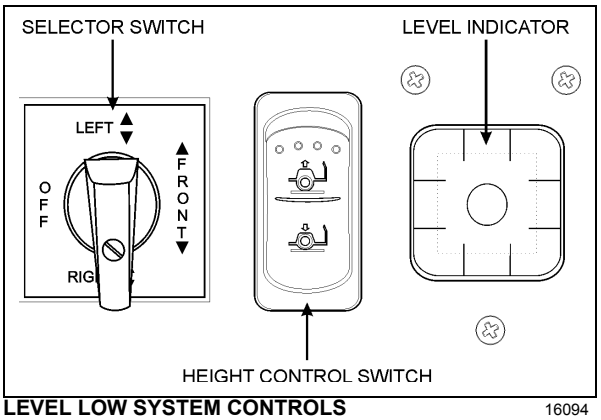
MIRROR CONTROLS 06374

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

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

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

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

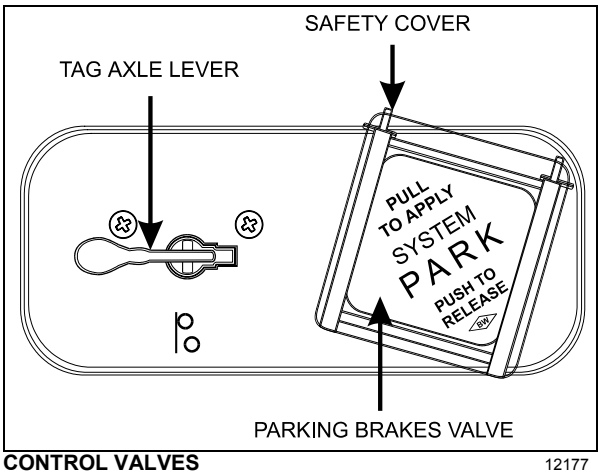
If, for any reason, you wish to start the engine without moving the vehicle (to warm up the engine for instance) while keeping the vehicle in the manually leveled position, place selector switch in any position except OFF. When ignition switch is turned to the OFF position, reset the selector switch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

12-VOLT DC POWER OUTLET (9)

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.

ACCESSORY POCKET (10)

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

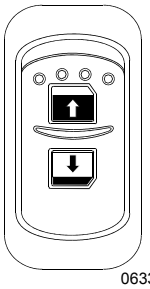
To open the ashtray, push slightly on the cover's side. The ashtray can be removed for cleaning by pulling it out.

WARNING

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

BLANK (11)

POWER WINDOW SWITCH (12)



06338

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

ASHTRAY (13)

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.

CIGARETTE LIGHTER (14)

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.

Diagnostic Data Reader (DDR) Receptacle

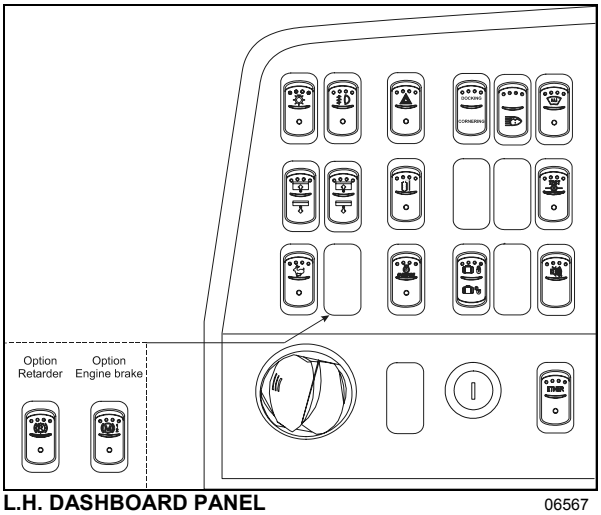
To facilitate troubleshooting of the DDEC, Allison Transmission and ABS systems and to obtain data logged in the ECM (Electronic Control Module) memory, a Diagnostic Data Reader (DDR) (not supplied) can be connected through the DDR receptacle. A user's manual is supplied with the optional DDR.

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

DASHBOARD 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.

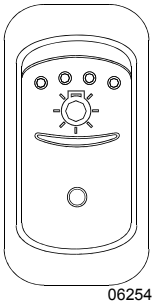
L.H. DASHBOARD PANEL



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



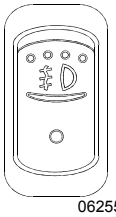
06254

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.

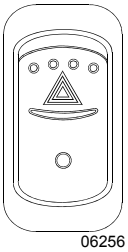
WARNING

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

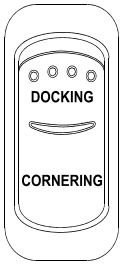
Depress the rocker switch to make all turn signal lights flash at once. The dashboard telltale lights will flash when the hazard warning flashers are *ON*.

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.

Docking/Cornering Lights



06337

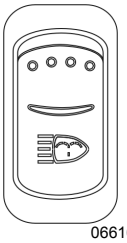
Depress the upper portion of the switch to activate both the docking and the cornering lights. Depress the lower portion of the switch to activate the cornering lights.

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.

Headlights washer

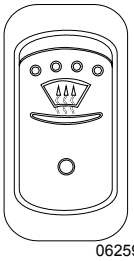

06616

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

CAUTION

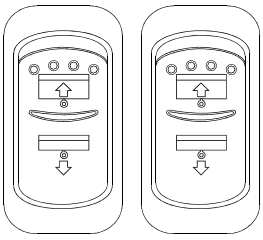
To avoid damaging the pump mechanism, do not use the windshield washer when the fluid level is very low or empty.

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.

Left and Right Sunshades (Optional)

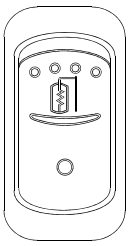

06353

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

CAUTION

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

Outside Mirror Heat (Optional)


06261

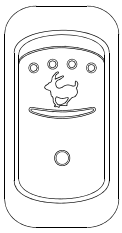
Turn *ON* to clear fog, frost or thin ice from outside mirrors.

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.

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.

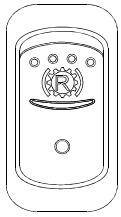
NOTE

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*.

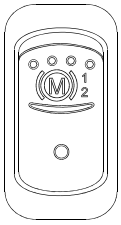
Transmission Retarder (Optional)



06252

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

JACOBS Engine Retarder (Optional)



06253

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

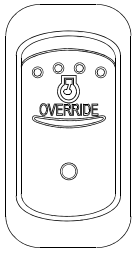
DANGER

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

NOTE

Engine brake is activated when accelerator pedal is released and the engine speed is higher than 750 rpm. Stop lights turn ON when the engine brake is used.

Engine Stop Override



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.

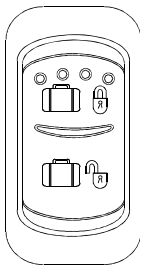
DDEC Diagnostic Request

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. The first digit of the diagnostic code is determined by the number of flashes before a short pause. The second number of the diagnostic code is then flashed in the same manner. As an example, code “25“ (everything O.K.) consists of two flashes, followed by a short pause, then five flashes. Refer to the “Technical Information” chapter under “DDEC V Diagnostic Codes”.

Central Locking System (Optional)

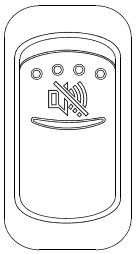

06266

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

NOTE

Service panels are not linked to the central locking system.

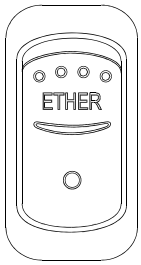
Back-Up Alarm Cancel Switch


06311

Press down this switch to cancel the Back-Up Alarm

NOTE: After use, return to normal operation.

Ether Start Control (Optional)



06237

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

Driver Controlled Differential Lock (DCDL) (Optional)

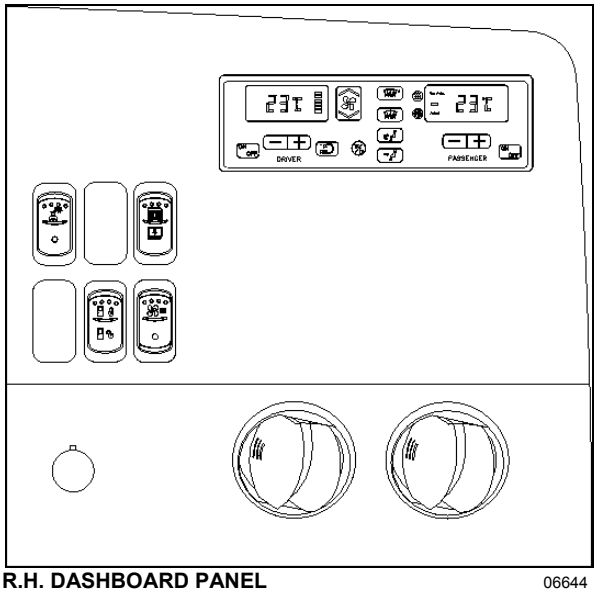
06571

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.

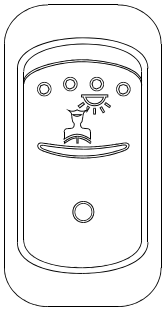
R.H. DASHBOARD PANEL



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.

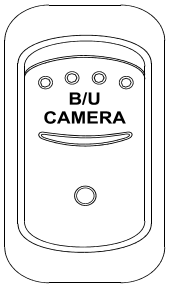
Driver's Area Lighting



06244

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

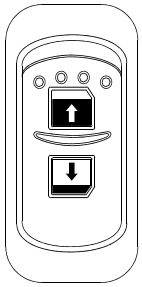
Back-Up Camera Switch



06314

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

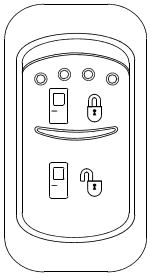
Entrance Door Power Window



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.

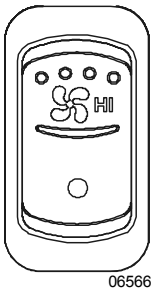
Entrance Door Switch



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.

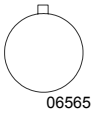
Cabin Fan Speed Control Switch



06566

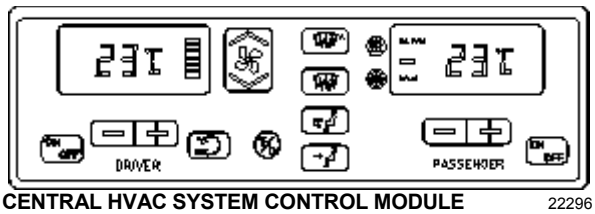
Switches fan speed to HI for cabin ventilation (only available on models equipped with central HVAC).

Brightness Control

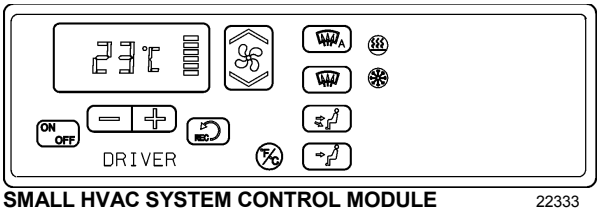

06565

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).

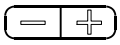
NOTE

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  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

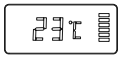
Illuminates when system is cooling.

Fan Speed


22135

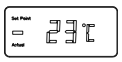
The driver's fans have six speeds. Increase speed by pressing on the upper portion of the button, decrease by pressing on the lower portion.

Driver's area temperature display



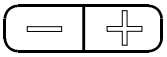
The temperature displayed on the driver's side HVAC control module is the temperature set point.

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

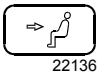
Air is sent to defogger vents as well as panel and footwell vents.

Panel and Footwell


22137

Air is sent to panel and footwell vents only.

Panel


22136

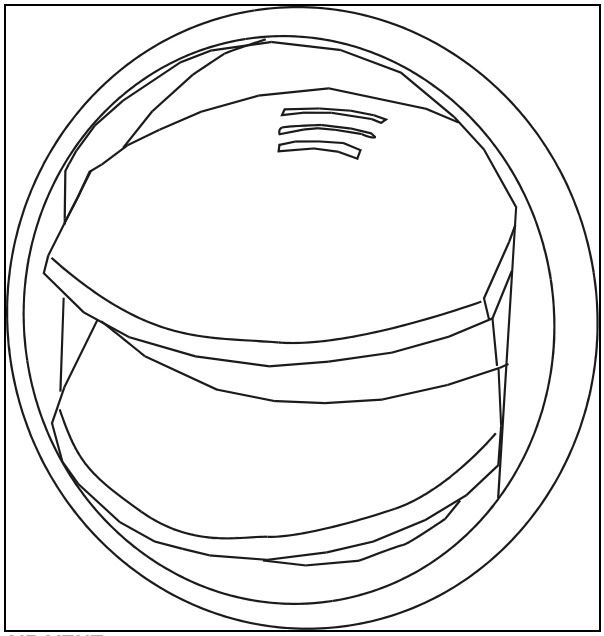
Air is sent to panel vents only.

Temperature Degree Selector

22133

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

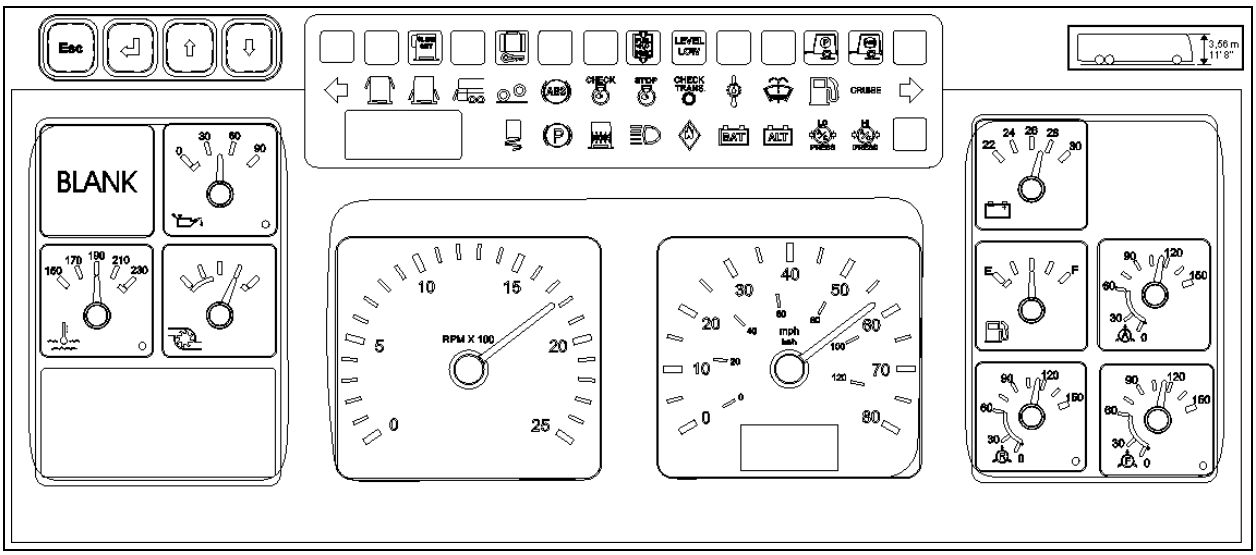
AIR VENTS



AIR VENT 22249

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

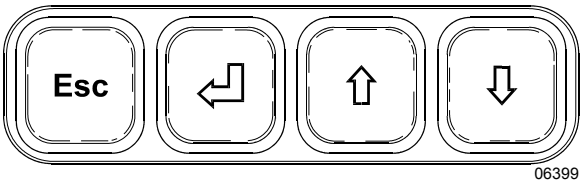


CLUSTER 06651

CLUSTER

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

MESSAGE CENTER DISPLAY (MCD)



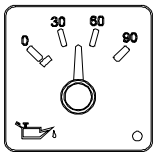
06399

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



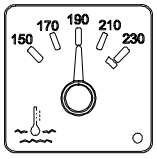
06229

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

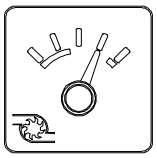


06231

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

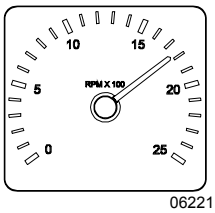
A high coolant temperature indicator LED (bottom right corner of gauge) illuminates when the coolant temperature rises above 223°F (106°C). An audible alert signal also informs the driver of this condition. Refer to Safety Features and Equipment chapter for table of audible alarms.

Turbo Boost Pressure Gauge


06230

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

Tachometer

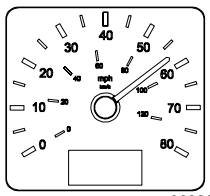


06221

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.

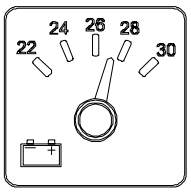
Speedometer



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).

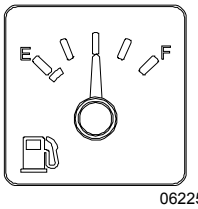
Voltmeter (24-Volt System)



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

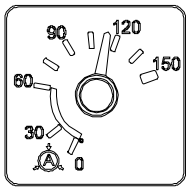
Indicates the amount of fuel remaining in the fuel tank.

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.

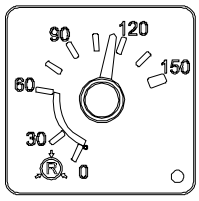
Air Pressure Gauge (Accessories)



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

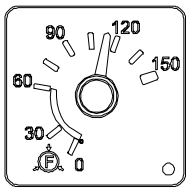
Indicates the primary air system pressure. The normal operating pressure is from 95 to 125 psi (655 to 860 kPa).

