
PREVOST®

X3-45 COMMUTER OPERATING MANUAL

DOB 1300-1556

PA-1639

October 2020

PA-1639

Featuring:

- New front and rear aerodynamic design
- New headlights design

REV	EFFECTIVE	DESCRIPTION	DATE
0	M-7751	Initial Release	October 2020
1	M-7751	Limp home mode available functions corrected	November 2021
2	-	Addition of new HVAC control module	January 2022
3	-	Driver Operated Snow Chains System - condition "The ambient temperature is less than 50deg F (10deg C)" removed	October 2022

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IMPORTANT INFORMATION

This manual has been prepared to thoroughly acquaint the driver and service technicians with the equipment and features in order to fully appreciate and safely enjoy this vehicle.

Prevost is committed to the continuous improvement quality, reliability, durability and safety. With innovative features, the vehicle was designed with passenger, driver safety and comfort in mind.

This manual contains information available at the time of publication. Standard and optional equipment are covered in this manual. Therefore, some of the optional equipment described may not apply to your vehicle. In doubt, refer to the technical documentation package provided.

Driver's controls and instruments incorporate advanced technology for enhanced driving ease and security. This manual describes the main features, instruments, controls, and servicing requirements for standard and optional equipment.

Read this manual carefully to take advantage of the advanced features and to ensure optimum safety and passenger comfort.

Keep the manual in the vehicle at all times. Make sure it is kept with the vehicle when ownership is transferred. Please notify the [Prevost Warranty Support Team](#) of any change of address or transfer of ownership. This will ensure fast and reliable service to all operators.

NOTE

Illustrations in this manual are used for reference only and may differ from the actual vehicle; however, key components addressed in the manual are represented as accurately as possible.

Danger, Warning, Caution and Note are used throughout this manual to emphasize important points when necessary:



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.

The service life of the vehicle depends on the kind of attention it receives. Pay close attention to the warnings, cautions and notes. Read the various notices and instructions posted throughout the vehicle and attached to equipment.

Continuous improvement is a primary focus at Prevost, we reserve the right to make changes anytime, without notice, and without incurring any obligation.

Before reproducing or copying this manual, in whole or in part, written consent must be obtained from Prevost.

CRITICAL EMISSION-RELATED MAINTENANCE

Source of parts and repair:

A repair shop or person of the owner's choosing must maintain, replace, or repair emission control devices and systems per manufacturer's recommendations.

Replacement of tires that are GHG certified:

The tires installed on this vehicle are leased. They must be certified to the U.S. EPA Greenhouse Gas (GHG) and National Highway Traffic Safety Administration (NHTSA) Fuel Efficiency regulations. Replacement of these tires should be with a tire of equal or lower rolling resistance levels (TRRL or Crr). Please consult your tire supplier(s) for appropriate replacement tires.

Maintaining a GHG certified tire:

In order to maintain the certified rolling resistance of the tires which optimize fuel economy, the maintenance procedures provide by the tire manufacturer must be followed.

DATA LOGGING

EVENT DATA RECORDING DEVICES

This PREVOST vehicle is equipped with a device generally referred to as an "event data recorder" or "EDR." Please note that while the term "event data recorder" is typically used throughout the motor vehicle industry, not every EDR is the same; i.e., they do not all record the same data elements.

The EDR on this PREVOST vehicle records vehicle speed, engine RPM, time and date, plus a variety of pedal and switch positions, both before and after an "event." Sudden vehicle deceleration or the occurrence of certain other vehicle operational characteristics will define (trigger) an "event."

For any questions about this vehicle EDR device, contact a PREVOST Service Center or a regional service manager.

TELEMATICS DEVICE

Your vehicle is equipped with one or more recording devices ("Telematics Device"), associated with Prevost's Connected Vehicle Services (the "Telematics Services"). These services, which are described in greater detail at www.prevostcar.com (the "Website"), allow you to manage vehicle maintenance and repair in a cost-effective manner by providing: proactive diagnostic and repair planning assistance with detailed analysis of diagnostic trouble codes; streamlined service procedures with parts-on-hand confirmation before a vehicle arrives for service; and live repair and customer communication. The service eliminates or reduces diagnostics time, enhances repair efficiency, expedites decision process, improves communications and maximizes uptime. To access the Telematics Services, you must enter into a Telematics Subscription Agreement with Prevost, via the sales agreement pertaining to your vehicle.

The Telematics Device collects stores and/or transmits information about your vehicle. Such information may include direction and rate of speed, fuel consumption, engine performance, gearing, rpm, altitude, geo-location (including a history of where the vehicle travels), safety information related to the use and operation of the vehicle, vehicle performance, diagnostic data and error codes. The Telematics Device has the capacity to store historical data about the use and performance of your vehicle. The Telematics Device has the ability to transmit information to a central communications system. The information contained in your Telematics Device may be periodically transmitted to or accessed by Prevost and others authorized by Prevost, along with your vehicle's VIN number or other identifying information. Prevost does not collect any driver information. Prevost retains and uses this information to understand the operational use of your vehicle, to remotely tune your vehicle, and to help facilitate maintenance and vehicle improvements. To the extent allowed by law, Prevost reserves the right to access, use and control this information.

Declining to enter into a Telematics Subscription Agreement with Prevost, or canceling a Telematics Subscription Agreement, will not end the transmission of data from your Telematics Device or the collection of information by Prevost. Prevost may access Telematics Data, to the extent it is available, and use it in connection with providing services and vehicle improvements to you and your vehicle. Prevost will regularly purge from its systems all data collected from your Telematics Device, at time intervals determined by Prevost at its sole discretion.

OWNERSHIP OR ADDRESS HAS CHANGED

If your address has changed or you are the new owner, please help us update our records. Use the link below to access the Prevest Warranty Support web page.

<http://www.prevestcar.com/parts-and-services/warranty>

Click on the link 'Change of address or ownership', fill the form, save it and email the file at prevost.onlinewarranty@volvo.com.

QUESTIONS AND COMPLAINTS

Your satisfaction is our most important concern. If questions or complaints arise, first discuss the matter with the service manager at the Prevest facility involved. If you are not satisfied with the service manager's response, contact the branch manager. If, for any reason, you need further assistance after dealing with the personnel at a Prevest facility, contact your regional service manager. The regional service manager has the responsibility and the authority to recommend action in most cases and (with the aid of relevant district service personnel) will make every effort to conduct a fair review of the situation.

REPORTING SAFETY DEFECTS

UNITED STATES

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

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 Prevest Service Center, or Prevest.

To contact NHTSA, either call the U.S. Government's Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153); go to <http://www.NHTSA.gov>; or write to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, DC 20590. You can also obtain other information about motor vehicle safety from the Vehicle Safety Hotline.

CANADA

Canadian customers who wish to report a safety-related defect to Transport Canada — Defect Investigations and Recalls, may telephone the toll free hotline at 1-800-333-0510, or contact Transport Canada by mail at Transport Canada, ASFAD, Place de Ville Tower C, 330 Sparks Street, Ottawa ON K1A 0N5. For additional road safety information, please visit the Road Safety website at <http://www.tc.gc.ca/roadsafety/menu.htm>.

SECTION 1 - SAFETY PRECAUTIONS

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DEFENSIVE DRIVING PRACTICES 2
OTHER PRECAUTIONS 3

1-2 Safety Precautions

SAFE OPERATING PRACTICES

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

- 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 your safety belt when driving.
- Check the instrument panel frequently. Do not operate the vehicle when dials or indicators do not indicate normal operating conditions.
- 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 the vehicle.
- 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.

DEFENSIVE DRIVING PRACTICES

- For city driving, allow a four to six second travel interval between your vehicle and the vehicle ahead. Increase this travel interval to six to eight seconds for highway driving. Increase time interval for driving at night or in foul weather.
- Be prepared to stop when approaching an intersection. The stopping distance of the vehicle increases with the weight and speed.
- Establish eye-to-eye contact with other drivers and with pedestrians. Use, high beam and low beam headlights, turn signals and horn as needed.

- On highway, don't stare at the road ahead. Keep your eyes moving. Check mirrors and dashboard instruments frequently.
- To keep the vehicle from drifting across lanes during highway driving, always look over the horizon on the road ahead.
- Adjust your speed to road conditions, traffic and visibility. Never exceed the posted speed limits.
- If another vehicle is following close behind, reduce your speed to let the vehicle pass.
- For additional information about safe operation and defensive driving practices, contact the local department of motor vehicles authority.

OTHER PRECAUTIONS



WARNING

This vehicle is not designed to carry standing passengers.



WARNING

CALIFORNIA PROPOSITION 65

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

Battery posts, terminals and other related accessories contain lead and lead compounds, chemical known to the State of California to cause cancer and other reproductive harm.

Batteries also contain other chemicals known to the State of California to cause cancer.

Wash hands after handling.



DANGER

Make sure that electrical current or air pressure is removed before performing any work. A part may be energized even if the ignition switch is OFF. A part may be under pressure even if all tanks are empty. Before performing any work on the vehicle, refer to wiring diagrams and/or air schematics to thoroughly understand the system.



CAUTION

PRECAUTIONS ARE TO BE OBSERVED BEFORE WELDING TO MINIMIZE THE RISK OF MAJOR AND COSTLY DAMAGES CAUSED TO THE VEHICLE ELECTRONIC COMPONENTS!

1. Set the main electrical shut-off switch to "OFF" position.
2. Trip circuit breaker CB2 and CB6.
3. Disconnect electronic ground terminal from the ground junction block located in the battery compartment.
4. Make sure to clamp the welding ground return as close as possible to the welding point and make a good electric contact to the chassis.

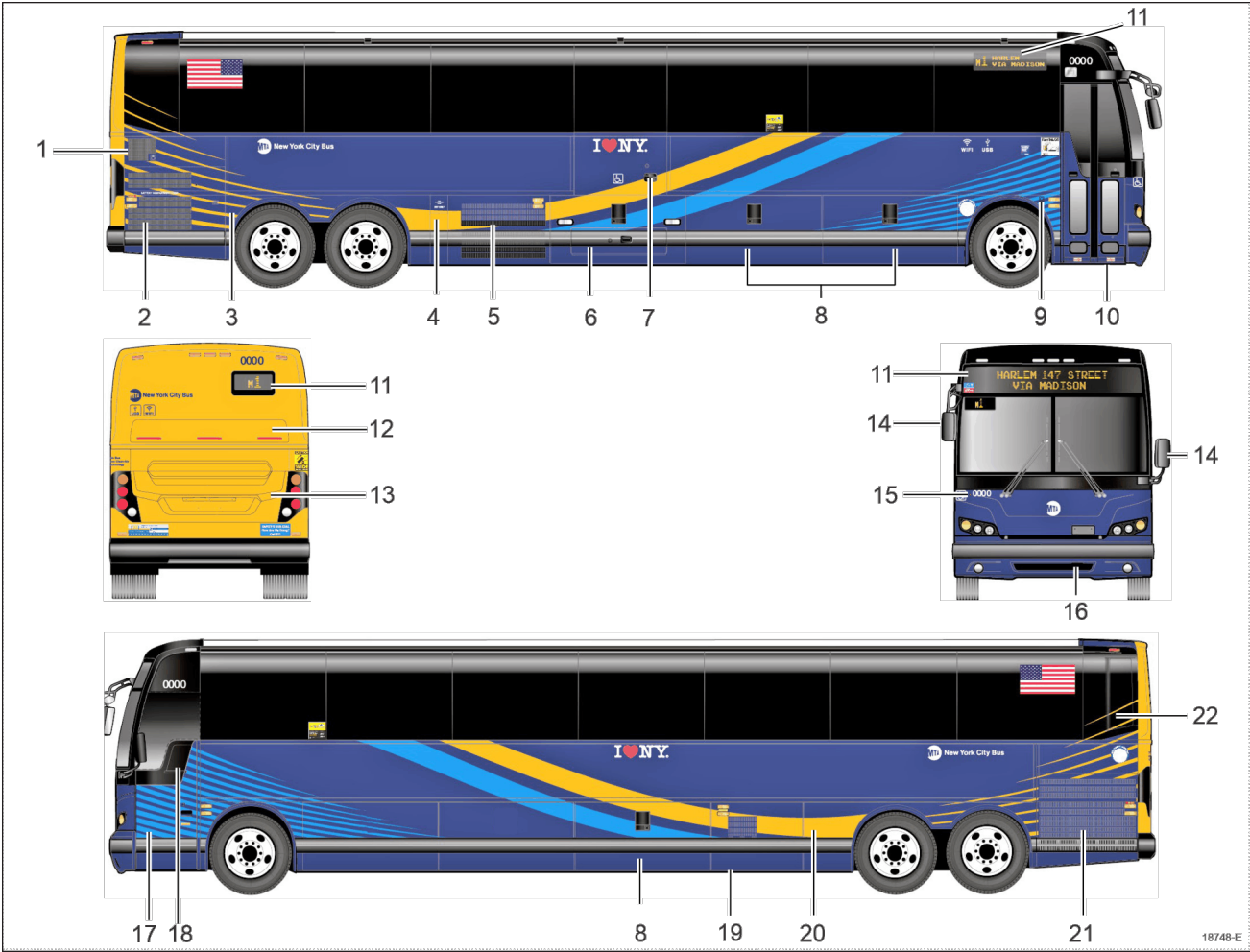
Detailed instructions are provided in section 00-GENERAL of your vehicle maintenance manual.

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 - BACK-UP CAMERA 20
- HUBODOMETER 20

2-2 Coach Exterior

1. EXTERIOR VIEW



EXTERIOR VIEW

2-4 Coach Exterior

1. Engine air filter intake grill
2. Engine compartment curbside door
3. Hinged rear fender
4. Fuel filler neck & DEF filler neck door
5. Condenser compartment
6. Wheelchair Lift mechanism access door
7. Wheelchair access door
8. Baggage compartment
9. Entrance door control switch
10. Entrance door
11. Electric destination sign or route number
12. Exhaust after-treatment system access door
13. Engine compartment rear door
14. Rear-view mirrors
15. Transmission retarder OFF indicator light
16. Tow truck connector & air supply quick coupling fittings
17. Front electrical and service compartment
18. Driver's power window
19. Evaporator compartment
20. Air dryer compartment
21. Radiator door
22. SCR converter access door

ROOFTOP ANTENNAS

The vehicle is equipped with eight antennas located on the roof.

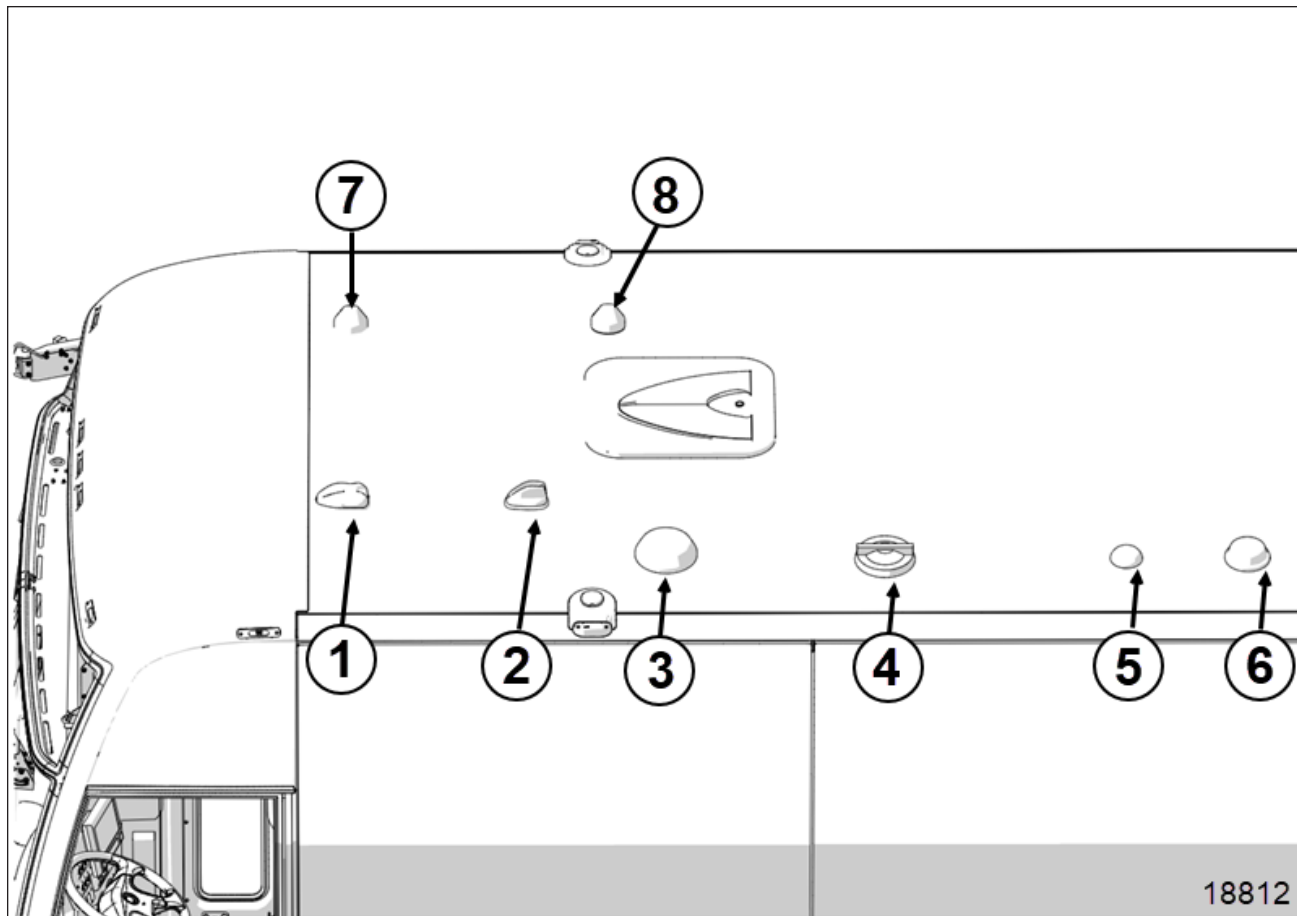


FIGURE 1: ROOFTOP ANTENNAS

1. Cubic BHS/BCIS 7in1;
2. Prevost TGW 4G;
3. Vianova Digital Information Screen System;
4. WI-FI (passenger's);
5. Radio (provision);
6. Radio (current);
7. Clever Device IVN5;
8. Mobile View (GPS + WIFI).

2-6 Coach Exterior

CORNERING (PERIMETER) LIGHTS

The vehicle is equipped with six(6) cornering lights installed on both sides of the roof (above the front axle, WCL area and drive axle).

The lights turn-on automatically when the vehicle speed is less than 12 mph (20km/h) and the directional lights are activated.

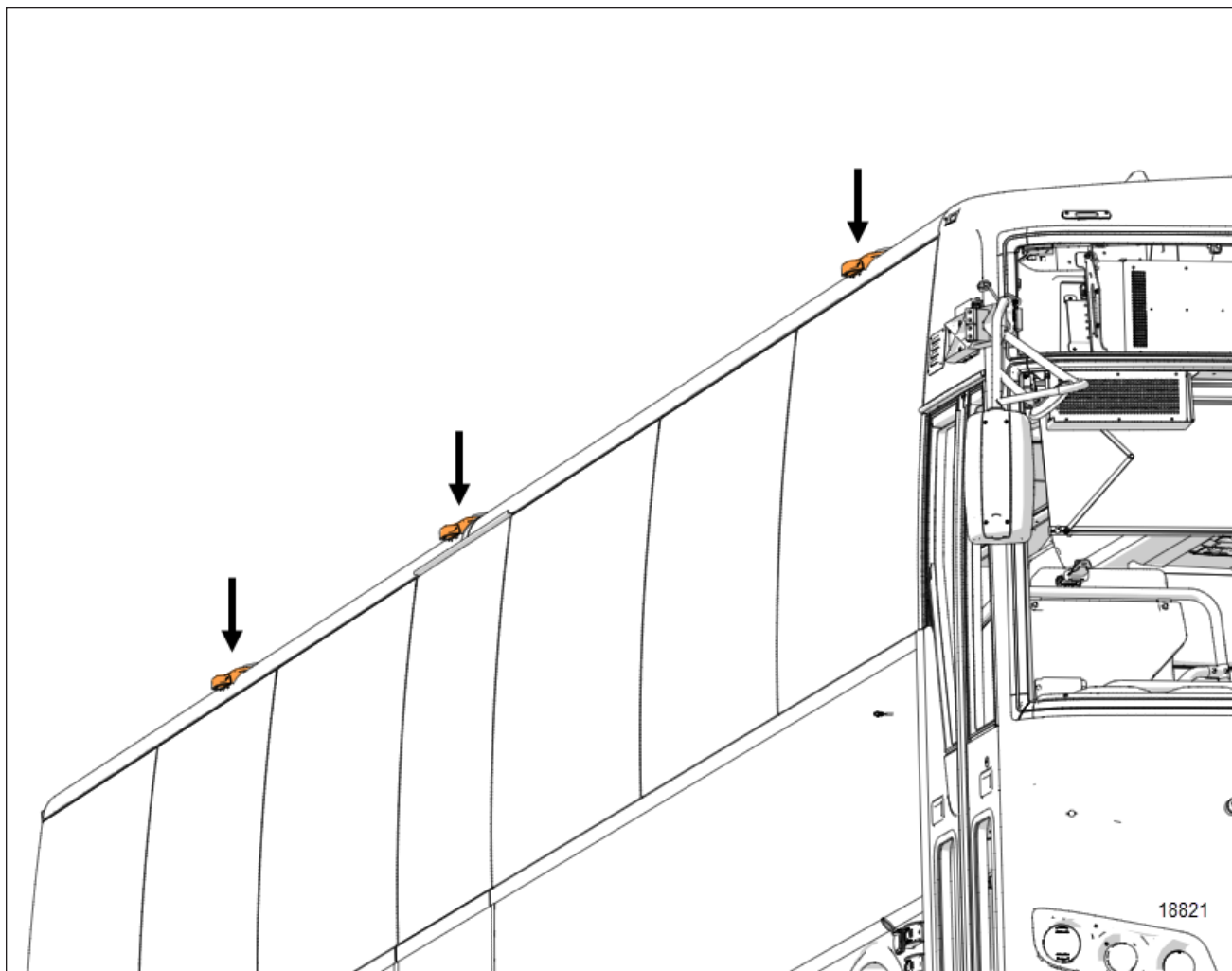


FIGURE 2: CORNERING LIGHTS (CURB SIDE SHOWN)

ENGINE COMPARTMENT COMPONENTS

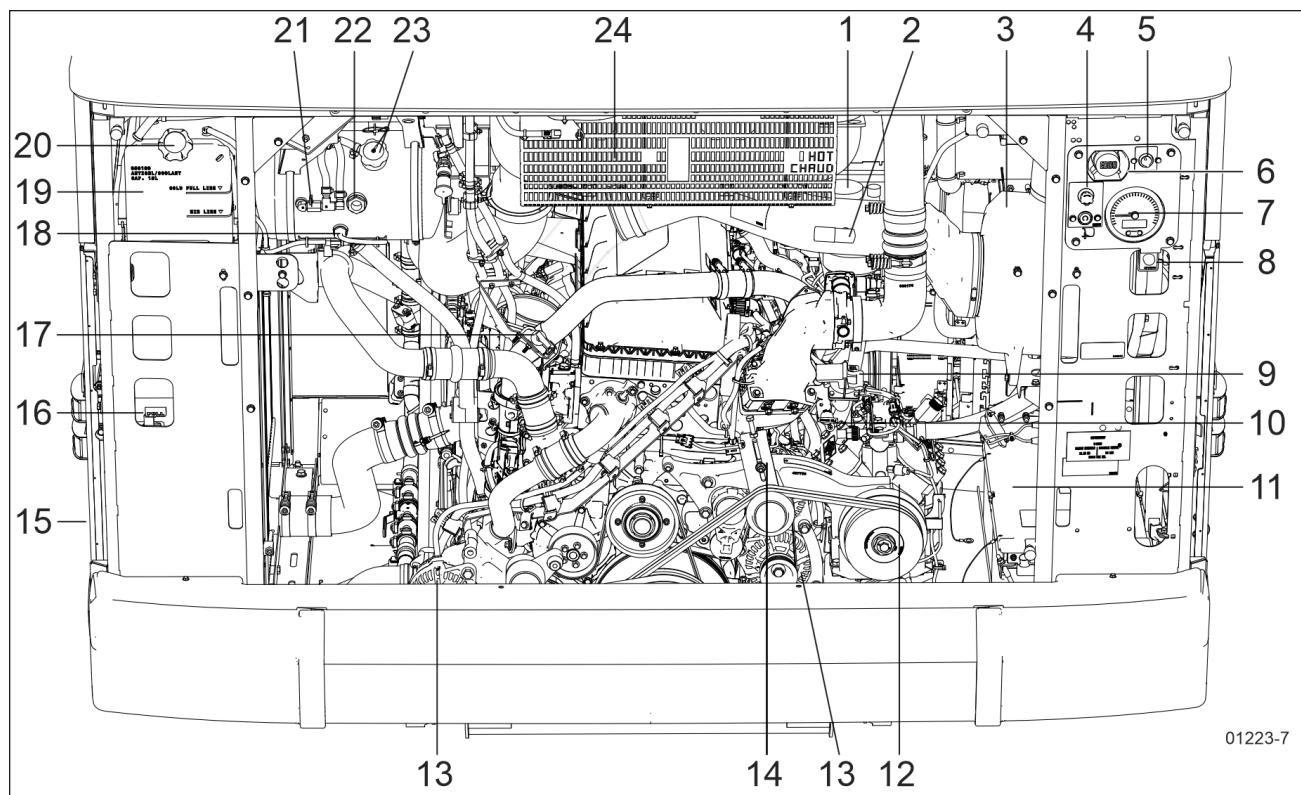


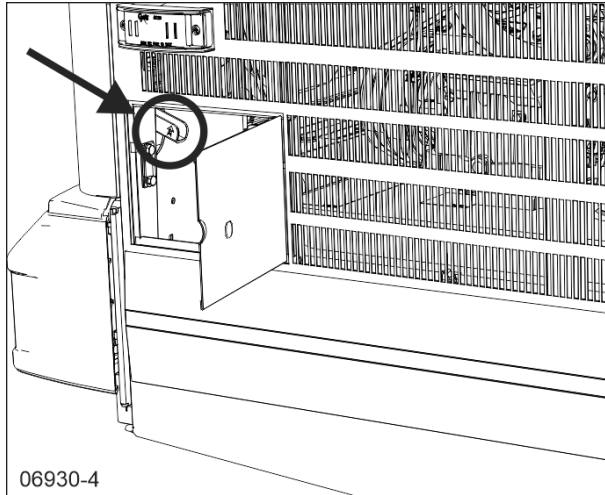
FIGURE 3: ENGINE COMPARTMENT

2-8 Coach Exterior

1. Power steering fluid reservoir (hidden);
2. Engine air filter restriction indicator;
3. Engine air filter;
4. Emergency engine stop push-button & rear start push-button;
5. Engine compartment light switch;
6. Backup alarm;
7. Engine compartment rear gauge;
8. Air system drain valve push-button;
9. Engine oil filler tube;
10. Engine oil dipstick;
11. Battery bank;
12. A/C compressor;
13. Alternators;
14. Compressor belt tensioner;
15. Cooling pack;
16. Radiator door catch lever;
17. Transmission fluid dipstick;
18. Coolant surge tank "critically low" level sensor;
19. Coolant recovery tank;
20. Coolant recovery tank filler cap;
21. Coolant surge tank pressure relief valve
22. Coolant surge tank sight glass;
23. Coolant surge tank filler cap;
24. Diesel Particulate Filter (DPF) assembly (behind heat shield).

ENGINE COMPARTMENT REAR DOOR OPENING

To open the engine compartment rear door, open the catch lever access hatch on the curbside door. Pull the yellow catch lever and then grab the side of the door in the middle, pull and lift the door.



06930-4
FIGURE 4: ENGINE COMPARTMENT DOOR CATCH LEVER



WARNING

Unless otherwise stated, do not run the engine when the engine compartment is open.

NOTE

The engine compartment lights will turn on automatically when the engine door is opened.

A catch engages to maintain the door in the full open position. To close the door, slightly lift up the door and release the catch before firmly shutting down the door.

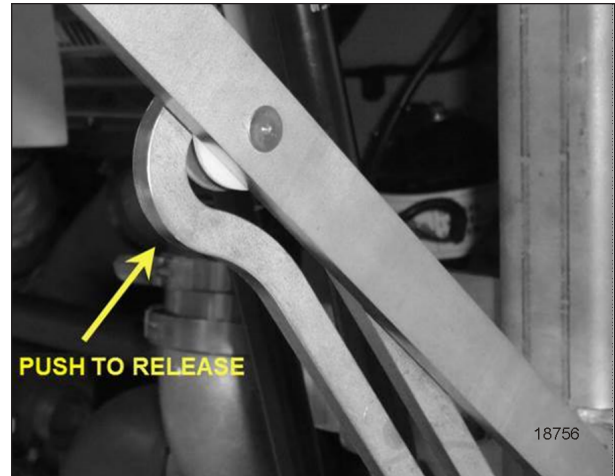


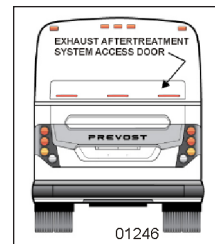
FIGURE 5: REAR DOOR SAFETY CATCH



WARNING

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

EXHAUST AFTERTREATMENT SYSTEM ACCESS DOOR



The engine door must be open before opening the exhaust aftertreatment system access door. To open the access door, pull down the latch release knob.

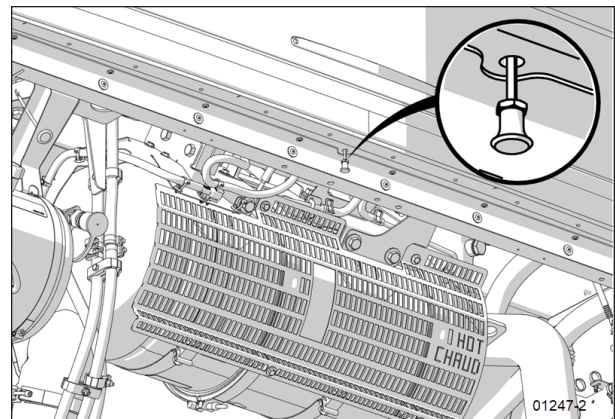


FIGURE 6: AFTERTREATMENT ACCESS DOOR LATCH

To close the door, lower the door and push against the release lever spring to latch the door shut.

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ENGINE COMPARTMENT CURBSIDE DOOR

To open this door, push the catch lever to the right. Lock this door using the square drive T-key. The small hatch located on the lower left corner gives access to the engine compartment catch lever. This door is equipped with a secondary latch.

The engine compartment curbside door provides access to the following equipment:

- Engine compartment rear door catch lever;
- Booster block terminals;
- Main power compartment (a.k.a. rear junction box);
- Battery bank;
- Heated Davco Fuel Pro filter/water separator with water-in-fuel sensor;
- Emergency air system fill valve;
- Engine air filter housing;
- Battery equalizer.

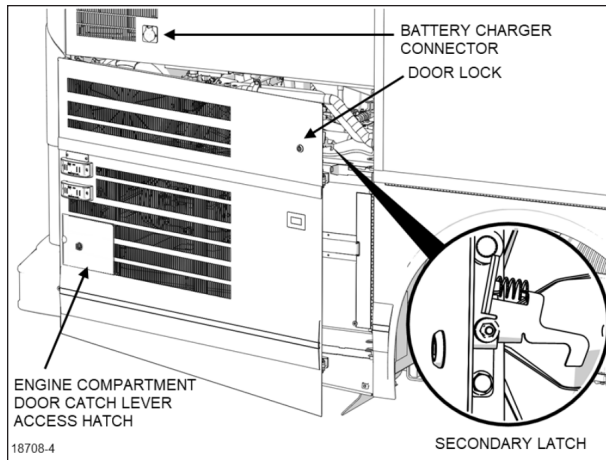


FIGURE 7: ENGINE COMPARTMENT CURBSIDE DOOR

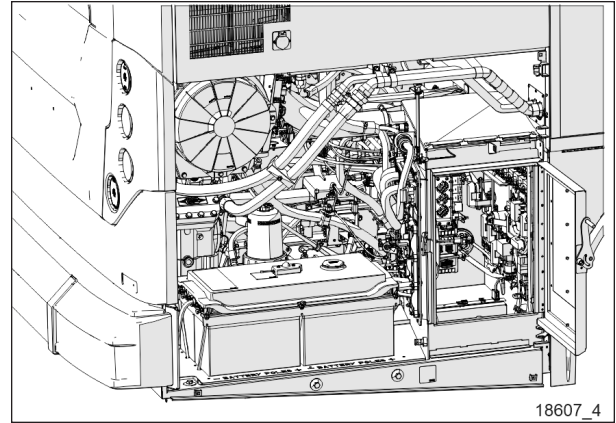


FIGURE 8: ENGINE COMPARTMENT CURBSIDE

MAIN POWER COMPARTMENT

The main power compartment (a.k.a. rear junction box) and battery installation are accessible from the engine compartment curbside door.

The batteries are housed and secured on the engine R.H. side deck. The battery posts and connections are protected by a watertight cover. The cover is fitted with a built-in vent. The cover can be unlocked and then removed with the use of the same type of hardware that allows opening and closing of the rear fender.

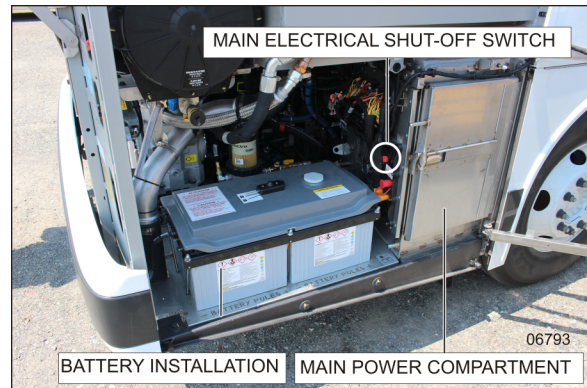


FIGURE 9: ENGINE R.H. SIDE COMPARTMENT (TYPICAL)

The main power compartment panel provides access to the following:

- Rear 12VD, 24VD junction blocks;
- Main circuit breakers;
- AE49, AE50, AE51, AE52 I/O-EB Multiplex modules;

- Vehicle Electrical Center Rear (VECR);
- Master relay R1;
- 12V ignition relay R3;
- Starter relay;
- Relays and fuses;
- Battery equalizer;
- 12VD & 24 VD current sensors.

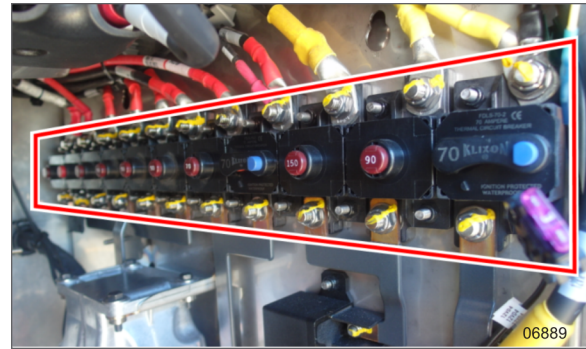


FIGURE 12: MAIN CIRCUIT BREAKERS IN MPC (TYPICAL)

ENGINE RADIATOR DOOR

The engine radiator door gives access to the radiator electrical fans and power distribution box.



FIGURE 10: MAIN POWER COMPARTMENT (TYPICAL)

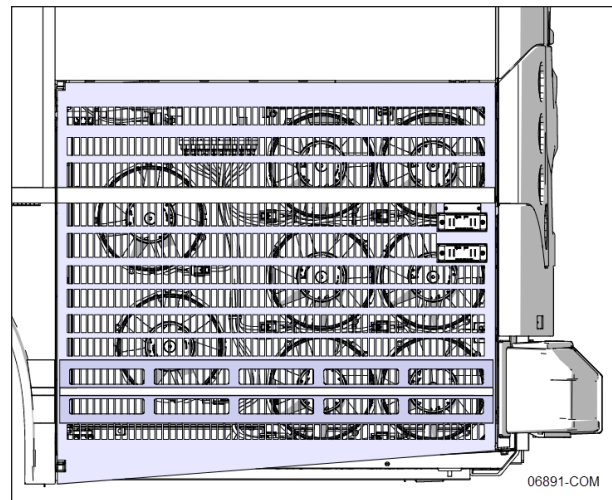


FIGURE 13: RADIATOR DOOR

Open the engine compartment rear door to access the engine radiator door release lever (see image below). Pull lever to release the radiator door. This door is equipped with a secondary latch.

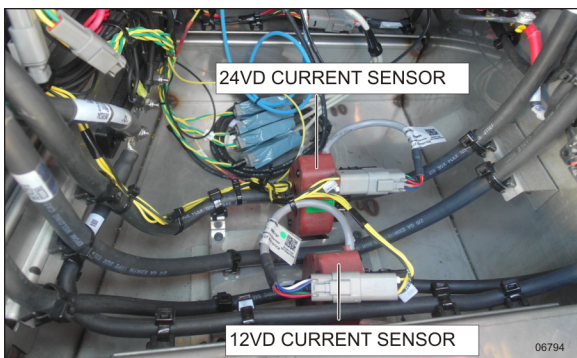


FIGURE 11: 12VD / 24VD CURRENT SENSORS IN MPC (TYPICAL)

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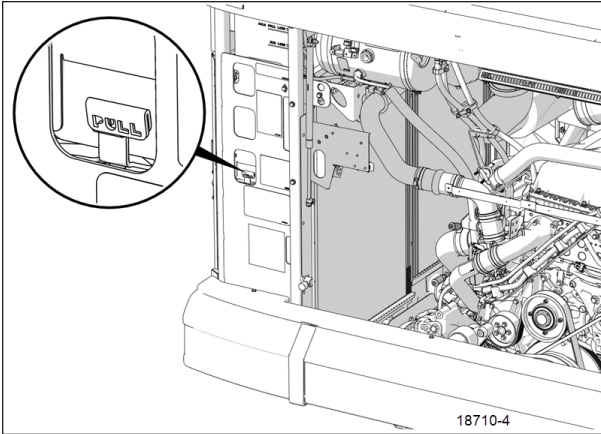


FIGURE 14: RADIATOR DOOR RELEASE LEVER LOCATION

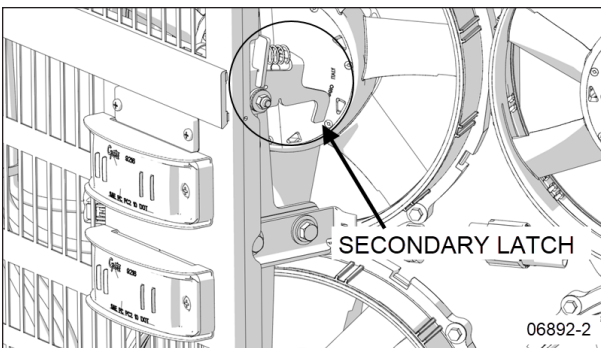


FIGURE 15: RADIATOR DOOR SECONDARY LATCH

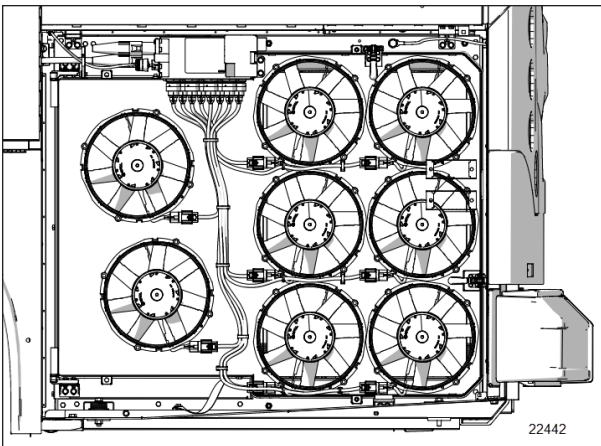


FIGURE 16: RADIATOR DOOR OPENED



WARNING

WHEN THE ENGINE IS RUNNING...

Cooling fans may activate at any moment.

Keep hands away from cooling fans or keep the radiator door closed



WARNING

Cooling fans may be running when the engine is shut down in the following conditions:

- If a High Exhaust Temperature condition exists (e.g. following regeneration). The CAC fans will keep running for a maximum of 15 minutes.
- During the electric Motor Test Sequence, the cooling fans will start running briefly.

SCR CONVERTER ACCESS HATCH

This hatch is located above the radiator door.

To open the door, pull the handle behind the door panel (on the left).

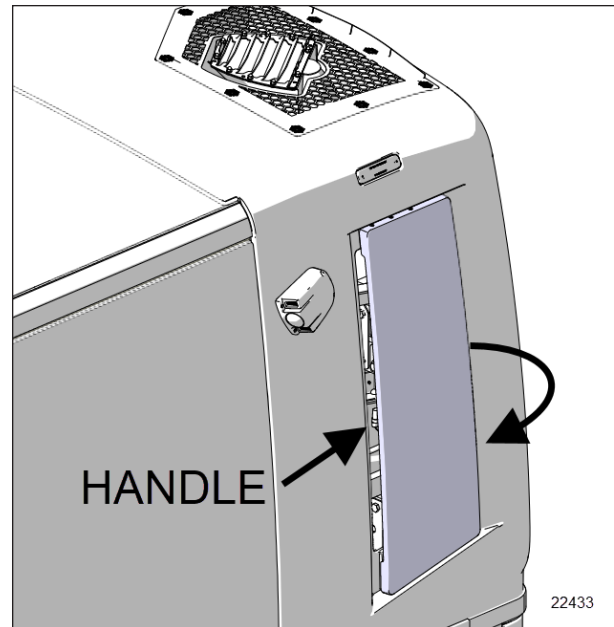


FIGURE 17: SCR CONVERTER ACCESS DOOR



FIGURE 18: SCR ACCESS DOOR HANDLE



WARNING

External and internal temperatures remain hot long after the engine has been shut down. Allow the Exhaust Aftertreatment System to cool before handling. Wear protective clothing and gloves while servicing.