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

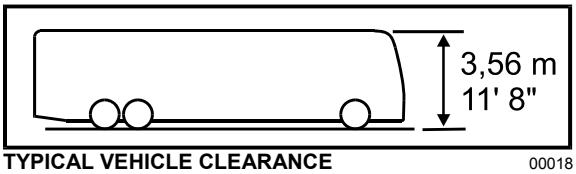
Indicates the secondary air system pressure. The normal operating pressure is from 95 to 125 psi (655 to 860 kPa).

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

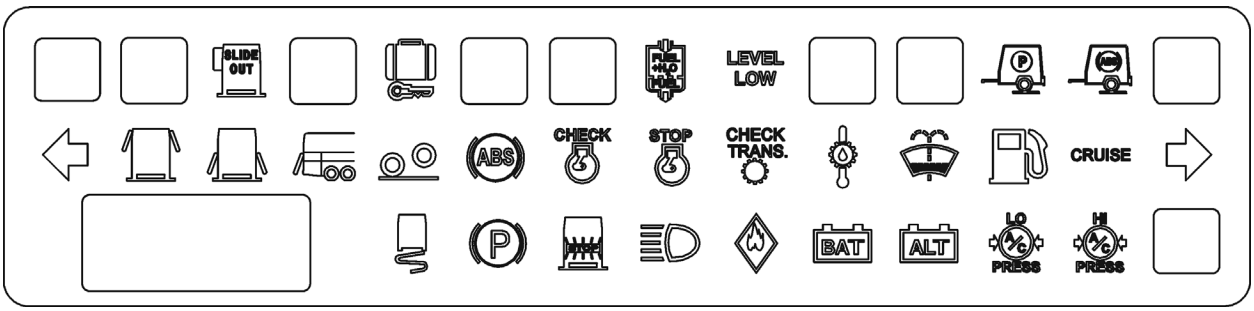


TYPICAL VEHICLE CLEARANCE 00018

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.

Fuel Filter/Water Separator

06291

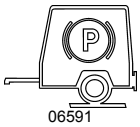
Illuminates when accumulated water in the optional fuel filter/water separator needs to be drained. Refer to “Care and Maintenance” chapter.

Level Low System Indicator

06297

Illuminates when the vehicle leveling system is activated.

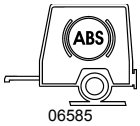
Trailer Emergency / Parking brake



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.

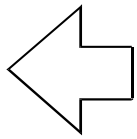
Trailer Antilock Brake System (ABS)



06585

Illuminates when the trailer ABS is malfunctioning.

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

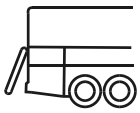
06287

Illuminates when an emergency window is open or unlocked.

Baggage Bay Door Ajar

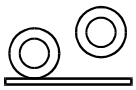
Illuminates when one or more baggage bay doors are ajar.

Engine Door Ajar



Illuminates when the engine compartment door is ajar.

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.

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.

Check Engine

06281

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

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

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

STOP Engine

06309

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

If the indicator remains illuminated after five seconds or comes *ON* sometime after starting the engine, the DDEC system has detected a major problem. Immediately park the coach in a safe place and stop the engine. An audible alert signal also informs the driver of this condition.

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

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

NOTE
Once the engine is stopped, it cannot be restarted until the problem has been corrected. A diagnostic code will be stored in memory. The STOP engine indicator can be used to identify the problem. Refer to "Technical Information" chapter under "DDEC V 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 “Technical Information” chapter under “Allison Transmission Diagnostic Troubleshooting Codes (DTC) and Descriptions”.

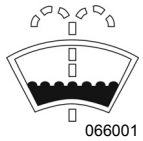
NOTE
The CHECK TRANS indicator may also illuminate when starting the engine in extremely cold weather. Refer to "Starting and Stopping Procedures" under “Allison Transmission Warm-up”.

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

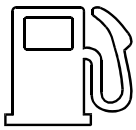

066001

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

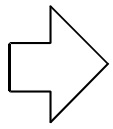
Refuel as soon as possible.

Cruise Control Enabled

06284

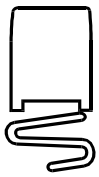
Illuminates when cruise control is enabled.

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


06273

Flashes for about 10 seconds every 15 minutes when the outside temperature is in the range between 2°C and 1°C (35°F to 34°F), when the road is most slippery.

An audible alert will sound when these conditions arise. Refer to “Safety Features and Equipment” chapter.

Emergency/Parking Brake

06303

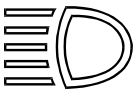
Illuminates when the emergency /parking brake is applied. The control valve is located on the L.H. control panel. An audible alert will sound if ignition is turned to *OFF* and the parking brake is not engaged.

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.

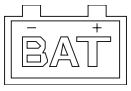
NOTE

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.

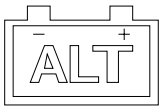
NOTE

To prevent discharge of the batteries when the engine in not running, some functions are automatically switched off if the batteries voltage drops below 24.4 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 in the main power 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.

A/C System Pressure Low

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

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

NOTE

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

A/C System Pressure High

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

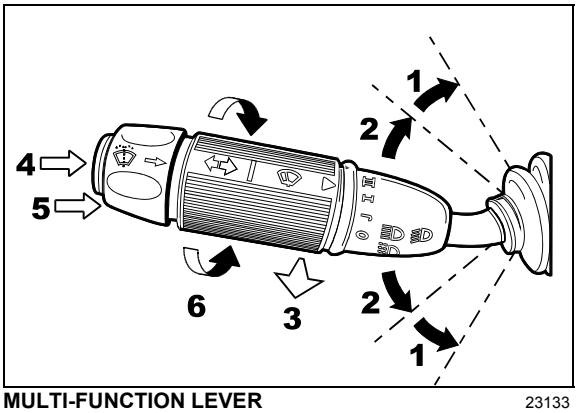
Refer to the Maintenance Manual for information on control panel troubleshooting mode.

NOTE
When outside temperature is 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.

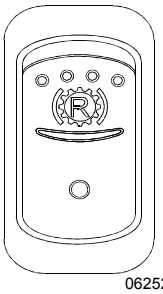
Windshield Wipers (6)

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.

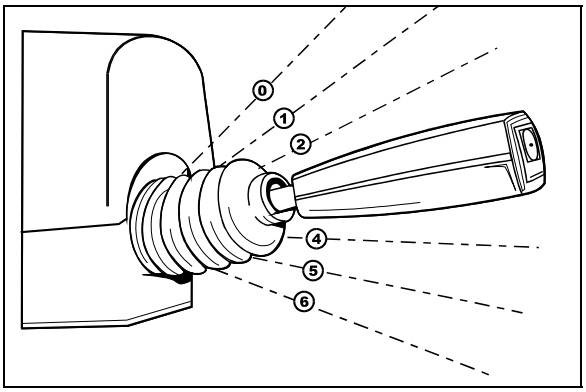
TRANSMISSION OUTPUT RETARDER (OPTIONAL)



06252

Press down this rocker switch to activate the transmission retarder.

Operating the Retarder Using the Hand Lever



RETARDER HAND LEVER 07043

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

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

NOTE

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

Operating the Retarder Using the Brake Pedal

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

NOTE

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

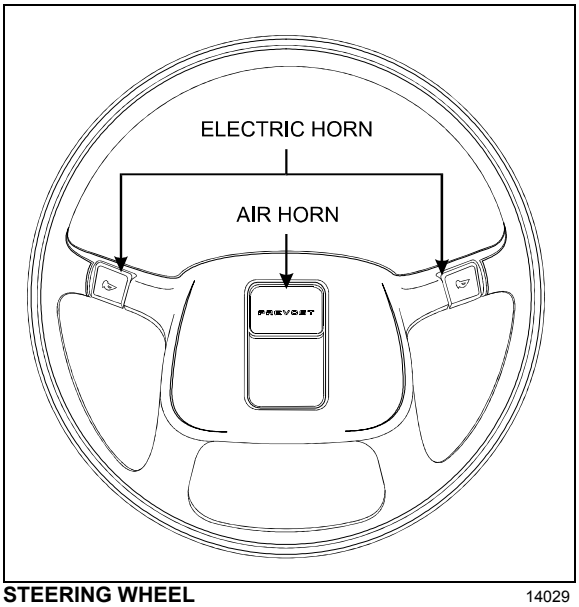
HORN

Electric Horn

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

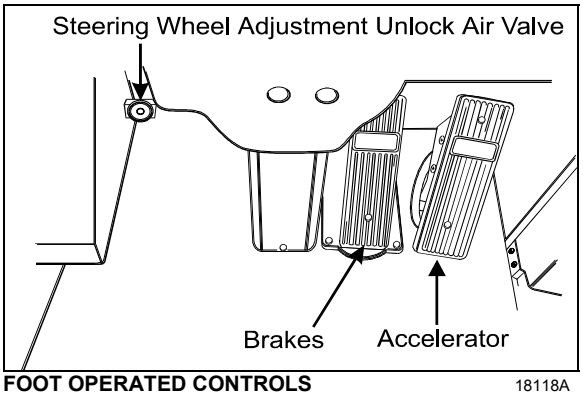
Air Horn

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



STEERING WHEEL 14029

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

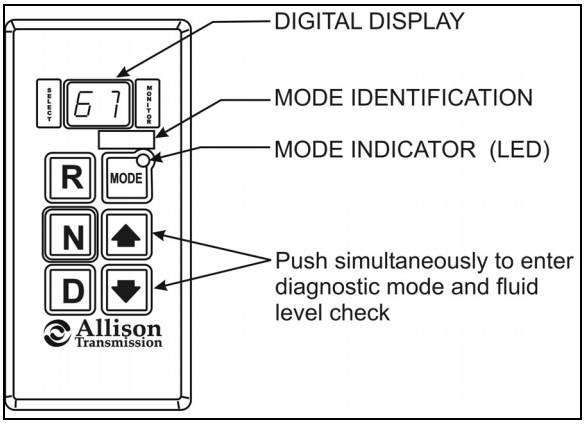
The transmission is fully automatic: Proper ranges should be automatically selected according to driving speeds to improve vehicle performance and control. The speed ratio of the power converter changes automatically as vehicle speed increases and direct-drive goes in and out as necessary. The speed 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 Technical Information chapter 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)

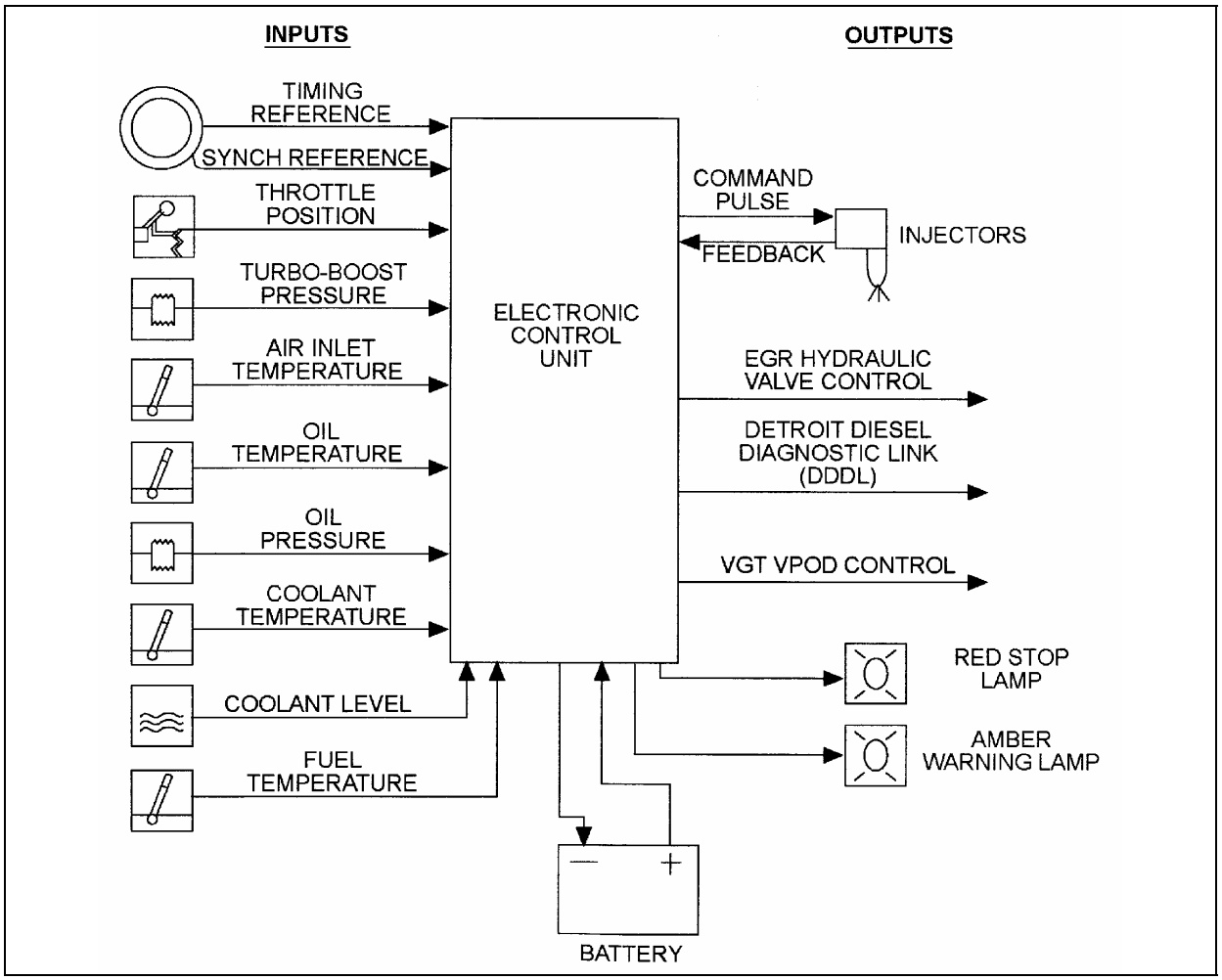
Select these ranges when driving on moderate grades or when load and traffic conditions limit speed.

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 "Technical Information" 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.



SHEMATIC DIAGRAM OF DDEC V SYSTEM 01143

DETROIT DIESEL ELECTRONIC CONTROL (DDEC) SYSTEM

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

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

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

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

DDEC provides the capability of quickly diagnosing system malfunctions with a self-

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

DDEC V ELECTRONIC CONTROL MODULE (ECM)

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

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

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

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

MESSAGE CENTER DISPLAY (MCD)

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

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

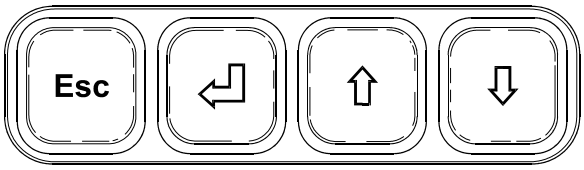
The MCD uses a dashboard integrated liquid crystal display. It provides automated intensity control of the display, based on the dashboard instrument panel lights for improved driver convenience.

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

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

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

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



06399

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

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

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

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

DRIVING MODE MENU

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

GAUGE MODE MENU

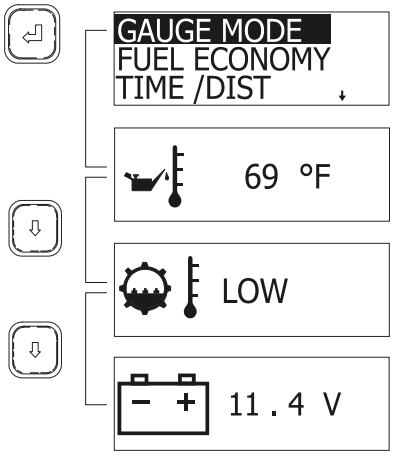
Transmission fluid temperature, engine oil temperature and battery voltage can be displayed in this mode.

To display:

1. Highlight GAUGE MODE.
2. Press enter key (⏎).
3. Choose a gauge using the up (⇧) or down (⇩) arrow keys.

To exit gauge mode, press Esc key.

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



06398

FUEL ECONOMY MENU

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

To display:

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

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

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

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

TIME / DIST MENU

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

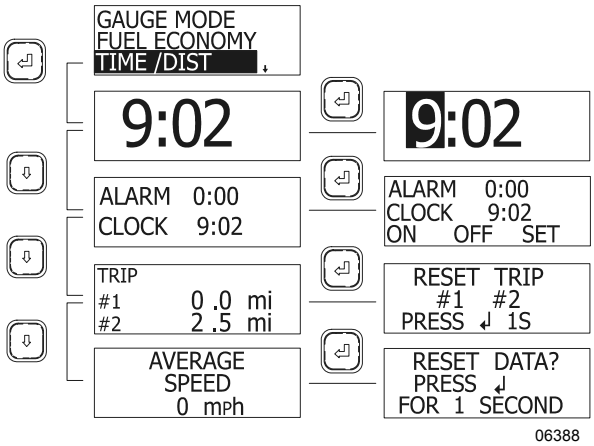
To display the digital clock.

1. Highlight TIME/DIST.
2. Press enter key (⏎).

The digital clock appears.

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

To exit TIME/DIST menu, press Esc key.



06388

Setting the Digital Clock

1. Display the clock.
2. Press the enter key (⏎).

The first digit of the time is highlighted.

3. Set the correct value using the arrow keys.
4. Press enter key (⏎).

The next digit of the time is highlighted.

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

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

Reminder Alarm

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

To set the alarm:

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

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

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

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

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

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

Trip Odometers

Two trip odometers are available for driver convenience.

To reset a trip odometer:

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

To exit anytime, press Esc key.