CONDENSER COMPARTMENT (A/C)

To open the condenser door, open the fuel filler door and locate the door latch behind the door.

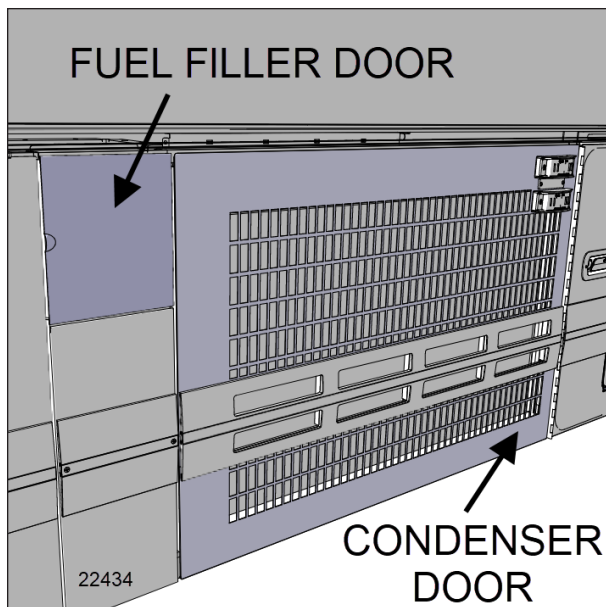


FIGURE 19: CONDENSER COMPARTMENT DOOR (A/C)

Push down the door latch (first lock).

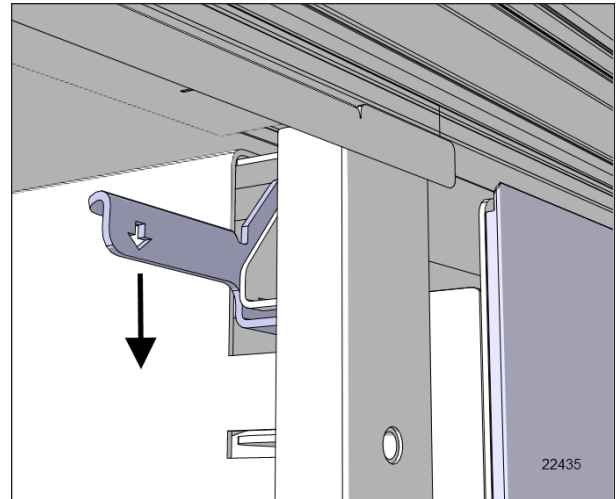


FIGURE 20: CONDENSER COMPARTMENT DOOR LATCH

Open the door slightly to get access to the secondary latch (second lock) and push the handle.

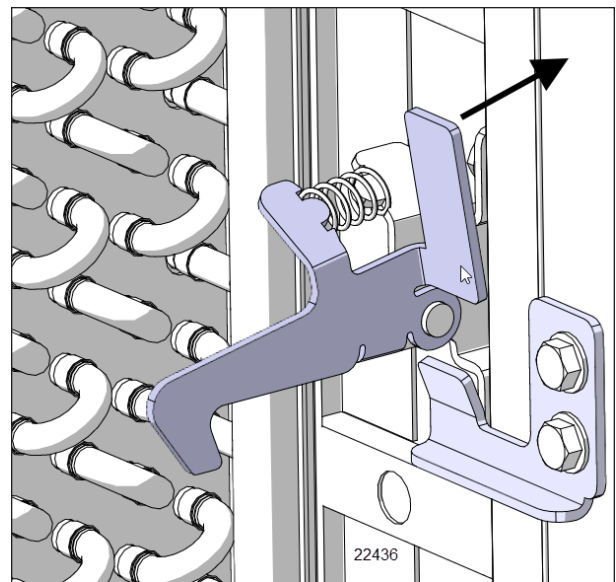


FIGURE 21: SECONDARY LATCH

Unlock both bottom and top condenser unit latches.

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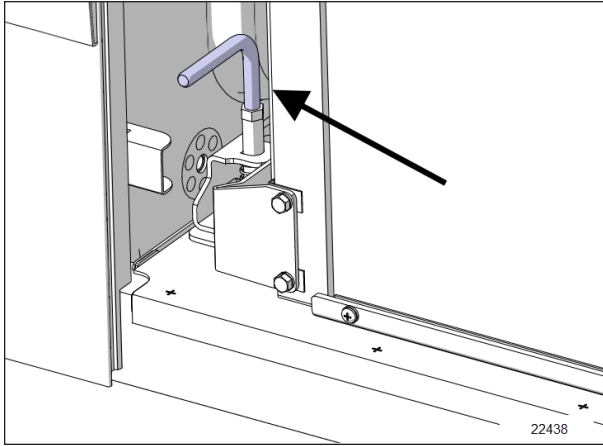


FIGURE 22: BOTTOM CONDENSER UNIT LATCH

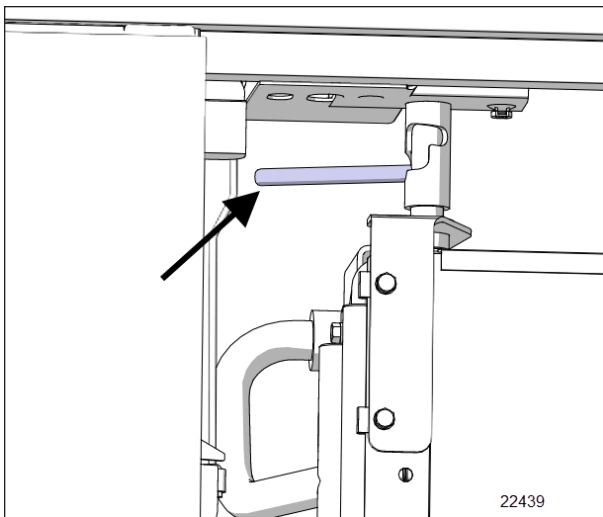


FIGURE 23: TOP CONDENSER UNIT LATCH

Use the strap to pull out the condenser unit.

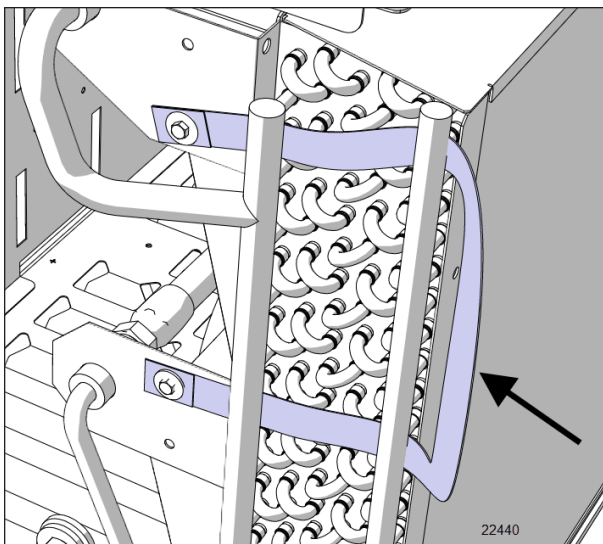


FIGURE 24: CONDENSER CORE STRAP



CAUTION

Only the strap should be used to pull the condenser-fan assembly open. Damage to the condenser could result if pulling by other means

The condenser compartment is equipped with an automatic light and provides access to the following:

- Exhaust aftertreatment control module (EACM);
- Diesel Exhaust Fluid (DEF) Tank and DEF pump;
- Condenser;
- Condenser fans;
- Refrigerant filter- dryer and moisture indicator;
- Refrigerant receiver tank;

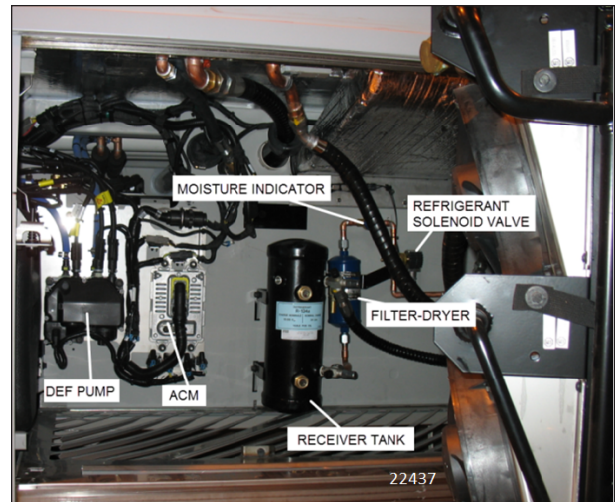


FIGURE 25: CONDENSER COMPARTMENT (A/C)

EVAPORATOR COMPARTMENT

The HVAC (Heating, Ventilation and Air Conditioning) evaporator and heater coils are located in this compartment along with the blowers.

The evaporator compartment door release latch is located on the right wall of the baggage compartment, left of the door.

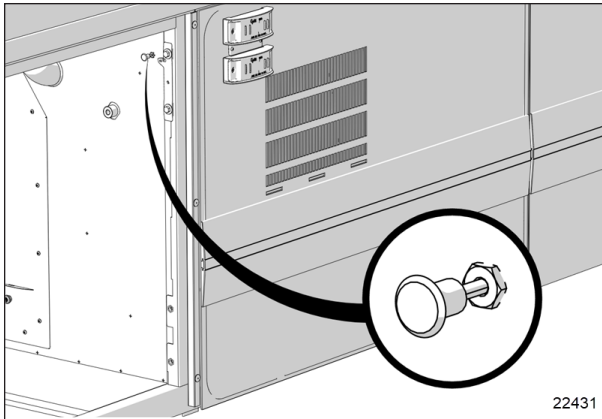


FIGURE 26: EVAPORATOR DOOR RELEASE LATCH

Pull the release latch then slide your hand in the opening to depress the secondary latch and swing open.

Temperature sensor is located behind the front bumper under the driver side head lights.

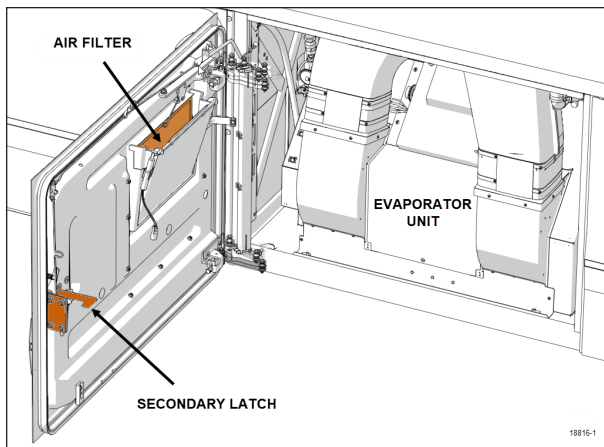


FIGURE 27: EVAPORATOR COMPARTMENT

FUEL AND DIESEL EXHAUST FLUID (DEF) FILLER DOOR

The fuel and Diesel Exhaust Fluid (DEF) filler door is located on the R.H. side of the vehicle providing easy filling. A spring keeps the door either open or shut. The vehicle is equipped with Emco Wheaton POSI/LOCK 105 Automatic DRY-BREAK Fueling System; the POSI/LOCK Filler Neck Assembly is installed on the fuel tank and requires the use of POSI/LOCK Refueling Nozzle for proper operation.

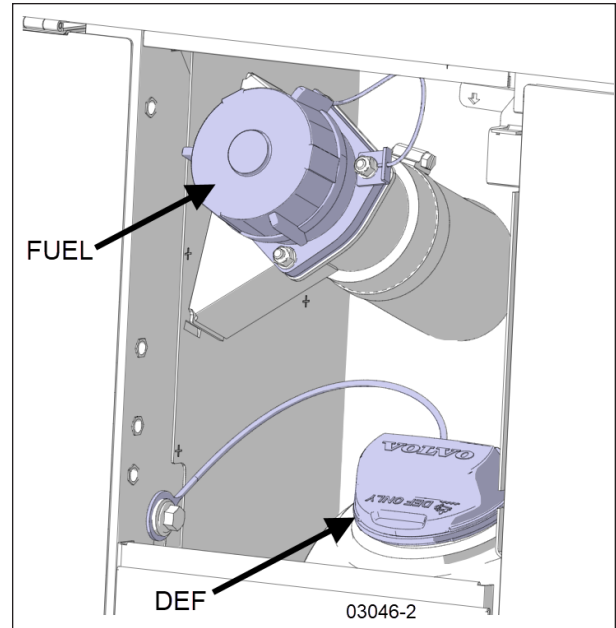


FIGURE 28: FUEL & DEF FILLER DOOR

NOTE

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



WARNING

DEF – Do not overfill

If an automatic nozzle is used for filling diesel exhaust fluid (DEF), do not add further DEF after the nozzle has automatically shut off flow a first time.

If such nozzle is not available, use the DEF level gage on the instrument panel to control the quantity during filling.

Diesel exhaust fluid DEF will begin to crystallize and freeze at 12°F (-11°C) and expand by 7% when frozen. To allow expansion without damaging the DEF tank, do not fill the tank with more than 16 gallons (60 liters).



WARNING

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

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REAR FENDERS

Rear fenders are hinged for maintenance on brakes and suspension. Each rear fender panel has two mechanical springs loaded holding devices fixing it to the vehicle's structure.

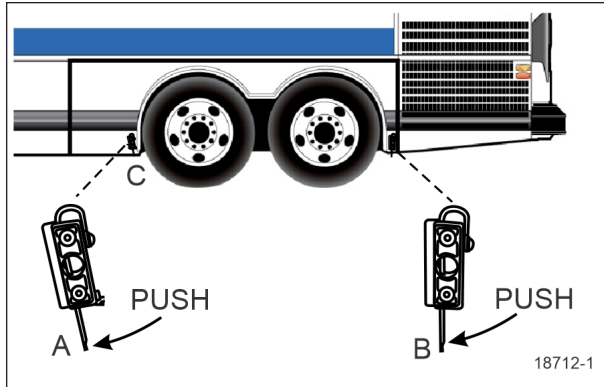


FIGURE 29: FENDER LATCHES

To lift a rear fender:

1. Push rod sideways on latch A and B (image above);
2. Pull the secondary latch (position C) and then lift the fender.

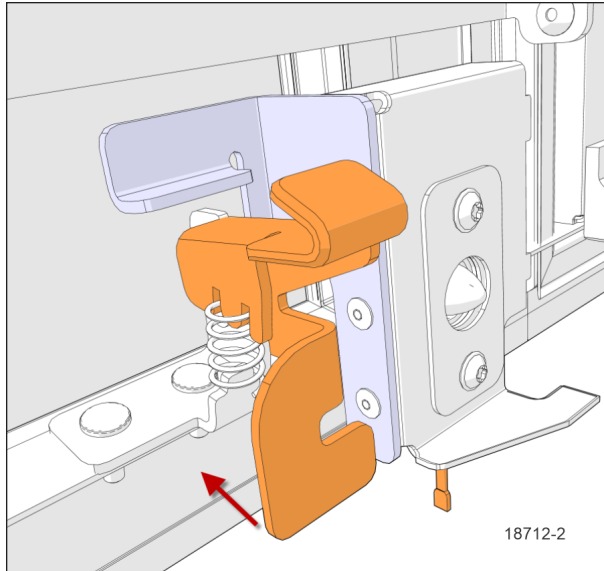


FIGURE 30: SECONDARY LATCH

AIR DRYER COMPARTMENT

The hot water recirculating pump and the air dryer are found inside this compartment located aft of the evaporator compartment. Lift the rear fender to gain access to this compartment.

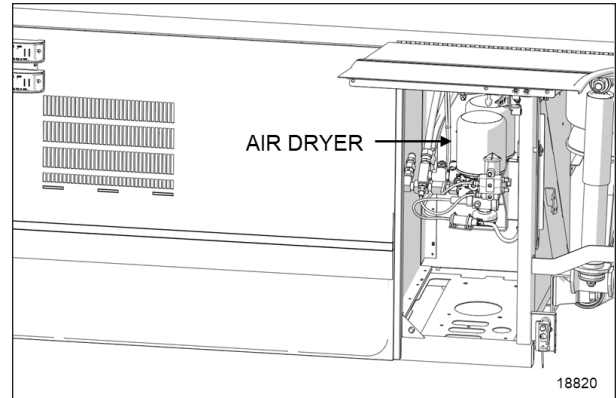


FIGURE 31: OPENING THE STREET SIDE REAR FENDER GIVES ACCESS TO THE AIR DRYER AND HOT WATER RECIRCULATING PUMP

BAGGAGE COMPARTMENTS

The baggage compartments provide 350 ft³ (9.9 m³) of storage capacity.

The compartments can be locked or unlocked by using the GM key. The baggage compartments may also be locked using a wire on the operating handle.

Note that the two front compartments are only accessible from the curb side while the third rear is accessible from both sides.

Lift up operating handle to release the latch, and then pull the door open by the handle rod. Pressurized cylinders assist the opening and closing of the baggage compartment doors and hold the doors open.

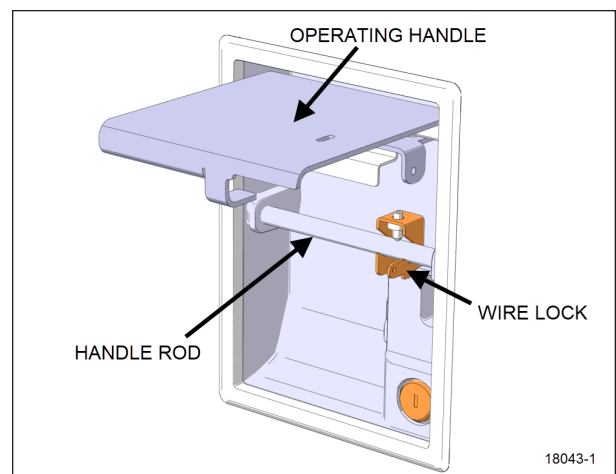


FIGURE 32: BAGGAGE DOOR LOCK AND LEVER

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 the door weather-stripping or locking mechanism could result.

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



FIGURE 33: BAGGAGE DOOR LOCK AND LEVER

NOTE

For added safety, open the door until the catch assist in holding the door in the open position. Lift lever to release the door



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.

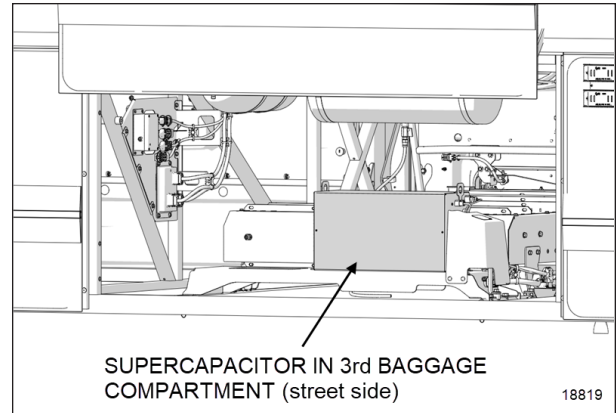


FIGURE 34: THIRD BAGGAGE COMPARTMENT, STREET SIDE

WHEELCHAIR LIFT ACCESS DOORS

To open the wheelchair lift access doors, the vehicle must be parked on a flat and level surface with the parking brake on. Using the exterior compartment doors key, unlock and carefully lower the lift mechanism access door which is part of the baggage compartment door. The lift mechanism access door is located directly below the wheelchair access door. A handle at the left of the lift mechanism unlocks and enables opening of the wheelchair access door. If the parking brake is not activated, a switch in the door will activate the parking brake when it detects the door is open.

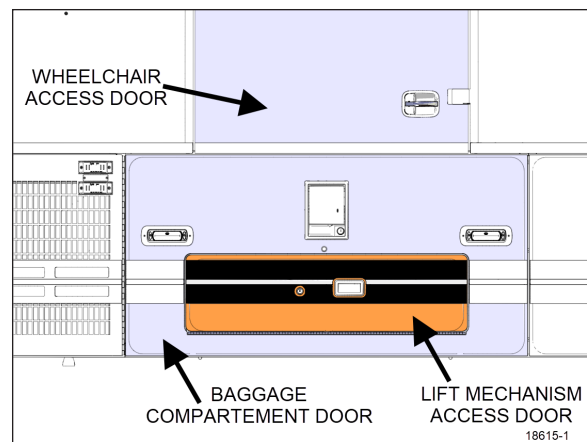


FIGURE 35: WHEELCHAIR LIFT ACCESS DOORS

2-18 Coach Exterior

FRONT ELECTRICAL AND SERVICE COMPARTMENT

Use the square drive T-key (maintenance key) to open the front electrical and service compartment door. This door is equipped with a secondary latch located at the bottom.

The light in the front electrical and service compartment turns on automatically when the door is opened.

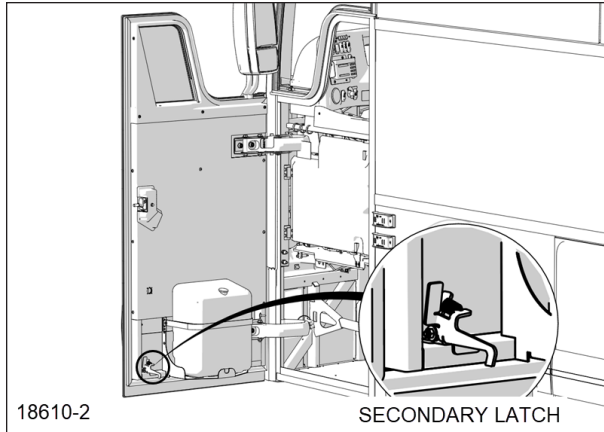


FIGURE 36: FRONT SERVICE COMPARTMENT DOOR

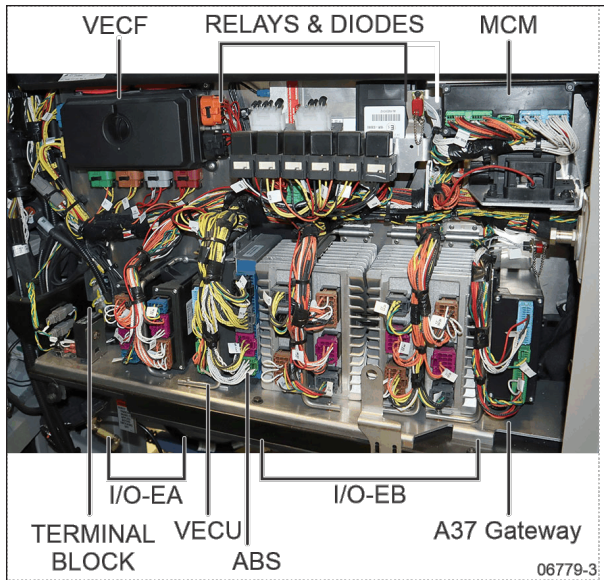


FIGURE 37: FRONT ELECTRICAL COMPARTMENT

The electrical section of the front compartment provides access to the following:

- Vehicle Electrical Center Front (VECF);
- Relays and diodes;

- Master Control Module (MCM);
- Front terminal block;
- I/OE-B Multiplex Modules;
- I/OE-A Multiplex Modules;
- VECU;
- ABS Electronic Control Unit (ECU);
- C226 connector (MCM) type DB9 for laptop diagnostic tool;
- A37 Gateway module

The lower section of the front service compartment provides access to the following:

- Automatic tag unload override valve (maintenance);
- Master interlock cancel switch;
- Emergency entrance door air pressure relief valve;
- Windshield washer reservoir;
- Pneumatic accessories panel;
- Air system emergency air fill valve;

BI-PART ENTRANCE DOOR

Unlock or lock the entrance door from outside the vehicle by turning the GM key in the door lock (counterclockwise to lock, clockwise to unlock).

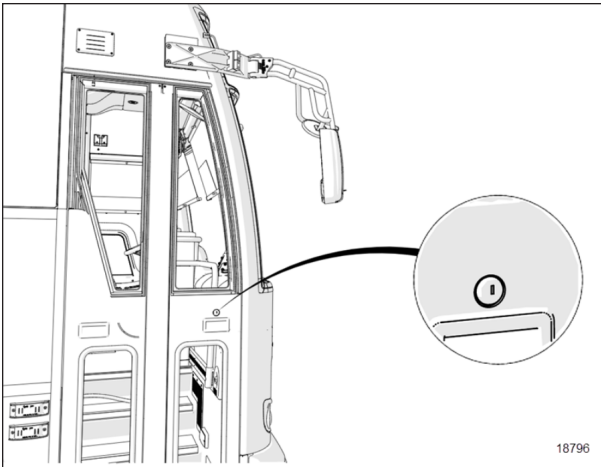


FIGURE 38: ENTRANCE DOOR LOCK

The entrance door can be locked from the inside by sliding the interior door lock.

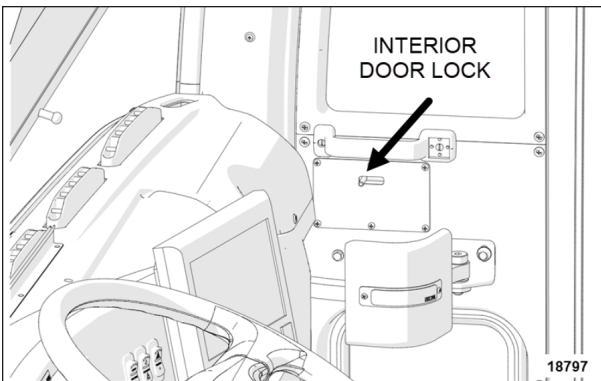


FIGURE 39: ENTRANCE DOOR INTERIOR LOCK

ENTRANCE DOOR OPERATION FROM OUTSIDE

Use the GM key with the entrance door control switch to open or close the entrance door. The key can be remove in either position.

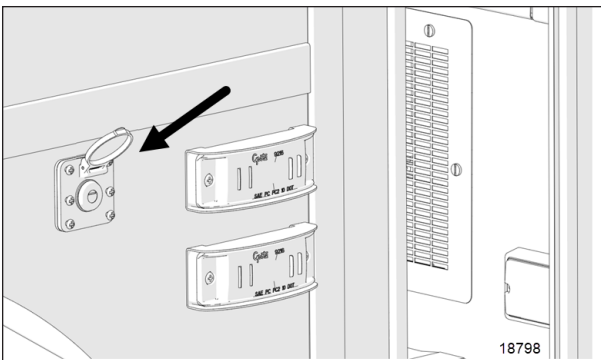


FIGURE 40: ENTRANCE DOOR CONTROL SWITCH

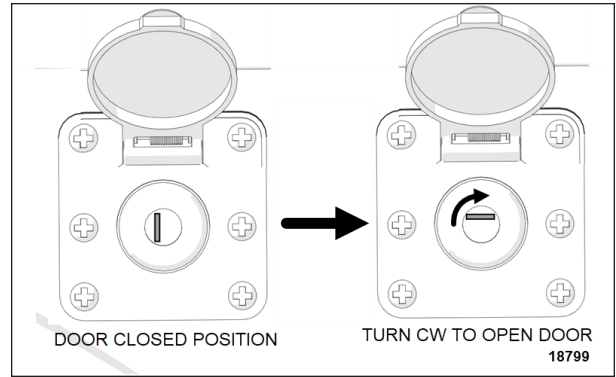


FIGURE 41: TO OPEN THE DOOR

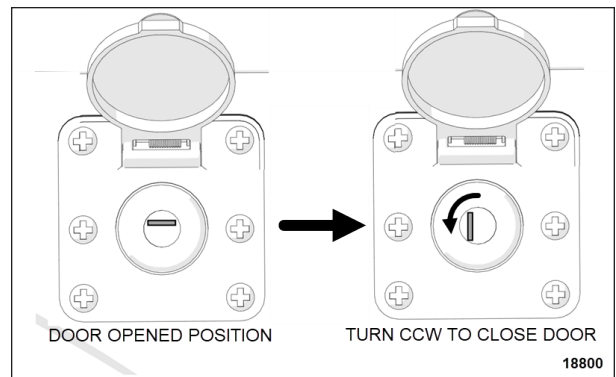


FIGURE 42: TO CLOSE THE DOOR

If the vehicle is in sleep mode, the key must be cycled **first** as shown below to wake up the multiplex system.

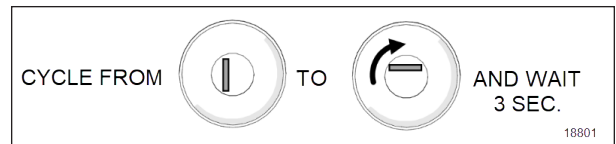


FIGURE 43: CYCLE THE KEY TO WAKE UP MULTIPLEX SYSTEM

DOOR OPERATION LOGIC

When the door is fully open or closed, the system holds pressure in the door cylinder, blocking the door in that position.

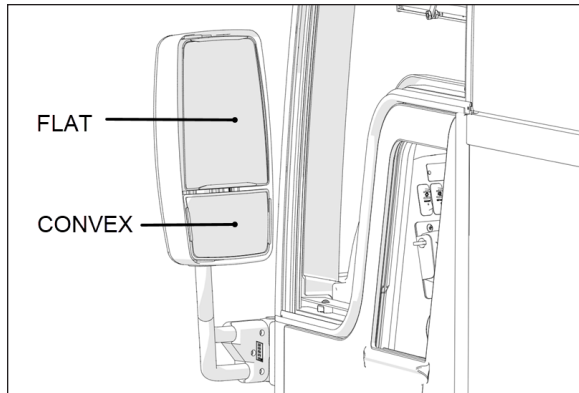
EMERGENCY DOOR OPENING

Refer to "[ENTRANCE DOOR OPENING IN CASE OF EMERGENCY](#)" on page 3" in Section 7, Safety Features and Equipment.

2-20 Coach Exterior

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 activate automatically according to the dashboard HVAC module defrost status. Refer to "Controls & Instruments" chapter. Thermostats are used to prevent continuous operation of the heating elements.

L.H. and R.H. side mirrors are basically the same except that the R.H. side mirror support arm is also equipped with a fixed round convex type mirror to provide better visibility in front of the vehicle R.H. side corner.

The mirrors are adjusted using the controls located on the lateral control panel. Refer to "Controls & Instruments" chapter.

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.

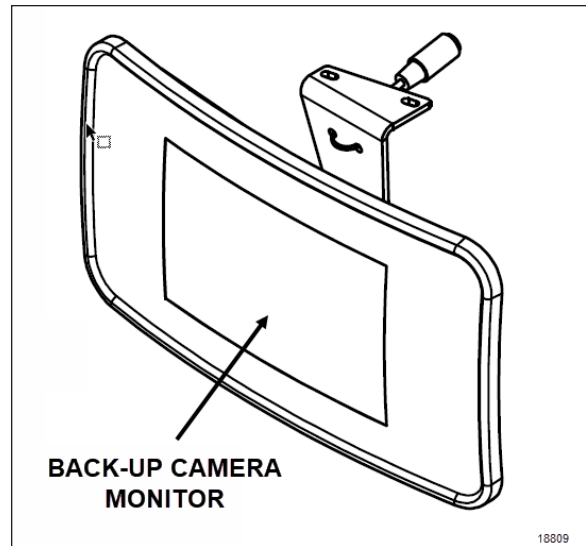
BACK-UP CAMERA

The back-up camera provides the driver with visual assistance when backing-up. The monitor is integrated in the interior central mirror and turns on automatically when the transmission is put into reverse gear (R).



WARNING

The back-up camera is intended as a driver assistance device only. Check surroundings before backing-up !



HUBODOMETER

An odometer is installed on the curbside drive axle wheel hub. The odometer calculates the total distance traveled by the coach since manufacture, including factory road testing.

NOTE

It is normal for the hubodometer, the engine ECM and the vehicle odometer to disagree on the total mileage.

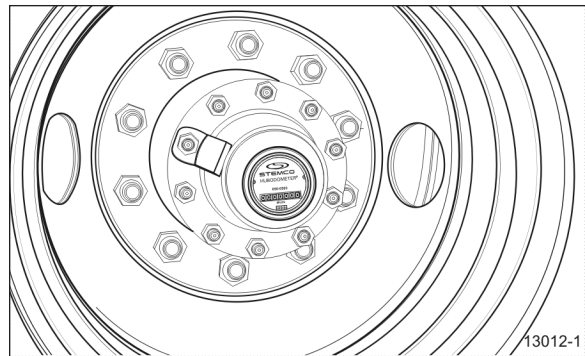


FIGURE 44: HUBODOMETER

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3-2 Coach Interior

INTERIOR MIRRORS

Two manually adjustable convex mirrors are located in the driver's area. A 6 inches round mirror positioned just above the entrance door stepwell helps to determine that the front door is cleared of passengers while a central rectangular mirror allows the driver to see the aisle and the passengers behind him.

The central mirror also double as a back-up camera monitor during back-up maneuvers. more information regarding the back-up camera can be found in Section 7 under ["BACK-UP CAMERA"](#) on page 14.

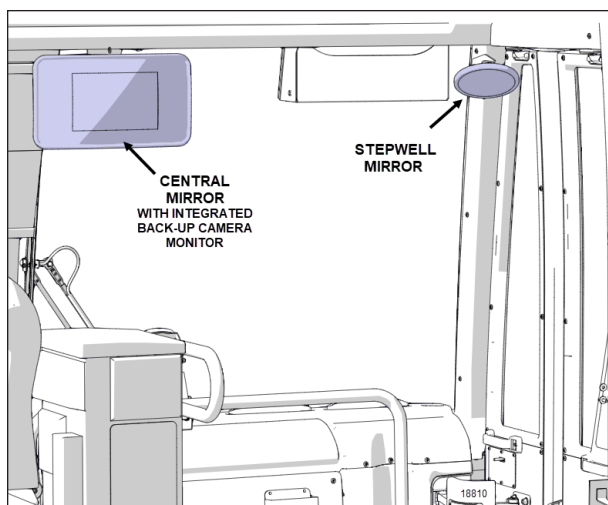


FIGURE 1: INTERIOR CONVEX MIRRORS

ADJUSTABLE HVAC REGISTERS

The HVAC system has adjustable registers to control air flow around the driver's area. Three are located on the dashboard; two on the R.H. side and one on the L.H. Another one is located close to the door, below the modesty panel wall for step de-icing. The direction and volume of air flow are adjustable manually.

Use the HVAC control panel to set air temperature (refer to ["HVAC - DRIVER'S CONTROL UNIT"](#) on page 17 in Controls & Instruments chapter).

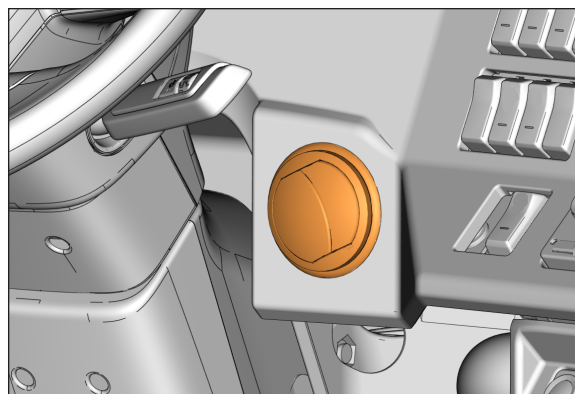


FIGURE 2: DASHBOARD AIR REGISTER

RECARO DRIVER'S SEAT

The vehicle is equipped with a Recaro Ergo seat.

! DANGER

The driver's seat must be adjusted to allow the driver easy access to the coach controls. Never adjust seat while driving a vehicle as this could result in loss of vehicle control.

! DANGER

Make sure that seat is adjusted and that safety belt is buckled up before diving vehicle.

ADJUSTMENT

Seat can be adjusted to the desired driving position by following the instructions listed below:

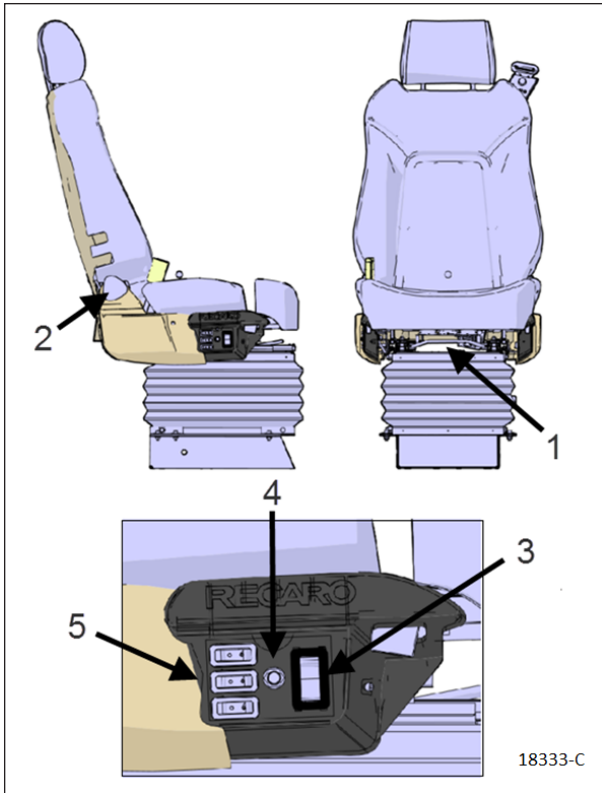


FIGURE 3: DRIVER'S SEAT ADJUSTMENT (RECARO)



Fore and Aft

To adjust distance between driver and dashboard, pull handle (1) up and slide the seat forward or backward. Release handle to lock the seat in position.



Backrest

Turn hand wheel recline (2) to adjust backrest to the desired angle.



Up and Down

Toggle up/down switch (3) to adjust the height of the seat.



Fore and Aft Auto Actuator

To adjust distance between driver and dashboard, push auto actuator (4) and slide the seat forward or backward. Release button to lock the seat in position.



Lumbar Support

Use the 3-cell lumbar switches (5) to adjust lumbar support.

DRIVER SEAT BELT

The driver's seat is equipped with a retractable safety belt as required by State, Provincial and Federal regulations.



WARNING

A snug fit with the lap belt positioned low on the hips is necessary to maximize driver 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 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 a Prevest Car service center immediately.

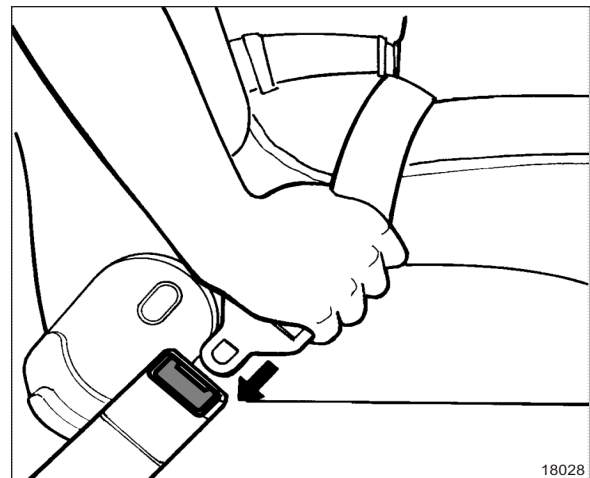


FIGURE 4: TO FASTEN SEATBELT

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

3-4 Coach Interior

twists. Make sure that it remains untwisted as it retracts.

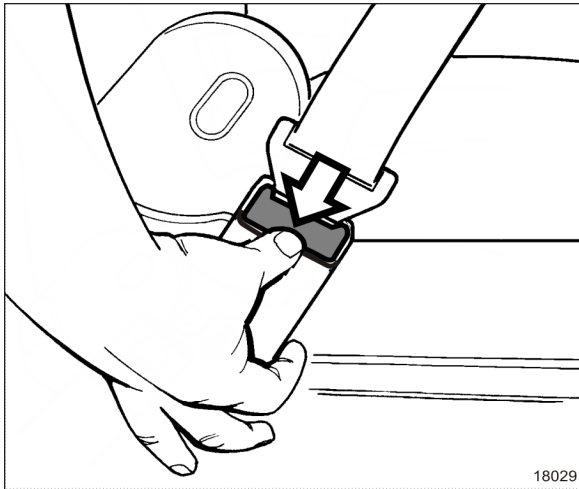


FIGURE 5: TO UNFASTEN SEATBELT



WARNING

Most State and Provincial laws require that safety belts be worn when they are supplied with the seat.

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.

PASSENGER SEATS - AMERICAN SEATING W2096 MODEL

The seat layout accommodates 57 seated passengers.

It features twenty two-passenger fixed seats, six two-passenger reconfigurable seats and five fixed rear cross single seats.

Passenger seat backrests can be reclined using the button located on the armrest. Push on the button and adjust backrest to the desired angle. Release button to lock backrest in position. The fixed rear cross seats are non-reclining.

A fold-up armrest is installed on the aisle side of the seat. A fixed armrest is installed on the window side. A grab handle is mounted on the aisle side backrest.



FIGURE 6: 3-POINT LAP/SHOULDER BELT PASSENGER SEAT

All seats are track-mounted so that the seating configuration can be changed. Each set is mounted on rectangular aluminum bases to make cleaning between the base and side wall easier.

USB PORT POWER

One integrated dual port power outlet is provided for each seat. The low voltage DC power is capable of charging most mobile devices including phones and tablets.



FIGURE 7: USB PORT POWER

SEAT RECONFIGURATION FOR MOBILITY DEVICES

The layout features four (4) sliding, flip-up, and two (2) fixed flip-up, two-passenger seats.

They are placed in the center section for easy reconfiguration to accommodate mobility devices.



FIGURE 8: WHEELCHAIR SEAT CONFIGURATION

Refer to section 05 Other Features for more information.

PASSENGER SEAT BELT

Passengers are strongly advised to wear seat belts at all times. Children can use a passenger seat belt as long as they are large enough to properly wear the seat belt. The shoulder belt must be correctly positioned over the child's shoulder and it must not touch the neck or lie below the shoulder.

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 retractor device is self-adjusting. If the seat belt operation becomes defective, report to maintenance personnel immediately.