Average Speed

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

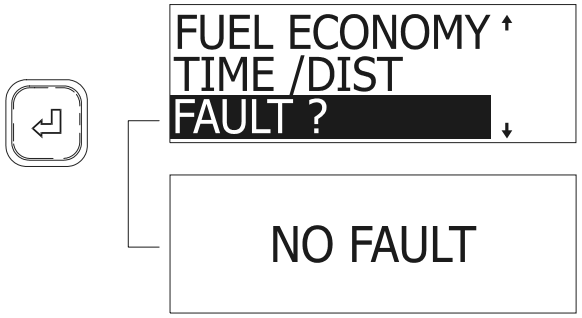
To reset:

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

FAULT ? MENU (Fault messages)

To display logged fault messages:

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



06393

NON-DRIVING MODE MENU

SET UP MODE MENU

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

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

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

Language Selection

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

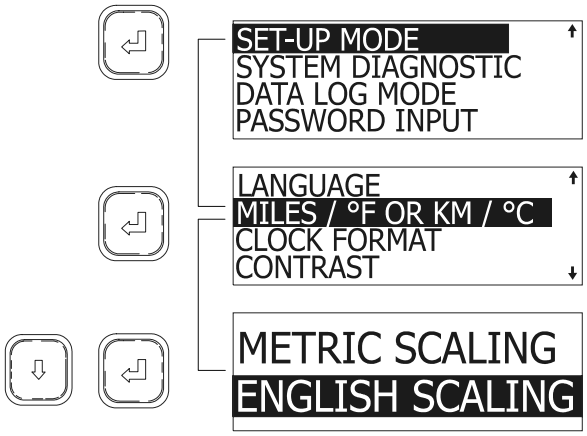
1. In SET UP MODE, highlight LANGUAGE using the arrow keys.
2. Press the enter key (⏎).
3. Highlight the desired language using the arrow keys.
4. Press enter key (⏎) to confirm the language choice.

The MCD returns to SET UP MODE menu.

Metric or Standard Units

1. In SET UP MODE menu, highlight MILES/°F OR KM/°C using the arrow keys.
2. Press the enter key (⏎).
3. Highlight the desired units using the arrow keys.
4. Press enter key (⏎) to confirm.

The MCD returns to SET UP MODE menu.

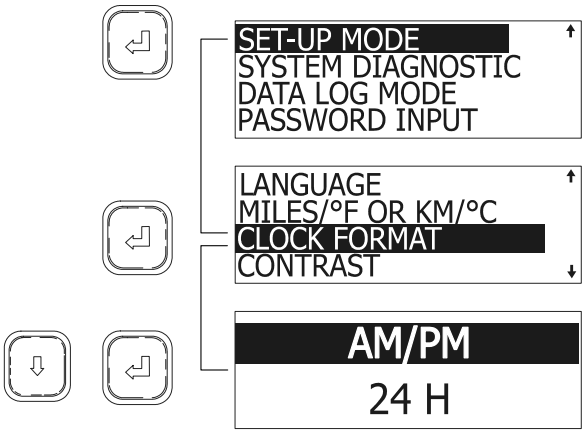


06384

Clock Format

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

The MCD returns to SET UP MODE.

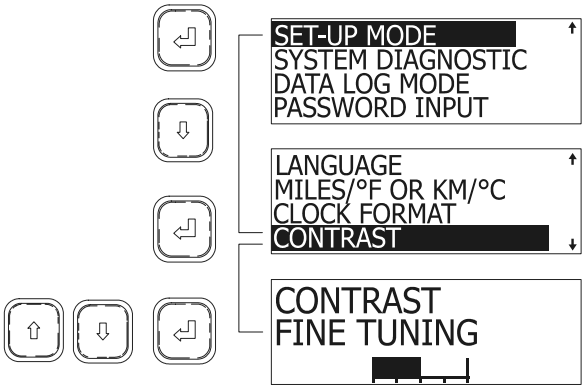


06389

Setting Contrast

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

The MCD returns to SET UP MODE.

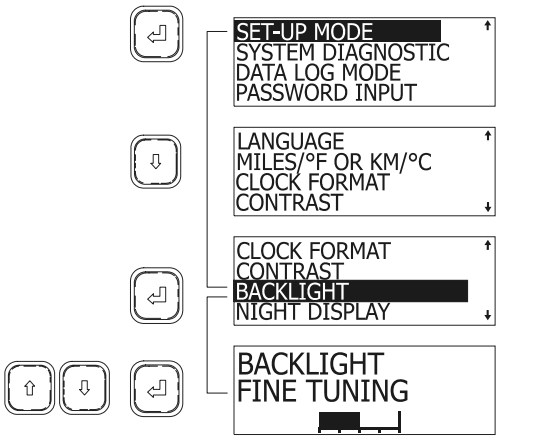


06395

Setting Backlight

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

The MCD returns to SET UP MODE.

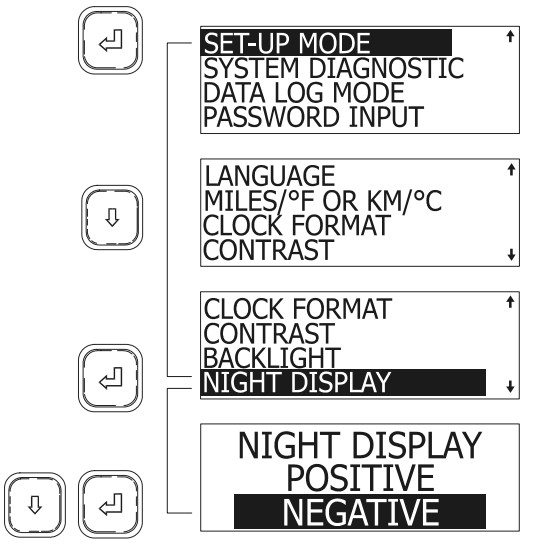


Setting Night Display

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

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

The MCD returns to SET UP MODE.



Setting Default Language

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

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

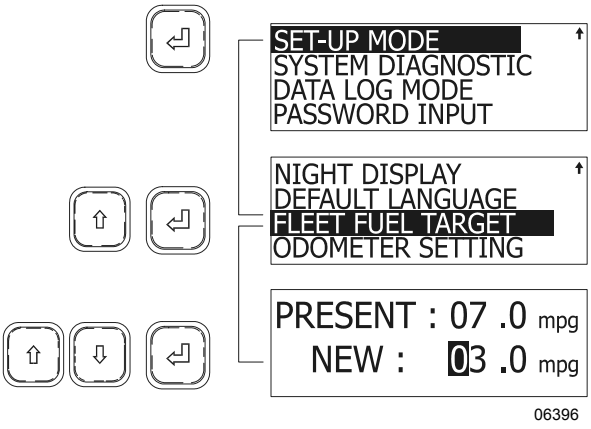
The MCD returns to SET UP MODE.

Setting Fleet Fuel Target

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

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

The MCD returns to SET UP MODE.



Setting the Odometer

This feature is disabled.

SYSTEM DIAGNOSTIC MENU

System Diagnostic menu allows the driver to request diagnostics from the 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:

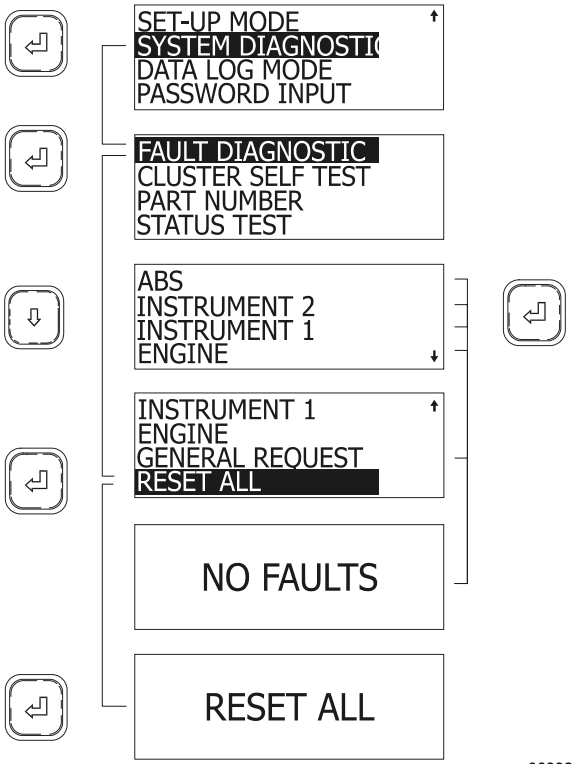
1. Highlight FAULT DIAGNOSTIC with the arrow keys.
2. Press the enter key (⏎) to confirm.
3. Highlight the component to request a diagnostic using the arrow keys.
4. Press the enter key (⏎).

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

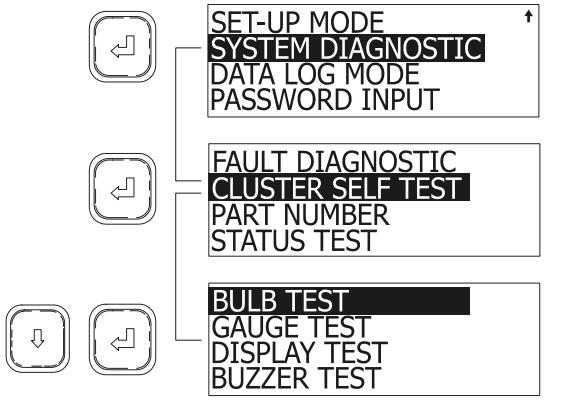
Tests cluster light bulbs, gauges, MCD display and buzzers.

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.

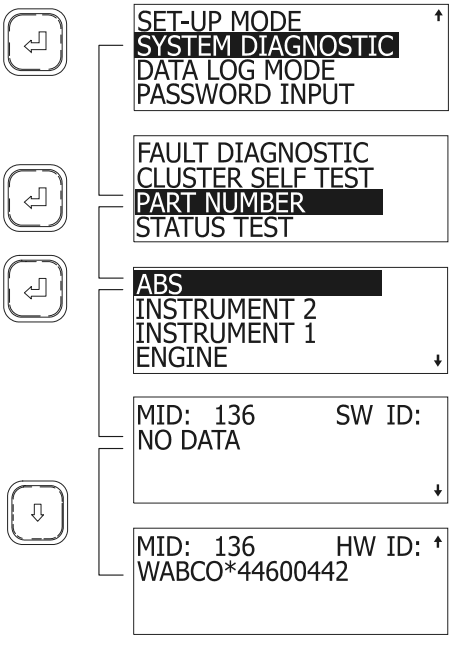
PART NUMBER

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.



06391

STATUS TEST

This feature allows testing the response of vehicle systems. This can be useful when troubleshooting or checking the proper working order of senders and other components. This feature is enabled when correct password is entered (see password input)

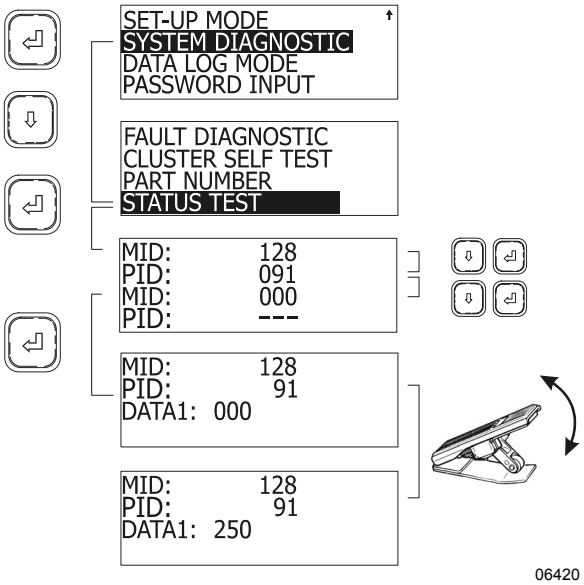
In Status Test mode, the MCD will monitor the system and display the data on the screen. Up to two components can be monitored at once.

To perform a status test:

1. When in SYSTEM DIAGNOSTIC, highlight STATUS TEST using the arrow keys.
2. Press enter key (⏎).
3. Using the arrow and enter keys, enter a MID and PID (or PPID).
4. Press enter key (⏎).

The MCD now displays in real time the value of the component. The example below shows how changing the throttle position will be displayed on the MCD. That way one can verify if any identifiable sender unit is working properly or whether the link is OK.

5. Press Esc key to exit.



06420

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

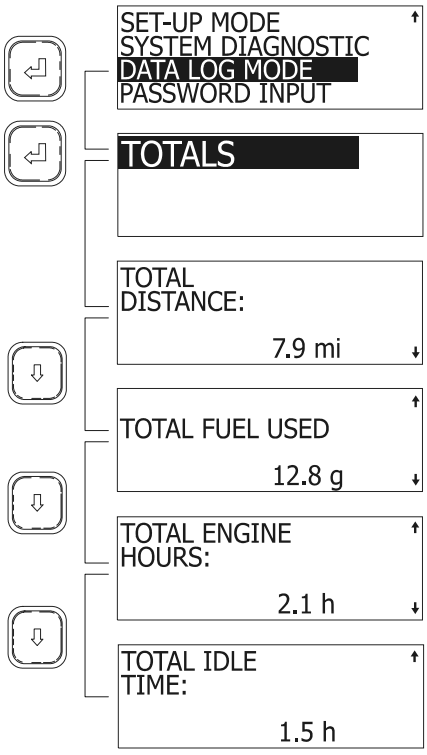
To access data log:

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".

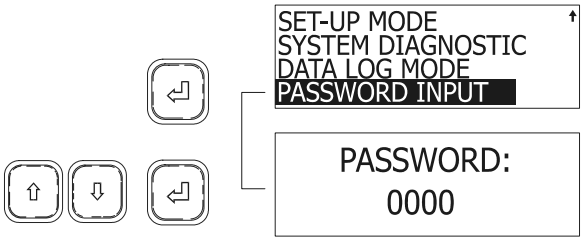
The owner's password is initially set to "1234".

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.



06402

Changing passwords

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

To change passwords:

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

PRODRIVER™

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

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

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

ALLISON TRANSMISSION CONTROL MODULE (TCM)

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

The Allison Transmission electronic control has 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 control monitors 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 chapter, "Technical Information" under "Allison Transmission Diagnostic Troubleshooting Codes (DTC) and Descriptions".

TRANSMISSION RETARDER

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

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

NOTE
Extended use will raise the temperature of the transmission oil.

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

NOTE
Each time the transmission retarder system is in operation, the stoplights automatically illuminate.

NOTE

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

JACOBS ENGINE BRAKE

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

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

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

⚠ WARNING

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

NOTE

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

NOTE

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

ANTILOCK BRAKING SYSTEM (ABS) – 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.

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 9mph (15 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:

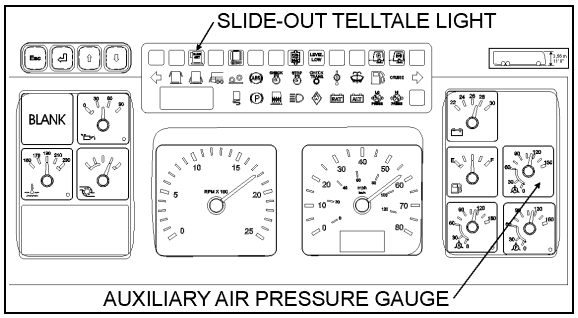
- Make sure that the area outside of the slide-out is clear and that there are no persons or objects within 3 feet of the slide-out outside wall. ***Serious personal injury or damage to the vehicle components may occur***.
- Make sure that the area inside the motor home where the room retracts (30" for 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:

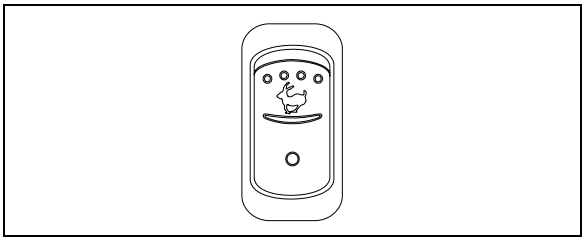
1. Make sure the air pressure is 110 psi minimum on the auxiliary air pressure gauge.
2. Make sure the parking brake is applied and that transmission is in the "NEUTRAL" position.



VEHICLE INSTRUMENT CLUSTER 26112

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

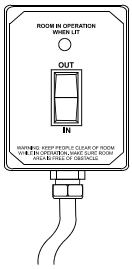
When the rocker switch is released, the green indicator light goes out. Note that for safety reasons, releasing the rocker switch will stop the slide-out movement instantly. At any time, releasing the rocker switch from the "OUT" position and pressing it to the "IN" position will reverse the operation.

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.