CHILD RESTRAINT SYSTEMS

Occupants under 40" height must use Child Seat / Booster

The seat belts are equipped with switchable ELR/ALR retractor lock mode.

Activate the ALR retractor lock mode to hold a child restraint system by pulling the shoulder belt all the way out. Allow it to retract to desired length. Check that the belt straps are fully tightened and the retractor / webbing is locked.

Note: Unbuckling the belt and allowing it to retract fully deactivates the ALR retractor

Failure to use the ALR lock mode will result in the child safety seat not being properly secured.

When using a booster seat, do not pull the shoulder belt all the way out. Doing so would engage the ALR lock mode which is not recommended with booster seat.

Install the child seat/booster according to the manufacturer's instructions.

OVERHEAD CONSOLE

An overhead console is installed above each row of twin seats. It provides such amenities as reading lights, air registers and stop request service.

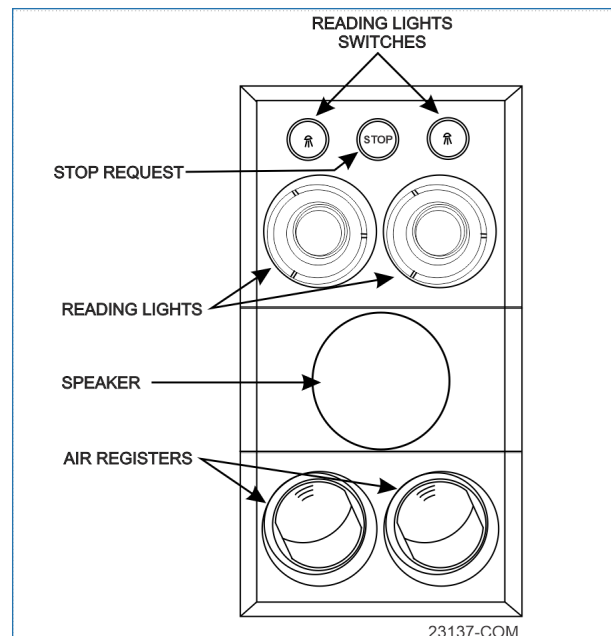


FIGURE 9: OVERHEAD CONSOLE

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ADJUSTABLE AIR REGISTERS

Manually adjustable registers located on the overhead console provide air flow to the passengers. Air flow can be directed, passengers can orient individual registers by rotating the nozzle. To adjust air flow, passengers must open or close the flaps. Activation of the fans is done by depressing a rocker switch on the dashboard. Refer to Controls & Instruments.

STOP REQUEST

Passengers can request a stop for disembarking by pressing the "STOP" request button on the overhead console by touching the tape switch. This will illuminate the button and activate a warning sound in the driver area, this will also light-up a warning signal on the dashboard. Press the "STOP" request button a second time to cancel the stop request.

For passengers with a wheelchair, a strip switch is available at the bottom of the window for a stop request.

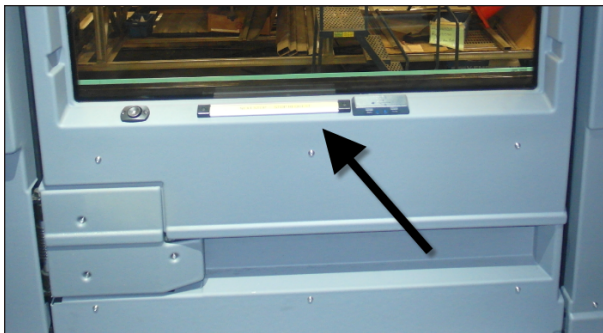


FIGURE 10: PASSENGER WITH WHEELCHAIR STOP REQUEST STRIP

READING LIGHTS

Reading lights are mounted underneath the overhead storage compartments. Depressing a rocker switch located on the dashboard (refer to ["This switch powers the reading light circuit enabling passengers to operate their personal reading lights. Refer to "Coach Interior" chapter." on page 17](#) in Controls & Instruments) will activate the reading light circuit and allow passenger control of reading lights. Turning the key or ignition switch to the accessory position "ACC" when the reading lights are on will activate the lights to full intensity, providing a clear view over the entire cabin area.

AUTOMATIC PASSENGER COUNTER (APC)

The vehicle is equipped with an automatic passenger counter (APC). The system sensor is located above the entrance door.

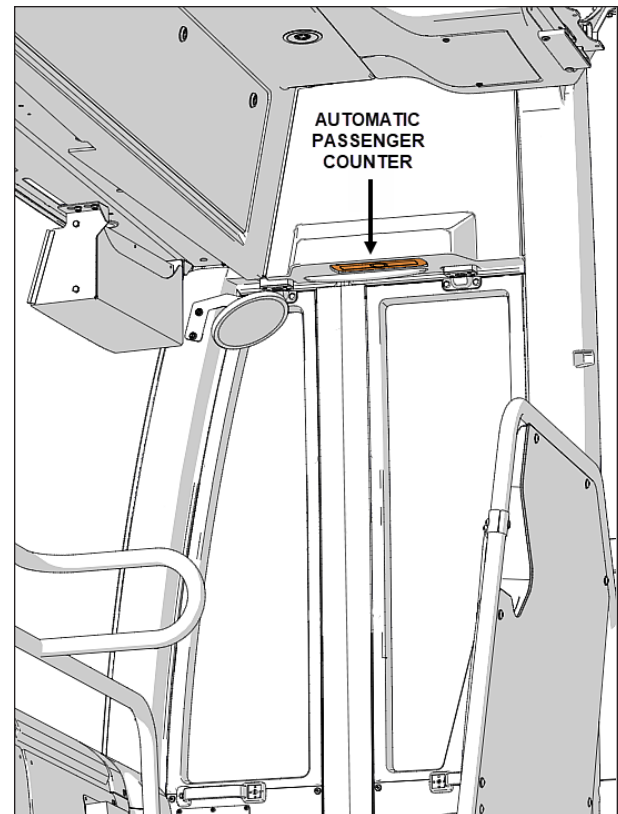


FIGURE 11:
AUTOMATIC PASSENGER COUNTER SENSOR LOCATION

WINDOWS

The vehicle is equipped with flush-mounted windows all around and a split-window windshield for maximum visibility.

PANORAMIC WINDOWS

Panoramic side windows can come in either single pane or, as an option, double pane (thermopane) glass. Some of these windows are of the fixed type and cannot be opened. Others can be easily opened to serve as emergency exits.

Fixed Windows

These windows are bonded to the structure. Fixed windows cannot be opened.

Emergency Windows

These windows can be opened from inside the vehicle as emergency exits. A decal on window sills indicates the location of the emergency windows. To open an emergency window, lift the window release bar (sill) and push the window open from the bottom.

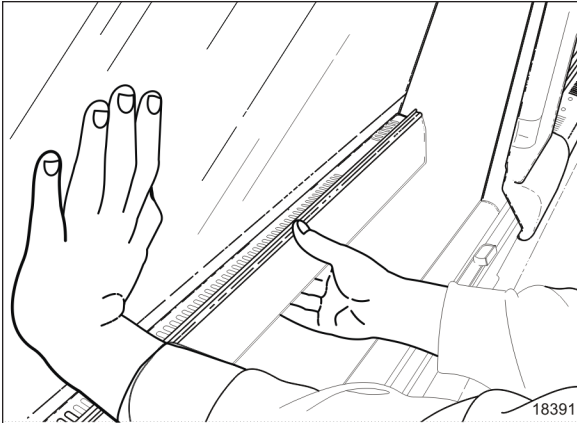


FIGURE 12: EMERGENCY WINDOW OPENING

To close, lift the release bar and pull the window into position. Push down on release bar to lock the window shut.

For more information on emergency windows, refer to ["EMERGENCY EQUIPMENT" on page 4](#) in Section 7 .

DRIVER'S POWER WINDOW

The driver has a power window on the left side of the vehicle. The windows are controlled by a rocker switch located on the driver's control panel. Refer to "Controls and Instruments".

DRIVER'S AREA SUNSHADES

This vehicle is provided with a sunshade on the driver's left side window. To operate, pull down the sunshade by its knob to the appropriate position and release. It will remain in position. To raise, pull up the sunshade by its knob.

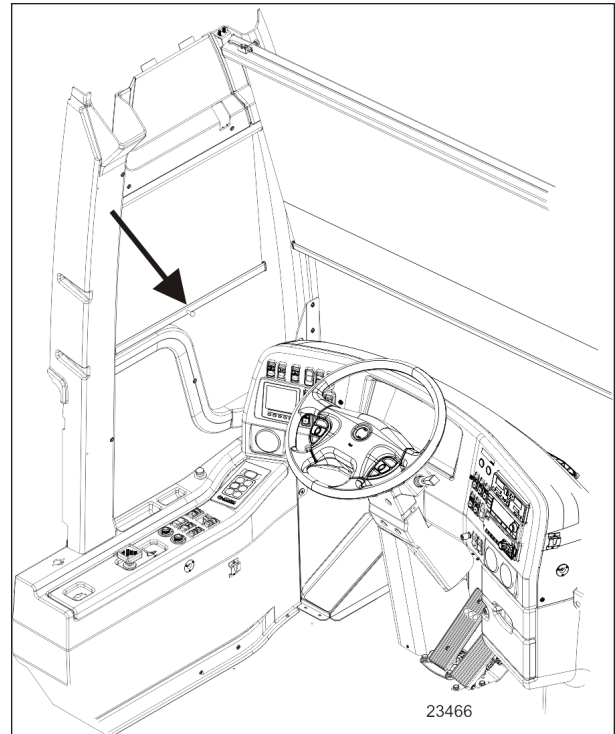


FIGURE 13: DRIVER'S WINDOW SUNSHADE

WINDSHIELD SUNSHADES

Two manually operated sunshades are installed behind the windshield. To operate, pull down the sunshade by its knob to the appropriate position and release. It will remain in position. To raise, pull up the sunshade by its knob.



FIGURE 14: WINDSHIELD SUNSHADE

VENTILATION / EMERGENCY EGRESS HATCHES

A ventilation hatch is installed in the ceiling at the rear of the coach and at the front of the coach. To

3-8 Coach Interior

open the hatch, push up with both hands and pull down to close. The ventilation hatch can be completely open for emergency egress. Refer to “Safety Features and Equipment” section.

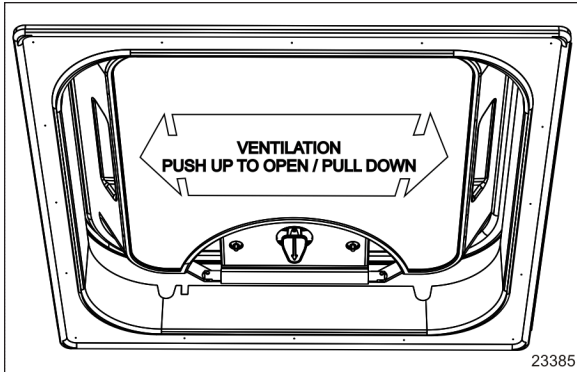


FIGURE 15: VENTILATION HATCH



WARNING

Be aware of coach overhead clearance when traveling under overpasses with the ventilation hatch(es) open. Check for maximum clearance height.

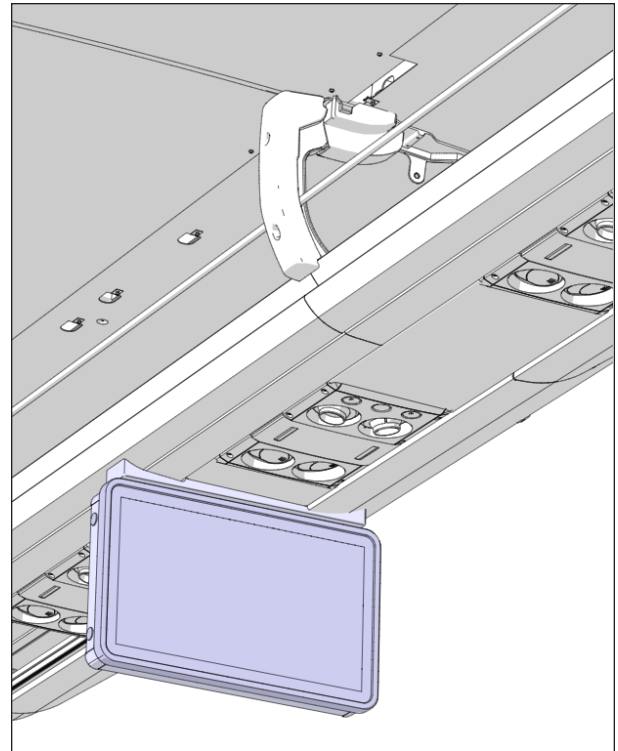


FIGURE 16: DIGITAL INFORMATION SCREEN

INFORMATION SCREENS

The vehicle is equipped with an automatic announcement system consisting of four 18.5 inches digital screens to display route and announce next stops, transfers and service alerts.

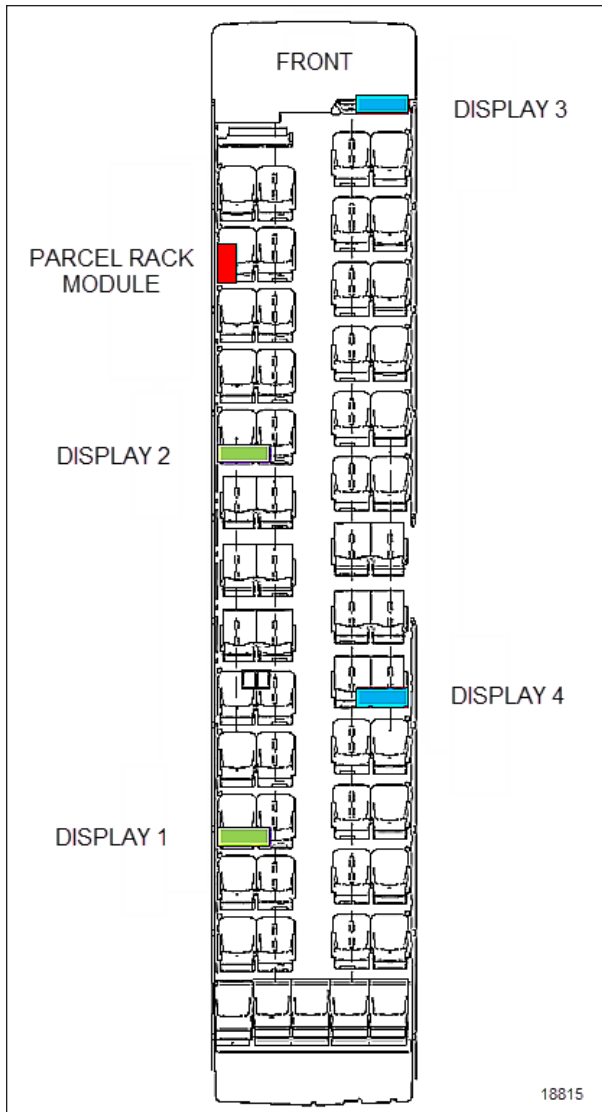


FIGURE 17: INFORMATION SCREEN LOCATION

OVERHEAD COMPARTMENTS

Passenger carry-on baggage is stored in overhead compartments on each side of the coach. A first aid kit is located in the first front curb side overhead storage compartment.

To open the optional closed overhead storage compartments, push the handle in to release the latch, then let go. A pressurized cylinder opens the door.

NOTE

The overhead storage compartments have a minimum amount of separators installed so as to quicken inspection for forgotten objects.

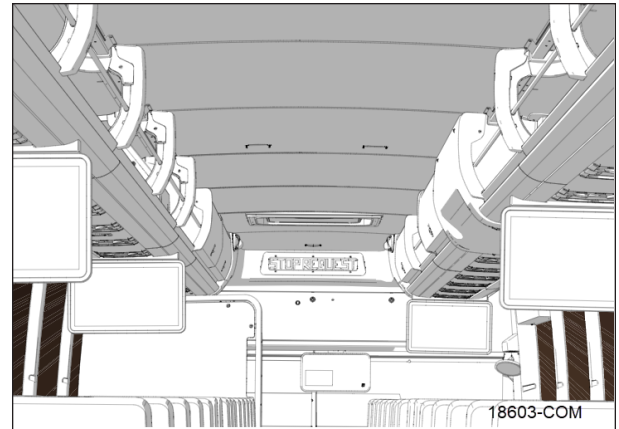


FIGURE 18: OVERHEAD STORAGE COMPARTMENTS

FIRST OVERHEAD COMPARTMENT COMPONENTS

Vehicle has two overhead compartments on the driver side with doors that can be locked. These compartments are used to group most of the electronic equipment for entertainment and communication.

Refer to the equipment manufacturer's documentation for these particular items.

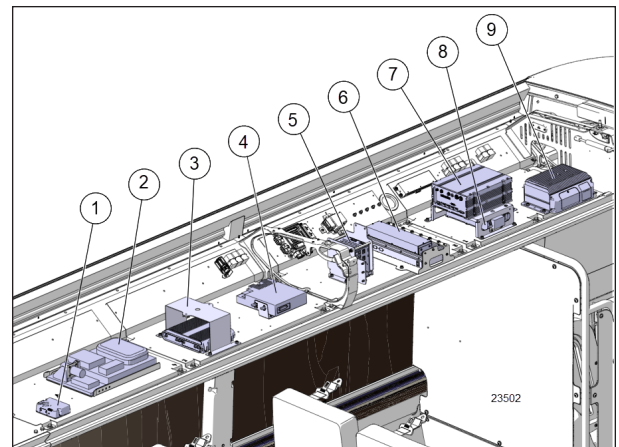


FIGURE 19: FIRST OVERHEAD COMPARTMENT COMPONENTS

1. RV50 Sierra Modem
2. BHS (BCIS)
3. Passenger WIFI Modem
4. Radio (Motorola)
5. Ethernet switch

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6. Vianova Digital Information Screen System
7. Mobile View NVR 7000
8. Mobile view 3200 Network Switch
9. Clever device IVN5

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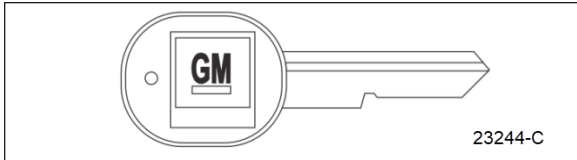
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KEYS

DRIVER KEY

Use this key to lock or unlock the entrance door, the baggage compartment doors, the driver storage and the front service compartment.



SQUARE DRIVE T-KEY

Use this key to lock the engine compartment curbside door and open the access to the catch lever that opens the engine compartment door.

Also use this key to lock or unlock the rear wall maintenance access door.



IGNITION SWITCH AND START BUTTON

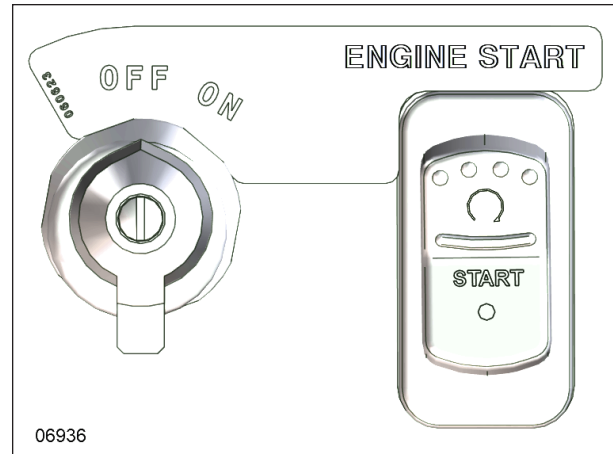


FIGURE 1: IGNITION SWITCH AND START BUTTON

The ignition switch is located on the lower left side of the dashboard. To start the vehicle, turn the ignition switch to the ON position and then push the start button.

Use the ignition switch to activate the electrical circuit by turning it to the ON position.

For further details, refer to **STARTING AND STOPPING PROCEDURES** section in this manual.

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DRIVER'S AREA OVERVIEW

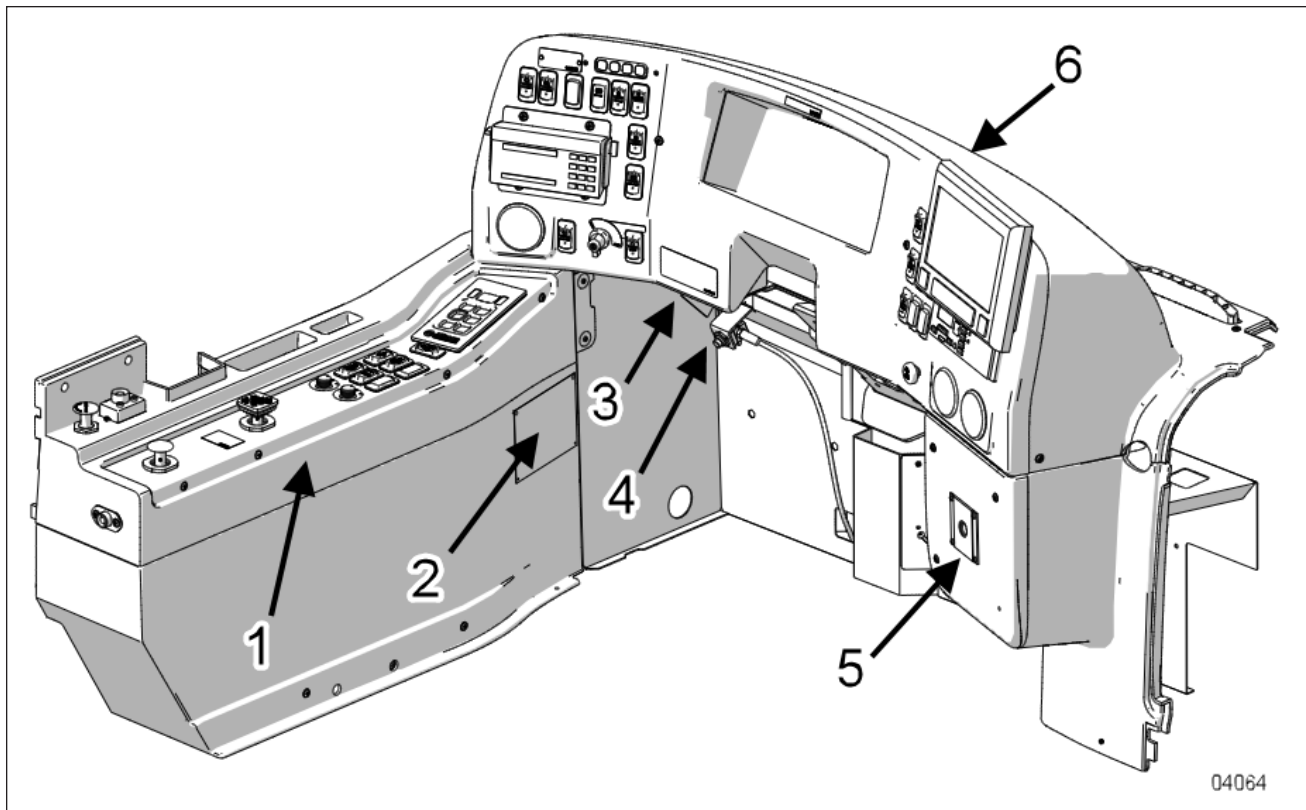


FIGURE 2: DRIVER'S AREA

1. Lateral control panel
2. DOT certification plate
3. OBD (On Board Diagnostic Tool) receptacle
4. Foot operated steering wheel adjustment valve
5. Farebox connection
6. Dashboard
7. Mobile view panic button
8. Silent alarm switch

LATERAL CONTROL PANEL

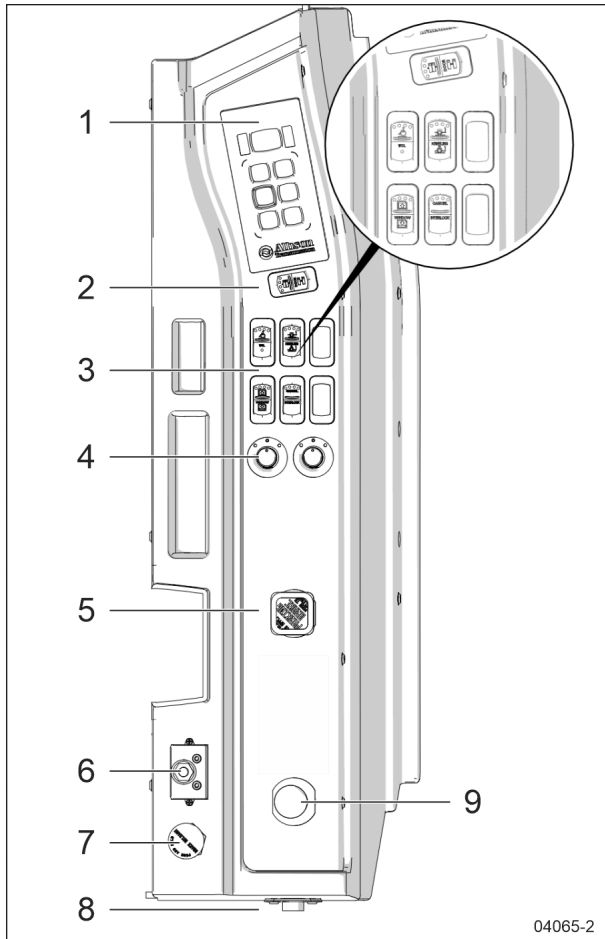


FIGURE 3: LATERAL CONTROL PANEL

1. Transmission control pad
2. Entrance door control switch
3. Control switches
4. Mirror controls
5. Parking brake control valve
6. Mobile view Tag Event button
7. Emergency/ parking brake overrule valve
8. Mobile view Tag Event buttonn
9. Entrance door emergency air pressure relief v

TRANSMISSION CONTROL PAD

The Allison transmission control pad is located on the lateral control panel. Refer to ["ALLISON TRANSMISSION" on page 40](#) in this chapter for operating instructions and more information.

The Allison transmission control pad is located on the lateral control panel. Refer to Allison Automatic Transmission paragraph in this section for operating instructions and more information.

ENTRANCE DOOR CONTROL SWITCH



Use this switch to close or to open the entrance door.

CONTROL SWITCHES

Wheelchair lift power switch



Supply electrical power to the wheelchair lift system by pressing down on the rocker switch. Refer to Other Features for instructions on operating the wheelchair lift.

Kneeling



Momentarily press the rocker switch downwards to lower the front end of the coach 4 inches (100 mm). Momentarily press the rocker switch upwards to return the coach to normal driving height.

Refer to Other Features for more information.

NOTES

This vehicle is equipped with an interlock system which automatically applies the parking brake when the kneeling system is activated.

Kneeling is disabled when the WCL system is in use.

4-6 Controls and Instruments

Power Window Switch



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



CAUTION

Close power window when parked or leaving the coach unattended.

Entrance door interlock cancel switch



This switch enables moving the vehicle while the entrance door is open for maintenance purposes or in case of emergency.



DANGER

Unless absolutely necessary, always apply parking brakes before canceling entrance door interlock.

MIRROR CONTROLS

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

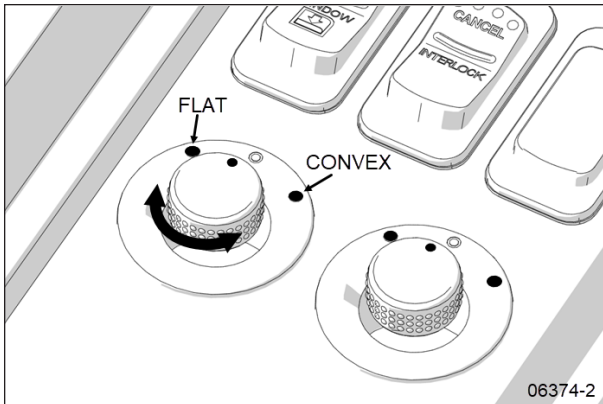


FIGURE 4: MIRROR CONTROLS

PARKING BRAKE CONTROL VALVE

Spring-loaded parking brakes are applied by pulling up the control valve knob. Push down to release brakes. Refer to SAFETY FEATURES AND EQUIPMENT section.



FIGURE 5: PARKING BRAKE CONTROL VALVE

ENTRANCE DOOR EMERGENCY AIR PRESSURE RELIEF VALVE

Use this relief valve to open the door in an emergency. Pull to release the air pressure. Push down to reapply air pressure for normal operations. Refer to "[ENTRANCE DOOR OPENING IN CASE OF EMERGENCY](#)" on [page 3](#)" in Section 7, Safety Features and Equipment for further details.

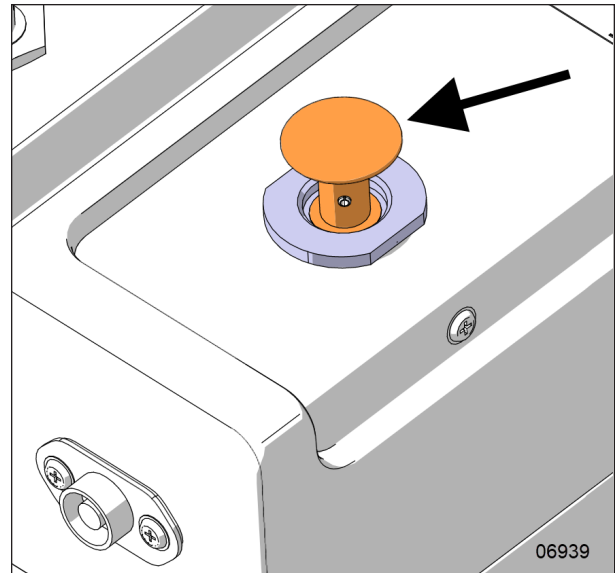


FIGURE 6: EMERGENCY ENTRANCE DOOR AIR PRESSURE RELIEF VALVE

SILENT ALARM BUTTON

Use this button to signal an emergency and ask for immediate assistance. A message will be sent via the Motorola system to the monitoring station.

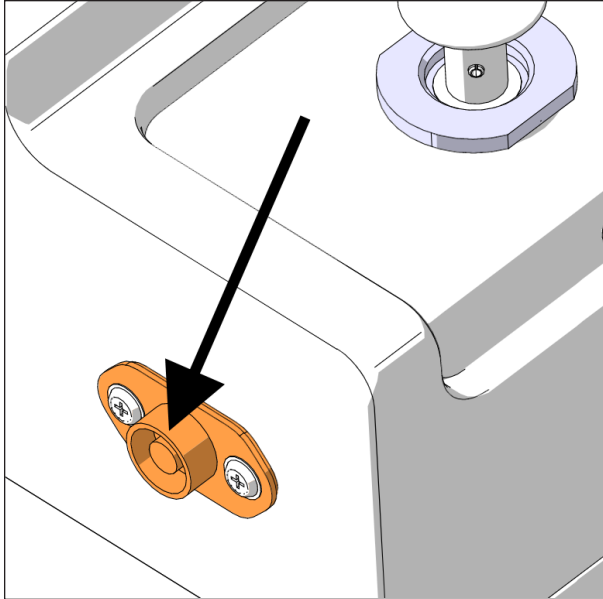


FIGURE 7: SILENT ALARM BUTTON

EMERGENCY/PARKING BRAKES OVERRULE CONTROL VALVE

During normal operation, if air pressure in any brake circuit drops below 60 psi, spring-loaded emergency brake will be immediately applied at full capacity to the drive axle wheels to stop the vehicle. Search and correct the cause of this pressure drop before driving vehicle.

The coach is equipped with the parking brake overrule system, which allows the vehicle to be driven to the nearest safe parking area even if air pressure is below 60 psi. To actuate the parking brakes overrule system, push and hold down the control valve located on the lateral control panel.

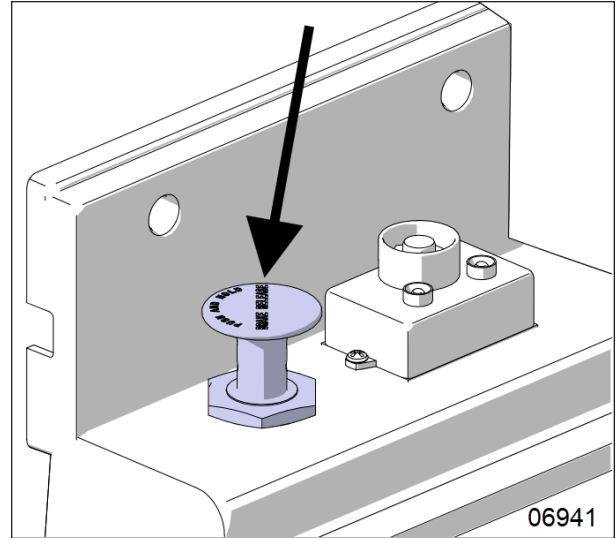


FIGURE 8: BRAKES OVERRULE CONTROL VALVE

MOBILE VIEW TAG EVENT BUTTON

This system combines real-time recorder status indicators and the Tag Event input in the Mobile View device.

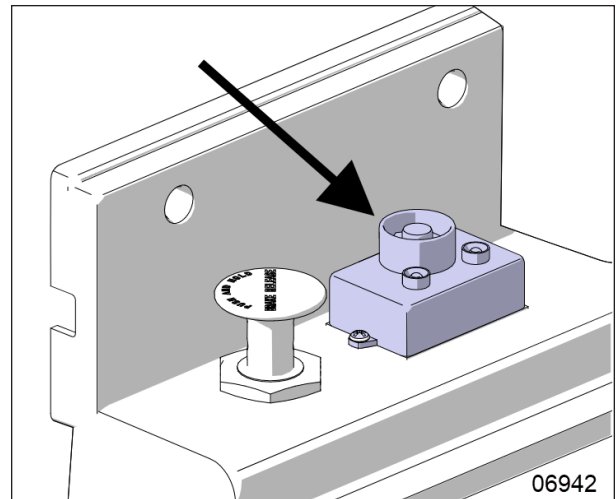


FIGURE 9: MOBILE VIEW TAG EVENT BUTTON

The Tag Event provides a discrete and silent way to record and log important events through the Mobile View device, these events can be easily reviewed later-on.

The Tag Event is activated by depressing the built-in push button.

4-8 Controls and Instruments

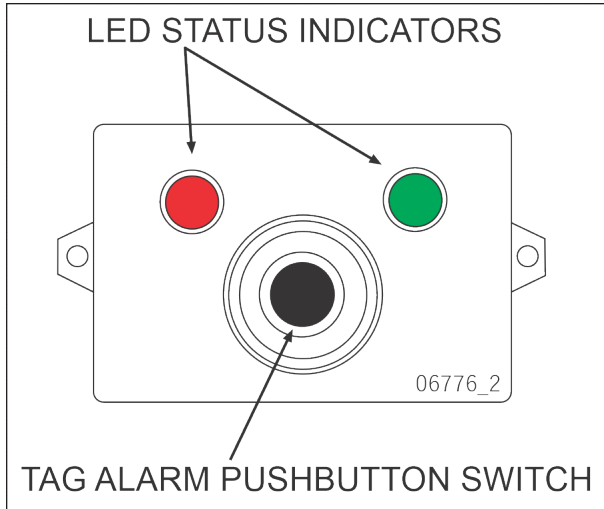


FIGURE 10: MOBILE VIEW MODULE

The recorder video status is provided by red and green LED indicators on the switch.

LED Status indicators:

- Green: Normal Operation
- Red: Check System
- None: Check System

ON BOARD DIAGNOSTIC TOOL RECEPTACLE

To ease troubleshooting, you can connect a diagnostic tool through the OBD receptacle to access recorded data. The OBD receptacle is located under the dashboard, on the left side.

AUTOMATIC FIRE DETECTION AND SUPPRESSION SYSTEM (AFSS)

The vehicle is equipped with an Automatic Fire detection and Suppression System (AFSS).

AFSS MANUAL ACTIVATION SWITCH

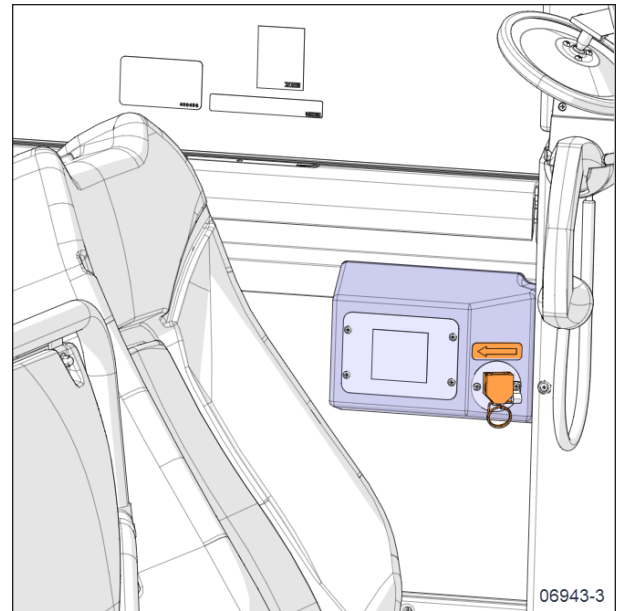


FIGURE 11: AFSS MANUAL ACTIVATION SWITCH

The manual activation switch allows immediate system activation (extinguisher discharge and engine shutdown) by the driver at any time. Activation of the switch is accomplished by pulling the tamper pin in the direction the arrow indicates to remove it, lifting the cover and pressing the red "FIRE" button for more than half a second.

Refer to Section 7 ["AUTOMATIC FIRE SUPPRESSION SYSTEM \(AFSS\)"](#) on page 5 for more information.

AFSS DISPLAY PANEL

The AFSS display panel, installed on the driver's overhead panel (next to the destination sign control panel). Important information regarding the AFSS status and possible alarms are displayed in real time. It is important to be able to interpret and react to these message (refer to *Section 7 Safety Features under "AUTOMATIC FIRE SUPPRESSION SYSTEM (AFSS)" on page 5* for more information regarding system features and how to react in case of fire detection).

Display panel main screens are shown and explained below:

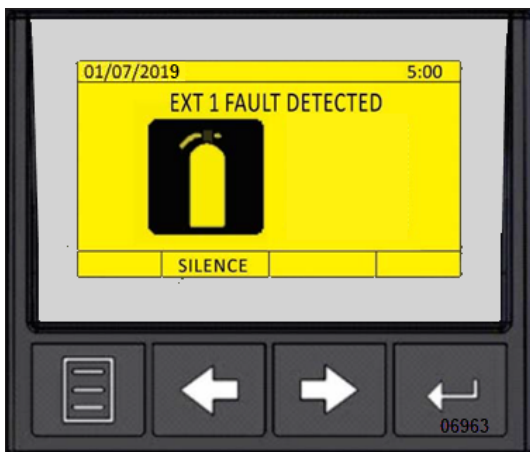
System OK Screen



Normal condition while driving.

Confirm that no obvious physical damage or condition exists that might prevent system operation.

Extinguisher Fault Screen



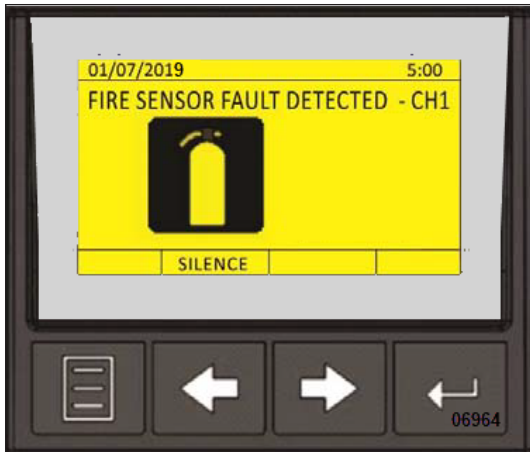
Problem with the extinguisher detected

Display turns constant yellow, an extinguisher fault will appear on the display panel and the buzzer will intermittently beep until the fault is cleared.

The system must be inspected and serviced as soon as possible to prevent malfunction in case of engine fire.

4-10 Controls and Instruments

Fire Sensor Fault Screen



Problem with one of the fire sensor (optical or thermal) detected

A sensor fault will appear on the display panel, yellow background will flashes & the buzzer will intermittently beep until the fault is cleared.

The system must be inspected and serviced as soon as possible to prevent malfunction in case of engine fire.

Manual Activation Fault Screen

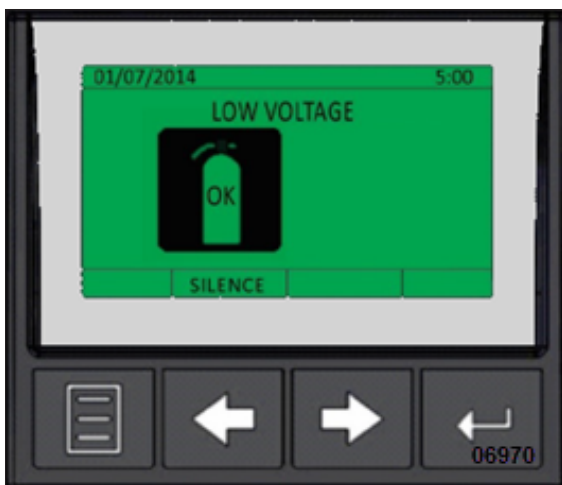


Problem with the manual activation system

A manual discharge fault will appear on the display, yellow background will flashes & the buzzer will intermittently beep until the fault is cleared.

The system must be inspected and serviced as soon as possible to prevent malfunction in case of engine fire.

Low Voltage Fault Screen

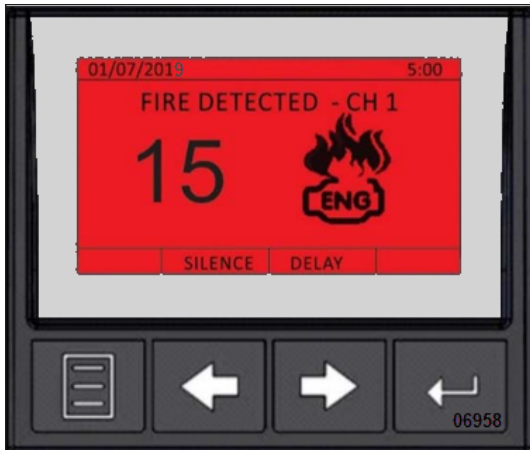


Low voltage warning

If the voltage to the system drops below 10 volts, a low voltage condition is indicated. The display backlight flashes green & the buzzer will intermittently beep until the fault is cleared.