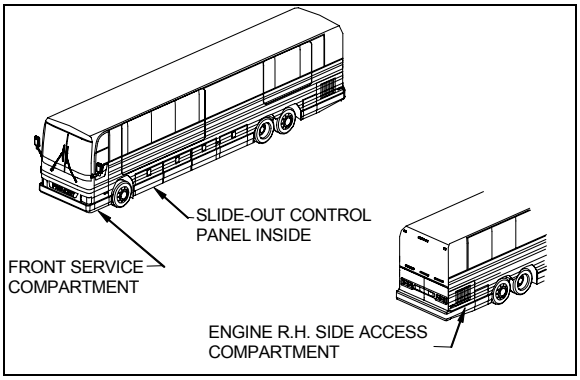
Preliminary conditions for manual override procedure

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

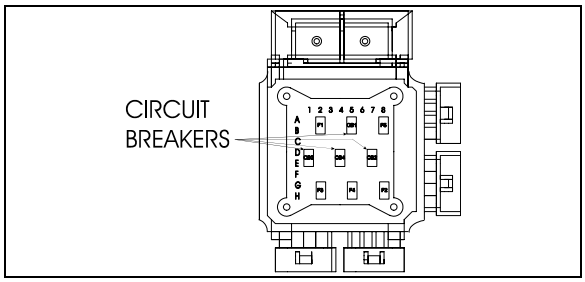
- Make sure that none of the breakers are tripped (the breakers are located inside the VEC on the slide-out control panel and the main slide-out breaker is located in the engine R.H. side access compartment).
- Make sure the barking brake is applied and that transmission is in the "NEUTRAL" position.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

CAUTION

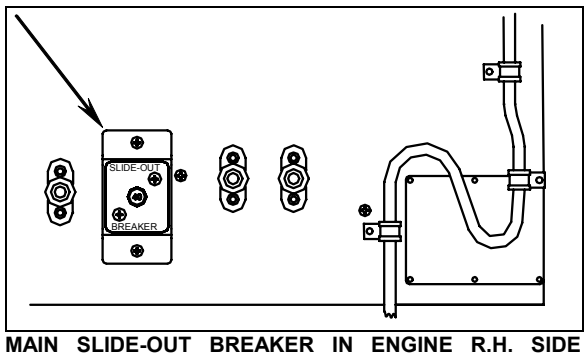
Before extending or retracting the slide-out, always open a window to avoid movement restriction and to prevent the motor from stopping in overcurrent because of a vacuum or pressure build up inside the vehicle.



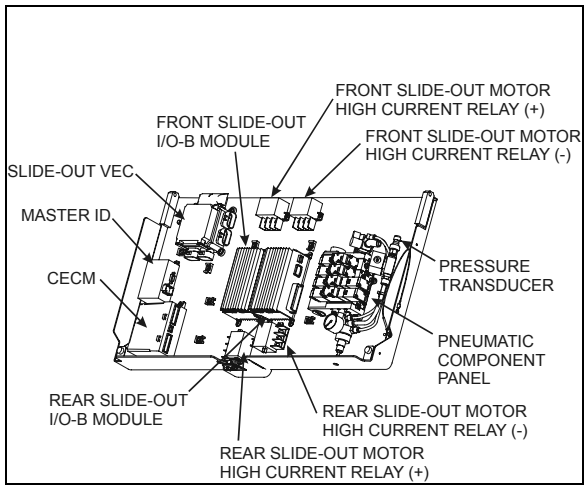
COMPARTMENTS LOCATION



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

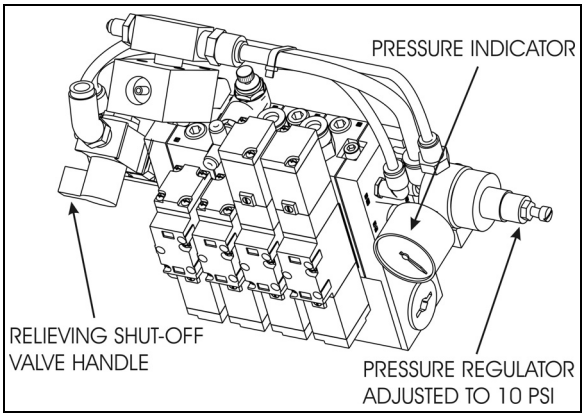
1. Turn the ignition switch to the "OFF" position, and remove the ignition key for more safety.
2. Deflate the inflatable seal by using the relieving shut-off valve located on the slide-out control panel. Turn the handle clockwise to deflate the seal. Make sure the pressure indicator reading is "0 psi".

⚠ 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.

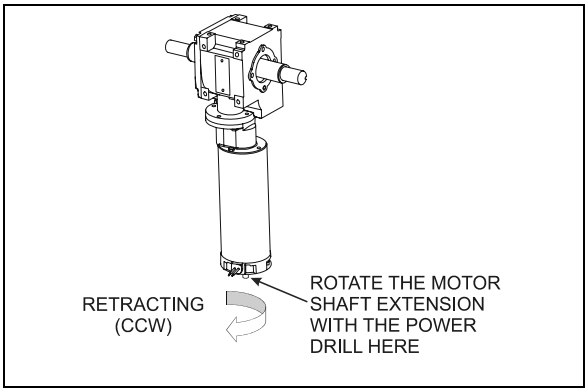


INFLATABLE SEAL RELIEVING SHUT-OFF VALVE

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.*

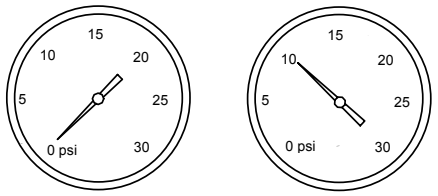


SLIDE-OUT MOTOR ROTATION

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.



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.

Manual extending procedure – Front and rear slide-out

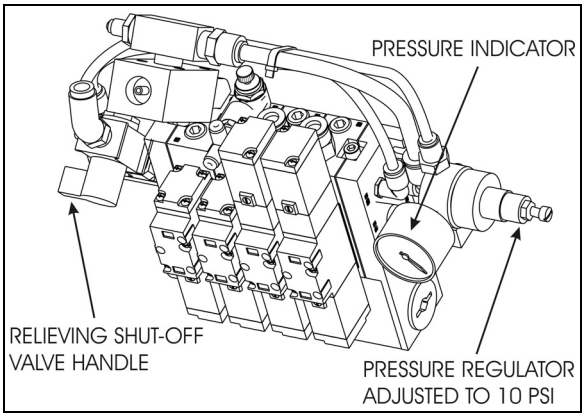
1. Apply barking brake to disengage the security pin from the receptacle.
2. Turn the ignition switch to the "OFF" position, and remove the ignition key for more safety.
3. Deflate the inflatable seal by using the relieving shut-off valve located in the slide-out control panel. Turn the handle clockwise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

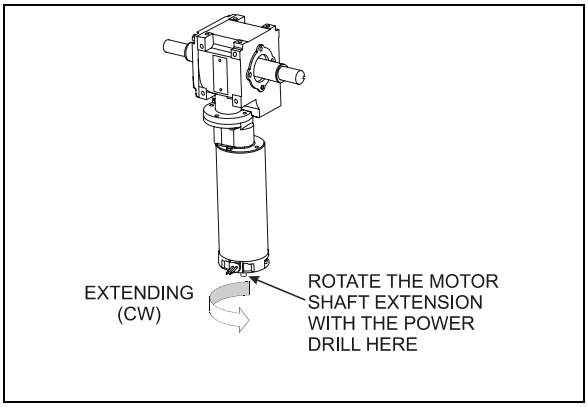
NOTE

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

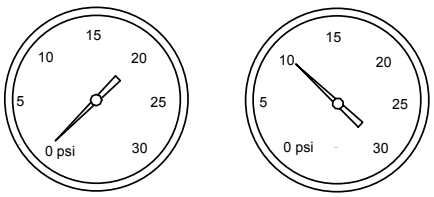
NOTE

*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.

64 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 over the engine.

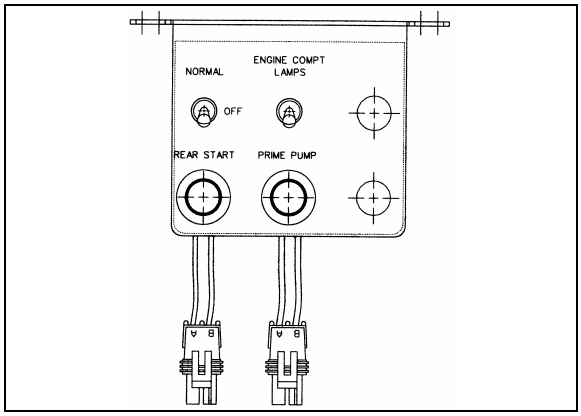
DANGER

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 starter 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

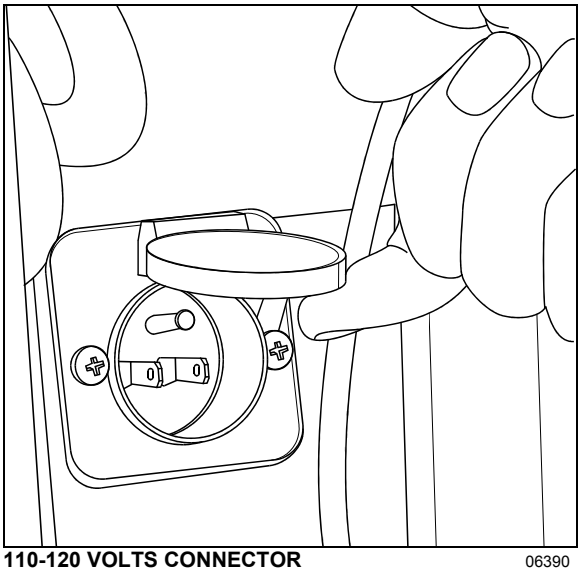
Use the cold starting aid only when absolutely necessary. Excessive use of starter fluid could result in serious engine damage.

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.

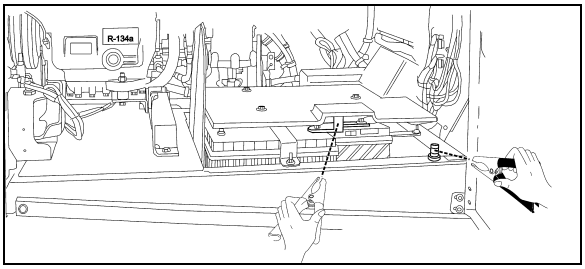
WARNING

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.

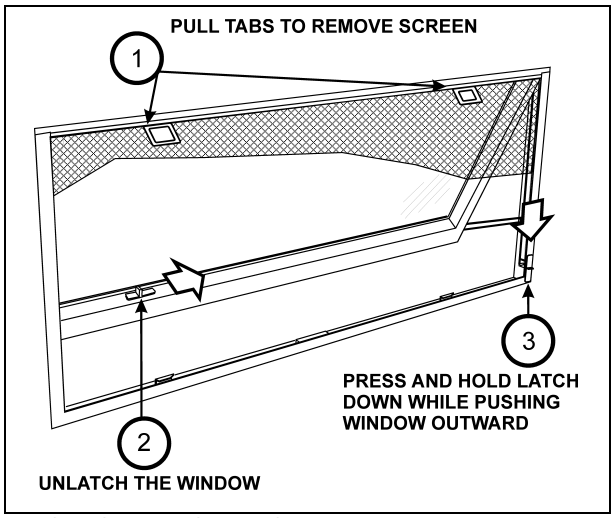


JUMP STARTING 06645

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

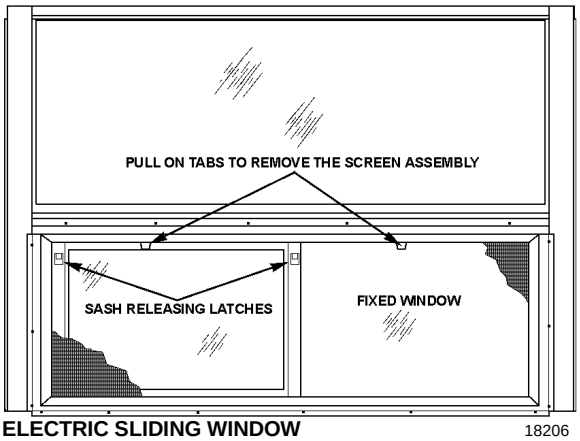


ELECTRIC AWNING WINDOW 18584

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.



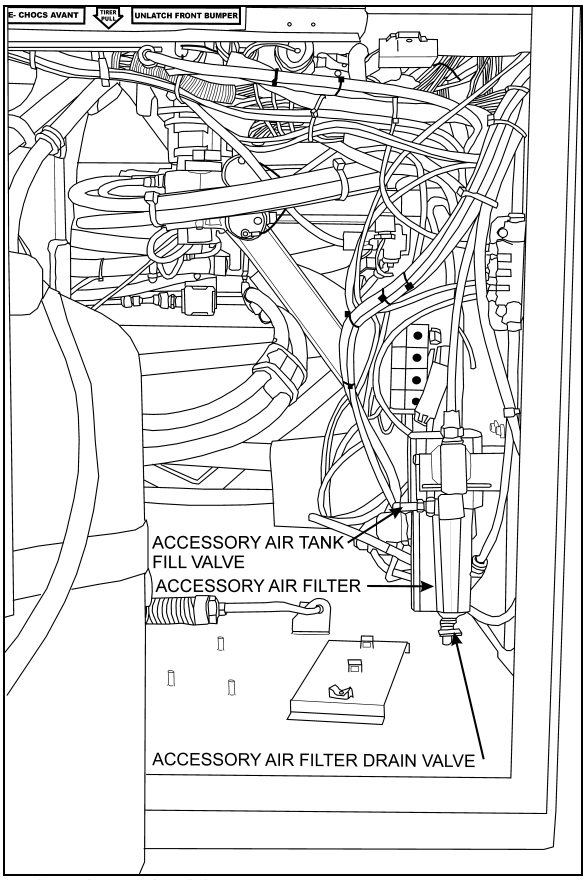
ELECTRIC SLIDING WINDOW 18206

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.

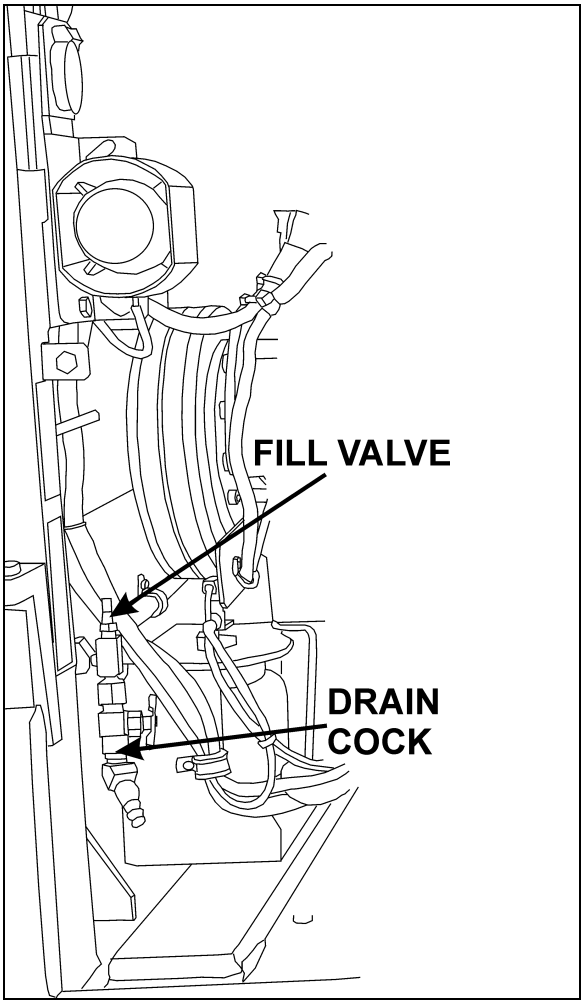


FRONT SERVICE COMPARTMENT 12218

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

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.

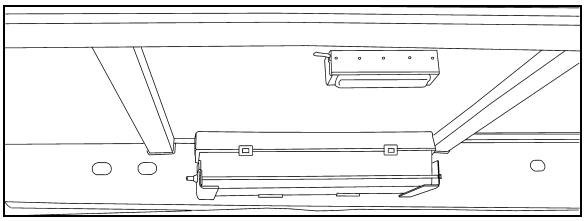
FIRST AID KIT

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.

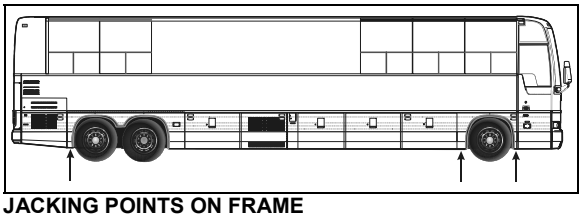
CHANGING WHEELS

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.

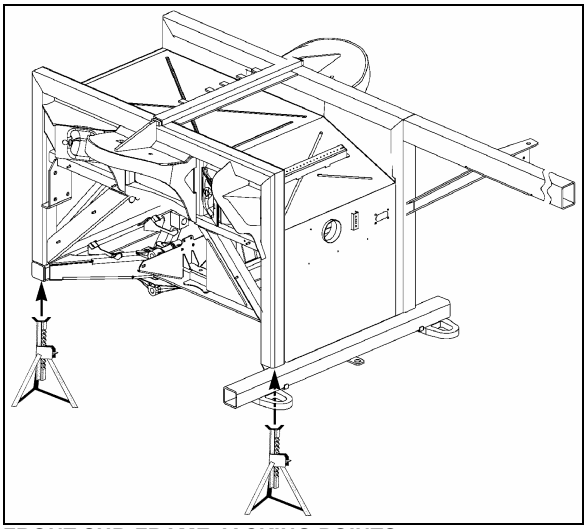
We suggest that you **do not** attempt to change a wheel. First, the wheel and tire are very heavy and usually there is no space available to put the removed flat. Second, the wheel nuts, especially those on inner dual, can become very tight after being on for only a short time. Often a heavy air wrench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

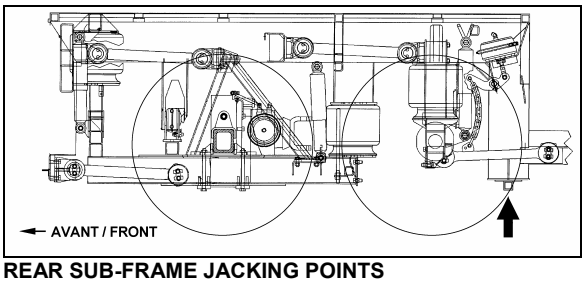
Twelve jacking points are located on the vehicle: three are located on each side of the frame and two are located under each axle. Refer to the following illustrations for the location of jacking points.