Below 9 volts, the system turns off.

Fire Detection - 15 Seconds Countdown



A fire is detected and a 15 seconds countdown before engine shut down and extinguisher discharge starts.

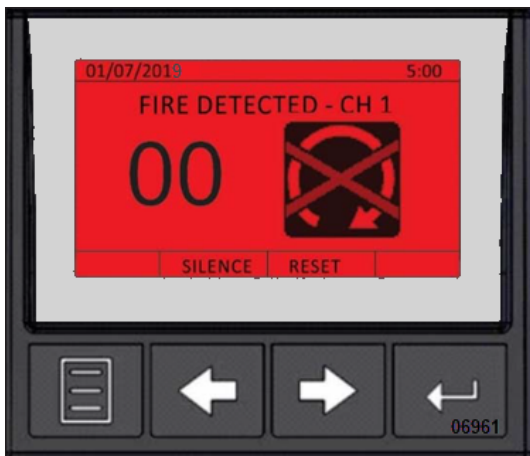
Display turns constant red and the Fire Detection icon is displayed - The buzzer starts intermittent beeping which accelerates as the timer approaches 0.

HVAC and defrost functions are disabled.

"SILENCE" and "DELAY" buttons appear.

The driver must bring the vehicle to a safe stop as soon as possible.

Fire Detection - End Of Countdown - Engine Stop & Extinguisher Discharge



The 15 seconds countdown is over.

Display turns constant red and System Deployment icon is displayed - Continuous beep in driver's area.

"DELAY" buttons disappear and is replaced by the "RESET" button.

Engine is shut down and the extinguisher is discharged.

Manual Discharge Activated



Manual activation of the Fire suppression system.

Display turns constant red and System Deployment icon is displayed - Continuous beep in driver's area.

"MANUAL DISCHARGE ACTIVATED" text appears on the screen.

Engine is shut down and the extinguisher is discharged.

4-12 Controls and Instruments

DASHBOARD

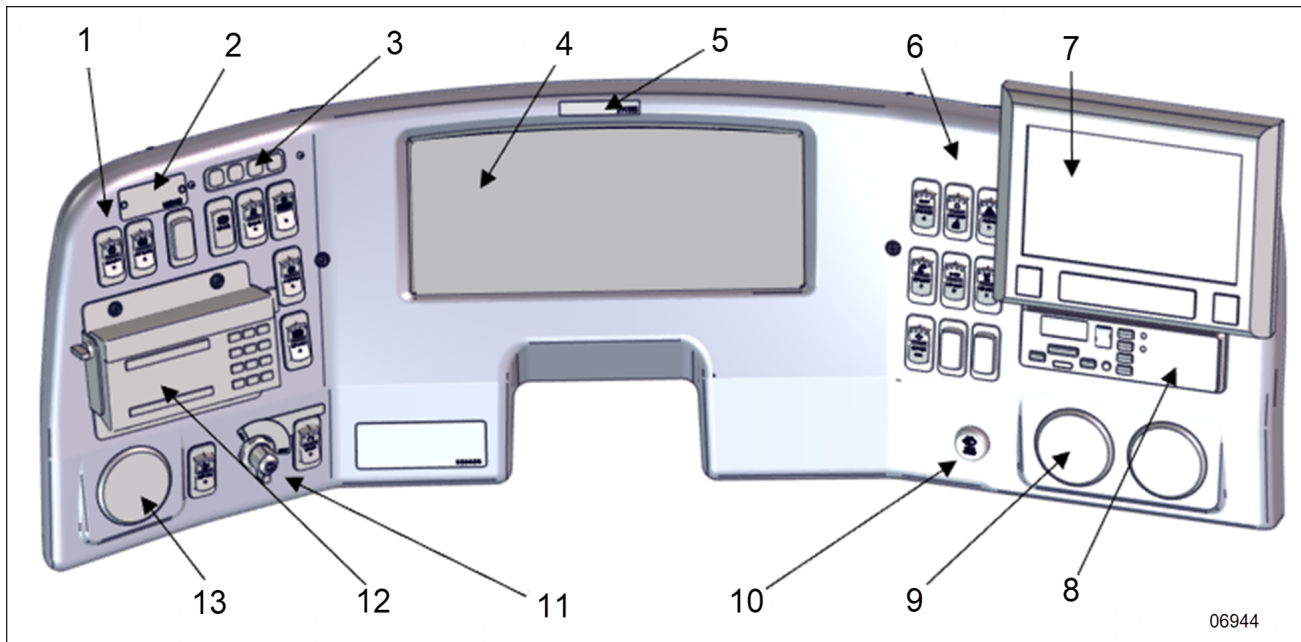


FIGURE 12: DASHBOARD

1. L.H. dashboard panel
2. Vehicle clearance information
3. Driver Information Display (DID) keypad
4. Instrument cluster
5. Minimal operating air pressure warning plate
6. R.H. dashboard panel
7. Monitor (relocated above driver)
8. HVAC control unit
9. R.H. air registers
10. Wiper and washer control
11. Ignition switch
12. Dashboard radio
13. L.H. air register

CONTROL SWITCHES

High quality switches are used to control many of the features of the vehicle. Many switches have an embedded indicator LED to inform the driver at a glance which features are active.

On some switches, the indicator 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

The L.H. dashboard panel includes controls for the operation of the coach; it also includes the ignition switch and an adjustable air register.

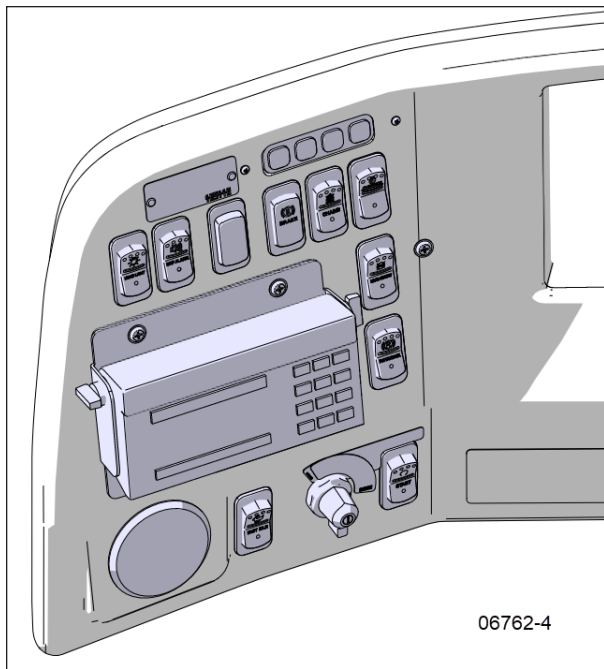
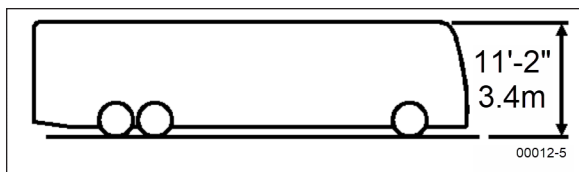


FIGURE 13: L.H. DASHBOARD PANEL COM

Vehicle Clearance Information



Vehicle height is 11'-2" (3.4 m).



CAUTION

Vehicle clearance is higher when the ventilation hatch is open.

DID Control Keypad

This feature is used to display important information about the vehicle's operation on a display screen on the lower center portion of the cluster.

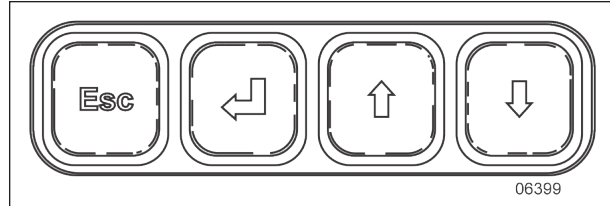



FIGURE 14: DRIVER INFORMATION DISPLAY CONTROL KEYPAD

Esc button is the escape function to move back into the menus. The second button  is the enter button to open the menus and to validate. The up and down arrows buttons are used to navigate into the menus.

Headlights And Exterior Lighting

OFF position – Daytime running lights only (with engine running).



Press this rocker switch to turn on the following lights:

First position – Front parking lights, taillights, clearance lights, marker lights, license plate light.

Second position (push down fully) – the headlights, the controls and instrument lights and all lights from the first position.

NOTE

Daytime running lights will be automatically canceled when the exterior lighting switch is fully depressed (second position).

4-14 Controls and Instruments

Back-up Alarm Cancel Switch



Use this rocker switch to cancel the back-up alarm.

NOTE

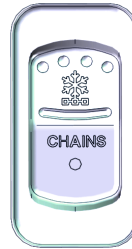
Normal operation resumes after leaving reverse gear.

Stop Light Indicator



This indicator light will illuminate simultaneously with the vehicle rear brake lights.

Driver Operated Snow Chains System



Use this feature to improve the drive axle wheels traction on iced or snowy road conditions.

When the engine is running, press this momentary switch to activate the system. The system will remain active for a 5-minute duration time.

- Activate the chain system before entering hazardous road conditions, this way you will have chains under the tires when needed
- Engage and disengage at lowest possible speed. This will save wear and tear on the system (must be moving to disengage).
- Avoid locking wheels.
- System will provide traction in both forward and reverse as well as braking but is intended to be used in 4 inches of snow or less.

The system will activate if the following conditions are all met:

1. The activation momentary switch is pressed;
2. The engine is running
3. The parking brake is released.
4. The transmission is out of neutral
5. Front axle is rotating at less than 17mph;

NOTE

Within the 5-minute duration time, if the vehicle speed exceeds 17 MPH and then drops below 17 MPH, the system will deactivate first and then reactivate.

NOTE

To maximize the drive axle wheel traction, the tag axle will automatically unload when the snow chain system is active. The tag axle air springs will return to normal pressure once this system deactivates.

Engine Stop Override (With Automatic Fire Detection And Suppression System)



Press the Engine Stop Override switch on the dashboard or the Delay Engine Stop switch on the AFSS protection panel to delay the engine shutdown and extinguisher discharge by an additional 15 seconds.



CAUTION

Use this function if you are not prepared to bring the vehicle to a safe stop (i.e. on a railroad track, in intersection).

This switch is functional only if the vehicle is equipped with the Automatic Fire Detection and Suppression System.

Traction Control System Mud/Snow Mode



On certain road conditions, it may be useful to retard the intervention of the traction control system TCS during vehicle acceleration. The Mud/Snow function allows greater engine power and more wheel spin during TCS operation. This function may be helpful to set the vehicle in motion on iced roads, for example.

Press the Mod/Snow switch to turn on this function. The TCS icon blinks slowly in the DID when the TCS Mud/Snow mode is active. Always remember to turn the Mud/Snow feature off when driving on a firm road surface.

A new ignition cycle or a second pressing of the Mud/Snow switch will turn this function off.

Transmission Retarder



Press this rocker switch to activate the transmission retarder. Refer also to "Transmission Retarder" in OTHER FEATURES section.

NOTE

Deactivating the transmission retarder will turn on the indicator light located at the front of the coach.

Secondary Use - Regeneration Inhibit Override

Flip this rocker switch 4 times (4 transitions from OFF to ON) within 2 seconds to override the regeneration inhibit function through geofencing and allow parked regeneration.

Starting Switch



Use this switch to start the engine. The ignition switch has to be in the "ON" position.

Fast Idle



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



CAUTION

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

The engine will return to fast idle once the parking brake is applied or neutral (n) selected.



CAUTION

Return the engine to normal idle before shutting the engine off.

4-16 Controls and Instruments

R.H. DASHBOARD PANEL

Miscellaneous control switches and air vents are located on this side of the dashboard .

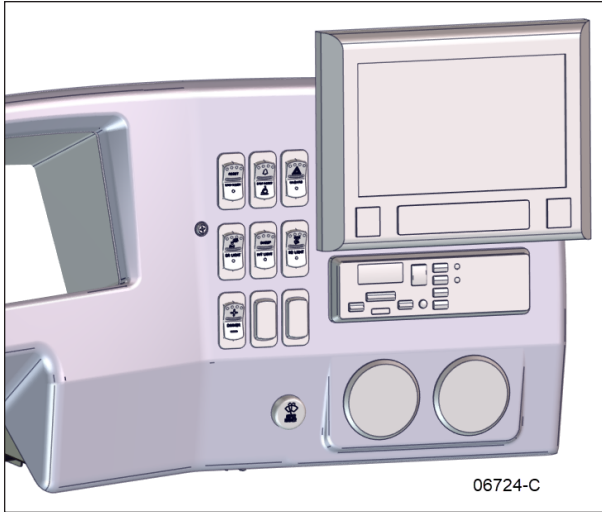


FIGURE 15: R.H. DASHBOARD PANEL

Reset Stop Request



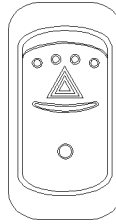
- Press the top of the switch to enable the stop request system.
- Press the top of the switch to reset a stop request.
- Press the bottom of the switch to disable the stop request system.

Wheelchair Stop Request Telltale Light



This telltale illuminates when wheelchair stop request is activated.

Hazard Warning Flashers



Press 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.

Once the hazard warning flashers are activated, the ignition switch can be turned to the OFF position. The hazard warning flashers will stay activated and will prevent the vehicle systems to fall in "sleep mode".



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.

Driver's Area Lighting



Press this rocker switch to turn on the driver's overhead light as needed.

Interior Lighting



Press this rocker switch to the first position to illuminate the aisle fluorescent lighting. Press down the second position to gradually illuminate the in-station reading lights to 80% of their intensity regardless if they were turned off individually by passengers. Lights will also turn OFF gradually.



CAUTION

To avoid running down the batteries when the engine is off, turn off the lights or connect an off-board battery charger.

Reading Lights



This switch powers the reading light circuit enabling passengers to operate their personal reading lights. Refer to “Coach Interior” chapter.

NOTE

Upon starting of the vehicle, when the ambient temperature is very cold in and out of the vehicle, the HVAC control unit will permit a temperature overshoot up to 3° over the passenger’s area set point to help warming up of the area because some parts of the vehicle like the seats and the overhead compartments accumulate cold.



CAUTION

To avoid running down the batteries when the engine is off, turn off the lights or connect an off-board battery charger.

HVAC DRIVER'S CONTROL UNIT

NOTE

It is recommended to run engine at fast idle to operate the air conditioning system when vehicle is stationary.

This will improve A/C compressor performance and provide adequate electrical power to the multiple A/C system fans.

When the system is running, keep roof ventilation hatch and door closed to prevent cooling loss.

Brightness Control



Adjusts the brightness of the dashboard instruments and switches.

To prevent battery run-down, the central 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 from other vehicles or buildings to allow sufficient air flow through the condenser core.

The driver’s HVAC unit may be turned ON by pressing the ON/OFF button.

Also, the driver's HVAC section turns on automatically at engine start and uses the settings that were kept in memory before turning off of the system.

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

The A/C compressor starts automatically when the two following conditions are satisfied:

1. The outside temperature is above 32°F.
2. The passenger's area temperature has reached 7°F under the set point. At this moment, enough heat is available from the engine to warm up the area while the air conditioning will remove moisture in air and prevent fogging up of the windows.

Wiper And Washer Control Switch



Push the control to activate the windshield washer. Turn the button to activate the wipers. The first position activates the wipers intermittently. The second position is the slow speed and the third position is for high speed wiping.

HVAC PASSENGER'S UNIT

The passenger’s area HVAC unit (central unit) has a preset temperature of 68°F (20°) and is fully automatic. It turns on at starting of the engine. No inputs are required from the driver to control the passenger’s HVAC unit.

4-18 Controls and Instruments

The vehicle is slightly pressurized by the HVAC system to prevent dust and moisture from entering.

NOTE

Upon starting if the outside temperature is above 32°F and then drops below 32°F, the compressor will keep running up to a temperature of 15°F to prevent condensation from forming on the windows.

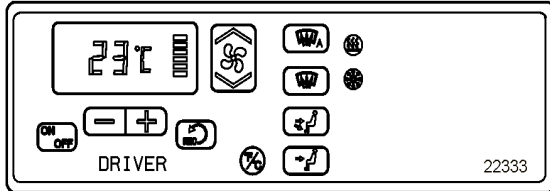


FIGURE 16: CONTROL UNIT FOR DRIVER'S HVAC SYSTEM

Heating Mode Indicator



This red LED illuminates when the system is heating.

Cooling Mode Indicator



This green LED illuminates when the system is cooling (when the compressor clutch is engaged).

Fan Speed



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

Recirculate



Closes or opens both the driver's and passenger's section fresh air damper.

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

This feature is automatically canceled when defogging is activated.

Driver's Section Temperature Setting



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



To increase the temperature set point, press the "+" sign, to decrease the temperature set point, press the "-" sign. Temperature range is between 60°F and 82°F (16°C to 28°C). On the driver's side only, asking for a temperature set point above 82°F (28°C) will keep the coolant valve open and "FUL" will be displayed.

In case of interior temperature sender unit failure, the coolant valve will remain open and three lines "---" will be displayed.



WARNING

Warm temperatures may cause drowsiness and affect alertness while driving. Keep the temperature comfortable but not too high.

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.



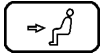
The dashboard damper sends air only to the lower windshield when activated. The footwell damper is also closed but the fan speed can be reduced or increased.

Panel And Footwell



The dashboard damper sends air to the panel vents and footwell.

Panel



Air is sent to panel registers. The foot damper is closed.

Switches between outside air and recirculated air for the driver and passenger area. This feature is automatically canceled when the windshield defrost is activated.

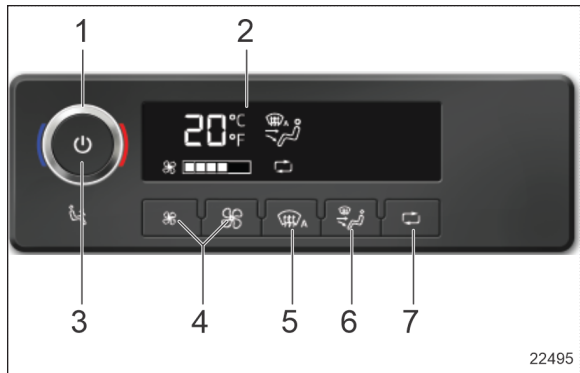


FIGURE 17: CONTROL UNIT FOR DRIVER'S HVAC SYSTEM (LATEST VERSION)

1) Driver temperature set point adjustment

Increases or decreases the temperature set point for the driver area.

2) Driver section display

Displays the temperature set point, the fan speed, the air selection and recirculate air status for the driver area.

3) Driver HVAC power button

Turns on/off the driver HVAC unit.

4) Fan speed

Increases or decreases the fan speed.

5) Auto-defrost

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 (recirculate off) and the driver set point is increased to 4 °F (2 °C) over the passenger section set point.

6) Air selection

Changes the air outlets used.

7) Recirculate

Temperature Unit Selection °F / °C

To switch the temperature units, press simultaneously both fan speed buttons for 3 seconds.

AIR REGISTERS

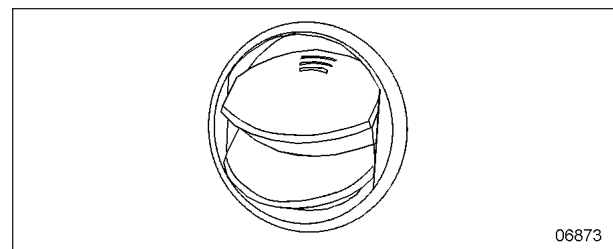
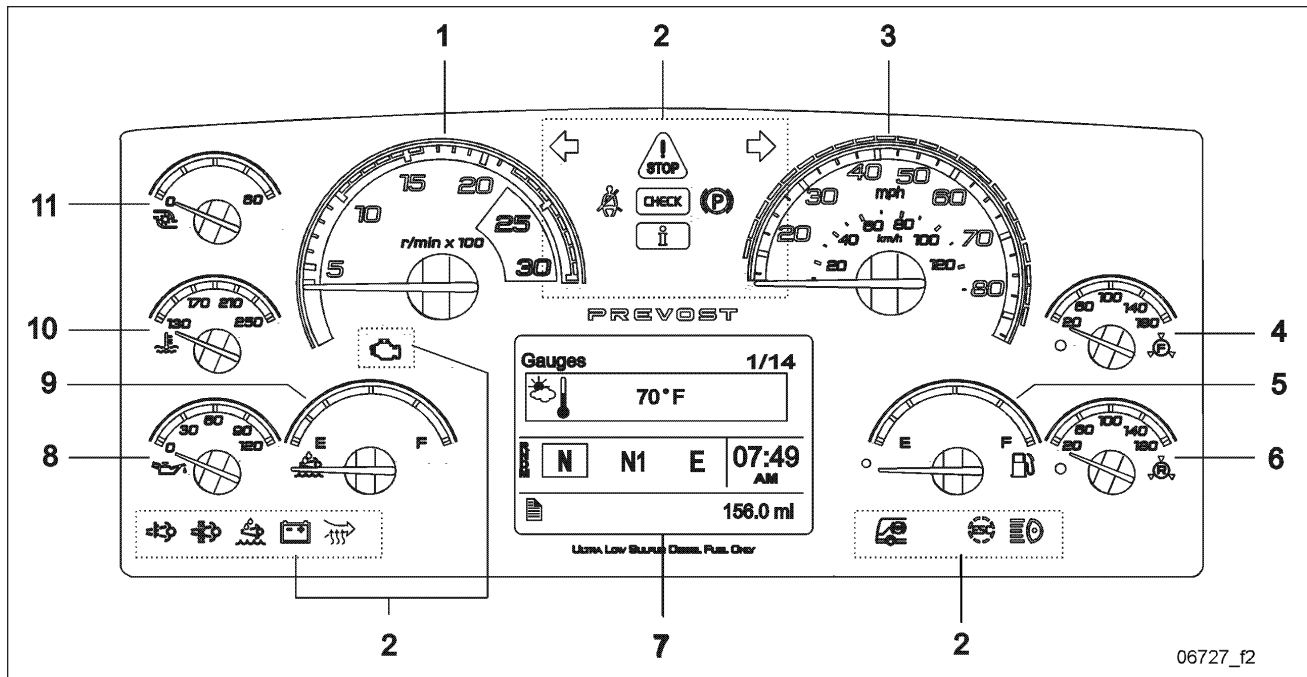


FIGURE 18: AIR REGISTER

Adjustable air registers feed air to the driver's area. Three are located in the dashboard and one near the door. Use the HVAC control panel to set air temperature and fan speed.

4-20 Controls and Instruments

INSTRUMENT PANEL



1. Tachometer
2. Telltale lights
3. Speedometer
4. Front brake air pressure (secondary)
5. Fuel level
6. Rear brake air pressure (primary)
7. Driver Information Display (DID)
8. Oil pressure indicator
9. DEF (Diesel Exhaust Fluid) level indicator
10. Engine coolant temperature
11. Turbo boost pressure

DRIVER INFORMATION LEVEL

The instrument cluster includes the analog instruments. It also presents two devices to communicate information to the driver, the telltale lights and the Driver Information Display (DID).

Indications and warnings are presented according to three levels of attention required:

FIRST LEVEL - TELLTALE LIGHTS

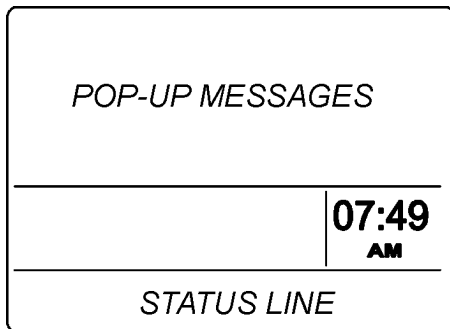
Telltale lights are temporary and exceptional; they present information critical to safety or vehicle integrity.

SECOND LEVEL - POP-UP MESSAGES

Pop-up messages appear in the Driver Information Display DID without the driver's intervention and acknowledgment. Pop-up messages present supplemental information to the driver.

THIRD LEVEL- STATUS LINE

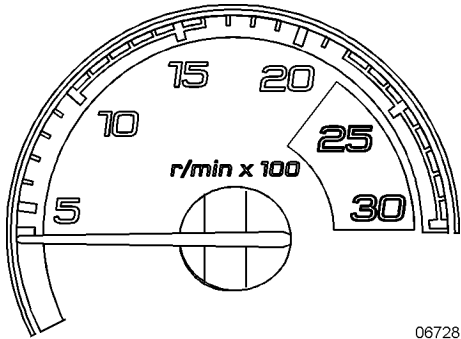
The status line monitors certain systems and gives feedback to the driver concerning current actions and functions.



06742b

4-22 Controls and Instruments

ANALOG INDICATORS



06728

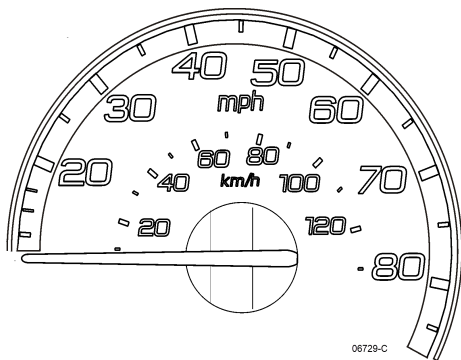
Tachometer (Rpm X 100)

Indicates the operating speed of the engine in hundreds of revolutions per minute. Use the green range for normal driving (1000 to 1600 RPM).



CAUTION

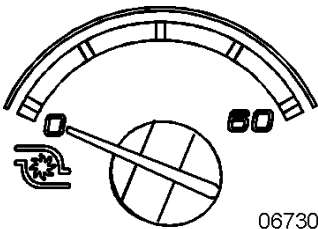
Never allow the engine to go into the red range. This could lead to severe engine damage.



06729-C

Speedometer (MPH, Km/h)

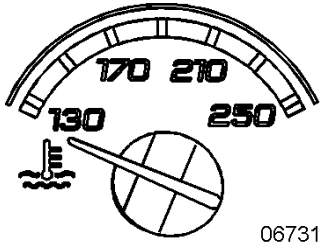
Indicates the vehicle speed in miles per hour (mph) and in kilometers per hour (km/h).



06730

Turbo Boost Pressure (psi)

Indicates the turbo boost pressure in psi. This pressure should be the same at a given engine temperature, speed, and load. An unusual reading could indicate an engine failure.



06731

Engine Coolant Temperature (°F)

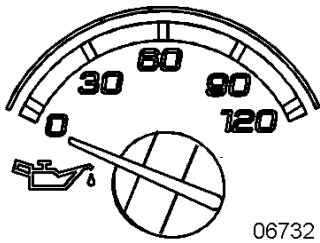
Indicates the operating temperature of the engine coolant in °F. The normal reading should be between 170°F and 222°F (80°C to 106°C).

The temperature limit is dependent on the electronic program for the engine model. When coolant temperature is excessive, the STOP telltale light turns on, an audible alarm sounds and a pop-up message appears on the DID. The engine protection system will automatically derate and stop the engine in 30 seconds. Stop at the first safe place where the problem can be checked.

If the temperature remains below or exceeds the normal temperature range, the cooling system should be checked for problems.



STOP telltale light



06732

Engine Oil Pressure (psi)

Indicates the engine oil pressure in psi. When the oil pressure is too low, the STOP telltale light turns on, an audible alarm sounds and a message appears on the DID. The engine protection system will automatically derate and stop the engine in 30 seconds. Bring the vehicle to a safe stop where the problem can be checked.



STOP telltale light



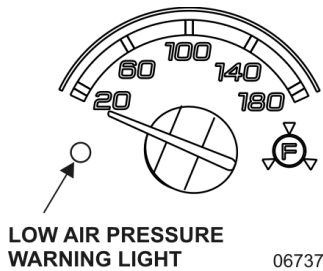
OIL PRESSURE Pictogram



CAUTION

Failure to take necessary action when the STOP telltale light is on can ultimately result in automatic engine derate and shutdown.

4-24 Controls and Instruments



Front Brake Air Pressure Gage (Secondary System)

Indicates the front brake air system pressure in psi. The normal operating pressure is from 122 to 140 psi.

The low air pressure indicator LED on the gage and the STOP telltale light illuminate when the front brake air system (secondary) pressure drops below 85 psi. An audible alarm will sound.



STOP telltale light

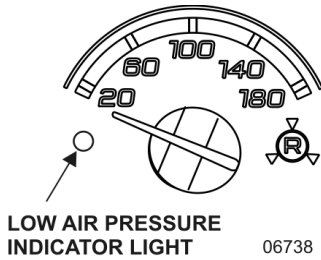


WARNING

The driver is responsible for monitoring the pressure as part of a regular sweep of the instruments.

If the pressure drops in the secondary system but remains normal in the primary system, the front axle service brakes will not function but the drive and tag axle service brakes will operate normally, although if there is a leak in any pneumatic system (Sec/Pri/Park/Acc), the primary system might eventually lose its air pressure as well, depending on the nature and size of the leak. In the event of any air pressure loss in any system, the driver should pull to the side of the road as soon as can be safely done and investigate the situation.

Do not drive the coach when the brake air pressure is low.



Rear Brake Air Pressure Gage (Primary System)

Indicates the rear brake air system pressure in psi. The normal operating pressure is from 122 to 140 psi.

The low air pressure indicator LED on the gage and the STOP telltale light illuminate when the rear brake air system pressure drops below 85 psi. An audible alarm will sound.



STOP telltale light



WARNING

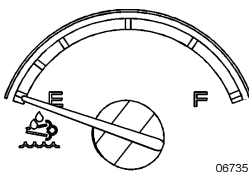
The driver is responsible for monitoring the pressure as part of a regular sweep of the instruments.

In the event of a pressure loss in the primary brake system, the drive and tag axle service brakes will not function normally. It is critical to bring the coach to a safe stop as quickly as possible.

If there is sufficient pressure in the secondary brake system, modulated spring brake pressure (using the park brake chambers) will be used to apply the drive axle brakes, proportional to the braking pressure on the front axle. It must be noted this is an emergency and a significant amount of secondary air pressure is lost with each apply/release cycle. The spring brake modulation will only function two or three times, depending on the amount of secondary air pressure that was on hand when the primary brake pressure was lost.

Once the secondary air pressure drops below 60 psig, the park spring brakes are fully applied and cannot be released until pressure is restored.

Do not drive the coach when the brake air pressure is low.



DEF Level

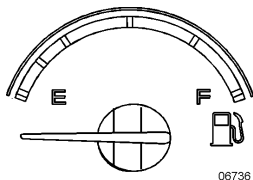
Indicates the amount of DEF (Diesel Exhaust Fluid) remaining in the DEF tank. The DEF tank is considered as being full when it contains 16 gallons (60 liters) of DEF. DEF consumption will be approximately 2% of the diesel fuel consumed.



CAUTION

Diesel exhaust fluid DEF will begin to crystallize and freeze at 12°F (-11°C) and expand by 7% when frozen. To allow expansion without damaging the DEF tank, do not fill the tank with more than 16 gallons (60 liters).

4-26 Controls and Instruments



Fuel Level

Indicates the amount of fuel remaining in the fuel tank. At the beginning of the red area, there is approximately 48 gallons (182 liters) left in the tank.

NOTE
<i>A pop-up message will appear in the DID informing that there is only 26 gallons (98 liters) left in the fuel tank.</i>

TELLTALE LIGHTS

The telltale lights illuminate for 5 seconds at the start of every ignition cycle as a light bulb check.



Stop

Indicates that a serious problem has been detected. Immediately park the coach in a safe place and stop the engine. This telltale light may be accompanied with a message in the DID and a diagnostic troubleshooting code will be stored to ease identification of the problem.



WARNING

Failure to take necessary action when the STOP telltale light is on can ultimately result in automatic engine derate and shutdown.



Check

Indicates that a problem has been detected and must be checked at the next stop. This telltale light may be accompanied with a message in the DID and a diagnostic troubleshooting code will be stored to ease identification of the problem.



Information

This information telltale is not activated in this vehicle but will be visible during a few seconds when the vehicle ignition key is turned ON.



Turn Signal Indicators

Flashes when the right or left turn signals are activated. Signal right and left turns by operating the foot control switches. See “Foot Operated Controls” in this section.

NOTE

The turn signals are automatically activated when the vehicle is backing up or when the Wheel Chair Lift is in function.



Parking Brake Or Emergency Brake Applied

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.

This telltale will also flash and an audible alert will be heard if ignition is set to off and the parking brake is not engaged or if no brakes (service or parking) are applied while the vehicle is in neutral below 3 mph (5 km/h).



Driver's Seat Belt Reminder Light And Warning Buzzer

Warns the driver to fasten his/her seat belt.



Aftertreatment System Malfunction (Malfunction Indicator Lamp)

Indicates a failure of an emission control device. May illuminate at the same time as the CHECK amber warning light. The lamp will go out after 3 completed ignition on-ride-ignition off cycles. Vehicle can be driven to end of the shift. Call for service.

4-28 Controls and Instruments



High Exhaust System Temperature (HEST)

Illuminates to notify the driver that the DPF is in active regenerative mode and that exhaust gas temperature at the exhaust system diffuser are potentially hazardous



WARNING

During regeneration, exhaust temperature may reach up to 1200°F (650°C) at the particulate filter. When parking the vehicle, if this telltale light is illuminating, make sure that the exhaust system diffuser is away from people or any flammable materials, vapors or structures.



DPF Regeneration Request

Illuminates to notify the driver that a manual stationary regeneration will be required soon.



Def Tank Low Level Indicator

Illuminates when there is less than 2.6 gallons (10 liters) of DEF left in the tank.



CAUTION

This telltale light starts flashing when there is less than 0.8 gallons (3 liters) left in the tank. It may flash in conjunction with the check engine and / or stop engine lights.

If the vehicle is kept in operation with an empty DEF tank, engine derate will eventually occur, limiting the speed to 5 mph.



Charging System Warning Light

Indicates a malfunction of the charging system or a low battery voltage condition.

NOTE

"Charging System Malfunction" message will also appear in the DID

This telltale will also flash and an audible signal will be heard if a battery charger is plugged and the parking brake is removed.



Intake Air Preheater On – Wait Before Starting

Illuminates when the intake air preheater element is in function. Wait until this telltale light has turned off before starting the engine. For more information, refer to "COLD WEATHER STARTING" in Section 6 Starting and Stopping Procedures.



Antilock Brake System (ABS)

Illuminates when the ABS is not available or when the ABS is malfunctioning. Since the ABS system does not operate at less than 4 mph (7 km/h), the indicator will remain illuminated until the coach reaches that speed. Refer to "ANTILOCK BRAKING SYSTEM (ABS)" in Section 5 Other Features.



Esc - Electronic Stability Control

Quickly flashes every time the electronic stability intervenes. Will also flash when Mud/Snow mode is turned on using the Mud/Snow switch.



High Beam

Illuminates when the high beams are selected. High and low beams are selected with the multi-function lever. Refer to "MULTI-FUNCTION LEVER" in this section.

4-30 Controls and Instruments

STOP, CHECK AND INFORMATION TELLTALE LIGHTS

STOP, CHECK and INFORMATION telltale lights illuminate automatically to draw the attention of the driver and their associated messages are displayed in the DID. More than one message (see "Acknowledging Messages" below) can be active at the same time. A displayed message can be replaced by a new message provided the new message has a higher priority. Only fault codes that have a direct impact on vehicle operation are displayed. All fault codes are stored in the appropriate ECU for access by service technicians.

Stop Telltale Light

In the event of a serious fault, the red STOP telltale light comes on and an audible alarm will sound if the engine is running. An illuminated stop message light indicates a serious problem has been detected, and the driver must respond immediately to the problem.



When illuminating, this telltale light means the vehicle must be safely pulled off the road and stopped. In some instances, the engine must be switched off immediately.



WARNING

Failure to stop and take necessary action when the STOP telltale light is on can result in an automatic engine derate and shutdown.

In some cases preventive action may be taken by the engine ECU to protect the engine. For further details, refer to ["ENGINE PROTECTION SYSTEM" on page 7](#) in Starting and Stopping Procedures.

Check Telltale Light

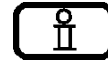
This telltale light means that a fault or an abnormal operating condition has been detected. The vehicle must be checked at the next stop.



If the CHECK telltale light illuminates, an associated message is displayed in the DID. Always pay attention to the associated messages (see "Acknowledging Messages" below).

Information Telltale Light

The INFO indicator light comes on when there is a new information message or an abnormal status is detected by the electronic control unit. A pictogram or text or both are shown in the DID in addition to the INFO telltale light (see "Acknowledging Messages" below).



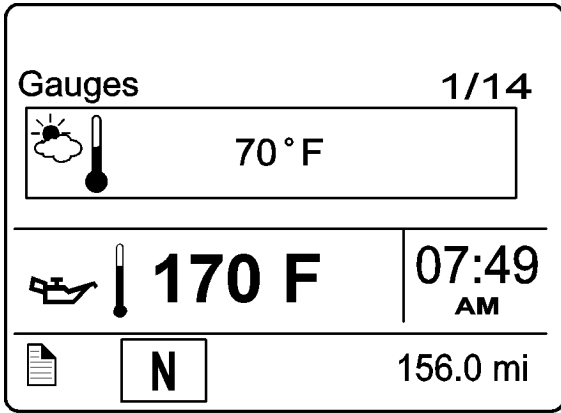
Acknowledging Messages

A fault message associated to a STOP, CHECK or INFORMATION telltale light must be acknowledged by pressing the ESCAPE or ENTER button after which the display returns to the same status that existed before the fault occurred. All messages can be acknowledged. Acknowledgement of pop-up messages and warnings stops the audible warning.

Acknowledged but inactive messages are displayed again when the ignition key is turned to the START position or they can be read in the DID menu. Refer to Other Features for more information on the DID menus.

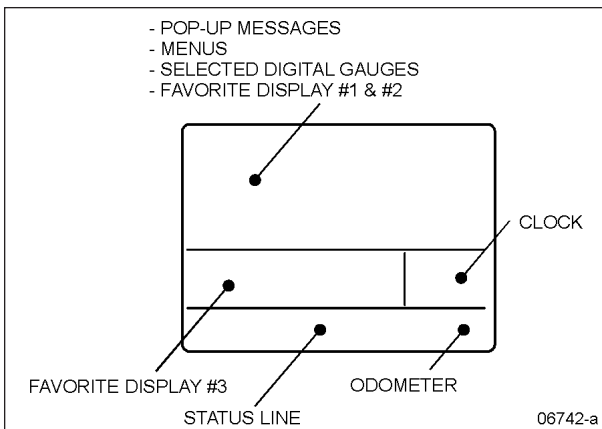
DRIVER INFORMATION DISPLAY

The DID (Driver Information Display) is located in the center of the instrument cluster. It displays digital gages, main menus and submenus that provide necessary and important information to the driver. The information available to the driver depends on vehicle configuration, and whether the vehicle is in operation or parked. For the list of the available menus and submenus, refer to "DRIVER INFORMATION DISPLAY (DID) MENUS" in Section 5 Other Features.

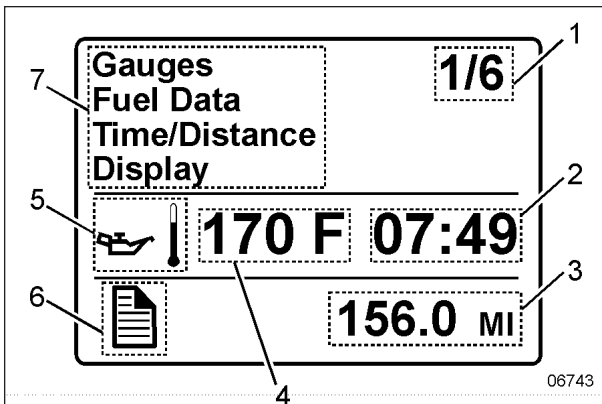


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The outside air temperature, fuel flow and the odometer (Allison transmission) or the current gear position (transmission I-Shift) are part of the default display. You can replace the default display by your selection of favorite gages using the Driver Information Display submenu Favorite Display Setting. Refer to "DRIVER INFORMATION DISPLAY (DID) MENUS " in Section 5 Other Features for more information.



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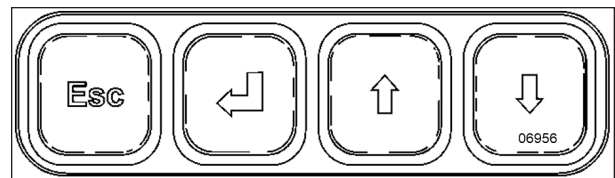


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

1. Indicates first of six available menus (varies by menu)
2. Clock
3. Odometer
4. Value or data (in this example, the engine oil temperature)
5. Pictogram relevant to the displayed value or data
6. Status bar active pictogram
7. Messages or available menus

Selecting A Menu

Menus are placed in a cascade arrangement. Use the Driver Information Display (DID) keyboard to scroll through them.




To select a menu:

1. Press the  or Esc button to display the list of available menus.
2. Use the UP/DOWN button to scroll up or down through the menus.
3. Use the  button to open a menu.
4. Use the Esc button to return to the previous menu or display or to cancel a setting or operation.

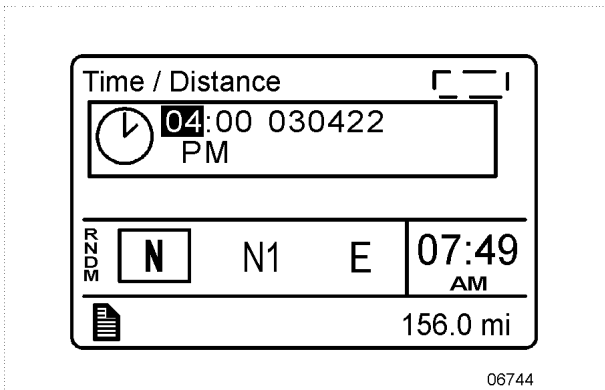
To Change Settings

To change a setting, like the clock:

1. Use the UP/DOWN button to increase or decrease the numerical value of the selected range.
2. Use the  button to confirm your choice and to move to the next field.

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3. Press the Esc button to return to the previous field or to cancel a setting or operation.






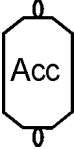





PICTOGRAMS DISPLAYED ON THE DRIVER INFORMATION DISPLAY (DID)

NOTE








In certain situations, the pictogram displayed represents a system or a function of the vehicle. A particular pictogram may be displayed with different messages. In that situation, it is very important to pay attention to the message displayed with the pictogram.

DRIVER INFORMATION DISPLAY “GAUGES” MENU PICTOGRAMS

“GAUGES” MENU PICTOGRAMS	
PICTOGRAM	DESCRIPTION
	Date and time
	Engine oil temperature
	Outside Air Temperature
	Icing condition If the exterior temperature is between 32°F to 35°F, the outside air temperature pictogram described above is replaced by this popup
	A/C compressor pressure This pictogram is displayed with a/c compressor suction pressure value (low side) and discharge pressure value (high side).
	Accessories Air Pressure Normal pressure should be between 122 and 140 psi.
	Voltmeter This pictogram is displayed with both the 12-volt and 24-volt electrical system current voltage value. When the engine is running, the 24-volt electrical system voltage value should be between 26,5 and 28,0 volts.
	Transmission Oil Temperature
	Battery State of Charge This pictogram is displayed with the state of charge (%) of the 12-volt and 24-volt battery banks.

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POP-UP MESSAGES

Pop-up Pictograms	
PICTOGRAM	DESCRIPTION
	High Engine Oil Temperature
	Engine Coolant Temperature
CHECK ENGINE COOLANT LEVEL AT NEXT STOP	Low engine coolant level Warns the driver that the engine coolant level has reached the recovery tank low level switch. Add coolant whenever possible.
ENGINE COOLANT LEVEL CRITICALLY LOW	Critically low coolant level Warns the driver that the engine coolant level has reached the surge tank low level switch. Stop and add coolant.
	Low Engine Oil Pressure
	High Transmission Oil Temperature This pictogram indicates that the transmission oil temperature is too high. Turn the transmission retarder off to allow the oil to cool down.
	Allison Transmission– Oil or Filter Replacement Required This pictogram may be displayed with many different messages. Pay attention to the displayed message which can advise that the transmission oil or filter change is necessary. Refer to Appendix C for more information on the Allison transmission prognostic features (oil life monitor, filter life monitor, transmission health monitor).
	Low Brake or ABS Air Pressure The message associated to this pictogram is “Low System Brake Air”. Warns the driver that the brake air system pressure of the primary or/and secondary system has decreased below 85 psig. Do not drive the coach when the brake air pressure is low.
	A/C System Pressure High This pictogram indicates that the A/C system pressure is too high. If the A/C pressure is too high, the compressor clutch is disengaged, but the fans remain activated.
NOTE	
<i>When outside temperature is high, it is possible and normal for that pictogram to appear.</i>	

Pop-up Pictograms



A/C System Pressure Low

This pictogram indicates that the A/C system pressure is too low. If the A/C pressure is too low, the compressor clutch disengages and the fan stops.

NOTE

When outside temperature is low, it is possible and normal for that pictogram to appear.



Engine Door Ajar

This pictogram indicates that the engine compartment door is ajar.



Wheelchair access door open

This pictogram indicates that the wheelchair access door is open or unlocked.



Wheelchair lift compartment door open

This pictogram indicates that the wheelchair lift system door is open or unlocked.



Wheelchair lift

This pictogram indicates that the wheelchair lift system is enabled and the wheelchair access door or the lift compartment door is open. It is necessary to stow the wheelchair lift, close the doors and set the wheelchair lift system enable switch to the OFF position to permit release of the parking brake or kneel the vehicle.



Freezing conditions

This pictogram appears when the temperature is in the range between 0°C and 2°C (32°F et 35°F), when the road is most slippery.



Parking brake applied



Tag axle unloaded

This pictogram appears to warn the driver that the tag axle is unloaded through the use of the automatic tag unload override valve.



Cooling fans low voltage

This pictogram indicates that battery voltage is too low for proper fan operation.



Low accessories air pressure

Normal pressure should be between 122 and 140 psi.



Suspension Level Low With Vehicle Speed > 12mph

This pictogram and message appear if the vehicle speed exceeds 12 mph (20 km/h) while the front suspension of the vehicle (kneeling) is lowered.

Pop-up Pictograms



TCS Status Icon

This pictogram indicates that the traction control system is active. It is displayed in conjunction with the ESC telltale.



Soot level critically high

This pictogram indicates that the soot level in the diesel particulate filter is critically high or unidentifiable.



A/C Fail



Fuel Filter/Water Separator

Indicates that draining of the fuel filter/water separator is required.



Remove parking brake

These two pictograms are displayed if the driver tries to move or accelerate the vehicle with the parking brake applied.

Door power failure

DOOR POWER FAILURE

This popup indicate that there is no power at the door control module or at one of the door solenoids

Charging system

CHARGING SYSTEM
MALFUNCTION

This popup appears in conjunction with the battery telltale if both alternators are not charging

Speed Switch

REDUCE SPEED TO
OPEN DOOR

Door controll switch in open position at speed over 2mph

Throttle malfunction

DOOR INTERLOCK
FAILED TO DISABLE
THE ACCELERATOR
PEDAL (THROTTLE)

This popup indicates that the door interlock failed to disable the accelerator pedal

Pop-up Pictograms



Fire in engine compartment

This pictogram appears if a fire is detected in the engine compartment while the vehicle is on the road. An audible alarm and the vehicle electric horn are activated to inform the driver that a fire is detected. The vehicle fire suppression system (AFSS) display panel will also show an alarm screen when a fire is detected. Refer to [Section 7 "AUTOMATIC FIRE SUPPRESSION SYSTEM \(AFSS\)" on page 5](#) for more information.

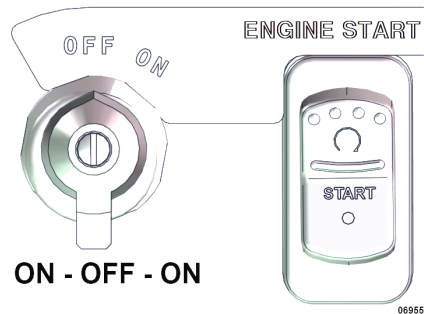


WARNING

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

NOTE

It is possible to cancel the horn alarm while on the road. To do so, stop the vehicle. Cycle the ignition twice between the ON and OFF position and then start the vehicle normally.



NOTE





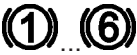


To stop the electric horn alarm when parked, cycle the ignition between the on and off position twice within 2 seconds.

For the location of the extinguisher, refer to [Section 7 Safety Features And Equipment "FIRE EXTINGUISHER" on page 4](#).

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STATUS BAR PICTOGRAMS

These pictograms will appear in the status bar of the DID.

Status Bar Pictograms	
PICTOGRAM	DESCRIPTION
	<p>Tag Axle UNLOAD selected</p> <p>Confirms that the automatic tag unload override valve is switched to the UNLOAD position. Refer to "AUTOMATIC TAG UNLOAD OVERRIDE VALVE" on page 41 for further details.</p>
	<p>DPF Regeneration inhibited</p> <p>Confirms that IVN regeneration inhibit function is active because the vehicle is inside of a geofence. When flashing, this pictogram indicates an IVN issue inhibiting regeneration as well.</p>
	<p>Kneeling/Front Suspension Active</p> <p>Indicates that the front suspension is lowered (kneeling).</p>
	<p>Allison Transmission Retarder</p> <p>Confirms that the Allison transmission retarder is off.</p>
	<p>Allison Transmission Retarder – Braking Level 0, 1, 2, 3, 4, 5, 6</p> <p>Confirms the retarder hand lever position. Each position corresponds to a given braking level. Refer to "TRANSMISSION RETARDER" in this section.</p>
TEST	<p>Vehicle Test</p> <p>Indicate that the vehicle test mode has been initiated manually.</p>
	<p>Entrance door interlock</p> <p>Confirms that the entrance door interlock is enabled.</p>
	<p>Entrance door interlock disabled</p> <p>Indicates that the entrance door interlock is disabled through the use of the entrance door interlock cancel switch or the master interlock switch.</p>

HORN

The electric horn is operated from the steering wheel center pad.

NOTE

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

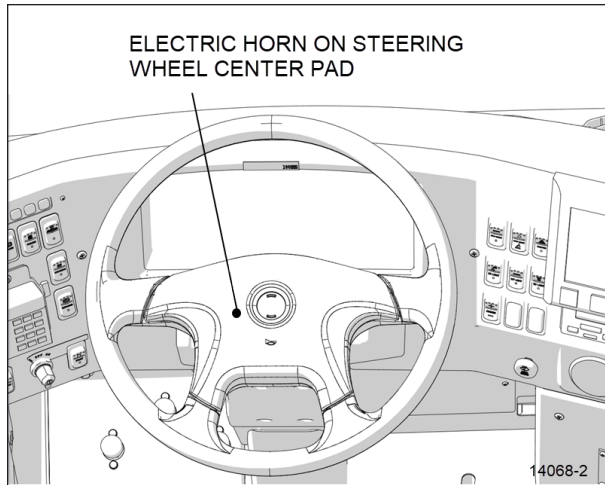


FIGURE 19: STEERING WHEEL

STEERING WHEEL ADJUSTMENT

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

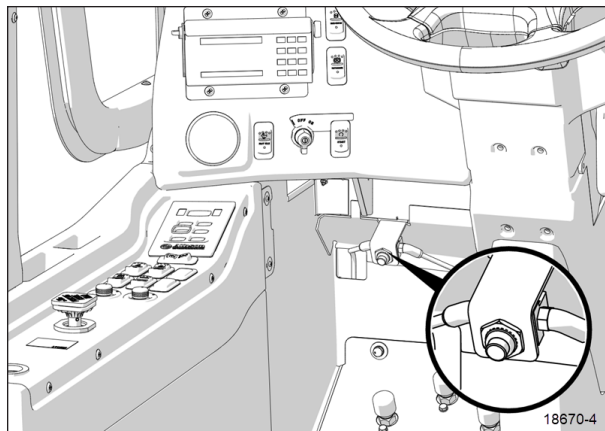


FIGURE 20: TILT AND TELESCOPIC ADJUSTMENT



WARNING

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

FOOT-OPERATED CONTROLS

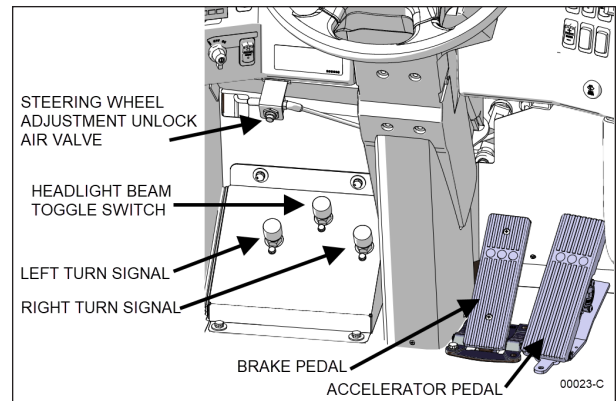


FIGURE 21: FOOT OPERATED CONTROLS

HEADLIGHT BEAM TOGGLE SWITCH

Toggle between high and low beams by pressing the foot-operated switch.

LEFT TURN SIGNAL SWITCH

Press the foot-operated switch to signal a left turn. Pressing and quickly releasing the button will cause the turn signal to cycle ten times by itself.

RIGHT TURN SIGNAL SWITCH

Press the foot-operated switch to signal a right turn. Pressing and quickly releasing the button will cause the turn signal to cycle ten times by itself.

BRAKE PEDAL

The vehicle is equipped with a dual braking system. The front brakes operate from a different air source than the drive and tag axle brakes.

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Service brakes are applied by depressing the brake pedal. Braking increases with the amount of pressure applied to the foot pedal.

A warning LED and an audible alert will sound when the air pressure in either the primary or secondary circuit drops. If this occurs, stop the vehicle; determine the cause of the pressure loss before proceeding.

The brake pedal can be used in conjunction with the transmission retarder.



DANGER

Immediately report any brake system problem to your company or directly to the nearest Prevost or Prevost-approved service center.

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 entrance door is open.

ALLISON 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 5th Generation Bus Series Operator's Manual](#) available on the Prevost Technical Publication web site.

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, the CHECK telltale lights on the dashboard.

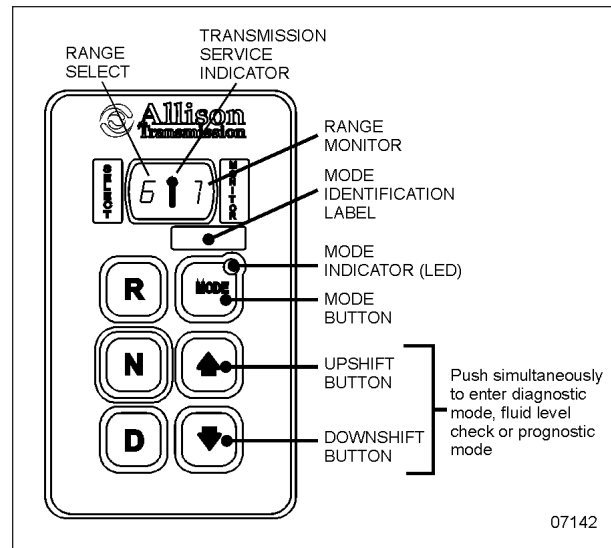


FIGURE 22: ALLISON PUSHBUTTON SHIFT SELECTOR

PUSHBUTTON SHIFT SELECTOR

The pushbutton shift selector has the following elements:

R: Press to select Reverse gear.

NOTE

The forward limit speed to activate the reverse gear is 5 mph.

N: Press to select Neutral.

D: Press 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: Pressing the MODE button allows the driver to activate the secondary shift schedule that has been programmed into the TCM unit.

PRIMARY AND SECONDARY SHIFT SCHEDULES


The primary shift schedule is the default mode at starting of the engine and is typically specified to accommodate normal vehicle operation. The transmission controller automatically selects between ECONOMY and PERFORMANCE shift strategy, based on the vehicle actual load and the grade on which the vehicle is operating. This is called Load Based Shift Scheduling (LBSS). This can produce improved overall vehicle fuel economy while still enabling high productivity when the vehicle is loaded.

In the secondary shift schedule, only the ECONOMY shift strategy is available. No switching is done between shift strategies. The secondary shift mode is available only if selected by the driver, using the MODE button. When the secondary mode is activated, "MODE" illuminates on the display.

NOTE

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

TRANSMISSION SERVICE INDICATOR

: This indicator will be illuminated upon the detection of a service issue relating to clutch, filter or fluid life. The appearance of the indicator (lit steadily, flashing, etc.) varies for each of the conditions monitored by the system. Refer to

appendix C for more details about diagnostic code display procedure, fluid level check or prognostic features (Oil Life Monitor, Filter Life Monitor and Transmission Health Monitor) using the pushbutton shift selector.

Illuminated at startup for a bulb check, this indicator will then be turned off if no service conditions exist.

DESCRIPTION OF AVAILABLE RANGES

R (Reverse)

Press the «R» button to select reverse. Completely stop the vehicle and let the engine return idle before shifting from forward range «D» to reverse «R» or from reverse to forward range. The reverse warning signal will be activated when this range is selected.

N (Neutral)

Use this position to start the engine. Select «N» (Neutral) when checking vehicle accessories and for extended periods of engine idle operation; parking brake must then be applied. The pushbutton shift selector automatically select «N» (Neutral) when the ignition switch is turned On.

NOTE

The automatic transmission does not have a park «P» position. Select «N» (Neutral) and apply parking brake when the vehicle is left unattended. An audible alert will sound if the engine is stopped and the parking brake is not applied.



WARNING

Before leaving driver's seat, always put the transmission in NEUTRAL and apply parking brake.



WARNING

The vehicle service brakes or park brake must be applied whenever NEUTRAL is selected to prevent unexpected vehicle movement.

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CAUTION

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 «N». This practice can result in transmission damage. Also, no engine braking is available in neutral.

D (Drive)

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 downshift for a period of time or until normal wheel speed has been restored.

NOTE

IMPORTANT: Brake pedal must be applied when selecting «D» (Drive) otherwise the transmission will stay in «N» (Neutral).

NOTE

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

1 (First Range)

Select this range when pulling through mud and snow, when speed control is needed for driving up or down steep grades or when maneuvering in tight spaces. This range also provides maximum driving torque and 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.

2 (Second Range)

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

3, 4 (Third And Fourth Ranges)

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



WARNING

Service brake should not be used to control the speed of the vehicle on long, steep descents. Instead, lower transmission ranges should be used in conjunction with the output retarder. Refer to "[TRANSMISSION RETARDER](#)" on [page 31](#) in Section 5 Other Features for details regarding both systems. This procedure keeps service brake 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.

DESTINATION SIGN CONTROLLER

The Destination Sign System (DSS) is automatically activated when the ignition switch is turned to the ON position.

The controller provides a single control interface to multiple systems on the vehicle. System information such as message listings for destination signs, updated route or public service information for the INFO transit system can be downloaded via USB, Wireless or other on board systems.



FIGURE 23: DESTINATION SIGN CONTROLLER

Refer to Technical Publications web site and [Supplier Publications](#) section for reference guide how to set the controller.

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EXHAUST AFTERTREATMENT SYSTEM

The exhaust aftertreatment system consists of two units, the filtration and regeneration unit and the selective catalytic reduction SCR unit.

FILTRATION AND REGENERATION UNIT

The main purpose of the filtration and regeneration unit is to capture and oxidize (regenerate) the particulate matter (soot) in the engine exhaust gas. The exhaust gas first enters the Diesel Oxidation Catalyst (DOC) and then flow through the Diesel Particulate Filter (DPF); together they capture and regenerate the soot on a regular or passive basis. Through constant monitoring of the exhaust gas temperature and the system back pressure, the engine control module is able to manage regeneration.

PASSIVE REGENERATION

Passive regeneration is the process by which the particulate matter is oxidized due to the heat generated by the engine internal combustion process. During normal highway operation, exhaust temperatures alone are usually high enough to oxidize accumulating soot. In low ambient temperatures, however, or in some stop-and-go applications, the system needs a little help to regenerate, or clean itself. This process is called “active” regeneration.

ACTIVE REGENERATION

Active regeneration is necessary when the engine internal combustion process alone does not generate enough heat. A dosing system injects a mist of diesel fuel into the exhaust system to increase and maintain the aftertreatment system temperature. Exhaust temperature must be above 572°F (300°C) to initiate the oxidation catalyst, which in turn oxidizes the injected diesel fuel molecules to achieve up to 1200°F (650°C) exhaust temperature at the particulate filter. This process of active regeneration takes place during the normal operation cycle of the vehicle without charges in performance or control for the operator. EPA2010 compliant and later Volvo engines produce less soot, so less active or stationary regeneration will be required.





STATIONARY (PARKED) REGENERATION




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

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

5-4 Other Features

DEF CLOGGING SEQUENCE – INSTRUMENT CLUSTER TELLTALE LIGHT

LEVEL 1	 solid	<p>REGENERATION NEEDED</p> <p>Diesel particulate filter is becoming full</p> <p>The DPF Regeneration telltale light illuminates to notify the driver that a stationary regeneration (parked) will be required soon. When this lamp is lit, initiate stationary regeneration process at an appropriate time of day. THERE IS NO URGENCY AT THIS LEVEL.</p>
LEVEL 2	 flashing	<p>REGENERATION REQUIRED</p> <p>Diesel particulate filter full</p> <p>If no DPF regeneration occurs after the initial DPF Regeneration telltale light illumination, the lamp will begin blinking and a stationary regeneration should be initiated as soon as possible in order to prevent from entering into Level 3.</p>
LEVEL 3	 flashing + 	<p>ATD SERVICE REQUIRED</p> <p>ENGINE DERATE ACTIVE</p> <p>Diesel particulate filter overfull</p> <p>If the flashing DPF Regeneration telltale light is still ignored, the CHECK telltale light will illuminate. In that situation, engine performance is limited. Perform a parked regeneration IMMEDIATELY to avoid further derate and prevent from entering into Level 4.</p>

<p>LEVEL 4</p>	<p> flashing</p> <p>+</p> <p></p> <p>+</p> <p></p>	<p>ATD SERVICE REQUIRED ENGINE SHUTDOWN ACTIVE</p> <p>A serious engine problem has occurred. The DPF may be over its maximum capacity.</p> <p>If a stationary regeneration is still not initiated, a standard Engine Protection Shutdown sequence will occur. All of the following dashboard lamps will be present:</p> <ul style="list-style-type: none">• Blinking DPF Regeneration telltale light;• Solid CHECK telltale light;• Solid STOP telltale light. <p>Once engine derate and/or shutdown sequence is completed, a stationary regeneration must occur to continue vehicle operation. If the driver continues to operate the vehicle without regeneration, additional measures will be taken to protect the engine and ATD from damage, up to and including engine shutdown. Parked regeneration might no longer be possible.</p> <hr/> <p>If engine protection has been initiated and forces the engine to shutdown, you can immediately RE-START the engine and perform the necessary steps in order to initiate a stationary regeneration.</p> <p><u>Find and solve the cause of the shutdown</u></p>
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5-6 Other Features

Initiating A Stationary (Parked) Regeneration

NOTE

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



WARNING

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



WARNING

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



WARNING

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

NOTE

STATIONARY REGENERATION

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

The DPF Regeneration telltale light illuminates to notify the driver of the need and urgency of a manual stationary regeneration.



DPF REGENERATION telltale light

If stationary regeneration is not performed, this telltale light will blink, indicating that a stationary regeneration is required immediately. If stationary regeneration is still not performed, “engine power derate and shutdown” sequence may occur as per level 1 to level 4 sequence.

To initiate a stationary regeneration:

- Park the vehicle in a clear area, vehicle speed must be 0 mph (0 km/h);
- Engine must be on normal idle and fully warmed up (coolant temperature above 140°F/60°C);
- Apply parking brakes and set the transmission to neutral (N).
- Press the DID ENTER button and then get to the DID Aftertreatment menu. Select sub-menu Request Parked REGEN and press ENTER button to confirm and initiate regeneration.

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

Voluntary Interruption Of A Stationary Regeneration

It is possible to interrupt a stationary regeneration at all time. To do so, get to the DID's Aftertreatment menu, select Cancel REGEN and press ENTER button to confirm. You can stop regeneration simply by releasing the parking brake. Use this procedure in order to move the vehicle in a safe area only.

If regeneration is interrupted, it is very important to reinitiate the regeneration as soon as possible.



CAUTION

If an active regeneration is stopped repeatedly, the vehicle may need to be taken to a service facility. The service facility will use a service tool to manually initiate the regeneration. Moreover, the interruption of active regeneration should not be considered as a normal practice. Some components of the aftertreatment system might be damaged in the long term.



CAUTION

To void damages to the system components, do not set the ignition key to the OFF position to interrupt a stationary regeneration.

SELECTIVE CATALYTIC REDUCTION UNIT

Selective Catalytic Reduction (SCR) is a technology that uses Diesel Exhaust Fluid (DEF) and a catalytic converter to reduce nitrogen oxides (NOx) emissions.

SCR is an exhaust aftertreatment system that injects small amount of DEF into the exhaust gas between the DPF and the selective reduction catalytic converter. DEF turns to ammonia and carbon dioxide when heated. The exhaust stream then passes over a catalyst, the ammonia reacts with the NOx to form nitrogen and water vapor.

The basic elements of the SCR system consist of a 15.9 gallons (60 liters) DEF tank complete with pump, lines and heating system, a dosing injector, a catalytic converter and the control and monitoring system.

Diesel Exhaust Fluid (DEF)

When handling DEF solution, keep electrical connectors properly connected or well capped, otherwise there is a risk that the DEF will cause oxidation that cannot be removed. Water or compressed air will not help, since DEF quickly oxidizes certain metals. If a disconnected connector comes into contact with the DEF solution, it must be replaced immediately to prevent the DEF solution from creeping further into the copper wiring, which takes place at a speed of about 2.4 in (60 mm) per hour.

Things to know about spilled diesel exhaust fluid (DEF):

- If urea solution comes into contact with the skin, rinse with plenty of water and remove contaminated clothing.
- If urea solution comes into contact with the eyes rinse for several minutes and call for medical help if necessary.
- If inhaled breathe fresh air and call for medical help if necessary.
- Do not allow the DEF solution to come into contact with other chemicals.
- The DEF solution is not flammable. If the DEF solution is exposed to high temperatures, it breaks down into ammonia and carbon dioxide.
- The DEF solution is highly corrosive to certain metals, including copper and aluminum.
- If the DEF solution is spilled onto the vehicle, wipe off the excess and rinse with water. Spilled DEF solution can form concentrated white crystals on the vehicle. Rinse off these crystals with water.



CAUTION

Diesel Exhaust Fluid (DEF) is a nontoxic aqueous solution of urea (32.5%) and ultra-pure water (67.5%). Urea is a compound of nitrogen that turns to ammonia when heated. The fluid is non flammable, and is not dangerous when handled as recommended. However, it is highly corrosive to certain metals, especially copper and brass.

When detaching hoses and components, do not spill DEF on disconnected or unsealed connectors. If DEF is spilled on a disconnected or unsealed connector, the connector must be removed immediately and replaced.



CAUTION

DEF freezing and expansion

DEF will begin to crystallize and freeze at 12°F (-11°C). DEF expands by approximately 7% when frozen. During freezing weather, do not store a DEF container on the coach unless it is designed to allow for expansion.

Make sure the DEF container is not completely full. DEF expansion may split an inappropriate container, causing a spill and corrosion as a result.



WARNING

DEF spilt onto hot components will quickly vaporize. Turn your face away!

5-8 Other Features

Diesel Exhaust Fluid Consumption









DEF consumption is related to fuel consumption. In order to meet EPA requirements, DEF tanks are sized so one refill will be necessary every two refills of the fuel tank.

SELECTIVE CATALYTIC REDUCTION – DRIVER WARNINGS AND INDUCEMENTS









SCR system components must not be removed, altered or modified in any way. In order to protect the SCR system from tampering, inducement measures will occur if the following states are detected:

- Disconnection of DEF tank level sensor
- Blocked DEF line or dosing valve
- Disconnection of DEF dosing valve
- Disconnection of DEF pump
- Disconnection of SCR wiring harness
- Disconnection of NOx sensor
- Disconnected exhaust temperature sensor
- Disconnected DEF temperature sensor
- Disconnected DEF quality sensor

5-10 Other Features

DEF TANK LEVEL - DRIVER WARNINGS AND INDUCEMENTS				
Conditions / Triggers		DEF Tank LOW LEVEL Indicator, DID Message and audible warning		Inducement
1	Normal DEF tank level sensor reads between 100% and 10%	None		None
2	DEF tank near empty  DEF tank level sensor reads less than 5%	 blinking	None	Engine torque reduction of 25%
3	DEF tank empty and one (1) hour of operation in engine derate mode 	 blinking	DEF TANK EMPTY ENGINE IN DERATE 5 MPH LIMIT IF VEHICLE NOT MOVING FOR 20 MIN  3 cycles of 2 beeps	Engine torque reduction of 40%
4	DEF tank empty  1. Diesel fuel refueling done with a fuel level sensor reading increase of 15%, or more 2. Vehicle stationary (speed=0) for 20 minutes with engine off or at idle	 blinking	(4/4) REFILL DEF TANK VEHICLE SPEED LIMITED TO 5 MPH (8 KM/H)  continuous cycle of 2 beeps	Vehicle road speed limited (RSL) to 5 mph (8 km/h)

5-12 Other Features

DEF QUALITY - DRIVER WARNING AND INDUCEMENT				
Conditions / Triggers		Amber Warning Light & DID Message And Audible Warning		Inducement
1	Good DEF quality	None		None
2	Poor DEF quality detected	 solid	(1/4) DEF QUALITY OK TO CONTINUE DRIVING  3 cycles of 2 beeps	Engine will derate 25% in < 60 mins
3	Poor DEF quality detected and one (1) hour of operation with active diagnostic troubleshooting code	 solid	(2/4) DEF QUALITY OK TO CONTINUE DRIVING  3 cycles of 2 beeps	Engine derated 25% Engine will derate 40% in <240 mins
4	Poor DEF quality detected and four (1) hours of operation with active diagnostic troubleshooting code	 solid	(3/4) SERVICE DEF 5 MPH LIMIT IF VEHICLE NOT MOVING FOR 20 MIN  3 cycles of 2 beeps	Engine derated 40% 5 mph (8 km/h) limit after next 20 min vehicle stop
5	Poor DEF quality detected Diesel fuel refueling done with a fuel level sensor increase of 15% or more or Vehicle stationary (speed=0) for 20 minutes with engine off or at idle or Key cycle trigger	 solid	(4/4) POOR DEF QUALITY 5 MPH LIMIT SERVICE DEF SYSTEM  continuous cycle of 2 beeps	Service DEF 5 mph (8km/h) limit

5-14 Other Features

SCR SYSTEM TAMPERING - DRIVER WARNING AND INDUCEMENT				
Conditions / Triggers		Amber Warning Light, DID Message And Audible Warning		Inducement
1	Normal No diagnostic troubleshooting code active	None		None
2	SCR fault has been detected continue driving	CHECK solid	(1/4) SRC SYSTEM OK TO CONTINUE DRIVING 🔊 📢 📢 3 cycles of 2 beeps	25% Engine torque reduction in 60 minutes
3	SCR fault has been detected Continue driving	CHECK solid	(2/4) SRC SYSTEM OK TO CONTINUE DRIVING 🔊 📢 📢 3 cycles of 2 beeps	Engine torque derated 25% 40% Engine torque reduction in 240 minutes
4	SCR fault has been detected	CHECK solid	(3/4) SCR SYSTEM 5 MPH LIMIT IF VEHICLE NOT MOVING FOR 20 MIN 🔊 📢 📢 3 cycles of 2 beeps	Engine torque derated 40% Vehicle speed limited to 5 mph (8 km/h) if vehicle is immobilized for more than 20 min
5	SCR fault has been detected Diesel fuel refueling done with a fuel level sensor increase of 15% or more or Vehicle stationary (speed=0) for 20 minutes with engine off or at idle or Key cycle trigger	CHECK solid	(4/4) SCR SYSTEM 5 MPH LIMIT SERVICE SYSTEM 🔊 📢 📢 📢 📢 📢 📢 continuous cycle of 2 beeps	Vehicle speed limited (RSL) to 5 mph (8 km/h)

DRIVER INFORMATION DISPLAY (DID) MENUS

There are Driving and Non-Driving menus. Several sub-menus are password-protected. The Non-Driving menus are accessible only when the vehicle is parked.

DRIVING MODE MENUS	NON-DRIVING / STATIONARY MODE MENUS
<p><u>GAUGES</u></p> <ol style="list-style-type: none"> 1. Outside Temperature 2. Engine Oil Temperature 3. Transmission Fluid Temperature 4. Prevost Liaison Compass 5. Accessories Air Pressure 6. A/C Compressor Pressure 7. Battery Voltage 8. Allison Transmission Oil Life 9. Battery State Of Charge 10. Electric Cooling Fan Status 	<p><u>DISPLAY SETTINGS</u></p> <ol style="list-style-type: none"> 1. Language 2. Units 3. Time/Date 4. Favorite Display Setting 5. Display Light 6. Change Password
<p><u>FUEL DATA</u></p> <ol style="list-style-type: none"> 1. Fuel Flow 2. Fuel Flow / ECO % 3. Trip Fuel Used 4. Distance to Empty 	<p><u>DIAGNOSTICS MENU</u></p> <ol style="list-style-type: none"> 1. View Active Faults 2. View Inactive Faults 3. Cluster Self-Test 4. Part Number 5. Reset Inactive Faults 6. Vehicle Tests
<p><u>TIME/DISTANCE</u></p> <ol style="list-style-type: none"> 1. Time and Date 2. Alarm Clock 3. Trip Odometer 1 and 2 4. Average Trip Speed 1 and 2 5. Estimated Time of Arrival (ETA) 	<p><u>PRE-TRIP ASSISTANCE</u></p> <ol style="list-style-type: none"> 1. Exterior Light Inspection 2. Air Leakage Monitor

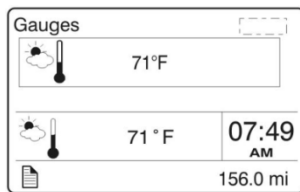
5-16 Other Features

<p><u>VEHICLE MESSAGES</u></p>	<p><u>DATA LOG</u></p> <ol style="list-style-type: none"> 1. Vehicle ID 2. Total Data 3. Trip Data 4. Reset Trip Data
<p><u>RESET TRIP DATA</u></p>	<p><u>AFTERTREATMENT</u></p> <ol style="list-style-type: none"> 1. Request Parked REGEN 2. ATS Status 3. Cancel REGEN <p><u>PASSWORD</u></p> <ol style="list-style-type: none"> 1. Enter Password <p><u>BRAKE LINING REMAINING</u></p> <p><u>PREVOST LIAISON</u></p> <ol style="list-style-type: none"> 1. Read Message 2. Send Message 3. Other Info

GAUGES

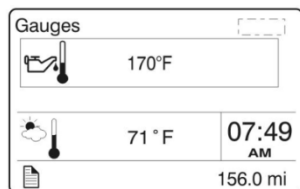
There are several gauges in this menu. The gauges are used to view current status of important functions in the vehicle.

Refer to “Driver Information Display” in CONTROLS AND INSTRUMENTS section for details on how to scroll through DID menus or select an item whole setting is to be changed.



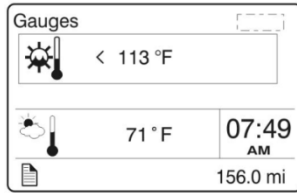
1. Outside Temperature

Selecting this gauge will display the engine oil temperature.

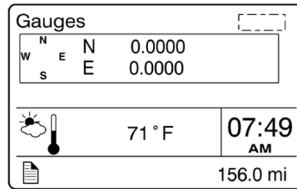


2. Engine Oil Temperature

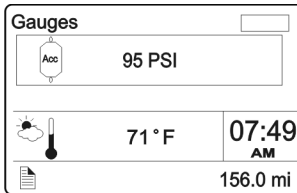
Selecting this gauge will display the engine oil temperature.



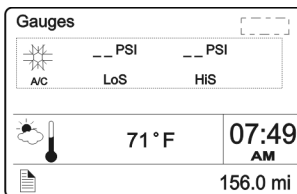
3. Transmission Fluid Temperature



4. Prevost Liaison Compass

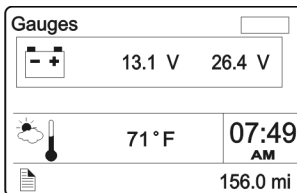


5. Accessories Air Pressure



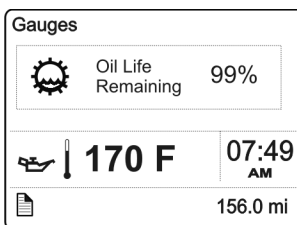
6. A/C Compressor Pressure

Displays the A/C compressor suction pressure value (LoS=low side) and discharge pressure value (HiS=high side).



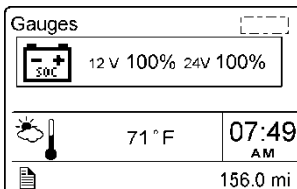
7. Battery Voltage

Displays current 12-volts and 24-volts systems voltage.



8. Allison Transmission Oil Life

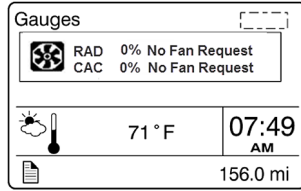
Displays the percentage of the calculated remaining life of the transmission oil. New oil is displayed as 99%. Refer to Appendix B for more details.



9. Battery State Of Charge

Displays the state of charge of the 12-volt and 24-volt systems, expressed in percentage.

5-18 Other Features

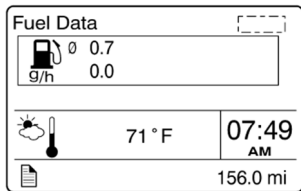


10. Electric Cooling Fan Status

Displays the speed and the state of both Charge Air Cooler and radiator cooling fans, expressed in percentage from 0 to 100%.

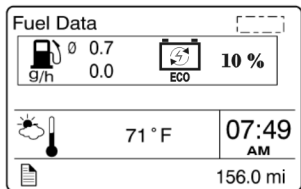
FUEL DATA

The Fuel Data menu provides information on the fuel consumption of the vehicle in various situations. For example, how much fuel has been used, how much fuel is remaining before refueling the vehicle.



1. Fuel Flow (gph)

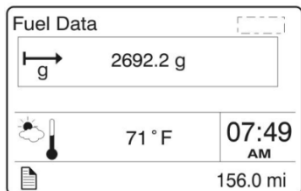
The lower numerical value (0.0) indicates the instantaneous fuel consumption. In this menu, you can reset the upper numerical value which is the average fuel consumption (0.7). To reset, hold ENTER button for 1 second.



2. Fuel Flow/ ECO%

The lower numerical value (0.0) indicates the instantaneous fuel consumption. In this menu, you can reset the upper numerical value which is the average fuel consumption (0.7). To reset, hold ENTER button for 1 second.

This menu also displays the percentage of trip made on regenerated electricity (10%).

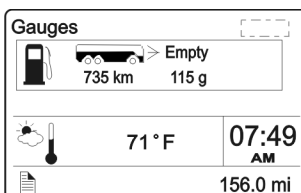


3. Trip Fuel Used

Indicates the total fuel consumption (gallons/liters) since the last reset.

Note: You should use Reset function before each new trip.

You can reset the fuel consumption value in this menu. To reset, hold ENTER button for 1 second.

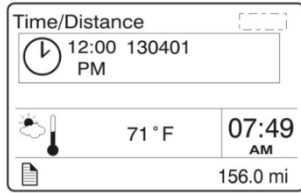


4. Distance to Empty

The left numerical value indicates the distance that can be traveled with the quantity of fuel that remains in the tank as indicated by the right numerical value.

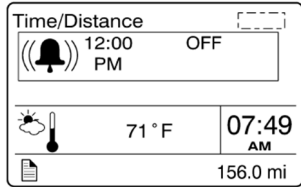
TIME/DISTANCE

The time and date can be set in the Time/Distance menu. The alarm clock can also be set from this menu. Following the alarm clock menu is the Trip Odometer 1 and 2 selection, which allows the operator to see the distance traveled since the last reset. Average trip speed is also shown. By specifying the distance to your destination, the vehicle can calculate the estimated time of arrival (ETA).



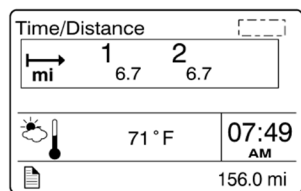
1. Time And Date

Adjust time and date with this menu. The instrument cluster has its own internal battery, so the date and date setting is keep in memory even if the vehicle's battery is disconnected.



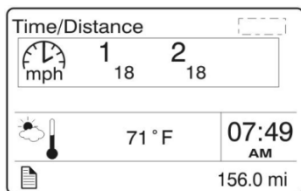
2. Alarm Clock

Use this function to program and activate an alarm on the instrument cluster clock. When the alarm clock goes off, a warning signal is sounded. The alarm shuts off after 60 seconds or if the ESCAPE button is depressed.



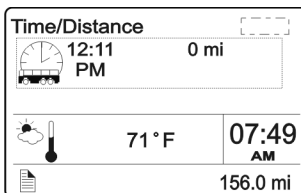
3. Trip Odometer 1 and 2

Allows the operator to see the distance traveled since the last reset. You can reset the trip odometer 1 or 2 in this menu. To reset, depress ENTER button, use UP/DOWN button to select between odometer 1 or 2 and then hold ENTER button for 1 second.



4. Average Trip Speed

This function displays the average speed for the current travel. The average trip speed is calculated as the distance traveled divided by the time the engine has been running (since the last reset). Two average trip speeds can be measured, corresponding to leg 1 and leg 2. Use Reset function before each new travel to start new measurements.



5. Estimated Time of Arrival (ETA)

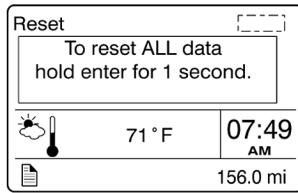
This function will display the estimated time of arrival if the distance to be traveled is entered first, in this menu. To set distance to be traveled, press ENTER and enter the distance left to drive in mile or km using ENTER and UP/DOWN buttons.

VEHICLE MESSAGES

Use this function to consult the vehicle active messages that were previously displayed as pop-up messages and then acknowledged. When consulting a message, the corresponding STOP, CHECK or INFORMATION warning light will illuminate. Scroll through the messages using the up/down button. Press ESC button to return to main menu.

5-20 Other Features

RESET TRIP DATA

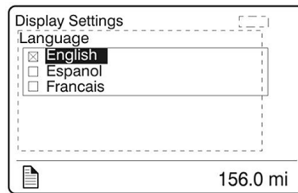


When the Reset Trip Data menu is open, pressing and holding down the Enter ↵ button for 1 second resets the functions listed below. This function will permit to the system to calculate new value from the point of resetting.

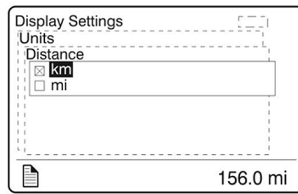
- Fuel flow
- Trip Fuel Used
- Average Trip Speed

DISPLAY SETTINGS

The Display Settings menu is used to change languages and units. The password, time and date can also be changed. The backlight and contrast of the display screen can be adjusted.