JACKING POINTS ON FRAME



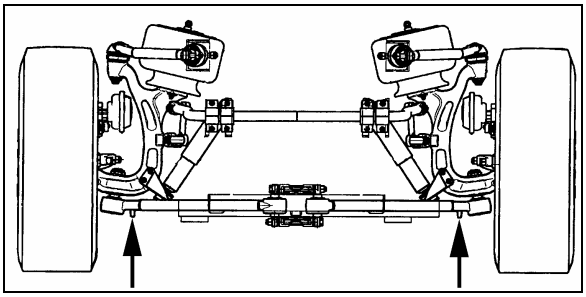
FRONT SUB-FRAME JACKING POINTS 18645



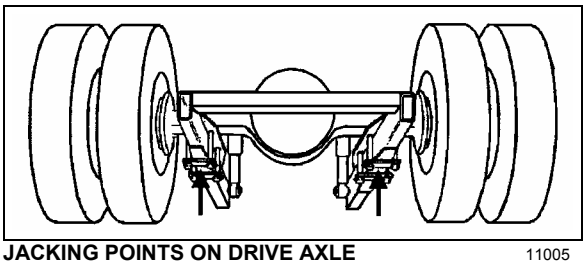
REAR SUB-FRAME JACKING POINTS

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.



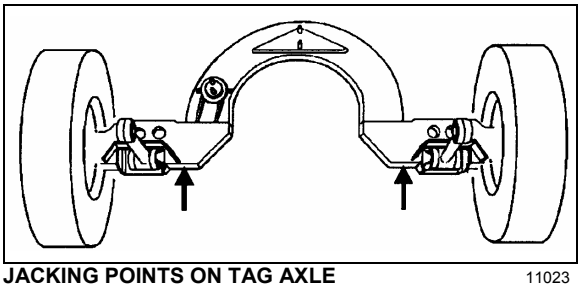
JACKING POINTS ON FRONT SUSPENSION 16139



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

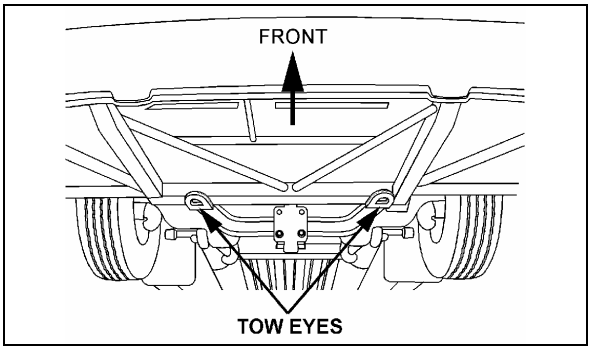
Jack is intended for lifting only. Do not get under the vehicle or load for any reason unless it is properly supported with safety stands and securely blocked.

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.

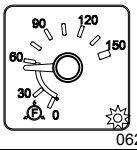
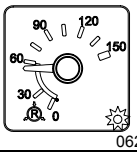
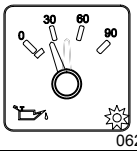
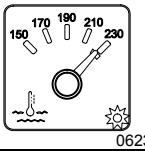
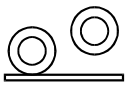
BACK-UP ALARM CANCEL SWITCH

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

Indicator Light	Audible Alarm	Condition
 06309	Yes	Major problem detected by engine ECM
 06273	Yes	Outside temperature close to water freezing point
 06292	Yes	Transmission fluid too hot

CLEANING

The cleaning information provided in this section is regarded as recommended cleaning practices. Cleaning results may vary depending on the condition of the stain. Always clean stains promptly for best results.

NOTE

Use only approved cleaning products such as Prevost A.P.C., all purpose cleaner (Prevost # 683664). Never use stain protection products on new fabrics. To prevent permanent staining of fabrics, clean stains soon after they occur. Incorrect treatment of stains can worsen them. Get help from a cleaning specialist to remove stubborn stains.

CAUTION

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

SEAT UPHOLSTERY

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

NOTE

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

Removal Of Stains And Marks

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

Method One:

1. Apply a nonflammable solvent (Trichloro-ethylene) to stained area with a clean, white absorbent rag;
2. Clean stain by starting at the outer edges of the stain and working in toward the center;
3. Blot affected area frequently with a clean, dry absorbent cloth to prevent stain rings caused by excess solvent.

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.

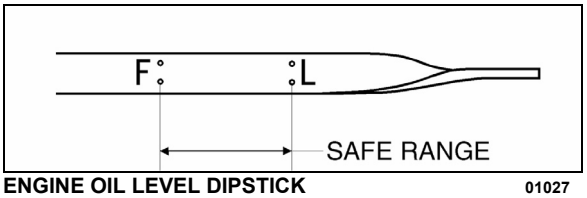
FLUID LEVEL VERIFICATION

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.

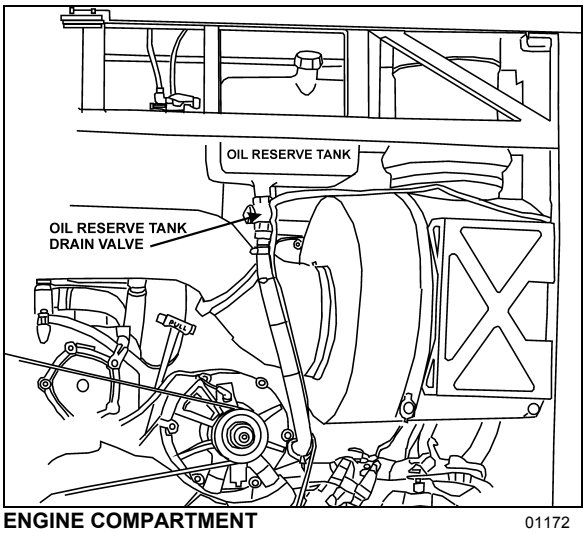
The oil level must be maintained between the two marks indicated on the dipstick. Do not let the oil level drop below the L mark. Add oil by opening the oil reserve tank drain valve or through the oil filler tube. Use the markings on the tank to check the quantity of oil added. Close the oil reserve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



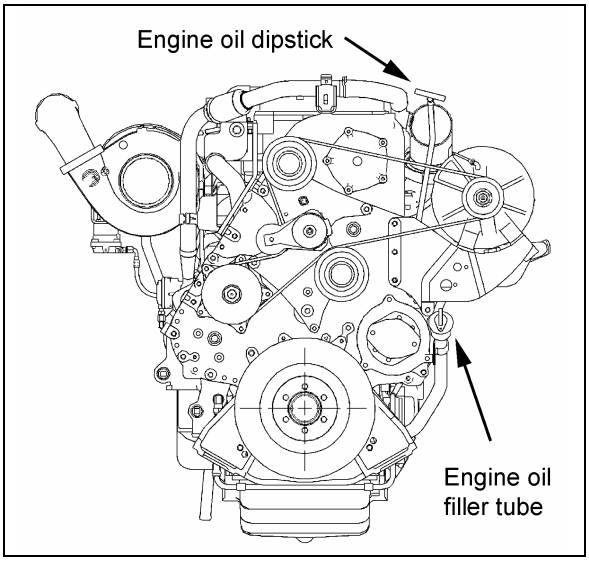
ENGINE OIL LEVEL DIPSTICK 01027

CAUTION

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



ENGINE COMPARTMENT 01172



ENGINE COMPARTMENT 01051

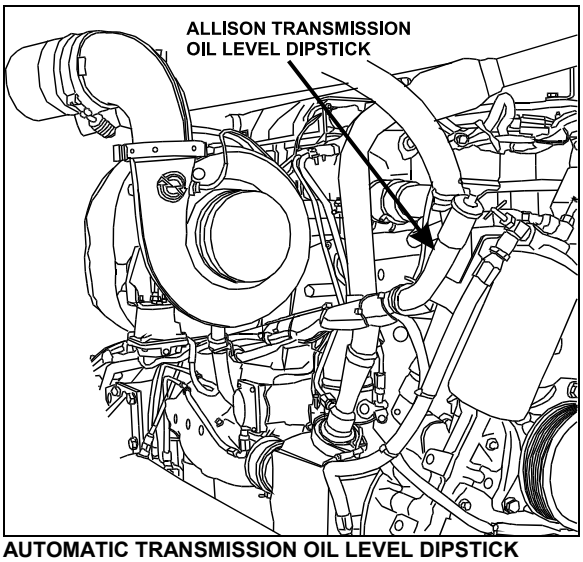
AUTOMATIC TRANSMISSION OIL LEVEL

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

The automatic transmission oil level dipstick is accessible through the engine compartment rear door and is located on the left side of the engine.

To check the transmission oil level, a "cold check" and a "hot check" must be performed. A cold check must be made when the transmission oil is between 60°F and 140°F (16°C and 60°C).

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



AUTOMATIC TRANSMISSION OIL LEVEL DIPSTICK

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.

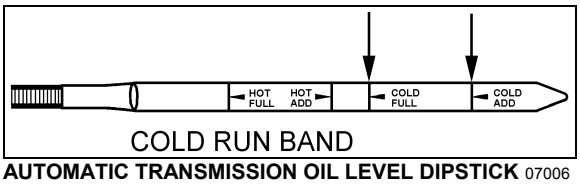
CAUTION

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.



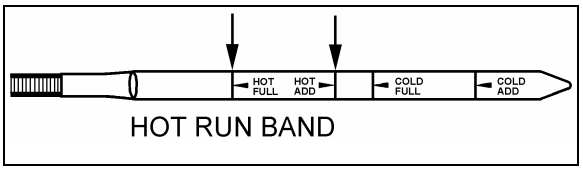
AUTOMATIC TRANSMISSION OIL LEVEL DIPSTICK 07006

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.

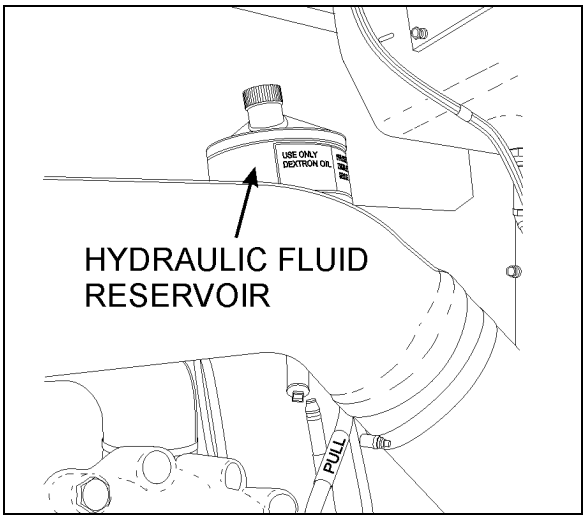
Replace dipstick and tighten the filler tube cap until the rubber seal is correctly seated.

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 14060

Check fluid level as follows:

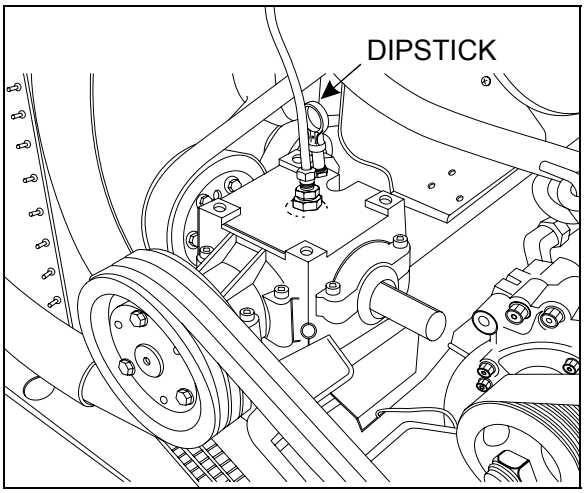
1. Stop engine, open engine compartment doors and place rear start switch to *OFF* position;
2. Unscrew and remove the dipstick located on top of the fluid tank and wipe with a clean rag;
3. Replace dipstick in tank, then remove to check fluid level;
4. Add hydraulic fluid until it reaches the FULL mark on the dipstick (use Dexron II, Dexron IIE, Dexron III or Mercon fluid type);
5. Replace and tighten dipstick;
6. Place engine rear start switch to *NORMAL* position. Close engine compartment doors.

RADIATOR FAN GEARBOX OIL LEVEL

The radiator fan is belt-driven by the engine crankshaft pulley through a gearbox and drive shaft. A dipstick located on top of the gearbox is used to check the radiator fan gearbox oil level.

Check radiator fan gear box oil level as follows:

1. Stop engine, open engine compartment R.H. side door and place battery master switch to the *OFF* position;
2. Open engine compartment doors and place engine starter switch to *OFF* position;
3. Remove the dipstick located on top of the gearbox and wipe with a clean rag;
4. Insert dipstick in gearbox case, then remove again to check mark;



ENGINE COMPARTMENT 05062

5. Add, if necessary, MOBIL SHC 630 synthetic lubricant (Prévost #180217) until it reaches "FULL" mark;

NOTE

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

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

DRIVE AXLE WHEEL BEARING OIL LEVEL

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

FRONT AND TAG AXLE WHEEL HUBS

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

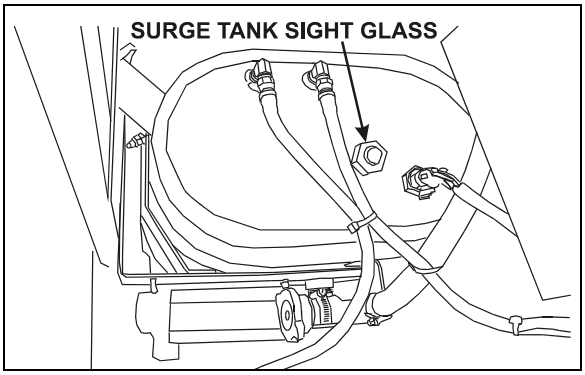
COOLANT FLUID LEVEL

Coolant level is correct when coolant is visible through the surge tank sight glass when cold. If coolant level is low, fill system with the same 50-50 mixture normally used.

CAUTION

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

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



ENGINE COMPARTMENT 05094

WARNING

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

WINDSHIELD WASHER & HEADLIGHTS WASHER RESERVOIRS

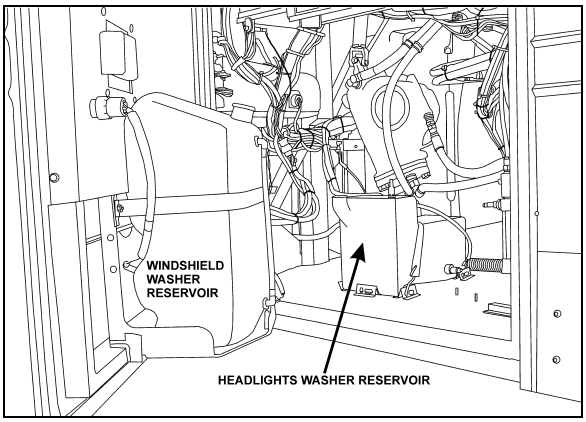
The windshield washer reservoir and headlights washer reservoir are located in the front service compartment. The windshield washer reservoir has a capacity of 5.3 US gallons (20 liters) while the headlights washer reservoir has a capacity of 2.6 US gallons (10 liters). Check fluid level regularly.

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.

WARNING

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

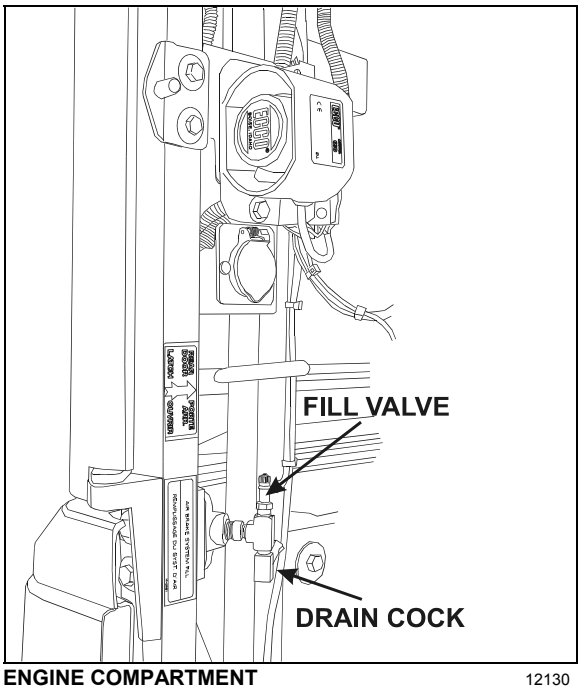


FRONT SERVICE COMPARTMENT RESERVOIRS 18381

OTHER VERIFICATIONS

AIR TANK PURGE

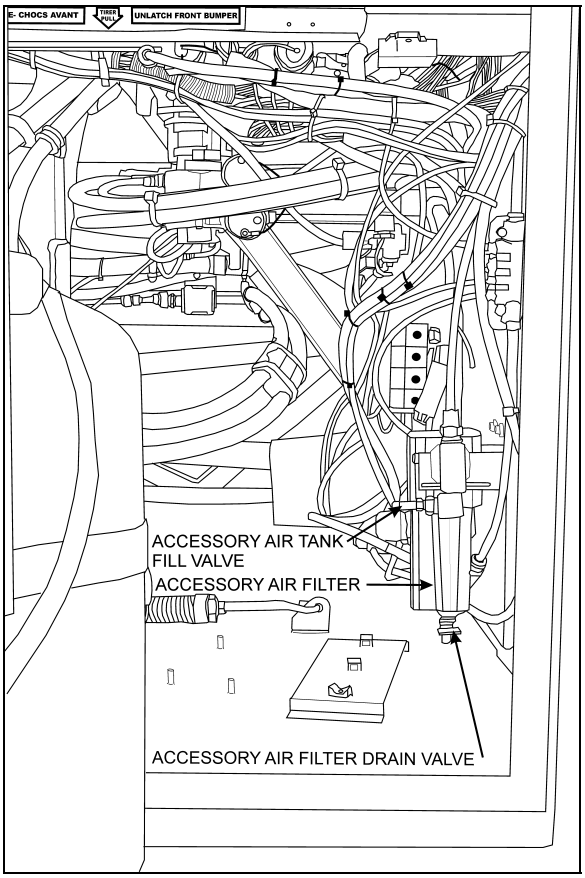
The vehicle may be equipped with up to twelve air tanks. Purge accessory and wet air tanks before each trip. The primary and secondary air tanks must be purged at every oil change. Oil changes should be scheduled at least every 12,500 miles (20 000 km).