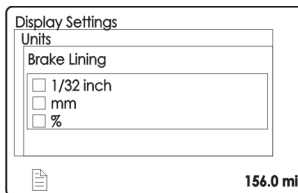
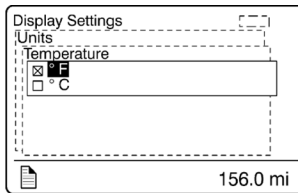
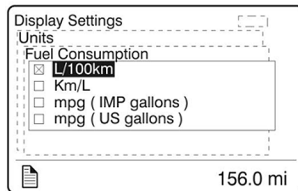
1. Language

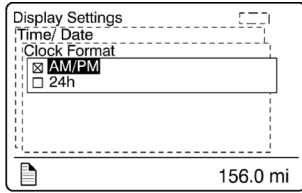


2. Units

Use this function to select desired unit formats for:

- Distance (miles or km);
- Fuel consumption (km/l, l/100km, mpg US or IMP);
- Temperature (°C or °F).
- Brake lining remaining (Brake calipers equipped with pad wear indicators): 1/32 inch, mm, %.

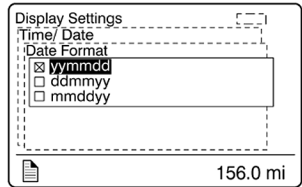




3. Time/Date

Select the time and date format using this function.

- am, pm, 24h
- yymmdd, ddmmyy, mmddyy



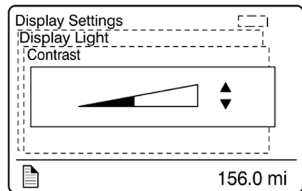
4. Favorite Display Setting

Use this menu to select your favorite display gauges 1, 2 and 3 and replace the default gauges.

Example: You wish to display the engine oil temperature at the Gauge 1 position.

1. Use UP/DOWN button until Gauge 1 position is selected.
2. Press ENTER button to confirm.

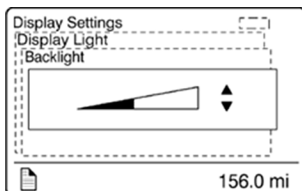
Use UP/DOWN button to scroll through the available gauges. When the engine oil temperature gauge is displayed, press ENTER button to confirm (repeat steps 1-3 to change Gauge 2 and Gauge 3 if needed).



5. Display Light

The Display Light menu has three sub-menus:

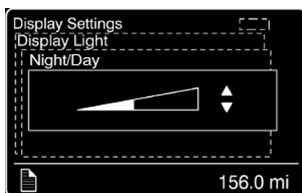
- Contrast



Adjust the contrast with the UP/DOWN button and press ENTER button to confirm.

- Backlight

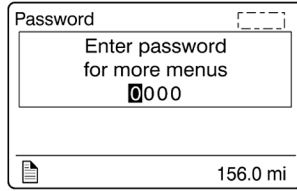
In this menu, the display lighting can be adjusted relative to other instrument lighting with the UP/DOWN button.



- Night/Day

Use the Night/Day menu to choose a dark background with light text and images or a light background with dark text and images. Press ENTER button to toggle between Night and Day.

5-22 Other Features



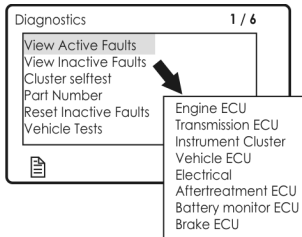
6. Change Password

Use this menu to change the current password. This menu is only accessible if the correct password is entered. The default password is 0000.

1. Mark which password is to be changed with the display UP/DOWN button.
2. Confirm with ENTER button.
3. Set the first digit with the UP/DOWN button.
4. Step to the next digit using ENTER button.
5. Step backwards with ESC button.

DIAGNOSTICS MENU

The Diagnostics menu enables fault tracing on the control units in the vehicle to check for faults. Instrument tests are available to check the telltales, gauges, display and speaker. The part number of a control unit can be identified in the part number menu.



1. View Active Faults

A list of the control units on the vehicle is displayed. Use this function to check for active faults on specific control units.

2. View Inactive Faults

Use this function to check for inactive faults on specific control units.

3. Cluster Selftest

Use this menu to check proper functioning of the following components:

- Telltale lights
- Analog gauges
- Display
- Speakers

The following table describes the available tests. To cancel a test, press the ESC button).

Telltale lights test	Telltale lights illuminate for approximately five seconds. Press the Esc button to cancel the test.
Analog gauges	The indicators move forwards and backwards between the end positions. They do not show any particular value. This is just a check to confirm that the indicators move, and to make sure the operators are working. Press the Esc button to cancel the test.
Display test	The entire display lights up until the Esc button is pressed.
Speaker Test	A sound is emitted through the speakers. Press the Esc button to cancel the test.

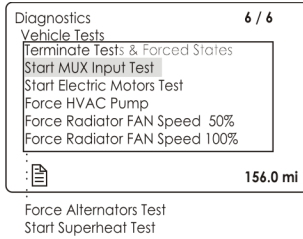
4. Part Number

A list of the control units on the vehicle with their part numbers is displayed in the Part Number menu.

5. Reset Inactive Faults

Use this menu to delete an inactive fault for a particular control unit. Note: it is not possible to delete inactive faults of the Engine ECU.

5-24 Other Features



6. Vehicle Tests

Use this menu to perform Test tests on several components and systems:

- Dashboard switches (Mux Input Test)
- Electric motors, valve and pump contactors (Electric Motors Test)

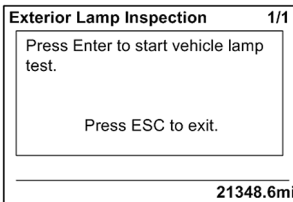
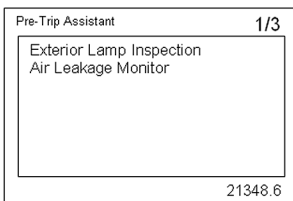
In case of overheating of the engine due to a malfunction of the radiator fan you can force activation of the fan using ACTIVATE RADIATOR FAN SPEED 50% or 100%.

The DID status line will show TEST to confirm that one of the test modes is active. To cancel an active test, turn the ignition switch to the OFF position or press ESCAPE button, select Terminate Tests & Forced States submenu and then press ENTER button twice. "TEST" will disappear from the DID status line.

For further information concerning these functions, refer to Maintenance Manual section 06: Electrical, under "Available Test Modes" and "Limp-home Modes".

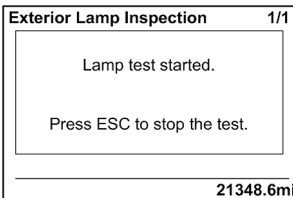
PRE-TRIP ASSISTANCE

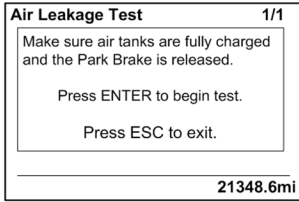
The Pre-Trip Assistance helps the driver in completing the pre-trip inspection of the vehicle. This feature is not a substitute for a complete pre-trip inspection. If any system of the vehicle does not pass inspection, the error must be corrected before operating the vehicle. The available pre-trip tests include the Exterior Light Inspection check, and the Air Leakage check.



1. Exterior Light Inspection

The Exterior Light Inspection function turns on all the exterior lights simultaneously. This allows the operator to start the test, exit the vehicle and do a visual check that all exterior lights function properly. Press ESCAPE button to end the test and turn off all the exterior lights.



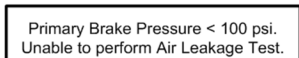


2. **Air leakage Monitor**

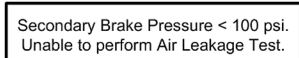
The Air Leakage check allows the driver to accurately measure the amount of air pressure drop in the front and rear brake air systems. After selecting this test from the DID, you are prompted to apply the service brake for 60 seconds. After applying and holding the service brake for 60 seconds, the DID will display the amount of pressure drop in the brake system.

Before starting the test through the DID, complete the following:

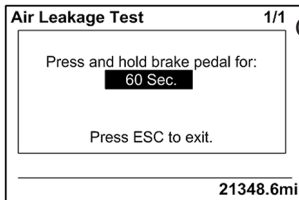
- A. Chock the wheels to prevent the vehicle from rolling.
- B. Start the engine and check that the brake systems air pressure is greater than 100 psi.
- C. Turn engine off.
- D. Release the parking and service brakes and allow the system to settle (air gauge needle stops moving).



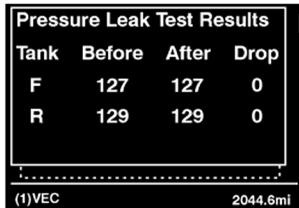
E. Press the ENTER button to start the test.



F. If the air tanks pressure is too low to perform the test (pressure must be greater than 100 psi), the following messages will appear.



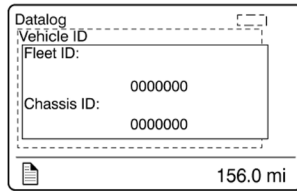
G. You must press and hold brake pedal for 60 seconds, as instructed.



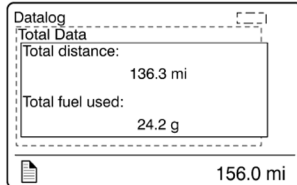
H. Once the brake pressure test is completed the pressure leak test results are displayed.

5-26 Other Features

DATA LOG



1. Vehicle ID

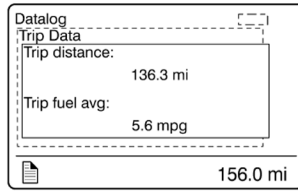


2. Total Data

Total Data menu indicates the accumulated engine values that have been logged during the lifetime of the engine ECU.

Available information:

- Total distance traveled
- Total fuel used
- Total engine hours
- Total idle time
- Total PTO hours
- Total engine revolutions

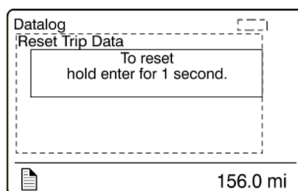


3. Trip Data

This menu displays the trip information listed below. This function must be reset before each measurement (before each new trip or leg) using the Reset Trip Data menu.

Available information for the trip or leg is:

- Trip distance (miles or km)
- Trip fuel average (mpg, liter/100km; km/liter)
- Trip fuel used (gallons or liters)
- Trip duration on cruise control (hours)
- Trip duration with engine rpm greater than economy rpm (hours)
- Trip duration while engine rpm is greater than the desired maximum rpm RPM Limit set in Fleet Limits sub-menu (hours)
- Trip fuel used with engine rpm greater than the economy rpm (gallons/liters)
- Trip average speed (mph, km/h)
- Trip duration with speed greater than the maximum desired speed as set in Fleet Limits sub-menu (hours)
- Trip engine hours
- Trip duration on engine idle (hours)
- Trip fuel used while in engine idle (gallons, liters)



4. Reset Trip Data

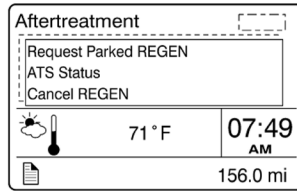
This menu can only be accessed if the correct password has been entered.

Use this function to reset measurements of the Trip Data menu before each new trip or leg.

AFTERTREATMENT

This menu permits the driver to initiate a stationary regeneration, to check the status of the aftertreatment system and to interrupt regeneration.

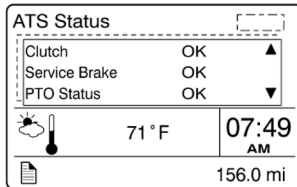
5-28 Other Features



1. Request Parked REGEN

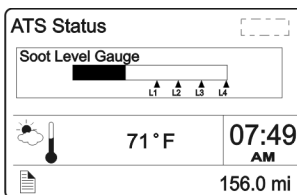
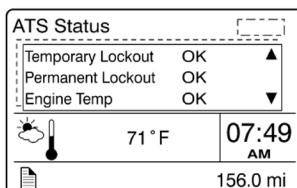
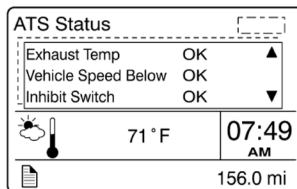
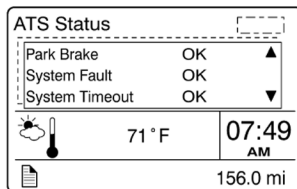
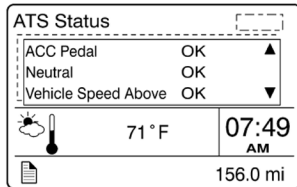
Use this function to initiate a stationary (parked) regeneration.

Even if parked regeneration is inhibited through the use of geofencing, a regeneration can nevertheless be initiated. To override IVN regeneration inhibit function and allow parked regeneration, flip the dashboard RETARDER switch 4 times (4 transitions from OFF to ON) within 2 seconds. Setting the ignition switch to OFF will cancel and return to normal geofencing operation.



2. ATS Status

The Aftertreatment status sub-menus provide information about the conditions required for performing regeneration. The status can be OK (regeneration allowed), CHECK (regeneration not allowed) or N/A (not applicable). When ATS Status is selected, the following displays (images at left) will show.



Soot Level Gauge

From the ATS Status sub-menu, you can view the soot level for the Aftertreatment system. When the soot level is high, regeneration is necessary. L1, L2, L3 and L4 under the scale correspond to Level 1 up to Level 4 (see ["DEF_CLOGGING_SEQUENCE_-_INSTRUMENT_CLUSTER_TELLTALE_LIGHT" on page 4](#)).



3. Cancel REGEN

From the Aftertreatment main menu, you can cancel a REGEN cycle.

PASSWORD

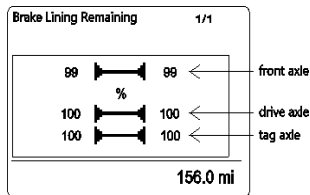
Certain functions are password-protected. These passwords give the user access to all password-protected functions. The default password is 0000.

1. Password

The following menus are password-protected and marked with a key symbol in the menus:

- Change Password
- Fleet ID
- Reset Trip Data
- Fault Diagnostics
- Inactive Faults

BRAKE LINING REMAINING

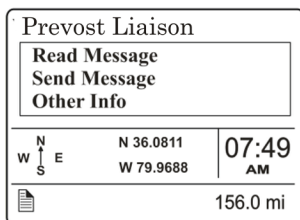


The numerical values indicate the brake lining remaining in term of percentage. New brake pads are displayed as 100%.

PREVOST LIAISON

The Prevost Liaison system provides cellular communication between the driver and the fleet operator. The driver can send and receive short text messages, which are visible through the Driver Information Display.

5-30 Other Features



The following menus are available:

1. **Read Message**
 - Quick Response (only available if there is a message available)
2. **Send Message**
 - Driver & Equipment
 - Dispatch Messages
 - Free Text
3. **Other Info**
 - Comm Liaison Info
 - Mailbox Info
 - GPS Info
 - INI Info
 - Configuration Info

INTELLIGENT SLEEP MODE (ISM)

The ISM is a battery-saving mode designed to protect the battery State Of Charge (SOC). The ISM will automatically change the vehicle electrical system from normal functional state to sleep mode if the battery SOC falls below 65%.

Once the vehicle has entered into sleep mode, the only actions needed to put the vehicle back into its normal functional state are:

- To cycle the ignition switch from OFF to ON;

or

- To open the entrance door;

or

- To turn on the hazard lights.

The ISM forces the vehicle to go into sleep mode if all the following conditions are met:

1. The Idle Shut Down (ISD) function has stopped the engine automatically;
2. The vehicle Ignition switch is ON, but engine is not running. ISM monitor the battery SOC and the battery voltage, to determine if the sleep mode should be activated
3. The ignition is OFF for 15 minutes, the system is in its wake-up period. The ISM could decide to shorten the period, depending on SOC and battery voltages.
4. 24V ISM activation limit: $24V_{bat} < 24.4V$
5. 12V ISM activation limit: $12V_{bat} < 12.2V$
6. The battery state of charge of 12V or 24V system falls below 65%.

If the voltages drop below the limits shown above, the Equalizer will trig the Accessories Sleep Mode (ASM) and disconnect almost of components from supply in parcel rack.

The red ALTERNATOR telltale will turn on 30 seconds before activation of the sleep mode.



TRANSMISSION RETARDER

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

NOTE

Extended use will raise the temperature of the transmission fluid.

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



Press this rocker switch on the L.H. dashboard panel to activate the transmission retarder.

NOTE

Deactivating the transmission retarder will turn on the indicator light located at the front of the coach.

Three levels of retarding power are available with the output retarder enabled: 1/3 of total retarding power is applied as soon as the brake pedal is pressed. If more force is applied to the brake pedal, 1/3 of retarding power is added. Finally, with full force applied to the brake pedal, an additional 1/3 of retarding power is added for a total of 100% of the available output retarding power.

Action	Retarding Power
Initial pressure on the brake pedal	33% of total retarding power
Additional pressure on service brake pedal	66% of total retarding power

5-32 Other Features

Action	Retarding Power
Full force on the brake pedal	100% of total retarding power



WARNING

Do not use the retarder during inclement weather or slippery road conditions.

NOTE

The stoplights automatically illuminate when the vehicle is slowing down after application of the transmission retarder.

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.

ABS, TRACTION CONTROL SYSTEM (TCS) & ELECTRONIC STABILITY CONTROL (ESC)

ANTILOCK BRAKING SYSTEM (ABS)

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

On slippery roads and more generally in emergency situations, over-braking frequently induces wheel locking. Wheel locking greatly increases braking distance on any road surface. Locked wheels also impede directional control and cause severe tire abrasion. An antilock 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, drive and tag axles constantly measure wheel speed during braking. This information is transmitted to a six-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.



WARNING

Vehicles following ABS-equipped vehicles may not be able to brake as fast on slippery roads.

ELECTRONIC STABILITY CONTROL (ESC)

The Electronic Stability Control (ESC) is a feature for ABS-equipped vehicles that reduces the risk of rollovers and loss of control. The ESC system features include the RSP Roll Stability Program and Yaw Control.

The RSP system counteracts the tendency of a vehicle to tip over while changing direction (typically, while turning).

To reduce the risk of rollover, the RSP system detects potential rollover conditions and slows the vehicle both by reducing engine throttle (and hence, engine torque) and by applying service brakes as needed at the appropriate wheels.



WARNING

During an RSP system intervention, the vehicle automatically decelerates. The RSP system can slow the vehicle with or without you applying the brake pedal, and even when you are applying the throttle.

During an RSP system intervention, you can always use your service brake pedal to increase the braking pressure that will be applied. However, if you were to apply less braking pressure than needed or even if you release the brake pedal entirely during an intervention, the RSP system will continue to apply the necessary amount of braking pressure automatically to the appropriate wheels to mitigate a potential rollover.

Yaw Control is a feature that reduces the risk of loss of control. If a vehicle's tires start to slide during a turn, Yaw Control counteracts the tendency of that vehicle to spin (or yaw), thereby reducing the risk of loss of control. Many factors, including road conditions, load distribution and driving behavior, can contribute to the development of a spin.



WARNING

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

NOTE

For further details, consult “Bendix ABS Operator’s Manual”

KNEELING SYSTEM

This system lowers the front end, enabling passengers to get on and off the coach without any difficulty.

To operate:

1. Stop the coach and apply the parking brakes
2. Set the transmission to neutral (N) ;
3. Momentarily press the rocker switch downwards to lower the front end of the coach 4 inches (100 mm). Refer to ["CONTROL SWITCHES" on page 5](#) in Section 4 Controls and Instruments.

A pictogram will appear in the DID status line indicating that the coach is being lowered.

To raise the front of the coach to normal height;

1. Momentarily press the rocker switch upwards. The front end will rapidly rise up.

NOTE

The parking brakes must be applied to allow the use of the kneeling.

NOTE

Kneeling is disabled when the entrance door is open or when the wheel chair lift (WCL) is in function.



CAUTION

Avoid parking the coach too close to the sidewalk or to other obstacles which could damage the coach during kneeling.

REAR GAUGE - ENGINE COMPARTMENT

The vehicle rear control panel is equipped with a combination tachometer / message display center intended to help the technician with the control and verification of the engine, transmission, UDS system (ACM) parameters among others.

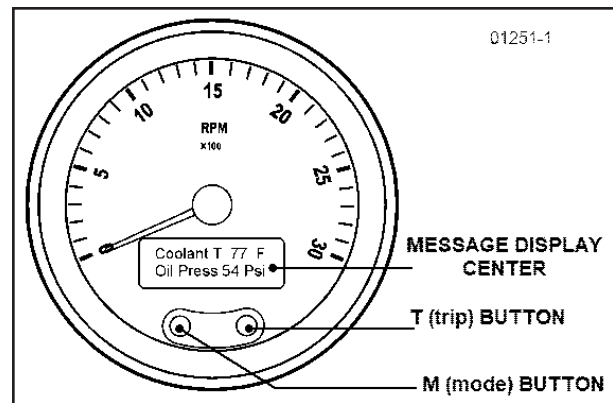


FIGURE 1: ENGINE COMPARTMENT REAR GAUGE ON REAR START CONTROL PANEL

START-UP MODE

Gauge pointer will drive to zero position. The pointers will then drive up scale, pausing at half scale, before completing the sweep to full scale. The pointers will then return to zero position before moving to the commanded position.

During the upscale sweep of the pointer, the LCD will turn all its segments off for one second and then display the opening message. The opening message is the Prevost logo.

IGNITION MODE

The ignition mode is active as long as the ignition switch is set to the ON position. The ignition is the normal operational mode of the system.

SELF-DIAGNOSTIC MODE

The self-diagnostic mode is entered through a menu selection using the LCD.

- The self-diagnostic includes the following tests:
 - Gauges

5-34 Other Features

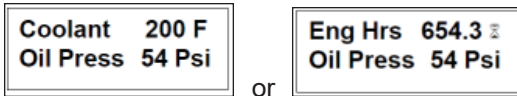
- LCD
- Binary Inputs
- Analog Inputs
- Communications
- Error codes on Engine, Transmission or UDS

MESSAGE CENTER DISPLAY

The message display is a graphical, backlit, LCD that displays information to the technician. In addition to basic odometer functions, a variety of customer-defined options will be displayed. Fault codes will also be displayed as they are received. Instrumentation diagnostics can be viewed on the LCD as well.

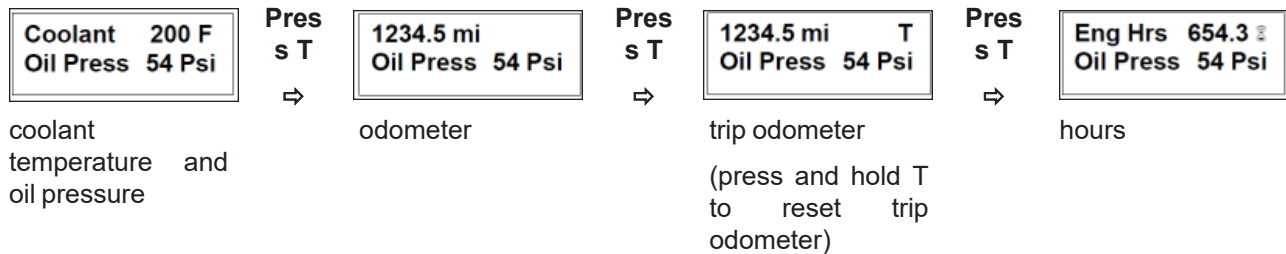
Drive Mode Screen

At startup the default drive mode screen is coolant temperature and oil pressure. When the display of engine hours is enabled, then engine hours and oil pressure is displayed on startup.



LCD Display Selection

Pressing M and T together toggles units between English and Metric. Pressing the T button changes the LCD display parameters.



Priority Messages

No Priority Message will be displayed during the first 10 seconds after ignition ON.

Priority messages can be generated by the engine, transmission or UDS controllers (ACM) or binary inputs.

Priority messages will interrupt the bottom line of the LCD in order to provide the technician with priority information.

A priority message is removed from the display only if its source expires or if the trip button acknowledges it. Some messages can be acknowledged. If acknowledged, it remains removed from the display and will only reappear if the source expires and reoccurs. If the ignition is turned off and then back on and a priority message is still active, it will display again.

If more than one priority message is active, each message will be displayed one after the other for three seconds each.

Assignment	Exact Text	Acknowledge?	Recur?	Turns off if
Engine Comm. Failure	ENG. COMM. ERROR	Yes	No	Communication is re-established
Trans Comm. Failure	TRANS. COM. ERROR	Yes	No	Communication is re-established
ABS Comm. Failure	ABS. COMM. ERROR	Yes	No	Communication is re-established
Inst Panel Comm Failure	IPANEL.COMM.ERROR	Yes	No	Communication is re-established

5-36 Other Features

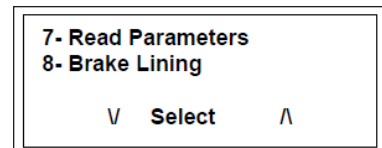
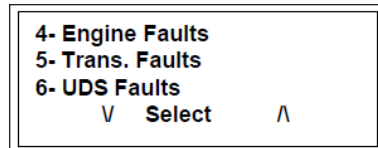
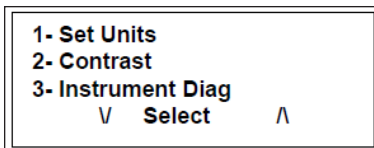
Assignment	Exact Text	Acknowledge?	Recur?	Turns off if
High Coolant Temp Alert	CHECK COOL TEMP	Yes	No	DM1 Clears
Low Coolant Level	LOW COOLANT LEVEL	Yes	No	message clears after 30 sec
	LOW COOLANT LEVEL	Yes	No	Flag Clears
Check Coolant SNS	CHECK COOLANT SNS	Yes	No	Flag Clears
Low Oil Pressure Alert	LOW OIL PRESSURE	Yes	No	DM1 clears
High Trans Temp Alert	CHECK TRANS TEMP	Yes	No	DM1 clears
Wait to Start	WAIT TO START	Yes	No	Msg clears
Water in Fuel	WATER IN FUEL	Yes	No	Msg clears
Engine Maintenance	ENG. MAINTENANCE	Yes	No	DM1 clears
+ Stop Engine	STOP ENGINE !!	No	No	Msg clears
Check Engine	CHECK ENGINE !	Yes	No	Msg clears
Transmission Maintenance	TRANsMAINTENANCE	Yes	No	DM1 clears
Network Fail	NETWORK FAILURE	Yes	No	Input clears
Check Transmission	CHECK TRANSMIS.	Yes	No	Msg clears
Stop Transmission	STOP TRANSMIS.!!	No	No	DM1 clears
Fire Alarm Detect	FIRE ALARM	No	No	Input Clears
ABS Maintenance	ABS.MAINTENANCE	Yes	No	DM1 clears
Check ABS	CHECK ABS!	Yes	No	Msg clears
Alternator charging failure	CHARGING FAILURE	Yes	No	Binary input or flag turn off
Low Battery	LOW BATTERY VOLT.	Yes	No	12V voltage > 12V for 30sec or 24V voltage > 24V for 30sec

Assignment	Exact Text	Acknowledge?	Recur?	Turns off if
High Battery	HIGH BATTERY VOLT	Yes	No	12V voltage < 17V for 30sec or 24V voltage < 30V for 30sec
Check Diesel Particle Filter	DIESEL.PART.FILT..	Yes	No	Message clears
Change Diesel Particle Filter	DIESEL.PART.FILT.	Yes	No	Message clears
Low Primary Air Pressure	LOW.PRIMARY AIR	No	No	Air pressure ≥ 75 psi
Low Secondary Air Pressure	LOW.SECONDARY.AIR	No	No	Air pressure ≥ 75 psi

Settings And Diagnostic Screens

The Settings and Diagnostic screens can be accessed when the drive mode screen is displayed and the **M** button is pressed for longer than 5 seconds or if no CAN messages are seen then holding the **M** button will enter the menu.

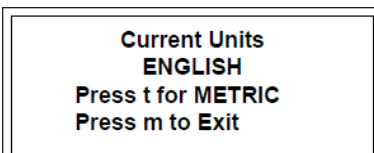
Once in the Settings and Diagnostics menu, pressing the **M** or **T** buttons separately moves the reverse video highlight up or down through the list, as indicated by the arrows. The highlighted item is selected when both **M** and **T** buttons are pressed at the same time. If no button is pressed for 5 seconds, the LCD will go back to the standard Drive Screen. The items available in the menu are:



This menu exits to the drive mode screen when there has been inactivity for 5 seconds.

1 - Set Units

Selecting menu item 1 brings up the following screen that is used to select if values are to be displayed in metric units or English units. Pressing **M** or waiting 5 seconds exits to Settings and Diagnostics menu.



2 – Contrast

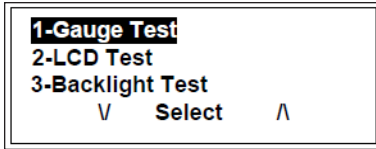
Selecting menu item 2 displays a screen to allow setting the LCD contrast. Pressing the **M** (+) button will increase contrast while pressing the **T** (-) button will decrease contrast. After inactivity for 5 seconds this menu exits to the Settings and Diagnostics menu.



3 – Instrument Diag

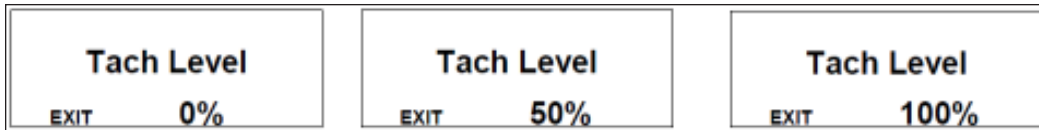
5-38 Other Features

Selecting menu item 3 in the Settings and Diagnostic menu will display the instrument diagnostic menu. There are 3 items in this menu and is navigated the same as the previous menu. This menu exits to the Settings and Diagnostics screen when there has been inactivity for 5 seconds.



Gauge Test

Item 1 – The gauge pointer will be driven through three positions pausing at each position as shown in the LCD as a percentage of scale. This test will proceed and return to the Instrument Diagnostic menu. Pressing the **M** button will end the test and return to the Instrument Diagnostic menu.



LCD Test

Item 2 – Displays the Prevost in normal then reverse video three times and then returns to the Backlighting Test

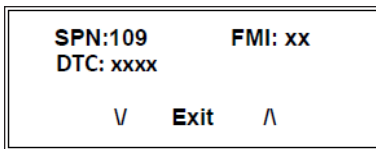
Item 3 – Cycles the gauge and LCD backlight through 3 brightness levels twice displaying the corresponding intensity on the LCD. Pressing **M** during the test or allowing the test to complete returns the gauge to the Instrument Diagnostics menu.



4 – Engine Faults

For all ECU, an array is defined containing DTC, SPN & Specific FMI. If the SPN is not known, the value is displayed in decimal. For active faults, the array is filled with information obtained from DM1.

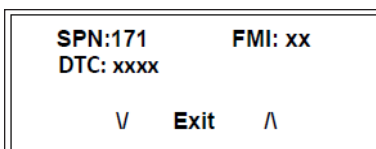
This screen displays DTC, SPN & associated FMI, otherwise, the Suspect Parameter Number (SPN) and Failure mode Identifier (FMI) as received from the engine for active faults via J1939.



5 – Trans. Faults

For all ECU, an array is defined containing DTC, SPN & Specific FMI. If the SPN is not known, the value is displayed in decimal. For active faults, the array is filled with information obtained from DM1.

This screen displays DTC, SPN & associated FMI, otherwise, the Suspect Parameter Number (SPN) and Failure mode Identifier (FMI) as received from the transmission for active faults via J1939.



6 - UDS Faults (ACM, Aftertreatment System ECU)

For all ECU, an array is defined containing DTC, SPN & Specific FMI. If the SPN is not known, the value is displayed in decimal. For active faults, the array is filled with information obtained from DM1.

This screen displays DTC, SPN & associated FMI, otherwise the Suspect Parameter Number (SPN) and Failure mode Identifier (FMI) as received from the UDS (ACM) for active faults via J1939.

SPN:241	FMI: xx
DTC: xxxx	
V	Exit ^

7 – Read Parameters

Selecting menu item 7 displays various parameters received by the rear gauge (engine RPM, boost pressure, engine load, transmission oil temp, engine coolant temp, engine oil pressure, primary air system pressure, secondary air system pressure, accessory air system pressure, fuel level, instantaneous fuel economy, average fuel economy, total engine hours, wheel based vehicle speed, gear engaged, 24V system voltage, 12V system voltage). The main use for these screens is in troubleshooting the system.

Eng RPM 775 RPM Boost Pr 5 Psi Eng Load 23 % V Exit ^	Trans T 195 °F Coolant T 180 °F Oil Press 40 Psi V Exit ^	Prim.Air 115Psi SecondAir 115Psi Acc Air 115Psi V Exit ^
Fuel Level 74 % Inst Fuel 15.4 mpg Avg Fuel 12.6 mpg V Exit ^	Hrs 123.45 hrs Speed 31.1 mph Gear Neutral V Exit ^	24V Batt. 23.1V 12V Batt. 13.2V Eng RPM 775 RPM V Exit ^

8 – Brake Lining (state)

Item 15 - A sub-menu is displayed to choose between 3 types of displaying:

- In 1/32 of inches
- In millimeters
- In %

Brake Lining in 1/32 inch Brake Lining in mm Brake Lining in %

The displaying in 1/32 of inches and millimeters requires two parameters:

- Corresponding value in 1/10 of millimeters for 100%
- Offset value in 1/10 of millimeters for 0%

The hardcoded value for these two parameters are:

Parameters	Default value (1/10mm)
100% value	150
0% value	50

5-40 Other Features

The following message is displayed on the screen for showing the Brake Lining State, for a % displaying:

The front wheels are displayed on the left side of the screen, right side on the top. The value is expressed in % for each brake lining.

FR	DR	TR	Brake Lining %		
FL	DL	TL	100	53	43
			98	55	42
			<- FL Wheel Press m to Exit		

AUTOMATIC TAG AXLE UNLOADING

The tag axle unloads when the air pressure is reduced in the air springs. The tag axle automatically unloads in tight maneuvering areas like in a parking lot to make it easier to turn a short corner and to reduce excessive wear of the tag axle tires.

The tag axle will unload automatically when all the following conditions are met:

1. The ignition is ON;
2. The steering wheel's rotation exceeds one turn;
3. The vehicle speed is below 20 mph.

In service, the tag axle will automatically reload if:

1. The vehicle speed exceeds 20 mph during 6 seconds;

or

2. The steering wheel's rotation becomes less than 1/4 turn.

NOTE

To avoid flat spots on the tires, the tag axle service brakes operate only when the tag axle is loaded.

DRIVER NOTIFICATION

In normal operating condition of the vehicle, the driver is not notified when the tag axle unloads automatically due to the conditions mentioned in the preceding paragraph.

If the tag axle is unloaded through the use of the automatic tag unload override valve located in the front service compartment, a pop-up message will appear in the DID as the ignition is turned to the ON position to warn the driver. Moreover, a pop-up message will appear and a warning tone will sound to warn the driver when the engine is running and the vehicle speed exceeds 3 mph.



FIGURE 2: POP-UP MESSAGE

The following pictogram appears in the DID's status bar to confirm that the automatic tag unload override valve is switched to UNLOAD.

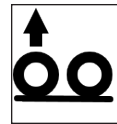


FIGURE 3: TAG AXLE UNLOAD SELECTED

TRACTION CONTROL

In service, the tag axle will unload when a spinning wheel condition is detected. This action is automatic and no action from the driver is required. Unloading the tag axle transfers extra weight for better traction to the drive wheels providing improved control on slippery surfaces.

AUTOMATIC TAG UNLOAD OVERRIDE VALVE

The automatic tag unload override valve is located in the front service compartment.

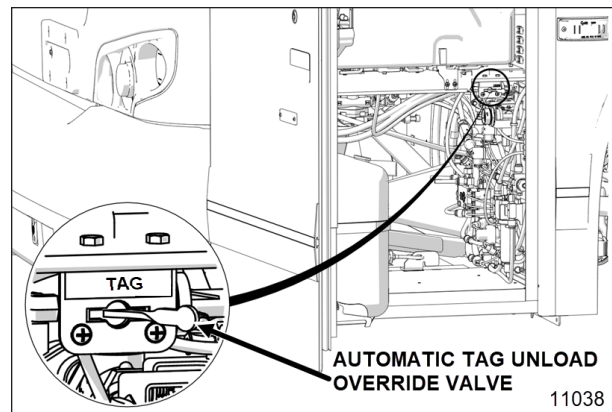


FIGURE 4: FRONT SERVICE COMPARTMENT

For maintenance purposes, use this valve to override the automatic loading/unloading of the tag axle.

The valve can be switched to UNLOAD or NORMAL position. Switching to UNLOAD keeps the tag axle unloaded at all time and cancels the automatic loading or unloading function.

NOTE

Always return the override valve to NORMAL before returning the vehicle to service.

5-42 Other Features

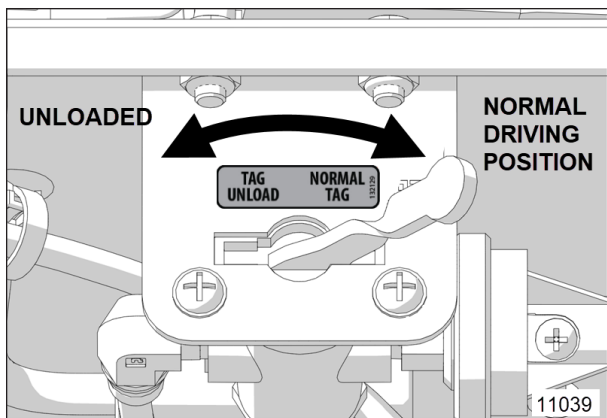


FIGURE 5: AUTOMATIC TAG UNLOAD OVERRIDE VALVE



CAUTION

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

WHEELCHAIR LIFT SYSTEM

It is important to passenger safety that the lift operator be familiar with the operating instructions. Read and understand the RICON Mirage F9TF/F9TH Wheelchair lift Operator Manual before attempting to use the wheelchair lift. The instructions below are a quick reference only and not a replacement to the information provided by RICON.

Watch the Prevest Wheelchair Lift Instruction video on Prevest's YouTube channel. To do so, type "Prevest Coach – YouTube" on your web browser and then select the proper link. Once on Prevest channel, select "Video" tab and then look for the video entitled "Prevest Wheelchair Instruction".

INTRODUCTION

Safe and easy access to the coach is provided by the Ricon Mirage F9T Public Use wheelchair lifts. The Mirage F9TF or F9TH is a dedicated entry model, which is intended for installation in a vehicle baggage compartment.

An electric-motor driven hydraulic pump provides a maximum platform lifting capacity of 660 pounds (300 kilograms).

A trained attendant or the vehicle operator operates the lift. For a boarding passenger, the operator uses control switches to withdraw the platform from the vehicle (deploy) and lower it to ground level. The passenger is placed on the platform and then lifted to floor height. After the passenger enters the vehicle, the operator lowers the platform and retracts it back into the vehicle (stow). For an existing passenger, the operator withdraws the platform from the vehicle (deploy) and raises it to floor height. The passenger is placed on the platform and then lowered to the ground. The passenger departs, and the operator returns the platform to the stowed position in the vehicle.

One individual can manually operate the lift when normal power is not present. A manual release mechanism is provided to ease the task of pulling the platform out of its enclosure. The hydraulic pump assembly includes a manually operated back-up pump to raise the platform, and a pressure release valve to lower it. The front platform rollstop, normally power operated, has a manual override knob for back-up use.

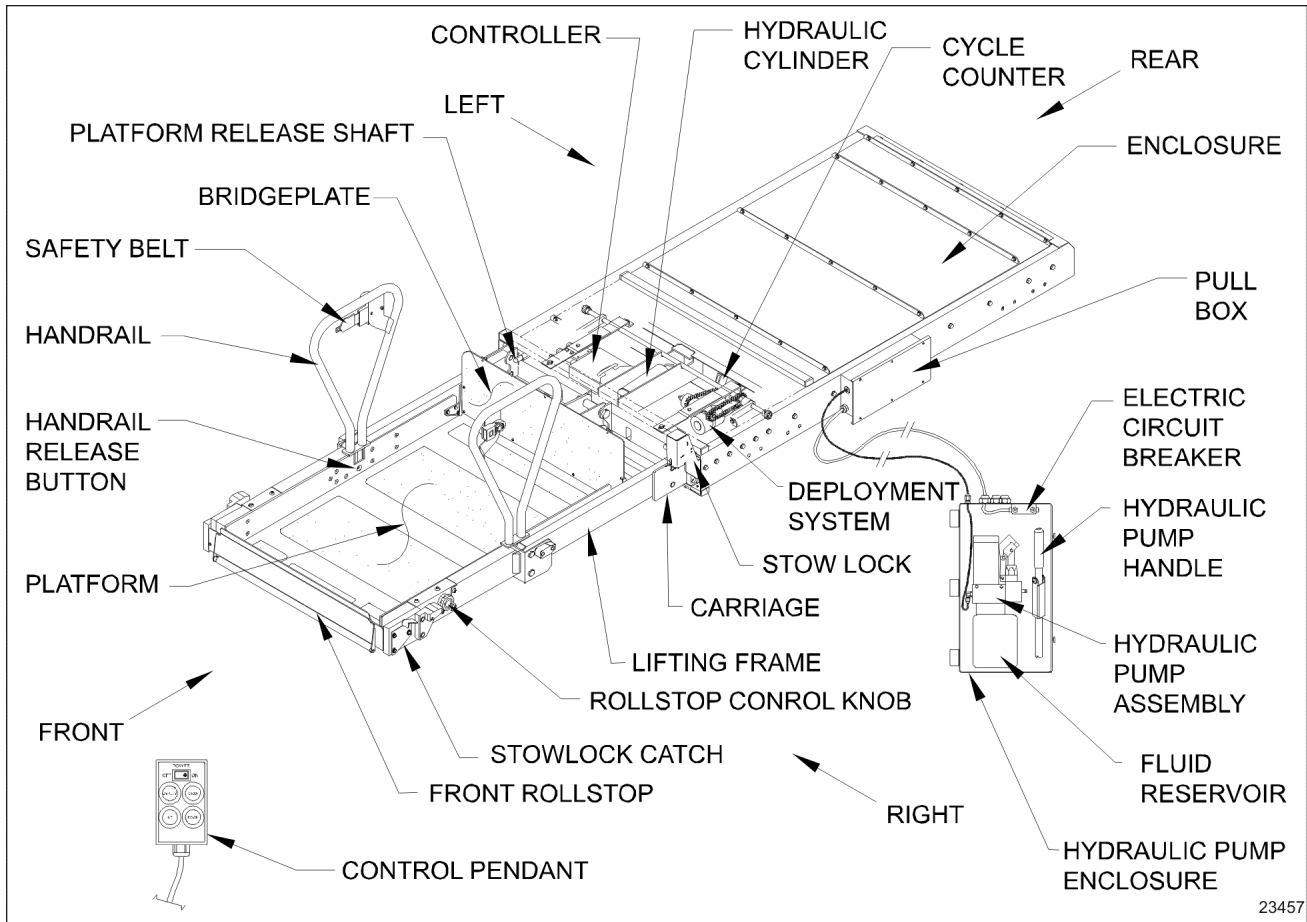
OVERVIEW

Major Lift Components

Left, Right, Front, Rear	Reference points from outside vehicle looking inward at lift.
Bridgeplate	Plate bridges gap between platform and vehicle floor when platform is at floor level. Acts as barrier during up and down platform motions to prevent wheelchair from rolling off rear of platform.
Carriage	Part of traveling frame that is mounted on rollers; moves on rails located inside enclosure. Supports lifting frame and platform.
Controller	Receives electrical input signals from pendant and lift sensors and sends control signals to lift electrical and hydraulic components.
Control pendant	Hand-held device used to control platform motions.
Cycle counter	Located on rear frame of carriage. Visible when platform is fully deployed. It records number of times platform has moved from floor to ground and back to floor.

5-44 Other Features

Deployment system	Located within carriage. Employs an electric gear-motor to propel platform out of enclosure, or pull it back into enclosure.
Enclosure	Travelling frame housing that is rigidly attached to vehicle chassis.
Fluid reservoir	Container holds hydraulic fluid that is used by hydraulic system.
Folding handrail	(left and right) Provides a handhold for standing passenger (standee).
Front rollstop	Front barrier prevents wheelchair from inadvertently rolling off platform during platform movement.
Handrail release button	(left and right) Locks handrail in vertical position. Must be pushed inward to release handrail.
Hydraulic cylinder	Located within carriage and connected to lifting frame. Receives pressurized fluid from hydraulic pump to lift platform.
Hydraulic pump assembly	Electro-hydraulic unit provides hydraulic pressure used to raise platform. Also mounts components for manual operation.
Lifting frame	Assembly is hinged to front of carriage and to center of platform; raised by single hydraulic cylinder attached to carriage.
Manual pump handle	Used to manually operate hydraulic backup pump and pressure release valve when electrical power is not available. Also used to rotate platform release shafts.
Platform	Curbed area where passenger resides while being raised to vehicle or lowered to ground.
Platform release shaft	(left and right) Used during manual operation of lift. Disengages platform from enclosure to facilitate manual deployment. Engage and rotate either shaft with manual pump handle.
Pull box	Houses electrical termination points to lift, and a hydraulic line disconnect point. Also accepts input harness from control pendant.
Rollstop control knob	Provides manual control of rollstop if electrical power is not available.
Safety belt	Safety restraint belt that spans between handrails to help confine passenger to platform area.
Stow Lock	Safety lock retains platform when in stowed position (retracted); releases when stow lock lever is raised.
Traveling frame	(not shown as unit) Assembly comprised of carriage, lifting frame, and platform.



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FIGURE 6: MAJOR LIFT COMPONENTS

GENERAL SAFETY PRECAUTIONS

- To avoid injury, always exercise caution when operating and be certain that hands, feet, legs, and clothing are not in the path of product movement.
- Read and thoroughly understand the operating instructions before attempting to operate the wheelchair ramp.
- Inspect product before each use. If unsafe conditions, unusual noises or movements, do not operate lift until the problem is corrected.
- Stand clear of doors and platform and keep others clear during operation.

OPERATING INSTRUCTIONS

Safety Precaution

- To operate the wheelchair lift, the coach must be parked on a flat and level surface, with the parking brake applied.

5-46 Other Features

- Inspect the lift before each use as described in the RICON Operator Manual 32DF9T15 under paragraph “Pre-Operation Lift Inspection”. If any unsafe condition exists, or if unusual noises or movements are noticed, DO NOT use and contact an authorized RICON dealer for repair.
- Read and comply with all warning labels and symbols affixed to the wheelchair lift.
- Wheelchair occupant should face outward when entering or exiting vehicle.
- Do not back onto platform when exiting vehicle. FACE OUTWARD, and verify that platform is at the same height as floor. Check that front rollstop is up and locked.
- The front rollstop is intended to prevent slow, unintentional, rolling off of platform.
- The front rollstop is not intended to stop a quick moving wheelchair. A quick moving wheelchair could tip if the small front wheels collide with the rollstop. Also, the large rear wheels of a quick moving wheelchair could roll over the rollstop. Possible injury to the occupant might occur in either case.
- Verify that wheelchair fits safely on platform; it must not extend beyond edges or interfere with operation of rollstop.
- Do not operate with a load in excess of 660 lbs (300 kg) for Mirage Model F9TF and 800 pounds (363 kilograms) for Mirage Model F9TH.
- Keep arms, legs, and clothing away from moving lift parts.
- The lift is intended for one wheelchair and its occupant, or one standee. Do not overload lift.
- Keep others clear while operating lift.
- Do not allow an untrained person to operate lift.
- Do not allow anyone to stand on bridgeplate. A bent bridgeplate can interfere with the platform as it raises and lowers.
- Lock wheelchair brakes before raising or lowering platform (power chair users should turn off power and set brake).
- Use great care in wet conditions; the wheelchair brakes are less effective if its tires or the platform are wet.
- Do not leave deployed platform unattended. Return to stowed position after use.

Hand-Held Control Pendant And Motion

The lift is operated with a hand-held, hard-wired remote-control pendant. Turn on the POWER ENABLE switch and then control each lift motion by pressing an appropriate button.

The POWER ENABLE switch provides power to the pendant and thereby enables the lift. When turned on, the power switch and each button illuminate.

Pressing the DEPLOY/OUT button extends the platform from the lift storage compartment, and pressing the STOW button retracts the platform back into the storage compartment. Pressing the DOWN button lowers the platform towards the ground, and pressing the UP button raises the platform towards the vehicle floor.

A button must be held depressed until the motion is completed. Movement of the platform can be halted at any time by releasing the button.



FIGURE 7: HAND-HELD CONTROL PENDANT

MOTION		DESCRIPTION
	DEPLOY / OUT	Platform extends out of vehicle, or deploys.
	DOWN	Platform lowers from present height towards ground; front rollstop lowers when platform contacts ground
	UP	Platform rises from present height towards vehicle floor; rollstop rises before platform leaves ground.
	STOW / IN	Platform retracts into vehicle, or stows.

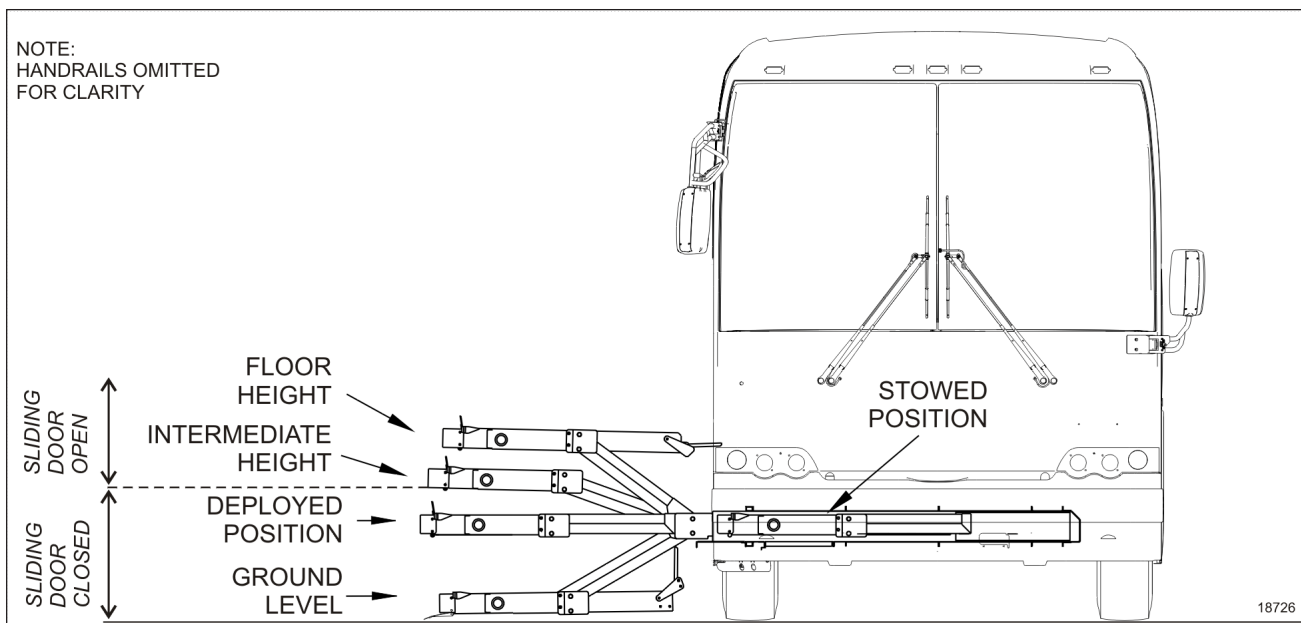


FIGURE 8: PLATFORM POSITION WITH INTERMEDIATE HEIGHT

5-48 Other Features

Normal Lift Operation – To Enter Vehicle

- Before operating lift, be certain vehicle is safely parked on a level area away from traffic. Provide at least 10 feet (3 meters) space for lift operation and passenger boarding.
- The lift operator must take special care to ensure that area is clear before deploying platform. Be certain there are no obstacles beneath platform.
- Open lift compartment door completely.

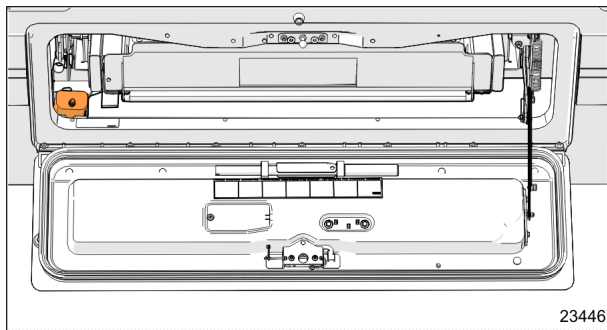


FIGURE 9: X3 SERIES SHOWN

- Open sliding door directly above lift compartment. This does not apply to models that stop upward platform movement prior to reaching floor level. The sliding door on these models is opened after the platform reaches intermediate height.
- The vehicle and lift are equipped with a safety interlock system (i.e. transmission into neutral, parking brake applied). Be certain that it is in the proper mode before attempting to operate lift. The lift will not operate until this feature has been properly engaged.
- Supply power to the wheelchair lift system first by depressing the power switch located on the dashboard.



FIGURE 10: WHEELCHAIR LIFT POWER SWITCH

NOTE

Whenever the wheelchair lift power switch is in the ON position, an interlock system prevents releasing of the parking brake and a transmission inhibit feature prevents gear selection when either the lift compartment door or the sliding door is open.

- Enable lift control pendant by turning on POWER switch located on pendant.
- A person that uses the wheelchair lift while standing (does not require mobility aid equipment) is referred to in this manual as a Standee.

1. **ACTIVATE INTERLOCK:** Make sure parking brake is set and transmission is in neutral.
2. **DEPLOY PLATFORM:** Press and hold DEPLOY/OUT button until platform is fully deployed. NOTE: Platform cannot be moved up or down unless platform is fully extended.
3. **RAISE HANDRAILS:** Lift right handrail to vertical and push firmly down into its socket. Repeat for left handrail. Verify that both handrails are latched in place by attempting to pull upward on them.
4. **BUCKLE SAFETY BELT (to enable lift controller):** Insert belt tongue into buckle and listen for audible “click” then tug belt to confirm belt is securely fastened.

NOTE

The safety belt acts as a safety device and it prevents raising or lowering the lift when not buckled.

5. LOWER PLATFORM: Press and hold DOWN button until platform stops at ground level and rollstop opens completely.
6. BUCKLE SAFETY BELT.
7. BOARD PLATFORM: Position wheelchair in center of platform, facing outward and advise occupant to lock wheelchair brakes. Power must be turned off on electric-powered wheelchairs.

NOTE

Standee must stand near the center of the platform, facing in the direction of travel (into vehicle), and firmly grasp handrails. Do not stand on bridgeplate.

8. BUCKLE SAFETY BELT (to enable lift controller): Insert belt tongue into buckle and listen for audible “click” then tug belt to confirm belt is securely fastened.

NOTE

The next two steps apply only to F9TF/F9TH models that stop upward platform movement at an intermediate level. Other models continue at step 11.

9. PARTIALLY RAISE PLATFORM: Press and hold UP button until platform stops at intermediate height.
10. OPEN SLIDING DOOR: Fully open vehicle sliding door located above lift. The lift operator, or attendant should do this.
11. RAISE PLATFORM: Press and hold UP button until platform stops at floor height and bridgeplate lowers onto vehicle floor.



WARNING

Verify that rear edge of bridgeplate lies flat on floor along its entire edge and does not create a tripping hazard.

12. EXIT PLATFORM: Advise passenger to carefully enter vehicle.

13. BUCKLE SAFETY BELT.

14. LOWER HANDRAILS: Press release button at base of handrail and lift the left handrail upward out of its socket. Lower handrail to platform. Repeat for right handrail.

15. STOW PLATFORM: Press and hold STOW/IN button. Close sliding door at intermediate height. Press and hold STOW/IN button until platform reaches STOW height and then fully retracts into vehicle.

NOTE

Do not use DOWN button to lower platform partway prior to stowing, and then complete the stowing process by using IN button. This method may not properly stow platform.

16. CLOSE DOOR. Close the lift compartment door.

Normal Lift Operation – To Exit Vehicle

1. ACTIVATE INTERLOCK: Make sure parking brake is set and transmission is in neutral.
2. DEPLOY PLATFORM: Press and hold DEPLOY/OUT button until platform is fully deployed.
3. RAISE HANDRAILS: Lift right handrail to vertical and push firmly down into its socket. Repeat for left handrail. Verify that both handrails are latched in place by attempting to pull upward on them.
4. BUCKLE SAFETY BELT (to enable lift controller): Insert belt tongue into buckle and listen for audible “click” then tug belt to confirm belt is securely fastened.

NOTE

The next two steps apply only to F9TF/F9TH models that stop upward platform movement at an intermediate level. Other models continue at step 7.

5-50 Other Features

5. PARTIALLY RAISE PLATFORM: Press and hold UP button until platform stops at intermediate height.
6. OPEN SLIDING DOOR: Fully open vehicle sliding door located above lift. The lift operator, or attendant should do this.
7. RAISE PLATFORM: Press and hold UP button until platform stops at floor height and bridgeplate lowers onto vehicle floor.



WARNING

Verify that rear edge of bridgeplate lies flat on floor along its entire edge and does not create a tripping hazard.

8. BOARD PLATFORM: Position wheelchair in center of platform, facing outward and advise occupant to lock wheelchair brakes. Power must be turned off on electric-powered wheelchairs.

NOTE

Standee must stand near the center of the platform, facing in the direction of travel (into vehicle), and firmly grasp handrails. Do not stand on bridgeplate.

9. LOWER PLATFORM: Press and hold DOWN button until platform stops at ground level and rollstop opens completely.
10. UNBUCKLE SAFETY BELT.
11. EXIT PLATFORM: Carefully assist passenger off of platform.
12. LOWER HANDRAILS: Press release button at base of handrail and lift the left handrail upward out of its socket. Lower handrail to platform. Repeat for right handrail.
13. STOW PLATFORM: Press and hold IN button until platform reaches STOW height and then fully retracts into vehicle.

MANUAL LIFT OPERATION

The lift can be operated manually if it loses electrical power. The following sections describe important safety preparations to be followed before using the lift, and operating procedures to deploy, raise, lower, and stow the lift. Ricon recommends that manual operation be used only to exit from vehicle, not to enter vehicle.

Preparation

- Park vehicle on a level surface, away from traffic. Allow sufficient space for lift operation and passenger boarding.
- The operator must summon assistance to move vehicle to a safe operating area if a breakdown situation exists and vehicle cannot be moved under its own power.
- Check to be certain obstacles are not in path of platform movement.
- Open vehicle doors by hand and secure.
- Caution people in vicinity that platform is about to deploy.
- Follow the "Safety Precautions ".

Manual Lift Controls

Manual operation components used are a hydraulic backup pump and pump handle, platform release mechanism, and a rollstop control knob.

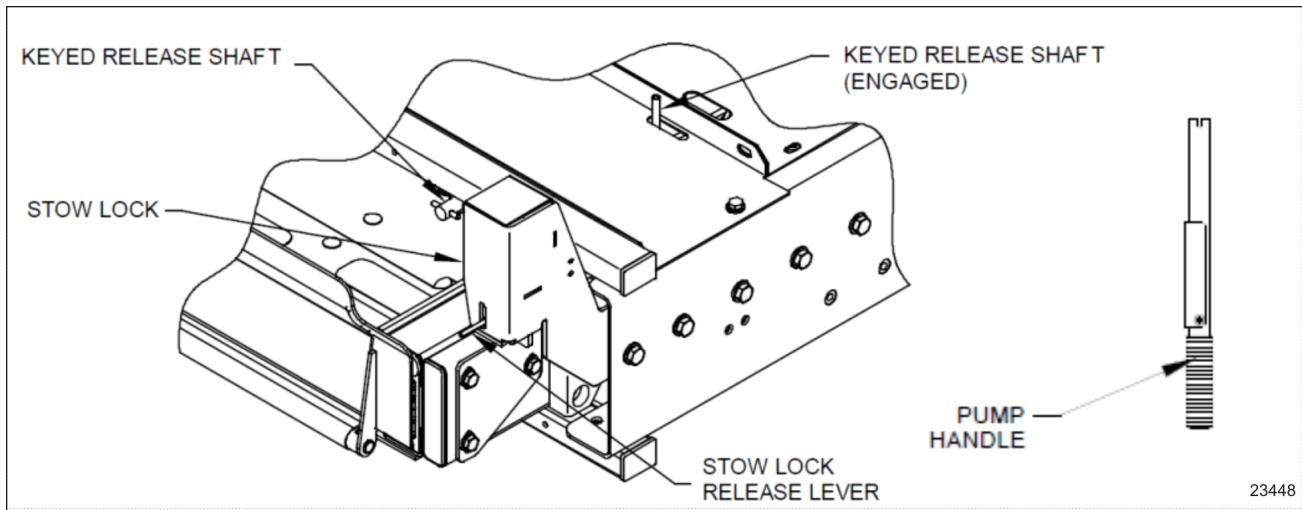


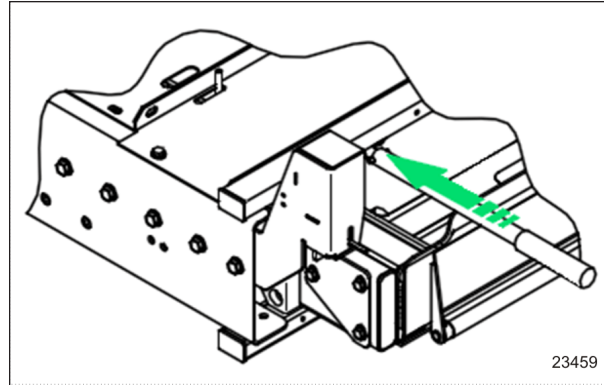
FIGURE 11: MANUAL LIFT CONTROLS

To Manually Deploy The Platform

1. Fully open sliding door and lift compartment door. Ensure that there are no obstacles in the path of the lift.
2. Take the manual backup pump handle attached to the inner side of the lift compartment door.

5-52 Other Features

- Engage either keyed release shaft with the pump handle.



- Rotate the keyed release shaft ¼-turn (as indicated on adjacent decal) while lifting stow lock lever simultaneously.

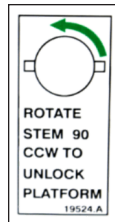
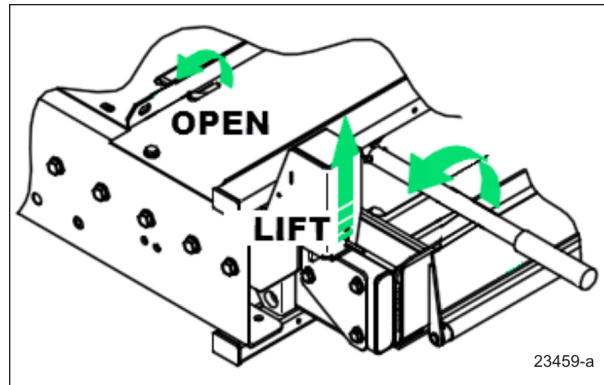
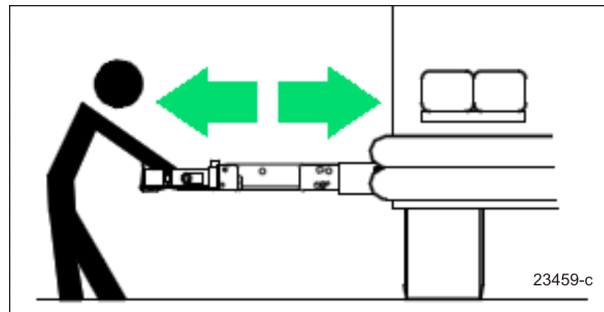


FIGURE 12: DECAL

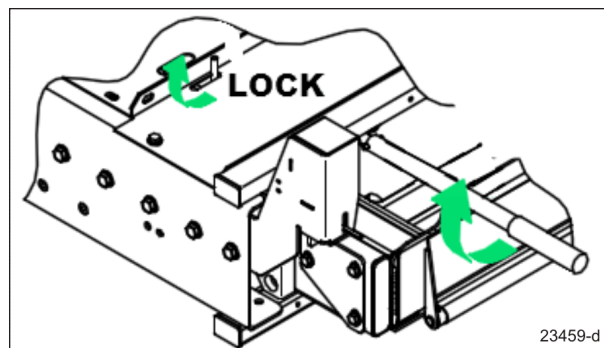


- Grasp the top edge of the front rollstop with two hands and pull firmly. The platform moves smoothly after an initial resistance. Pull platform straight out to the end of its travel.



CAUTION

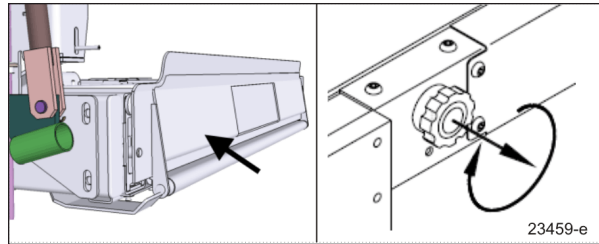
Ensure that release shaft re-engages and locks when platform is fully extended. If release shaft does not engage, use manual pump handle and turn ¼-turn (direction opposite to orientation shown on adjacent decal) to re-engage release shaft.



- Lift right handrail to vertical and push firmly down into its socket. Repeat for left handrail.

To Manually Raise The Platform

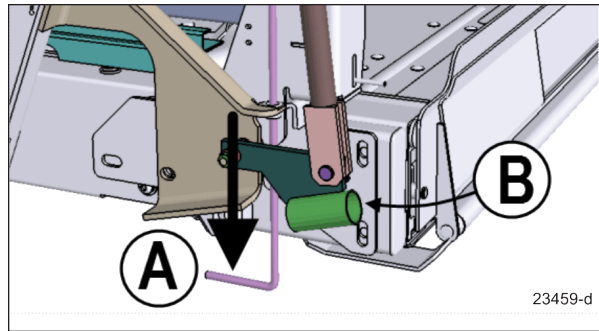
1. Verify that rollstop is up (closed). Pull rollstop control knob out and rotate fully clockwise, if it isn't up.



2. Close the backup pump release valve by pushing the actuating rod (A) DOWN (release valve should already be closed).

NOTE

Pumping the handle raises the platform when the release valve is closed.



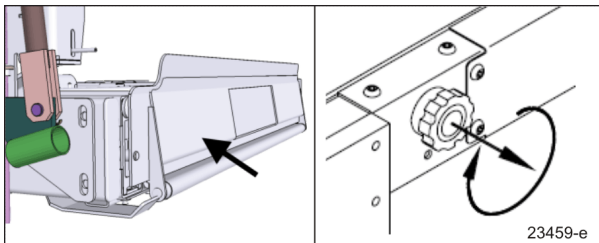
3. Insert pump handle into backup pump socket (B), then pump handle to raise the platform to the floor level.
4. Position wheelchair in center of platform, facing outward, and advise occupant to lock wheelchair brakes. Power must be turned off on electric-powered wheelchairs.

NOTE

Standee must stand near the center of the platform, facing in the direction of travel (into vehicle), and firmly grasp handrails. Do not stand on bridgeplate.

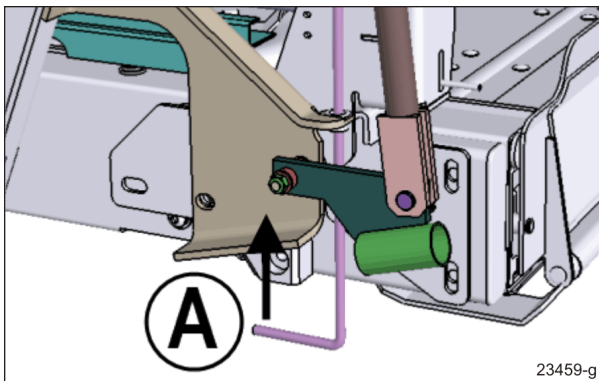
To Manually Lower The Platform

1. Verify that rollstop is up (closed). Pull rollstop control knob out and rotate fully clockwise, if it isn't up.



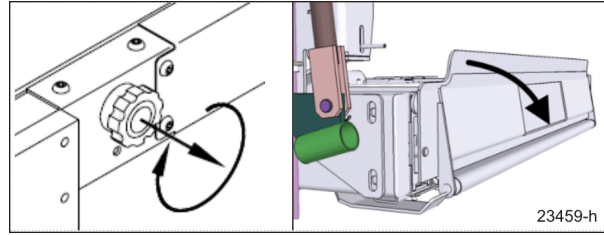
2. Slowly pull the manual backup pump release valve actuating rod (A) UP until the platform begins to lower (opening the release valve lowers platform).

3. Allow the platform to reach ground level.

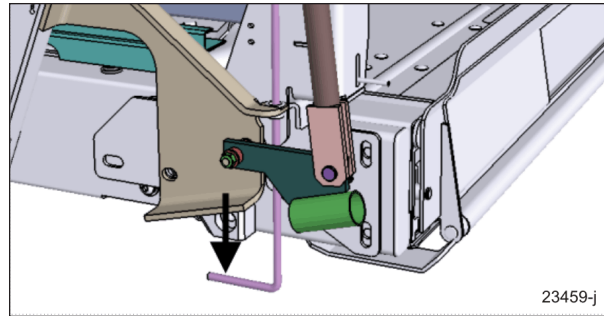


5-54 Other Features

4. Pull rollstop control knob out and rotate fully counterclockwise. Rollstop must lie flat on ground.

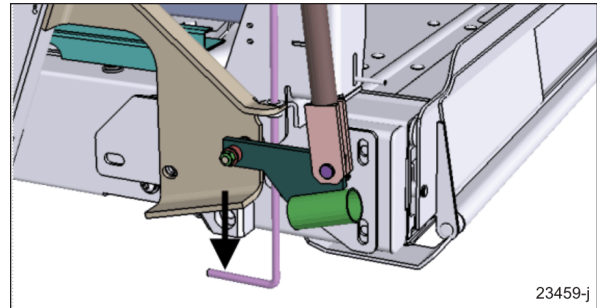


5. Carefully assist passenger off of platform.
6. Push the backup pump release valve actuating rod back DOWN until lightly-snug.



To Manually Stow The Platform

1. Verify that the backup pump release valve is closed (actuating rod (A) pushed DOWN).



2. Raise the platform to stow height; position the top surface of the platform lifting frame arm at the same height as the top surface of the carriage. If the exact height cannot be obtained, a slightly low platform is preferred to slightly high. This alignment eliminates interference between the platform and enclosure when pushing the platform into the enclosure.

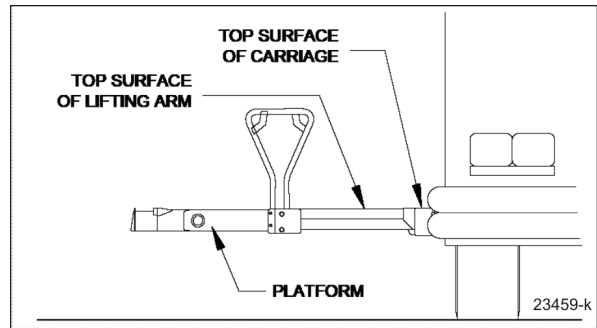
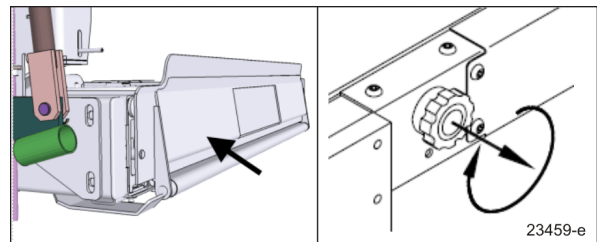


FIGURE 13: LIFTING ARM AND CARRIAGE AT SAME HEIGHT

3. Verify that rollstop is up (closed). Pull rollstop control knob out and rotate fully clockwise, if it isn't up.



- Lift the left handrail upward out of its socket. Lower handrail to platform. Repeat for right handrail.



CAUTION

An able-bodied person must stow the platform. Use caution and avoid injury.

- Engage either keyed release shaft with the pump handle.
- Rotate the shaft 1/4-turn (as indicated on adjacent decal).

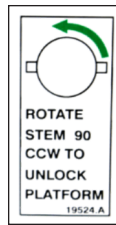
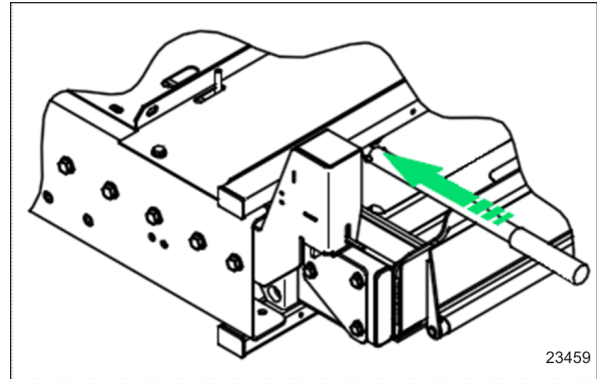


FIGURE 14: DECAL



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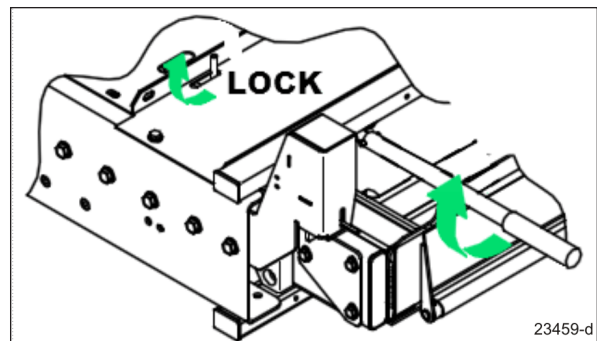
- Grasp the top edge of the rollstop, or the handrails, with two hands and push firmly. The platform moves smoothly after an initial resistance. Push platform in fully.



CAUTION

The platform must lock in place when fully stowed. Check platform retention by attempting to pull platform outward; it must not move.

- If platform does not lock, rotate either platform release shaft 1/4-turn (direction opposite to orientation shown on adjacent decal) to re-engage (lock) release shaft. Platform must be fully stowed before rotating shaft.
- Verify that stow lock striker is engaged and platform is securely stowed.



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SEATS RECONFIGURATION

To accommodate a wheelchair, one row of seats must be folded (9th row) and two rows must be folded and slide away (7th & 8th row). Seats may be folded on both sides of the coach to make room for a second wheelchair.

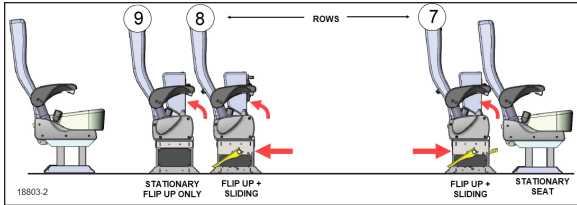


FIGURE 15: SEATING ARRANGEMENT ROW 7-9

Electrical wheelchair or tri-wheeler may require moving the sliding seats on both sides of the coach to allow enough turnaround space.

To fold a set of seats, raise the seat back then lift up the seat cushion by pulling the handle under the cushion.

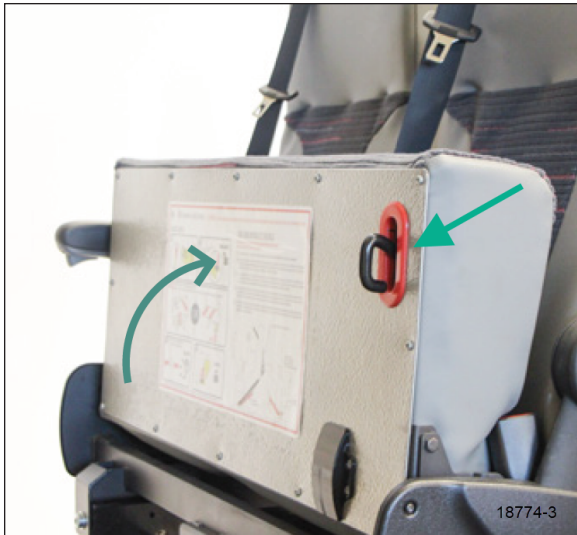


FIGURE 16: FOLDING SEATS

To slide a row of seats, remove the black covers from the floor tracks.

1) Use the forward lock pedal to unlock seat from the current position.



FIGURE 17: UNLOCK SEATS

2) Push either the forward or rear foot pedal to slide the seats in desired direction. Slide seats forward or back until engaged with a click sound.



FIGURE 18: SLIDING THE SEATS

3) Push on rear pedal to lock the seats in place.



FIGURE 19: LOCK THE SEATS

WHEELCHAIR AND OCCUPANT RESTRAIN SYSTEM

This securement system includes:

- 4 wheelchair restraint red belts and retractors with anchorage to passengers seat pedestals (sliding seats have two pedestals).
- Occupant securements: lap and black shoulder belt.

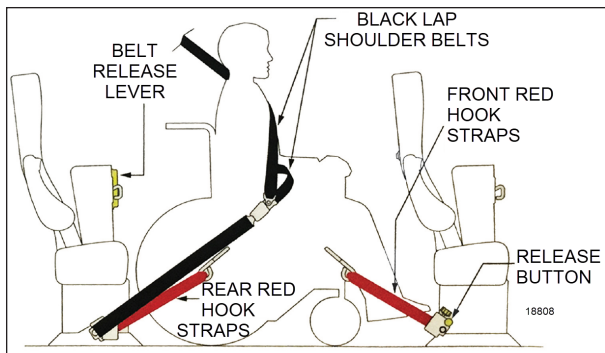


FIGURE 20: RESTRAIN SYSTEM

To secure the wheelchair, use the red restraint belts must (at all four corners). Hook one wheelchair restraint belt to each corner of the wheelchair frame (not the wheels) and allow the retractors to tension the belts.

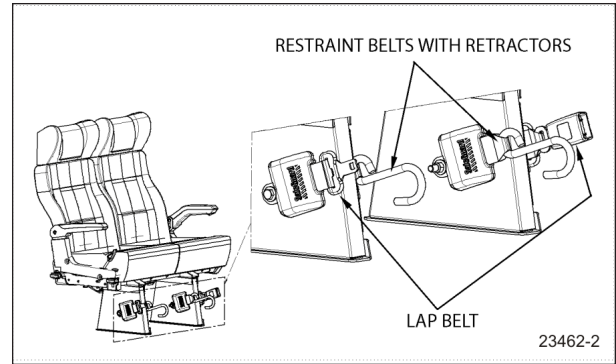


FIGURE 21: WHEELCHAIR AND OCCUPANT RESTRAIN SYSTEM

To remove the restraint red belts, push the release button found on the retractor. Unhook the wheelchair and allow the belts to retract. Guide the belts in, making sure they remain untwisted as they retract.

4-POINT SECUREMENT WITH ANCHORAGE TO PASSENGERS SEAT PEDESTALS

This securement system includes:

- 4 wheelchair restraint belts and retractors with anchorage to passengers seat pedestals.
- Occupant securements: lap and shoulder belt.

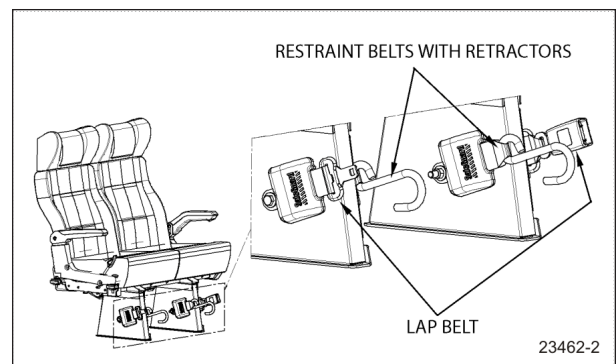


FIGURE 22: WHEELCHAIR AND OCCUPANT RESTRAIN SYSTEM

To secure the wheelchair, four restraint belts must be used (at all four corners). Hook one wheelchair restraint belt to each corner of the wheelchair frame (not the wheels) and allow the retractors to tension the belts.

To remove the restraint belts, push down on the tension release lever found on the retractor. Unhook the wheelchair and allow the belts to

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retract. Guide the belts in, making sure they remain untwisted as they retract.

Wheelchair Occupant Restraint

Secure the wheelchair occupant in the following manner:

Fasten and adjust the lap belts so it sits snug across the hips. Make sure that you place the lap belt buckle on the center aisle side. Fasten the shoulder belt by inserting the lap belt tab into the shoulder belt buckle. A retractor adjusts shoulder belt length automatically.



WARNING

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



CAUTION

The safety belt buckle provided with the red release button must always be located on the center aisle side.

To unfasten the belts, press the red release button on the shoulder belt buckle first and then unfasten the lap belt by pressing the red release button on the lap belt buckle.

WHEELCHAIR LIFT SYSTEM - THRESHOLD WARNING SYSTEM (TWS) ADJUSTMENT

There are three verifications to perform;

1. Adjust Aiming of Acoustic Sensor Beam,
2. Test Aim of Acoustic Sensor Beam, and
3. Adjust Acoustic Sensor Timing.

Adjustment of the sensor timing is done at the factory and should not need to be repeated in the field. Readjustment should only be considered if the sensor aiming could not be adjusted to ignore both the wheelchair in the aisle and the platform during its normal movement.

ADJUST AIMING OF ACOUSTIC SENSOR BEAM

1. Place wheelchair with passenger in center aisle of coach, pointed at doorway where Threshold Warning System (TWS) is installed. The TWS should not detect a wheelchair and passenger when they are located this far from doorway.

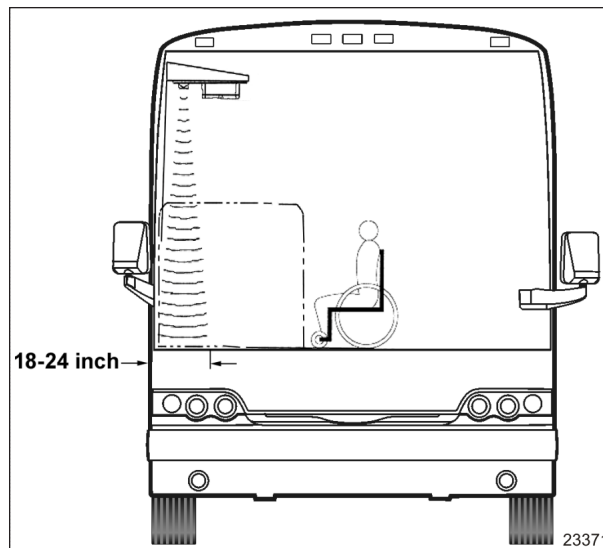


FIGURE 23: TWS AREA

2. Place wheelchair with passenger in center aisle of coach, pointed at doorway where Threshold Warning System (TWS) is installed. The TWS should not detect a wheelchair and passenger when they are located this far from doorway.
3. Place wheelchair with passenger in center aisle of coach, pointed at doorway where Threshold Warning System (TWS) is installed. The TWS should not detect a wheelchair and passenger when they are located this far from doorway.