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;

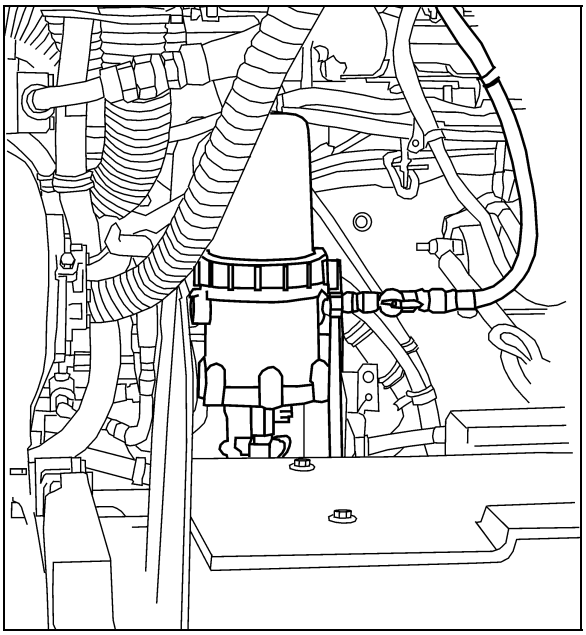
Check that seal on handle is intact;

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

Keep fire extinguishers clean.

FUEL FILTER / WATER SEPARATOR

The optional water separator installed in the engine compartment is used to prevent water from entering the fuel system. The water separator should be drained periodically or when the water separator telltale light on the dashboard illuminates. To drain water, loosen bleed screw below separator one quarter turn. Tighten bleed screw when finished.

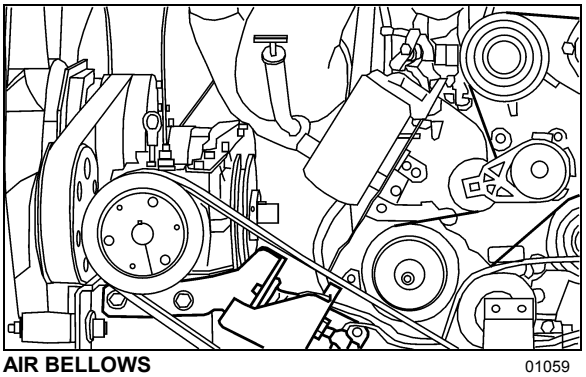


FUEL FILTER / WATER SEPARATOR 03032

BELT TENSION ADJUSTMENT

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

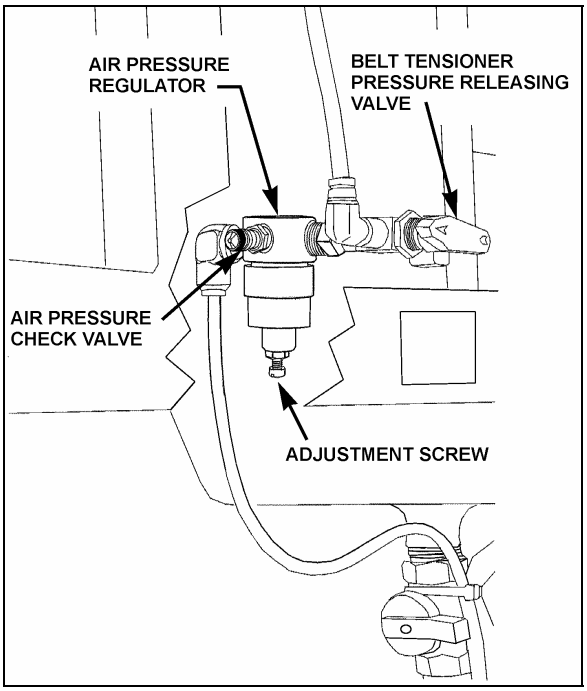
Belt tensioning is applied through air bellows which are adjusted by an air pressure regulating valve mounted in the engine compartment, right behind the belt tensioning pressure control valve. The correct pressure of 45 psi (310 kPa) for W5 and 50 psi (345 kPa) for W0 and WE is set at the factory. Periodically verify the pressure at the regulating valve using a tire pressure gauge and correct if necessary. The distance between the stop and the plate at the top of the bellow should be approximately ¼ " (7 mm).



AIR BELLOWS 01059

For belt replacement, air pressure must be released from bellows by means of the belt tensioning pressure control valve. This valve, mounted close to the pressure regulating valve, is manually operated. Before handling, be sure that all engine stopping safety precautions have been observed.

- 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.



PRESSURE REGULATING VALVE 12175

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.

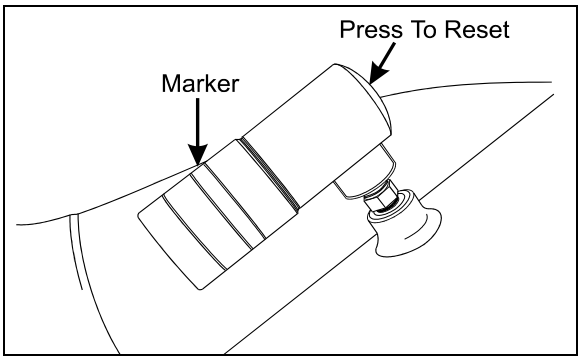
⚠ CAUTION

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.

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



RESTRICTION INDICATOR 01052

A/C AND HEATING SYSTEM AIR FILTERS

For maximum air conditioning and heating system efficiency, air filters should be inspected and cleaned as required in maintenance schedule to ensure proper ventilation of the evaporator and heating radiator cores. To clean filters, back flush with water, then dry with air.

⚠ CAUTION

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

⚠ CAUTION

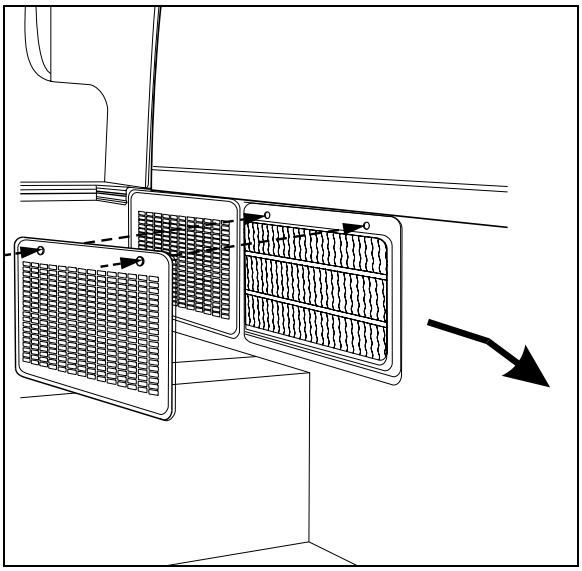
Be sure not to reverse filter upon installation.

DRIVER'S 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.



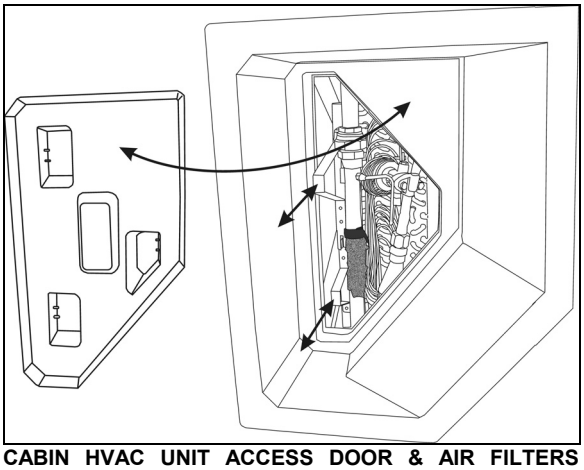
ACCESS TO DRIVER'S HVAC UNIT AIR FILTERS 22172

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.

LUBRICATION

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

PRE-STARTING INSPECTION

WITH ENGINE STOPPED:

Inspect hoses for leaks. Carefully inspect all fittings, clamps and ties. To prevent chafing, make sure hoses are not touching shafts, couplings, heated surfaces, sharp edges or other parts. Since hose clamps and ties can vibrate loose or fail over time, inspect frequently and tighten or replace as necessary.

Check for loose nuts and bolts. Visually inspect safety of compartment door latches. Test operation of all exterior lights.

CAUTION

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

Leaks

Check for leaks under vehicle and in compartments.

Correct leaking hoses immediately. Failure to correct leaks can cause severe damage to the equipment, as well as increase operating costs due to lost fluids. Treat fuel and oil leaks as an immediate fire hazard.

WARNING

Fire hazard - personal injury and property damage may result from fire caused by leaking flammable fluids.

Hose Service Life

Hoses have a limited service life. Thoroughly inspect hoses annually. Look for surface damage or indications of twisted, worn, crimped, cracked or leaking lines. Replace damaged hoses immediately.

Hoses should be replaced during major overhaul or after a maximum of five years service. Make sure replacement hoses match the original equipment manufacturer's specifications.

Wheels And Tires

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

Tire Pressure

Keep the tires inflated to the recommended inflation pressure to prolong tire life and for safety.

NOTE

Recommended tire inflation pressures are given in the "Coach Final Record", placed in the technical publications package supplied with the vehicle. The cold tire inflation pressures are on the Department of Transport certification plate located on the L.H. console besides the driver's seat.

WARNING

Do not exceed maximum inflation pressure. Incorrect tire pressure increases tire wear and could lead to loss of driving control because of reduced road handling. Check tire pressure regularly.

Doors

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

Tools And Spares

Make sure the vehicle is equipped with a wheel nut wrench, door keys, spare belts, reflectors and jack.

Air System

To purge water from air and accessory tanks, open drain cocks. Close drains when completed. Refer to heading "Air Tank Purge" in this chapter.

Water Separator

To purge water separator, loosen bleed screw. Tighten bleed screw after purging.

Coolant Level

Check coolant level. Coolant level is correct when visible in the filler neck of the surge tank. If coolant level is low, fill system with 50-50 coolant mixture. Refer to the vehicle "Maintenance Manual" for more information.

DANGER

Hot engine coolant is under pressure. Do not attempt to open the coolant filler cap when the engine is hot. Allow engine to cool before adding coolant.

Wheel Bearings

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

Windshield Washer Reservoir

Make sure windshield washer reservoir is full. For cold weather, use antifreeze windshield washer fluid.

Engine Oil

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

WARNING

Check the engine oil level with vehicle parked on a level surface and with the parking brake engaged.

Power Steering Oil Tank

Check steering oil level. Refer to heading "Power Steering Fluid Level" in this chapter.

Belts

Check for loose, worn or broken belts.

Belt Tension Adjustment

Check belt tension using a pressure gauge. Refer to heading "Belt Tension Adjustment" in "Other Verifications" section in this chapter.

Fire Extinguishers

Check fire extinguishers to make sure they are ready for operation. Refer to heading "Fire Extinguishers" in "Other Verifications" section in this chapter.

Emergency Exits

Verify emergency exits for correct operation.

Driver's Section

Adjust driver's mirrors and seat.

WITH ENGINE RUNNING:

Leaks

Walk around vehicle and listen for air leaks.

Turbocharger

Check for leaks and listen for unusual sounds coming from the turbocharger.

Automatic Transmission

Check automatic transmission oil level. Refer to heading "Automatic Transmission Oil Level" in this chapter.

Gauges and Buzzers

Perform a telltale light test (see "Controls and Instruments" chapter). Make sure gauges are in normal operating condition. Indicator lights and buzzers should all be *OFF* before driving.

Fuel Level

Make sure fuel level is sufficient.

Service Brakes

Check for correct pressure build-up. Pressure loss should not exceed 3 psi/minute (21 kPa/minute) with engine stopped and without

brake applied. Perform a full brake application. Air loss should not exceed 7 psi/minute (48 kPa/ minute).

Brake Test

Release parking and emergency brakes. Pump service brake pedal until air pressure drops to 65 psi (448 kPa). Make sure the warning buzzer operates and that the emergency brakes apply (the control valve knob lifts up). Allow air pressure to reach 95 psi (655 kPa) before releasing parking brake.

Parking And Emergency Brake Test

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

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:

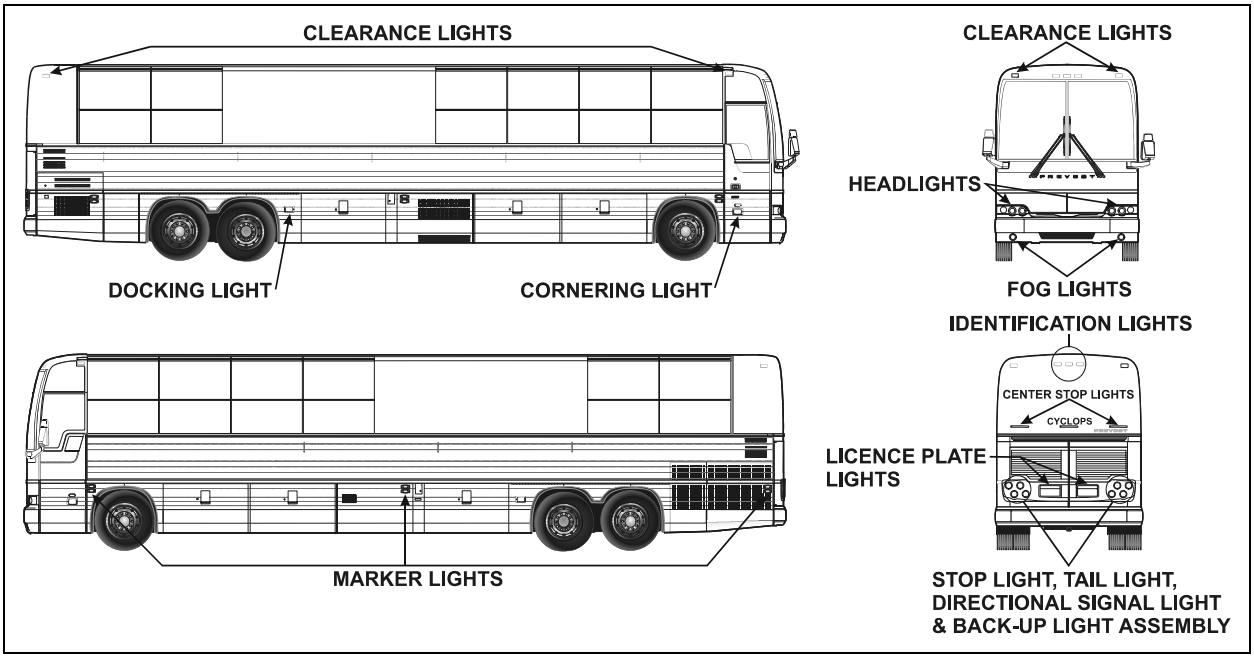
- Directional signals.
- Marker lights.
- Directional signals.
- Marker lights.

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

FIRST SERVICE ON NEW VEHICLE

NOTE
Refer to Maintenance Manual for precise service schedule.

ENGINE OIL

Preliminary oil change is not required since the engine has been test-run at the factory. Change oil and filter every 12,500 miles (20 000 km) or once a year, whichever comes first.

AUTOMATIC TRANSMISSION OIL FILTER

Replace Allison transmission main filter cartridge after the first 5,000 miles (8 000 km) and then, according to the lubrication and servicing schedule, depending if the vehicle is equipped or not with a retarder and depending on the type of oil used (Dexron-III/VI or TranSynd fluid).

COOLANT SYSTEM STRAINER

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

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

GENERAL RECOMMENDATIONS

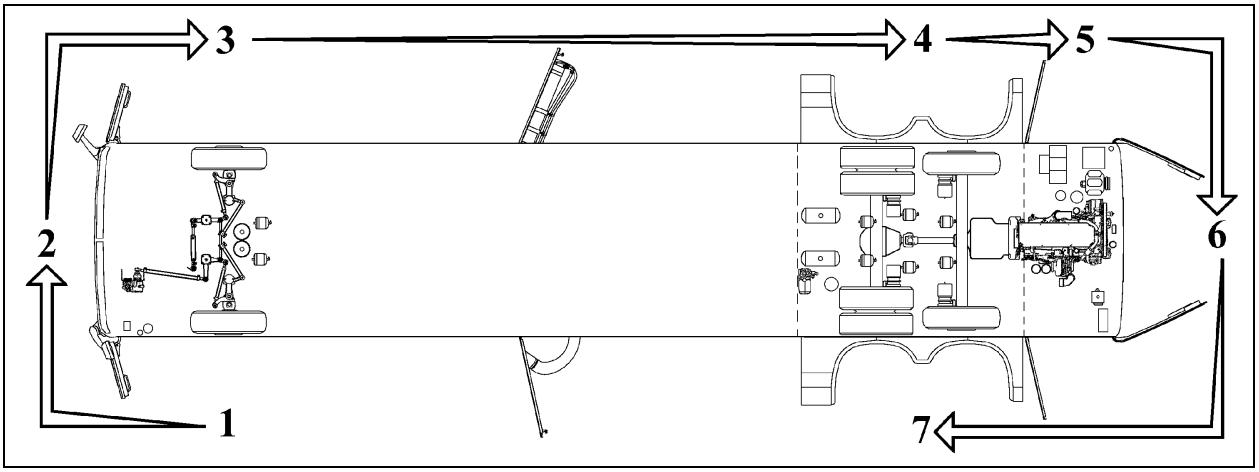
- Understand basic principles of vehicle operation;
- Always maintain the vehicle in good running condition;
- Do not drive with low fuel. If the fuel tank runs dry, the engine will not start until the air is bled from the fuel system. Refer to "Maintenance Manual" for more information;
- Allow engine to run for at least two minutes at slow idle before shutting *OFF*;
- Engine should be at idle when shifting from neutral (N) to forward (D) or from neutral (N) to reverse (R);
- The automatic transmission does not have a park (P) position. Place transmission in neutral (N) position and apply parking brake when the vehicle is stopped. A warning buzzer will sound if the engine is stopped and the parking brake has not been applied when foot pressure is removed from the brake pedal;
- Always follow the procedures described in this manual;

- Unless stated otherwise, shut *OFF* the engine before performing all servicing, lubrication and maintenance tasks;
- Do not attempt to push or pull-start a vehicle equipped with an automatic transmission;
- The vehicle may be damaged if towed with the axle shafts or driveshaft connected. Do not push or pull-start the vehicle in first or reverse gears;
- Two chemical fire extinguishers are stored near the back of the driver's seat. In case of fire, immediately evacuate all occupants. Human life safety is the first priority. Do not attempt to extinguish the fire if there is immediate danger or risk for personal injury;
- When driving on ice and snow, accelerate and decelerate gradually.

WARNING

Report all problems affecting passenger or driver safety to your service center or an authorized service center. Have problems corrected immediately.

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

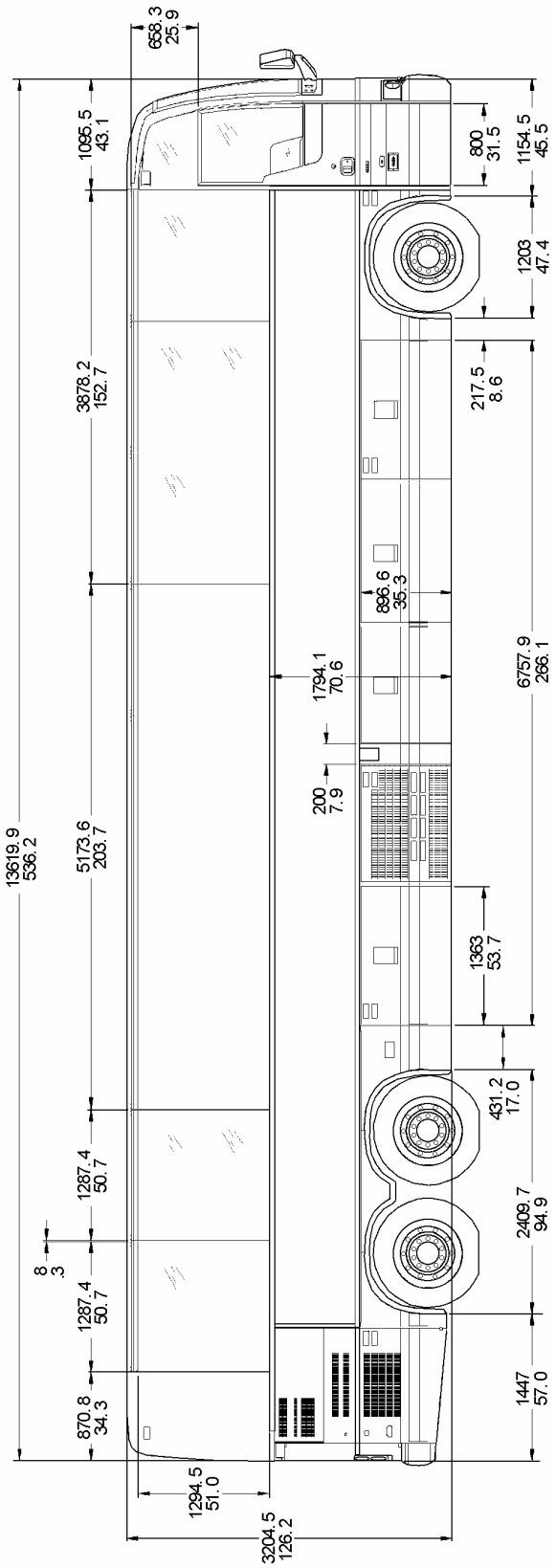
- Check condition of wheels and rims. Especially look for cracks, missing nuts, bent or broken studs.
- Check condition of tires: properly inflated, no serious cuts, bulges, tread wear or any signs of misalignment; valve stems not touching wheels or rims; valve caps in place and no objects stuck between 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	W0-40	W5-45 WE-45
Overall length (including bumpers)	40'0" (12,2 m)	45' (13,7 m)
Overall width	102" (2,59 m)	
Overall height	148 3/4" (3,78 m)	
Wheelbase (center of front axle to center of drive axle)	279" (7087 mm)	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	86" (2184 mm)	89" (2261 mm)
Entrance door opening width	30" (762 mm)	
Front overhang	68¾" (1746 mm)	
Rear overhang	82¾" (2102 mm)	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)	38'-5" (11709mm)	W5-45: 41'-10" (12751 mm) WE-45: 44'-3" (13487 mm)
	W0-40 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	W0-40 WE-45	W5-45
Engine oil (in crankcase)	37 U.S. qts (35 l)	
Engine oil (in reserve tank)	8.4 U.S. qts (8,0 l)	
Fuel tank (legal capacity equal to 95% of volume)	250 U.S. gal. (945 l)	208 U.S. gal. (787 l) plus 90 U.S. gal. (opt) (341 l)
Cooling system	18.7 U.S. gal. (71 l)	
	27.6 U.S. gal. (104,5 l)	
Transmission (does not include external circuit)	6 U.S. gal. (23 l) 6.9 U.S. gal. (26 l) with retarder	
Differential oil	20 U.S. qts (18,7 l)	
Power steering reservoir	4.0 U.S. qts (3,8 l)	
A/C compressor oil	4.5 U.S. qts (4,3 l)	
Windshield washer reservoir	5.3 U.S. gal. (20 l)	
Refrigerant	24.1 lb (11 kg)	

FUEL TYPE

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

WHEELS AND TIRES

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

RECOMMENDED TIRE INFLATION PRESSURE AT MAXIMUM COLD LOAD

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

WARNING

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

CAUTION

These tire pressures are established in accordance with the maximum allowable load on each axle. A lower pressure is recommended if the axle load is less than the above specifications. Weigh vehicle fully loaded and pressurize according to tire manufacturer's recommendations. For non standard tire and wheel specifications, see Prévost tire pressure tabulation in "Coach Final Record" or special specification chart affixed next to the DOT certification plate.

BELTS

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

ENGINE

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

Rated horsepower

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

Peak torque

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

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

TRANSMISSION

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

GEAR RATIOS

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

BRAKES

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

BRAKE CHAMBER EFFECTIVE AREA:

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

AIR SYSTEM

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

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

ANTI-LOCK BRAKING SYSTEM (ABS)

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

The Electronic Control 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".

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

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	6
Operating speed	700 to 6 000 rpm
Oil capacity	6.0 U.S. oz (0,18 l)
Approved oil	ZXL100PG

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

Heavy-duty engine oil SAE 15W-40 meeting API Classification CI-4.

AUTOMATIC TRANSMISSION

The transmission must be filled with *Dexron III/VI* automatic transmission fluid, Castrol TranSynd Synthetic Fluid or any equivalent Class C4 hydraulic fluid.

DIFFERENTIAL

Multigrade gear oil meeting MIL-L-2105-D: 85W140 is recommended for use in drive axle. This lubricant performs well over a broad temperature range, providing good gear and bearing protection in a variety of climates. If temperature drops below 10°F (-12°C), 80W90 should be used, and below -15°F (-26°C), 75W90 should be used. In extreme conditions or for better performance, full synthetic gear oil can be used.

FAN GEARBOX

Synthetic oil *Mobil SHC 630 (Prévost #180217)* is recommended for the fan gearbox.

POWER STEERING RESERVOIR

This reservoir must be filled with automatic transmission oil, *Dexron III/VI* or Mercon fluid.

DDEC V DIAGNOSTIC CODES

To read the diagnostic codes, a Diagnostic Data Reader should be plugged into the receptacle located on the lower side panel of the L.H. control panel. To read diagnostic codes as blink codes, momentarily depress the STOP ENGINE OVERRIDE switch while the ignition is *ON*, the engine is idling or shut off. Active codes will be flashed on the STOP ENGINE indicator light followed by the inactive codes being flashed on the CHECK ENGINE indicator light. The cycle is repeated until the operator depresses the STOP ENGINE OVERRIDE switch again. For example: code “43” consists of four flashes, followed by a short pause, then another three flashes in quick succession. The following table is a list of the DDEC diagnostic codes.

DDEC V Code	PID	SID	FMI	DESCRIPTION
11	187	--	4	Variable Speed Governor Sensor Voltage Low
11	187	--	7	Variable Speed Governor Switch System Not Responding
12	187	--	3	Variable Speed Governor Sensor Voltage High
13	111	--	4	Coolant Level Sensor Input Voltage Low
13	111	--	6	Add Coolant Level Sensor Input Voltage Low
13		146	6	EGR Valve Current too High
14	52	--	3	Intercooler Coolant Temperature Sensor Input Voltage High
14	110	--	3	Coolant Temperature Sensor Input Voltage High
14	175	--	3	Oil Temperature Sensor Input Voltage High
15	52	--	4	Intercooler Coolant Temperature Sensor Input Voltage Low
15	110	--	4	Coolant Temperature Sensor Input Voltage Low
15	175	--	4	Oil Temperature Sensor Input Voltage Low

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

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

DDEC V Code	PID	SID	FMI	DESCRIPTION
39	—	147	14	EGR Flow too low
39	—	147	7	VNT Vanes Not Responding – EGR
41	--	21	0	Too Many CKP Sensor (missing CMP Sensor)
42	--	21	1	Too few CKP Sensor (missing CKP Sensor)
43	111	--	1	Coolant Level Low
44	52	--	0	Intercooler Coolant Temperature High
44	105	--	0	Intake Manifold Temperature High
44	105	--	14	Engine Power Derate Due to Intake Manifold Temperature
44	110	--	0	Coolant Temperature High
44	110	--	14	Engine Power Derate Due to Coolant Temperature
44	172	--	0	Air Inlet Temperature High
44	175	--	0	Oil Temperature High
45	19	--	1	High Range Oil Pressure Low
45	100	--	1	Oil Pressure Low
46	168	--	1	ECM Battery Voltage Low
46	--	155		Injector V (reg) Voltage Failed Low
46	--	211	1	Sensor Supply Pins V-11/V-12 Low
46	--	212	4	Injector V (slope) Voltage Failed Low
46	--	214	1	RTC Backup Battery Voltage Low, Pin E-59
46	--	221	4	Injector I (pull-in) Voltage Failed Low
46	--	232	1	Sensor Supply Voltage Low, Pin E-12/E-26
47	18	--	0	High Range Fuel Pressure High
47	94	--	0	Fuel Pressure High
47	102	--	0	Turbo Boost Pressure High
47	102	--	14	Engine Power Derate Due to Turbo Boost Pressure
47	106	--	0	Air Inlet Pressure High
47	164	--	0	Injection Control Pressure High
48	18	--	1	High Range Fuel Pressure Low
48	94	--	1	Fuel Pressure Low
48	106	--	1	Air Inlet Pressure Low
48	164	--	1	Injection Control Pressure Low
48	351	--	1	TCI Temperature Low
48	404	—	1	Turbo Compressor Temperature Out Low
48	404	--	14	Engine Power Derate Due to Turbo Compressor Out Temperature
48	411	--	1	EGR Differential Pressure Low
48	412	--	1	EGR Temperature Low

DDEC V Code	PID	SID	FMI	DESCRIPTION
49	351	--	0	TCI Temperature High
49	404	--	0	Turbo Compressor Out Temperature High
51	351	--	3	TCI Temperature Circuit Failed High
51	404	--	3	Turbo Compressor Out Temperature Sensor Input Voltage High
52	--	254	12	A/D Conversion Fail
53	--	253	2	Nonvolatile Checksum Incorrect
53	--	253	12	EEPROM Write Error
53	--	253	13	Out of Calibration
54	84	--	12	Vehicle Speed Sensor Fault
55	--	216	14	Other ECM Fault (This fault is logged in conjunction with another fault to indicate missing information from another ECM.)
55	--	231	12	J1939 Data Link Fault
55	--	248	8	Proprietary Data Link Fault (Master)
55	--	248	9	Proprietary Data Link Fault (Receiver)
56	--	250	12	J1587 Data Link Fault
57	--	249	12	J1922 Data Link Fault
58	92	--	0	Torque Overload
61	--	xxx	0	Injector xxx Response Time Long
62	--	26	3	Aux. Output #1 Short to Battery (+) – Pin V-4
62	--	26	4	Aux. Output #1 Open Circuit - Pin V-4
62	—	26	7	Aux. Output #1 Mechanical System Not Responding Properly - Pin V-4
62	--	40	3	Aux. Output #2 Short to Battery (+) - Pin V-5
62	--	40	4	Aux. Output #2 Open Circuit - Pin V-5
62	—	40	7	Aux. Output #2 Mechanical System Not Responding Properly – Pin V-5
62	--	53	3	Aux. Output #5 Short to Battery (+) - Pin V-6
62	--	53	4	Aux. Output #5 Open Circuit - Pin V-6
62	—	53	7	Aux. Output #5 Mechanical System Not Responding Properly - Pin V-6
62	--	54	3	Aux. Output #6 Short to Battery (+) - Pin V-7
62	--	54	4	Aux. Output #6 Open Circuit - Pin V-7
62	--	54	7	Aux. Output #6 Mechanical System Not Responding Properly - Pin V-7
62	--	55	3	Aux. Output #7 Short to Battery (+) - Pin V-40
62	--	55	4	Aux. Output #7 Open Circuit - Pin V-40
62	—	55	7	Aux. Output #7 Mechanical System Not Responding Properly - Pin V-40

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

DDEC V Code	PID	SID	FMI	DESCRIPTION
63	--	268	7	PWM #6 Mechanical System Failed - Pin E-11
64	103	--	0	Turbo Overspeed
64	103	--	8	Turbo Speed Sensor Input Failure – Abnormal Period
65	51	--	0	Throttle Plate Position Above Normal Range
65	51	--	1	Throttle Plate Position Below Normal Range
65	51	--	2	Throttle Plate Position Erratic
65	51	--	7	Throttle Plate Not Responding
65	107	--	3	Air Filter Restriction Sensor Voltage High
65	107	--	4	Air Filter Restriction Sensor Voltage Low
66	99	--	3	Oil Filter Restriction Sensor Voltage High
66	99	--	4	Oil Filter Restriction Sensor Voltage Low
66	--	76	0	Engine Knock Level Above Normal Range
66	--	76	3	Engine Knock Level Sensor Input Voltage High
66	--	76	4	Engine Knock Level Sensor Input Voltage Low
66	--	76	7	Engine Knock Level Sensor Not Responding
67	20	--	3	High Range Coolant Pressure Sensor Input Voltage High
67	20	--	4	High Range Coolant Pressure Sensor Input Voltage Low
67	106	--	3	Air Inlet Pressure Sensor Input Voltage High
67	106	--	4	Air Inlet Pressure Sensor Input Voltage Low
67	109	--	3	Coolant Pressure Sensor Input Voltage High
67	109	--	4	Coolant Pressure Sensor Input Voltage Low
68	--	230	5	TPS Idle Validation Circuit Fault (open circuit)
68	--	230	6	TPS Idle Validation Circuit Fault (short to ground)
71	--	xxx	1	Injector xxx Response Time Short
72	84	--	0	Vehicle Overspeed
72	84	--	11	Vehicle Overspeed (Absolute)
72	--	65	0	Oxygen Content Too High
72	--	65	1	Oxygen Content Too Low
73	107	--	0	Air Filter Restriction High
73	--	77	0	Gas Valve Position Above Normal Range
73	--	77	1	Gas Valve Position Below Normal Range
73	--	77	3	Gas Valve Position Input Voltage High
73	--	77	4	Gas Valve Position Input Voltage Low
73	--	77	7	Gas Metering Valve Not Responding
74	70	--	4	Optimized Idle Safety Loop Short to Ground
74	99	--	0	Oil Filter Restriction High
75	168	--	0	ECM Battery Voltage High

DDEC V Code	PID	SID	FMI	DESCRIPTION
75	--	155	3	Injector V (reg) Voltage Failed High
75	--	211	0	Sensor Supply Pins V-11/V-12 Voltage High
75	--	212	3	Injector V (slope) Voltage Failed High
75	--	221	3	Injector V (pull-in) Voltage Failed High
75	--	214	0	RTC Backup Battery Voltage High
75	--	232	0	Sensor Supply Voltage High, Pin E-26
76	121	--	0	Engine Overspeed With Engine Brake
77	19	—	0	High Range Oil Pressure High
77	20	—	0	High Range Coolant Pressure High
77	21	—	0	ECM Temperature Above Range
77	21	—	1	ECM Temperature Below Range
77	21	—	3	ECM Temperature Above Failed High
77	21	—	4	ECM Temperature Above Failed Low
77	72	—	0	Blower Bypass Door Position High
77	72	—	1	Blower Bypass Door Position Low
77	73	—	1	Fire Pump Pressure Low
77	81	—	0	Exhaust Back Pressure High
77	81	—	1	Exhaust Back Pressure Low
77	81	—	3	Exhaust Back Pressure Sensor Voltage High
77	81	—	4	Exhaust Back Pressure Sensor Voltage Low
77	81	—	12	Exhaust Back Pressure at Rampdown Threshold
77	95	—	1	Fuel Filter Differential Pressure Low
77	99	—	1	Oil Filter Differential Pressure Low
77	100	—	0	Engine Oil Pressure High
77	102	—	1	Turbo Boost Pressure Low
77	105	—	1	Inlet Manifold Temperature Low
77	107	—	1	Air filter Restriction Pressure Low
77	108	—	0	Barometric Pressure High
77	108	—	1	Barometric Pressure Low
77	109	—	0	Coolant Pressure High
77	110	—	1	Coolant Temperature Low
77	111	—	0	Coolant Level High
77	171	—	0	Ambient Air Temperature High
77	171	—	1	Ambient Air Temperature Low
77	172	—	1	Air Inlet Temperature Low
77	174	—	0	Fuel Temperature High
77	174	—	1	Fuel Temperature Low

DDEC V Code	PID	SID	FMI	DESCRIPTION
77	175	—	1	Engine Oil Temperature Low
77	222	—	14	Anti-Theft Fault Present
77	251	—	10	Clock Module Abnormal Rate of Change
77	251	—	13	Clock Module Failure
77	252	—	10	Clock Module Abnormal Rate of Change
77	252	—	13	Clock Module Failure
77	354	—	0	Relative Humidity Above Range
77	354	—	1	Relative Humidity Below Range
77	446	—	0	Cylinder Head Temperature Above Range
77	—	151	11	Service Now Lamp Fault Expiration
78	86	--	14	Cruise Control/Adaptive Cruise Control Fault
81	98	--	3	Oil Level Sensor Input Voltage High
81	101	--	3	Crankcase Pressure Sensor Input Voltage High
81	153	--	3	Extended Crankcase Pressure Input Voltage High
81	164	--	3	Injection Control Pressure Sensor Input Voltage High
81	173	--	3	Exhaust Temperature Sensor Input Voltage High
81	411	—	3	EGR Delta Pressure Sensor Circuit Failed High
81	412	—	3	EGR Temperature Circuit Failed High
81	412	—	9	EGR Temperature Network Sensor Not Responding
81		20	3	Timing Actuator Failed High
81		20	4	Timing Actuator Failed Low
81	--	129	3	Exhaust Port Temperature #1 Sensor Voltage High
81	--	130	3	Exhaust Port Temperature #2 Sensor Voltage High
81	--	131	3	Exhaust Port Temperature #3 Sensor Voltage High
81	--	132	3	Exhaust Port Temperature #4 Sensor Voltage High
81	--	133	3	Exhaust Port Temperature #5 Sensor Voltage High
81	--	134	3	Exhaust Port Temperature #6 Sensor Voltage High
81	--	135	3	Exhaust Port Temperature #7 Sensor Voltage High
81	--	136	3	Exhaust Port Temperature #8 Sensor Voltage High
81	--	137	3	Exhaust Port Temperature #9 Sensor Voltage High
81	--	138	3	Exhaust Port Temperature #10 Sensor Voltage High
81	--	139	3	Exhaust Port Temperature #11 Sensor Voltage High
81	--	140	3	Exhaust Port Temperature #12 Sensor Voltage High
81	--	141	3	Exhaust Port Temperature #13 Sensor Voltage High
81	--	142	3	Exhaust Port Temperature #14 Sensor Voltage High
81	--	143	3	Exhaust Port Temperature #15 Sensor Voltage High
81	--	144	3	Exhaust Port Temperature #16 Sensor Voltage High

DDEC V Code	PID	SID	FMI	DESCRIPTION
81	—	277	9	EGR Rate Sensor not Responding
81	—	277	12	EGR Rate Sensor Failed
82	98	--	4	Oil Level Sensor Input Voltage Low
82	101	--	4	Crankcase Pressure Sensor Input Voltage Low
82	153	--	4	Extended Crankcase Pressure Input Voltage Low
82	164	--	4	Injection Control Pressure Sensor Input Voltage Low
82	173	--	4	Exhaust Temperature Sensor Input Voltage Low
82	411	—	4	EGR Delta Pressure Sensor Circuit Failed Low
82	412	—	4	EGR Temperature Circuit Failed Low
82	412	—	12	EGR Temperature Network Sensor Failed
82	--	129	4	Exhaust Port Temperature #1 Sensor Voltage Low
82	--	130	4	Exhaust Port Temperature #2 Sensor Voltage Low
82	--	131	4	Exhaust Port Temperature #3 Sensor Voltage Low
82	--	132	4	Exhaust Port Temperature #4 Sensor Voltage Low
82	--	133	4	Exhaust Port Temperature #5 Sensor Voltage Low
82	--	134	4	Exhaust Port Temperature #6 Sensor Voltage Low
82	--	135	4	Exhaust Port Temperature #7 Sensor Voltage Low
82	--	136	4	Exhaust Port Temperature #8 Sensor Voltage Low
82	--	137	4	Exhaust Port Temperature #9 Sensor Voltage Low
82	--	138	4	Exhaust Port Temperature #10 Sensor Voltage Low
82	--	139	4	Exhaust Port Temperature #11 Sensor Voltage Low
82	--	140	4	Exhaust Port Temperature #12 Sensor Voltage Low
82	--	141	4	Exhaust Port Temperature #13 Sensor Voltage Low
82	--	142	4	Exhaust Port Temperature #14 Sensor Voltage Low
82	--	143	4	Exhaust Port Temperature #15 Sensor Voltage Low
82	--	144	4	Exhaust Port Temperature #16 Sensor Voltage Low
82	—	277	12	EGR Rate Sensor Failed
82	412	—	9	EGR Temperature Smart Sensor not Responding
82	412	—	12	EGR Temperature Smart Sensor failed
83	73	—	0	Pump Pressure High
83	98	--	0	Oil Level High
83	101	--	0	Crankcase Pressure High
83	153	--	0	Extended Crankcase Pressure High
83	173	--	0	Exhaust Temperature High
83	411	—	0	EGR Delta Pressure High
83	412	—	0	EGR Temperature High
83	--	129	0	Exhaust Port Temperature #1 High

DDEC V Code	PID	SID	FMI	DESCRIPTION
83	--	130	0	Exhaust Port Temperature #2 High
83	--	131	0	Exhaust Port Temperature #3 High
83	--	132	0	Exhaust Port Temperature #4 High
83	--	133	0	Exhaust Port Temperature #5 High
83	--	134	0	Exhaust Port Temperature #6 High
83	--	135	0	Exhaust Port Temperature #7 High
83	--	136	0	Exhaust Port Temperature #8 High
83	--	137	0	Exhaust Port Temperature #9 High
83	--	138	0	Exhaust Port Temperature #10 High
83	--	139	0	Exhaust Port Temperature #11 High
83	--	140	0	Exhaust Port Temperature #12 High
83	--	141	0	Exhaust Port Temperature #13 High
83	--	142	0	Exhaust Port Temperature #14 High
83	--	143	0	Exhaust Port Temperature #15 High
83	--	144	0	Exhaust Port Temperature #16 High
84	98	--	1	Oil Level Low
84	101	--	1	Crankcase Pressure Low
84	153	--	1	Extended Crankcase Pressure Low
85	190	--	0	Engine Overspeed
85	190	--	14	Engine Overspeed Signal
86	73	--	3	Pump Pressure Sensor Input Voltage High
86	108	--	3	Barometric Pressure Sensor Input Voltage High
87	73	--	4	Pump Pressure Sensor Input Voltage Low
87	108	--	4	Barometric Pressure Sensor Input Voltage Low
88	20	--	1	High Range Coolant Pressure Low
88	109	--	1	Coolant Pressure Low
89	95	--	0	Fuel Restriction High
89	111	--	12	Maintenance Alert Coolant Level Fault

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 Transmission Control Module (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.

110 Technical Information

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:

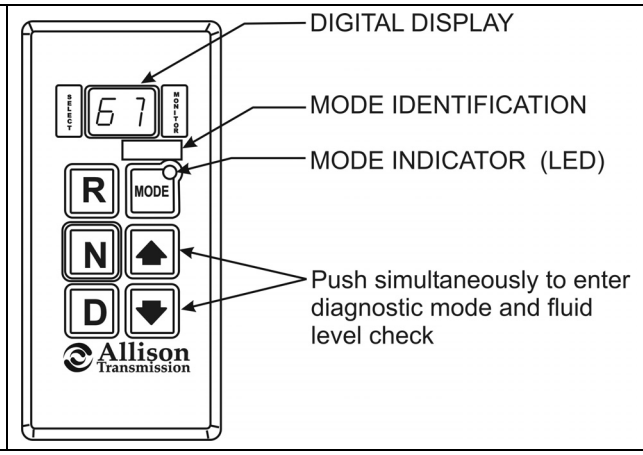
Exemple: Code P0722

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	d	1	MONITOR
		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.



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.

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 6th Gear Ratio	Yes	DNS, Attempt 5th, then 3rd
P0731	Incorrect 1st Gear ratio	Yes	DNS, Attempt 2nd, then 5th
P0732	Incorrect 2nd Gear ratio	Yes	DNS, Attempt 3rd, then 5th

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)

DTC	Description	CHECK TRANS Light	Inhibited Operation Description
P2685	Actuator Supply Voltage 3 (HSD3) Low	Yes	DNS, SOL OFF (hydraulic default)
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».

LIGHT BULB DATA

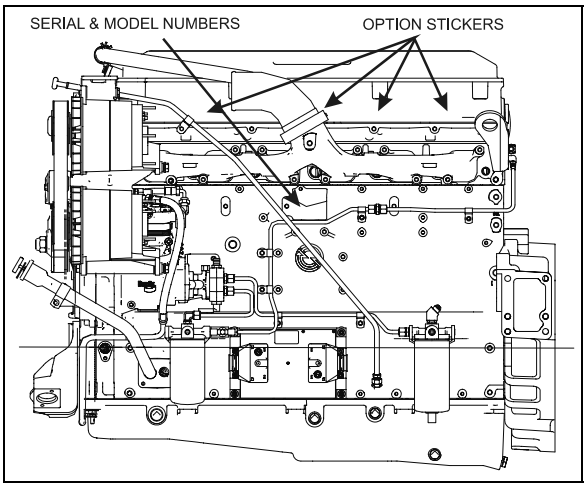
LIGHT BULB DATA					
APPLICATION	**PREVOST PART NO.**	**TRADE OR SAE NUMBER**	**WATTS OR CANDLE POWER**	**VOLTS**	**QTY**
EXTERIOR LIGHTING					
Hi/Lo-beam	930291	9004	65/45 W	12	2
Lo-Beam Xenon (optional)	930388	D2S	35 W	12	2
Docking & cornering	930319	9415	37.5W	12	4
Fog	561882	H3 (OSRAM)	55 W	12	2
License plate (sealed)	930266	TL 15206	---	12	2
Side Lamp (red)	930340	Grote 47072-3	---	12	12
Side Lamp (amber)	930341	Grote 47073	---	12	12
Identification (red)	930334	25350R	---	12	6
Clearance (red)	930334	25350R	---	12	8
Identification (amber)	930337	25350Y	---	12	6
Clearance (amber)	930337	25350Y	---	12	8
Front directional (hazard & marker)	562135	3057	32/3W	12	2
Rear directional	560589	1156	32 W	12	4
Stop	560589	1156	32 W	12	8
Back-up	560589	1156	32 W	12	4
Center stop	930330	HELLA 96208	---	12	3
Tail	560123	67	4 W	12	4
Exterior compartment (except engine)	562278	HELLA 78207 OSRAM 6429	10 W	24	12
Engine compartment	930383	Sealed	25 W	12	2
INTERIOR LIGHTING					
Instrument cluster lights	562838	2721 MFX (OSRAM)	---	---	---
Telltale panel assy.	562791	---	---	---	1
Step light	562278	HELLA 78207 OSRAM 6429	10 W	24	3

PLATES AND CERTIFICATION

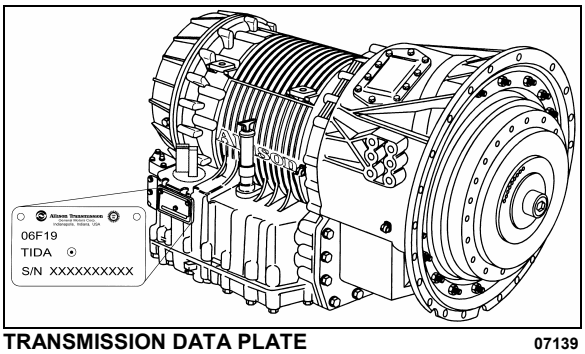
The main components of the vehicle such as engine, transmission, axles and chassis are identified by different serial numbers. It may be necessary to locate these numbers for warranty purposes.

The engine serial and model number are stamped on the cylinder block (as viewed from the flywheel end) on the left side just below the fire deck and above the cast-in Detroit Diesel logo "".

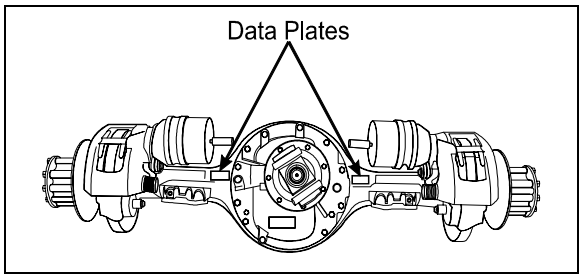
In addition, option decals are located on the rocker cover (starter side). The engine serial and model number and a list of the optional engine equipment are written on these decals. Refer to this information when ordering replacement parts.



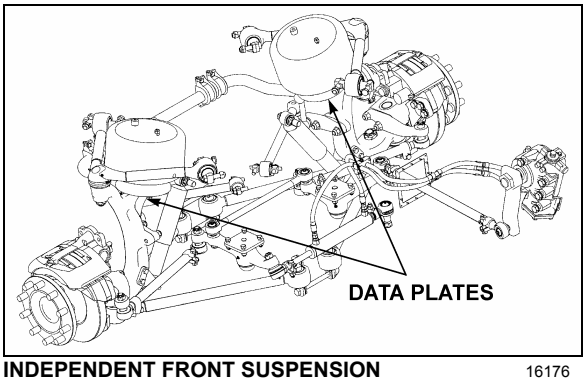
SERIES 60 ENGINE 00043



TRANSMISSION DATA PLATE 07139



DRIVE AXLE 11019



INDEPENDENT FRONT SUSPENSION 16176

SAFETY CERTIFICATION

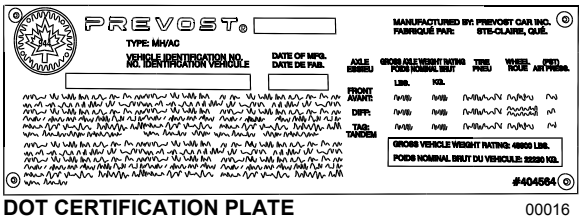
Vehicle components meet specifications and standards as follows:

- 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

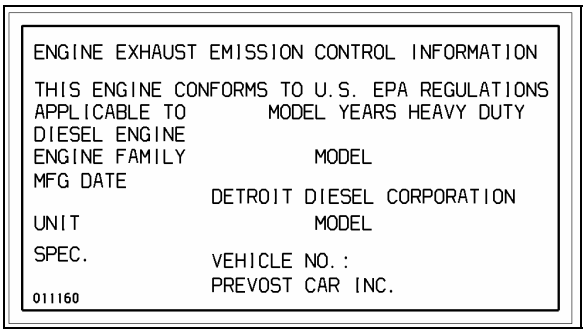
This certifies that vehicles manufactured by Prévost Car Inc. comply with all Federal Motor Vehicle Safety Standards at the time of manufacture. Information such as gross vehicle weight rating and tire pressure is also marked on this plate. The DOT Certification plate is affixed to L.H. control panel.



DOT CERTIFICATION PLATE 00016

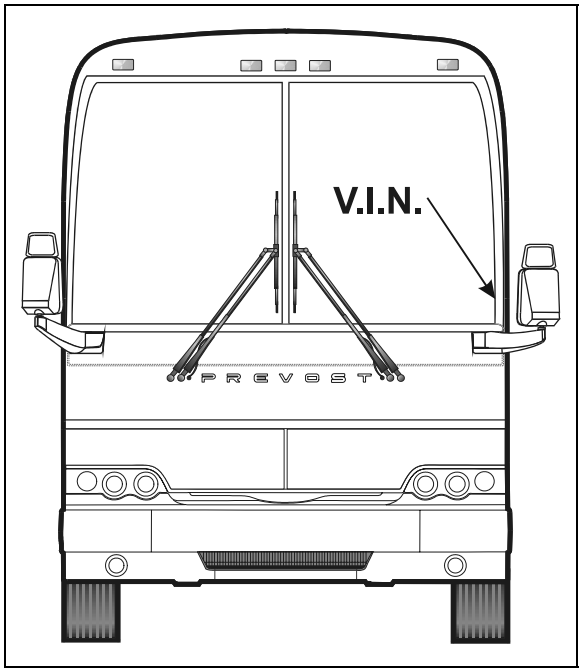
EPA ENGINE LABEL

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.

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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.

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

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