NOTE

Only in rare instances will adjustment be needed in the counterclockwise direction

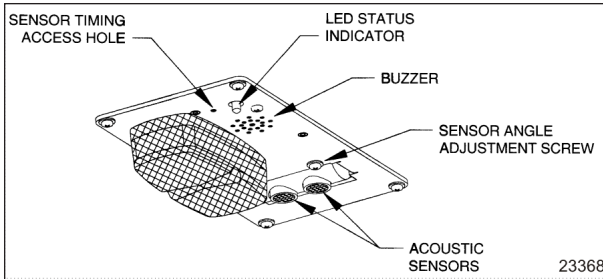


FIGURE 24: TWS MODULE DETAIL

TEST AIM OF ACOUSTIC SENSOR BEAM (WHEELCHAIR ACCESS)

1. Move wheelchair and passenger slowly towards doorway. TWS should detect wheelchair and passenger (LED will flash, buzzer will sound and the module red light will flash) when centerline of front wheels is between 18 and 24 inches from doorway.
2. Open vehicle access door above lift. Lower platform to ground and place wheelchair and passenger at rear of platform. Rollstop (rear barrier) should be up. Raise platform to floor level. This normal platform motion with wheelchair and passenger aboard should not actuate TWS. If LED does flash (buzzer will also sound and module red light will flash), turn sensor adjustment screw slightly counterclockwise.

NOTE

If an adjustment is made, repeat the previous step where wheelchair is between 18 and 24 inches from doorway.

ADJUST ACOUSTIC SENSOR TIMING

1. Support a flat sheet of cardboard, or similar material, directly beneath TWS module at a distance of 4½ feet below module. Sheet must be facing sensors.

NOTE

Before proceeding, visually inspect sensors to verify that they are pointing directly at floor, or nearly, and are not pointing off at an extreme angle.

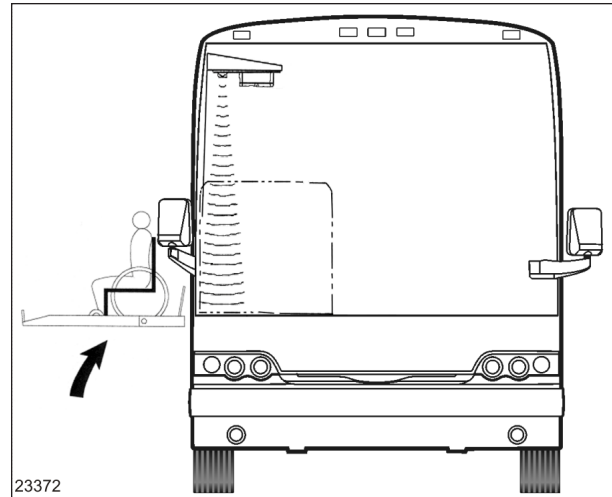


FIGURE 25: CHECKING NORMAL PLATFORM POSITION

2. Note the sensor timing access hole. This hole provides access to a plunger-actuated switch that sets the sensor timing. Insert a 1/16-inch diameter wire-like object into the access hole and press the plunger inward. The LED will flash momentarily while the module establishes the distance and then remain on steady. Release the plunger when the LED ceases to flash.

NOTE

It is important that objects, such as your body, tools, seats, etc, do not interfere with the beam while the adjustment is being made

WCL CASSETTE INSTALLATION AND REMOVAL

Refer to section 23 of the Maintenance manual for the WCL installation or removal procedure.

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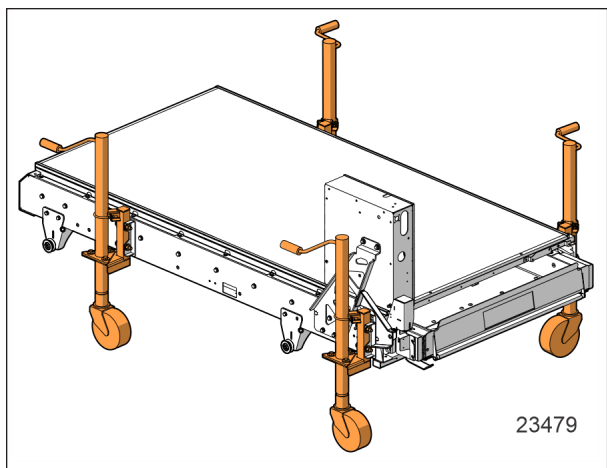


FIGURE 26: WCL CASSETTE WITH JACKS

SECTION 6 - STARTING AND STOPPING PROCEDURES

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6-2 Starting and Stopping Procedures

IGNITION SWITCH

The vehicle is equipped with a starting aid system which allows cranking the engine even if the batteries are depleted. Reserve power is stored in a super capacitor located next to the wheelchair lift platform.

An ignition switch (ON and OFF positions) and an independent ignition button (momentary switch) are used instead of an ignition key. Both are located side to side on the lower left side of the dashboard. To start the vehicle, turn the ignition switch to the ON position and then push the start button.

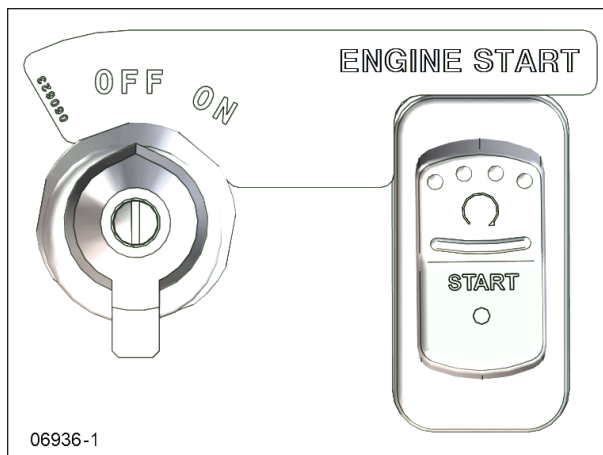


FIGURE 1: IGNITION SWITCH AND START BUTTON

The two position switch will act as follow when the engine is not running:

OFF - The electrical circuits are not activated, only the accessories connected directly to the batteries can be activated. These are:

- The main electrical shut-off switch;
- The entrance door;
- The battery equalizer;
- The engine and transmission control unit;
- The fire detection and suppression system.

CAUTION

The ignition switch doubles as the main electrical shut-off switch. When the vehicle is parked overnight or for an extended period of time, the ignition switch should be set to the OFF position.

NOTE

The vehicle is equipped with a "wake-up" function that will maintain power to important circuits for a period of 15 minutes when switched from ON to OFF.

ON - Set the ignition to on by turning the switch clockwise.

Beside accessories directly connected to the battery, the following electrical circuits are activated when the switch is in the **ON position**: transmission, engine and accessories, ABS system, wipers, dashboard cluster gauges and buzzers, temperature display, radio, Wi-Fi, cameras and information systems, air horn, air dryer as well as the interior and exterior lighting (excluding headlights).

Do not leave the key in this position unless the engine is running.

NOTE

When the hazard flashers are activated, the vehicle electrical circuit switches to the ON position even if the ignition switch is at the OFF position.

NOTE

To prevent discharge of the batteries when the engine is not running, some functions are automatically switched off if the battery SOC (State Of Charge) falls below 65% for more than 30 seconds. A pictogram (alternator) and a message will appear in the DID 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. If a prolonged use of the functions with the engine not running is necessary, connect the battery to a charger.

START BUTTON – With the ignition switch set at the ON position, use this momentary switch to crank and start the engine.

NOTE

If the engine was shut down by the automatic idle shutdown timer (after 15 minutes of idling) the ignition switch must be switched to the OFF position 10 seconds prior to restart.

The features activated when the engine is running are all those described above plus the HVAC system and headlights.

6-4 Starting and Stopping Procedures

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 allows starting the engine from that location, typically for maintenance operations. See "[STARTING FROM THE ENGINE COMPARTMENT](#)" on the [facing page](#)

STARTING FROM THE DRIVER'S SEAT

1. Make sure the engine STOP interlock button located in the engine compartment is reset (twist and pull) to enable starting from the front and that the main electrical shut-off switch is set to the ON position;

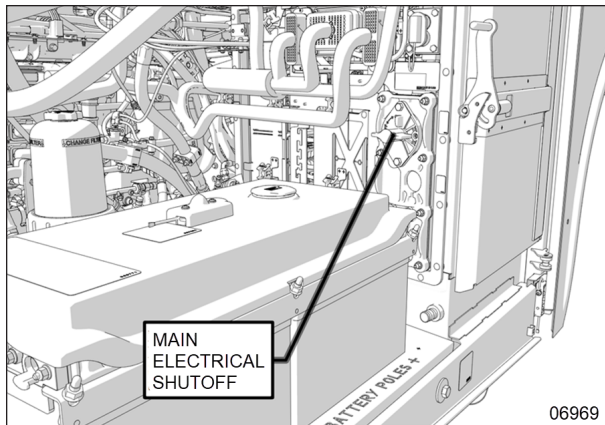


FIGURE 2: MAIN ELECTRICAL SHUT-OFF SWITCH

2. Make sure that the parking brake is applied. If not, apply the parking brake by pulling the parking brake control button all the way up;
3. With the foot off the accelerator pedal, turn the ignition switch to the ON position and momentary push the START push button to crank the engine;

NOTE

An electronic protection will prevent the engine from starting if the parking brake is not applied.

NOTE

When the ignition is turned to ON, the M32QR ABS Pressure Modulator Valve solenoids are briefly energized. This can be audibly detected by a rapid cycling of the PMVs. If the air system is fully charged and the service brake pedal is depressed when ignition is turned to ON, the modulator valves create a sharp audible "chuff" of air pressure.

4. 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 the bush button and let starter cool for one minute before attempting to restart.

NOTE

If engine does not start, return the switch to OFF position before attempting to restart.



CAUTION

Do not press the 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 normal 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 the accelerator pedal is depressed before starting, release and wait 30 seconds before attempting to restart.



WARNING

Do not use ether or other combustible starting aid fluid on any engine equipped with an intake air preheater. If the engine is equipped with a preheater, introduction of ether or similar starting aids could cause a fire or explosion resulting in severe property damage, serious personal injury or death.

Stopping The Engine

1. Apply parking brake and place transmission in neutral (N);
2. Allow engine to idle for at least two minutes before shutting down the engine. This ensures that the turbine speed drops and allows time for the engine exhaust gas temperature to drop to about 300°F (150°C);
3. Shut off all electrical loads;
4. Turn the ignition key to the OFF position.



CAUTION

Do not shut off the engine when running above normal idle.



CAUTION

Set the main electrical shut-off switch to the OFF position after parking and when left unattended for an extended period of time.

STARTING FROM THE ENGINE COMPARTMENT

Push buttons to start and stop the engine from inside the engine compartment are located on the R.H. side of engine compartment.



DANGER

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

1. Set the main electrical shut-off switch and ignition to the ON position.
2. Press the rear start button to start engine from engine compartment.

When servicing the engine, push the engine stop/ignition interlock button to prevent the engine from being started from the dashboard ignition key or the rear start push button.

Once servicing is done, twist and pull the button to allow normal engine start.



CAUTION

Refer to cautions in ["STARTING FROM THE DRIVER'S SEAT" on the previous page](#) in this chapter

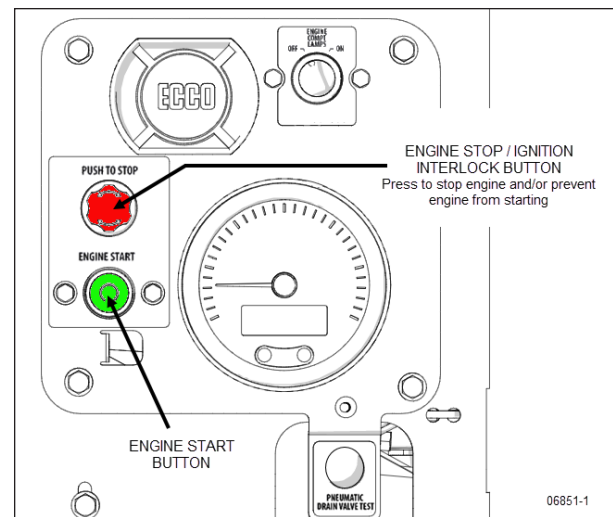


FIGURE 3: REAR START PANEL



DANGER

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



DANGER

Rotating shafts can be dangerous. They can snag cloth, skin, hair and hands, causing serious injury or death. Do not work on a shaft or other rotating parts of the vehicles (with or without guard) when the engine is running.

Stopping The Engine

Press the red engine STOP/ignition interlock button while the engine is running to stop the

6-6 Starting and Stopping Procedures

engine from the engine compartment.

COLD WEATHER STARTING

When starting a cold engine, the intake air will be warmed up with the intake air preheater. Turn the ignition switch to the ON position. The intake air preheater will not engage at coolant temperature above 54°F (12°C). If the coolant temperature is below 54°F (12°C), the intake air preheater will engage and will light the preheater telltale between 0 and 50 seconds, depending on the engine coolant temperature. Wait before the preheater telltale has turned off before starting the engine.



Intake Air Preheater Telltale

If necessary, once the engine has started, the preheater will re-engage (post heating) for the same length of time as the preheat time.



WARNING

Volvo D13 Engine

This engine is equipped with an intake air preheater. Never use ether or other combustible starting aid fluid. Introduction of ether or similar starting aids could cause a fire or explosion resulting in severe property damage, serious personal injury or death.

JUMP STARTING

In order to avoid damage to solid-state electrical components, it is important that jumper (booster) cables are 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.



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.



CAUTION

Off-board battery charger with a start boost facility must not be used to jump start the vehicle. This could damage the electrical system.

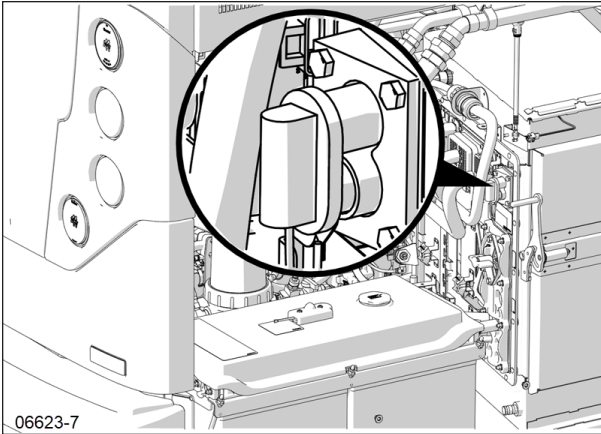


FIGURE 4: QUICK CONNECT JUMP START CONNECTOR

To jump start, proceed as follows:

1. Shut off all electrical equipment;
2. Remove the protective plug from the quick connect jump-start connector located in the engine curb side compartment;
3. Connect the jumper cable to the quick connect jump-start connector;
4. Start the vehicle with the dead battery;
5. Disconnect the jumper cable;
6. Install protective plug on the quick connect jump-start connector.

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 and 30 feet (6 to 9 m), use 3/0 (AWG) gauge wires.

ENGINE PROTECTION SYSTEM

The engine protection will automatically derate or stop the engine when certain engine conditions reach a critical stage.

In the event of a serious fault, the red STOP telltale light comes on and an audible alarm will sound if the engine is running.



An illuminated STOP telltale light indicates a serious problem has been detected, and the driver must respond immediately to the problem. The vehicle must be safely pulled off the road and stopped. In some instances, the engine must be switched off immediately.

AUTOMATIC ENGINE SHUTDOWN

Prior to an actual automatic shutdown, the engine will automatically derate, go to idle, and then stop as the vehicle speed gets below 2 mph (3 km/h).

The engine shutdown protection will automatically derate and stop the engine when one or more of the conditions listed below reaches a critical point:

- High engine coolant temperature
- High engine oil temperature
- Low engine oil pressure
- High crankcase pressure

After the automatic engine shutdown sequence, the engine may be restarted. To do so, turn the ignition switch to the OFF position for 7 seconds and then turn it back to ON. However, it will only operate for 30 seconds unless the problem is resolved.

Use this function sparingly and in order to move the vehicle to a safe parking place only. Excessive use may result in severe engine damage.



WARNING

Failure to take necessary action when the STOP telltale light is on can ultimately result in automatic engine derate and shutdown.

IDLE SHUTDOWN TIMER

The idle shutdown timer is programmed to shut down the engine after 15 minutes of engine idling time.

6-8 Starting and Stopping Procedures

The engine will shut down at the set time under the following conditions:

- Vehicle speed is 0;
- Engine is running at normal idle speed;
- Engine coolant temperature above 120°F (49°C);
- Temperature inside vehicle is between 59°F (15°C) and 81°F (27°C);
- Parking brake applied;
- Transmission into neutral (N);
- Wheelchair lift system not in use;

Pressing the fuel pedal will prevent engine shutdown and restart countdown.

ENGINE WARM-UP

After starting the engine, keep the parking brake applied and let the engine run at normal 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.

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).



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.

ALLISON TRANSMISSION WARM-UP

With an automatic transmission, when the temperature falls below -20°F (-29°C), the

CHECK telltale light illuminates after the engine is started, and a reminder tone will sound. In this case, the transmission will be locked in neutral (N) until the transmission temperature rises above -20°F (-29°C) and the CHECK telltale light goes out. The transmission will only operate in first or reverse gears until it reaches normal operating temperature.

STARTING THE VEHICLE AFTER A FIRE ALARM

The vehicle may be started after a fire alarm without resetting the system. Refer to *Section 7 SAFETY FEATURES AND EQUIPMENT* under ["Starting The Vehicle After A Fire Alarm" on page 9](#) for the complete procedure.

SECTION 7 - SAFETY FEATURES AND EQUIPMENT

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7-2 Safety Features and Equipment

EMERGENCY EXITS

Locate and learn how to use all possible emergency exits. It is good practice to inform passengers of the location of exits and how to use them in case of an emergency.

SIDE WINDOWS

Some side windows can be opened from the inside for emergency exit. A decal or tag located at the bottom of each passenger window indicates the location of the nearest emergency exit.

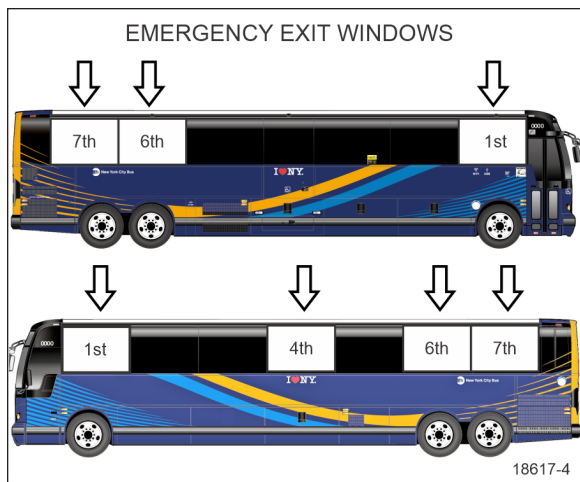


FIGURE 1: EMERGENCY EXIT WINDOWS

To open a side window emergency exit, tilt up the release bar and push the bottom of the window outwards, as illustrated below. The window is hinged from the top and will not fall out.

To close the window, tilt up the release bar and pull the window back. Push down the release bar to lock shut.

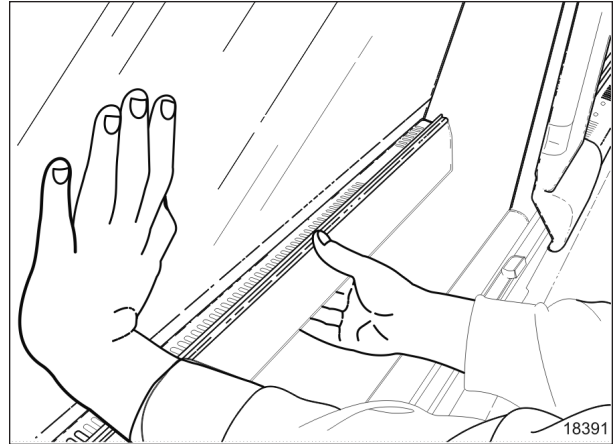
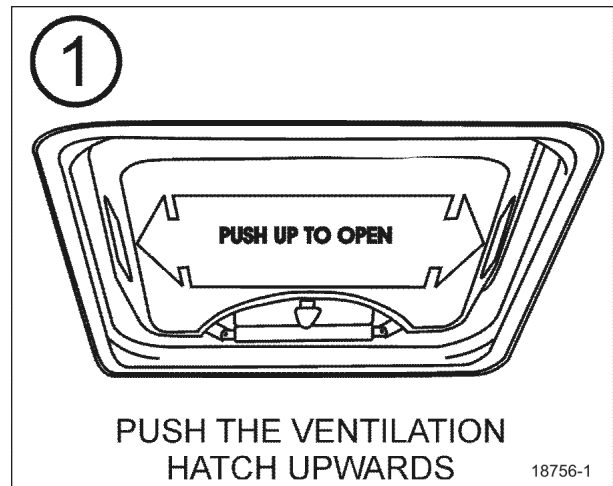


FIGURE 2: SIDE WINDOW EMERGENCY EXIT

ROOF HATCH

Two roof hatches serve as emergency exits. They are designed to be opened by occupants and are installed on the roof at the front and the rear of the vehicle. In case of an emergency, push the ventilation hatch upward (1). Turn knob 1/4 turn (arrow pointing "TO EXIT") and then push knob to release the hatch (2). Push the escape hatch outwards (3). A decal with operating instructions is located on the hatch.



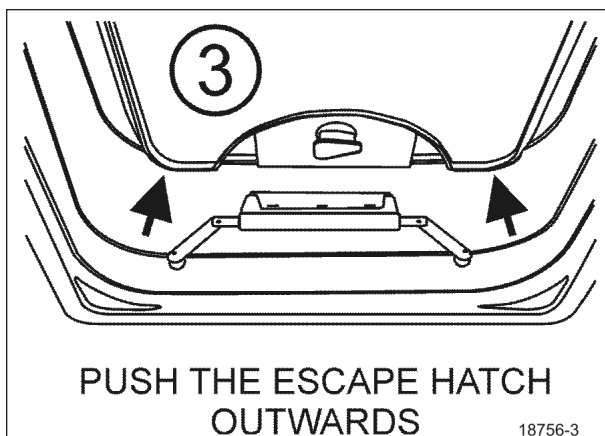
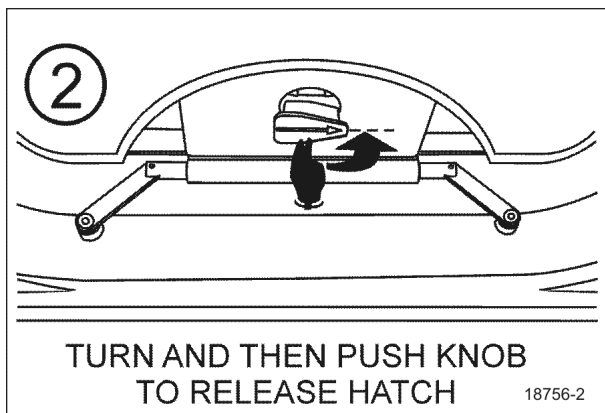


FIGURE 3: EMERGENCY ROOF ESCAPE OPENING

NOTE

In the event of ventilation blower motor failure, the roof hatch may be used to aid ventilation by pushing the hatch upward.



CAUTION

Be aware of reduced vehicle overhead clearance when driving under overpasses with an open roof hatch.

To latch escape hatch after use, vent arms must be pushed upright in FULL OPEN VENT position. Insert edge firmly between the two sections of the bracket and then return knob to original position (arrow pointing "LATCHED") to lock the hatch. Finally, pull the hatch into closed position, one side at a time.

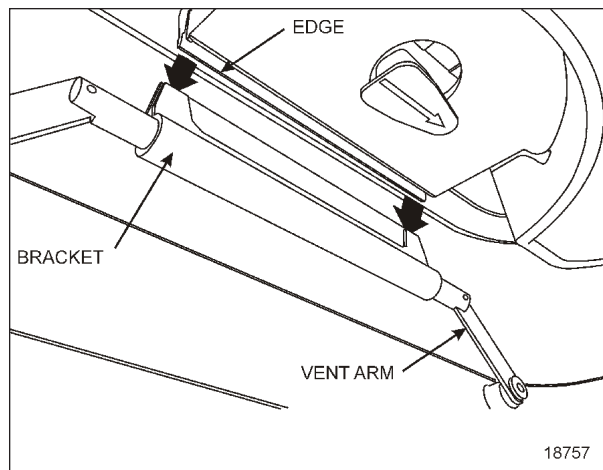


FIGURE 4: ROOF ESCAPE LATCHING

ENTRANCE DOOR OPENING IN CASE OF EMERGENCY

In case of an emergency, three relief valves are present on the vehicle to allow depletion of the entrance door cylinders and latching cylinders air pressure. Once the air pressure is released, the entrance door can be opened by pushing or pulling with the hands.

NOTE

The entrance door must be unlocked to allow opening of the door manually. The door can be unlocked from the outside with the GM key (driver key) or from the inside with the locking lever located near the upper fore hinge.

Emergency Air Pressure Relief Valve On The Lateral Control Panel

To open the door in an emergency, pull the knob to release the air pressure. Push the lateral control panel relief valve down to reapply air pressure for normal operations.

7-4 Safety Features and Equipment

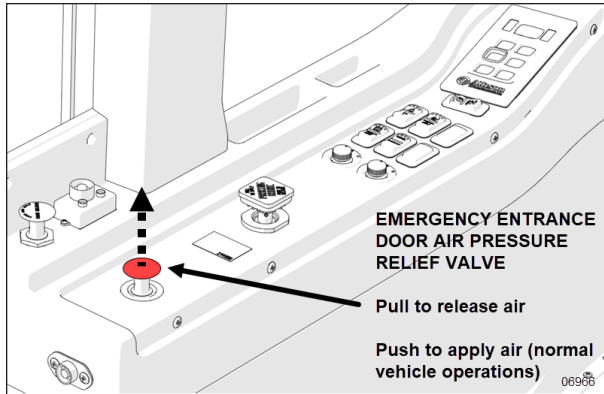


FIGURE 5: AIR PRESSURE RELIEF VALVE ON THE LATERAL CONTROL PANEL

Emergency Air Pressure Relief Valve At The Entrance Steps

To open the door, turn the relief valve in the direction of the arrows (CW) and push the door open. Return the valve to its initial position (CCW) for normal operations.

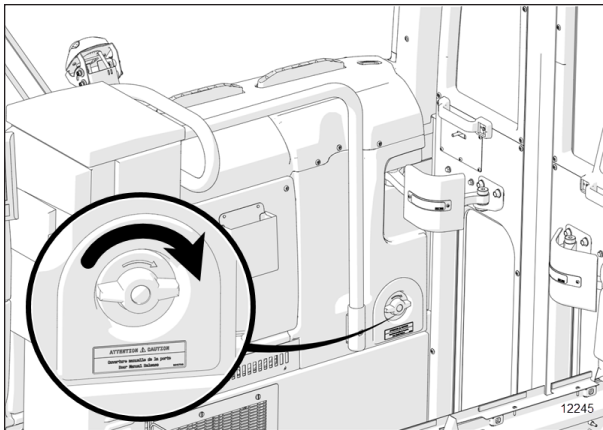


FIGURE 6: EMERGENCY AIR PRESSURE RELIEF VALVE AT THE ENTRANCE STEPS

Emergency Air Pressure Relief Valve In The Front Service Compartment

Another relief valve is located in the front service compartment to allow depletion of the entrance door air system from the outside.

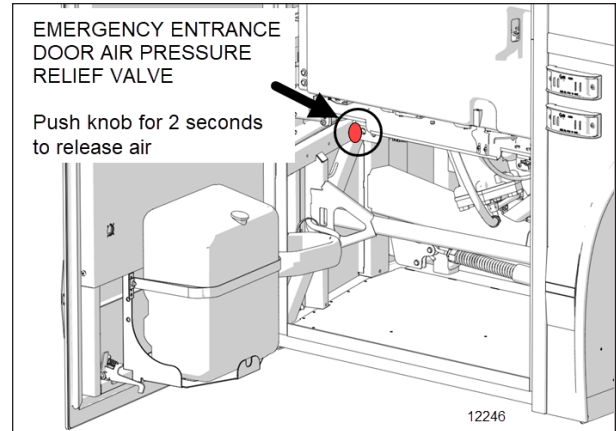


FIGURE 7: EMERGENCY AIR PRESSURE RELIEF VALVE IN THE FRONT SERVICE COMPARTMENT

To open the door, push the knob for two seconds to release the air. The air pressure relief valve on the lateral control panel will pop out.

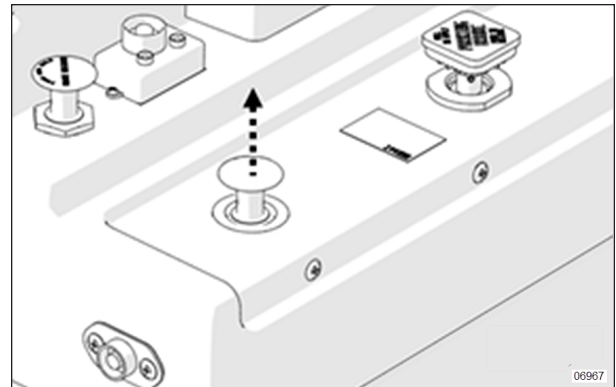


FIGURE 8: RELIEF VALVE ON THE LATERAL CONTROL PANEL POPS OUT

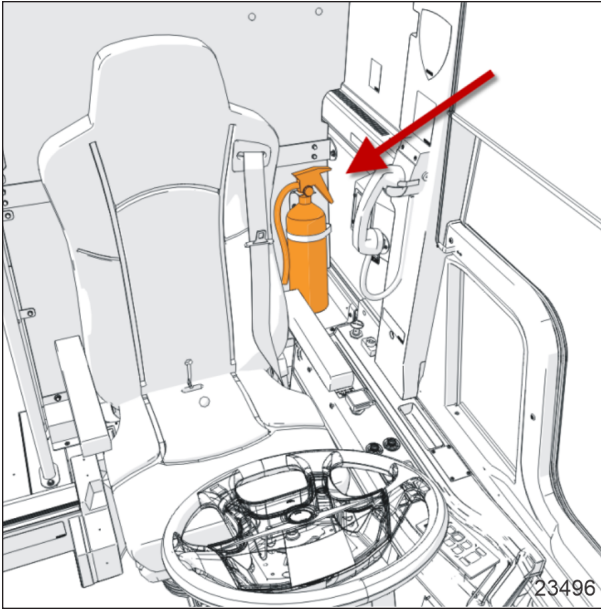
Push the lateral control panel relief valve back to reapply air pressure and return to normal operations.

EMERGENCY EQUIPMENT

The vehicle is equipped with numerous safety features and equipment. Verify the equipment regularly and keep on hand and in good condition at all times. Following is the enumeration and description of safety equipment found on board.

FIRE EXTINGUISHER

The 5 lbs fire extinguisher is located on the driver's L.H. side. Instructions for use are found on the extinguisher.



WARNING

Make sure you know how to operate the fire extinguisher in case of an emergency.

WARNING REFLECTORS

A box containing three triangular reflectors is provided to warn other drivers on the road in case of a breakdown. The box is located at the ceiling of the first baggage compartment, on the R.H. side. The reflectors provide visible warning of an emergency. The three reflectors should be placed as indicated on the box cover. These reflectors comply with FMVSS 125 (Federal Motor Vehicle Safety Standards).

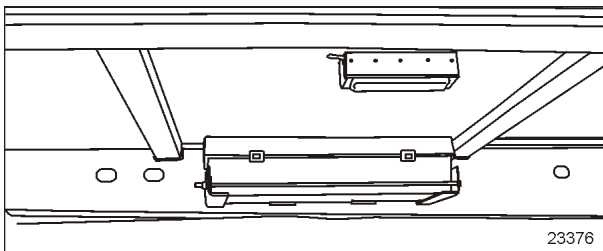


FIGURE 9: WARNING REFLECTORS LOCATION (X3 SERIES)

AUTOMATIC FIRE SUPPRESSION SYSTEM (AFSS)

The vehicle is equipped with an Automatic Fire Detection and Suppression System (AFSS)

intended to automatically detect and suppress an engine compartment fire. The system also includes real time driver status warnings and alarms as well as an automatic engine shutdown function.

Below is a brief description of the system, information regarding visual information provided and how the system should be interpreted and operated if a fire is detected.

7-6 Safety Features and Equipment

System Components

The AFSS system consist of several main components installed in different sections of the vehicle.

3 optical flame detectors are mounted in the engine compartment.

- A detector is mounted on the vehicle street side of the compartment to monitors the hot turbo and exhaust area as well as the engine starter.
- A second detector is mounted on the vehicle curb side of the compartment and is aiming at the engine fuel system (filters and fuel lines).
- A last sensor at the rear of the compartment is aimed at the alternators, AC compressor clutch and belt area.

A Thermal Linear Sensing Element (TLSE) is also installed in compartment. The TLSE is a temperature sensing metallic wire secured to the compartment ceiling routed over sensitive elements (engine and batteries).

4 discharge nozzles are installed in optimized position in the compartment, 2 on both sides of the engine.

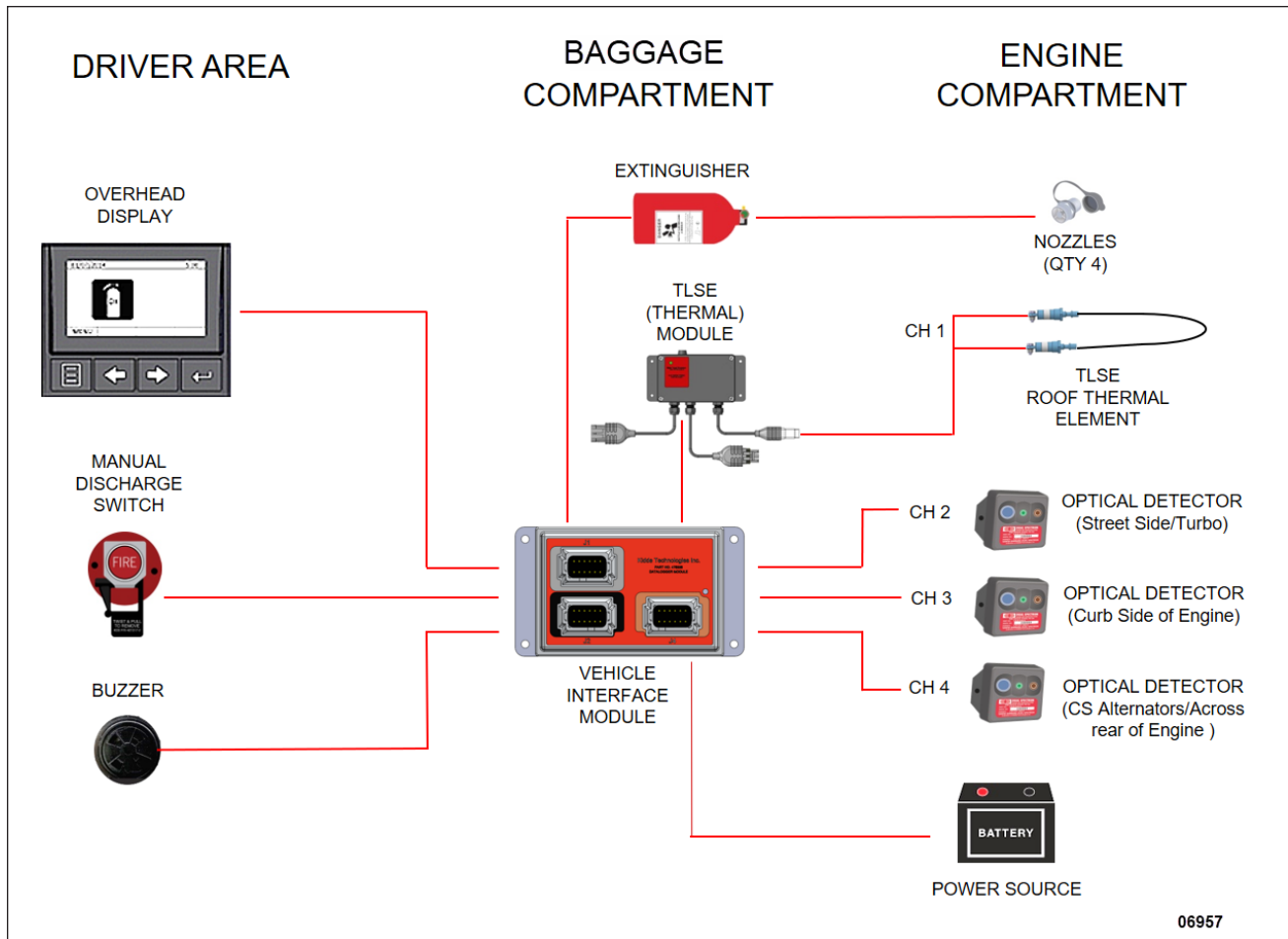


FIGURE 10: AFSS SYSTEM OVERVIEW

The 22 pounds fire extinguisher, the TLSE module and the system main interface module are protected from the elements in the Wheel Chair Lift compartment (road side).

Safety Features and Equipment 7-7

A display panel is installed in the driver's area and informs the driver of the system status and possible alarms. a warning buzzer is also installed near the system manual activation (discharge) switch on the left control panel (refer to *SECTION 4 "AUTOMATIC FIRE DETECTION AND SUPPRESSION SYSTEM (AFSS)"* on [page 8](#) for more information regarding the display panel and manual activation switch functions).

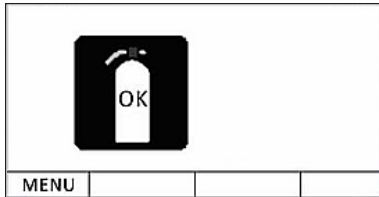
7-8 Safety Features and Equipment

System Operation

Optical and thermal detectors are installed in the vehicle engine compartment. When a fire is detected, the system sends a fire alarm signal to the display panel located in the driver's overhead area next to the destination sign control panel. The display panel immediately turns on the fire ALARM screen (an audio alarm and the vehicle electric horn will also be heard). After a 15-second time delay the engine is automatically shut down and the fire extinguisher is discharged.

NOTE

The system monitors system integrity in real time and displays the information via the display panel screen. During normal operation, a SYSTEM OK icon will be displayed to inform the operator that all AFSS components are working properly.



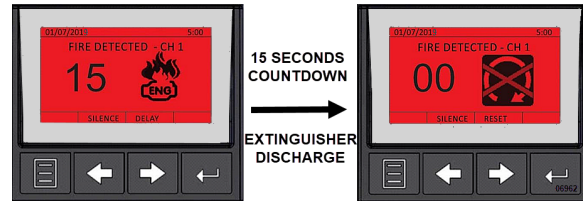
NOTE

The Manual Activation Switch is used when immediate discharge of the fire extinguisher and engine shutdown is desired.

Operational Sequence (Fire)

1. A fire optical or thermal detector detects a fire in the engine compartment and sends a signal to the Display Panel located in the driver's overhead area.
2. The fire alarm is activated; The Display Panel screen turns red, the Fire Detection icon is displayed and an audible beeping alarm is heard (vehicle horn will also be activated).
3. The HVAC shutdown activates immediately (including defrost / defogger blower).
4. The 15 seconds engine shutdown countdown starts and the time remaining appears on the screen (the alarm sound will accelerate as the timer approaches 0). The SILENCE and DELAY buttons also appear on the screen.

5. Unless advanced or delayed by the operator, the system automatically shuts down the vehicle engine and discharges the extinguisher into the engine compartment at the end of the countdown.



WARNING

The engine will stop 15 seconds after the fire alarm starts. The operator must be prepared to bring the vehicle to a safe stop as soon as the alarm sounds.

- If more time is required to stop the vehicle, the operator can press the Delay button on the panel display OR the Engine Stop Override switch on the dashboard to delay the engine shutdown and extinguisher discharge by an additional 15 seconds.
- The delay function can only be activated three times for a 45 seconds maximum extension.
- When one of the delay switch is pressed, a new 15 second countdown will start immediately. To use the maximum allowable running time, activate the new countdown at the very end of the current one.



WARNING

At any time, the operator can press the Manual Activation Switch located on the left window pillar to terminate the countdown and proceed to the immediate engine shutdown and extinguisher discharge.



WARNING

The extinguisher discharge may cause an obscuring cloud behind and near the vehicle.

Starting The Vehicle After A Fire Alarm

The vehicle may be started after a fire alarm without resetting the system. Refer to ignition switch sequence below. This will not reset the system; rather it will instruct the vehicle's multiplex system to ignore vehicle interface outputs. This feature is intended to be used only in emergencies that require the vehicle to be restarted and moved a short distance prior to system reset. It should not be performed if the cause of the fire has not been clearly identified and corrected.

To start the vehicle, perform these actions in sequence.

- Reset the AFSS from the AFSS panel.
- Reset manual switch in rear junction box (curb side of engine compartment).
- Perform this switch sequence **ON - OFF - ON** (within 2 seconds) then **START** the vehicle.

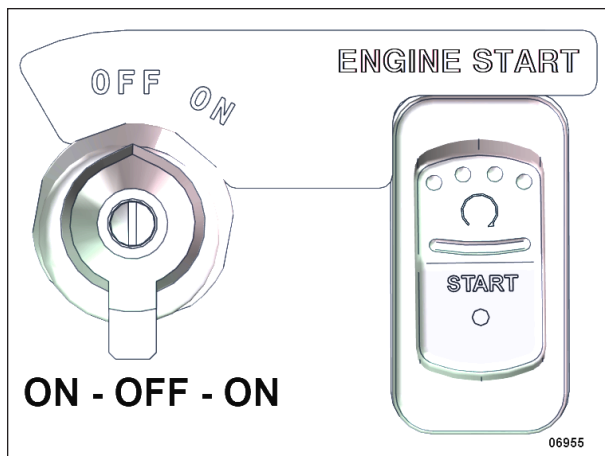


FIGURE 11: IGNITION SWITCH SEQUENCE

EMERGENCY AIR FILL VALVES AND QUICK COUPLING FITTINGS

The vehicle is equipped with three (3) air system emergency fill valves to supplement the air system when air pressure is low and the engine cannot be operated.

Air system emergency valves are fitted with either standard tire valve stem (Schrader) and pneumatic quick coupling fitting.

Air fill valves are as follows:

1- One quick coupling fitting and one air fill valve fitted with standard tire valve stem located near the engine air filter supply air for all systems through the wet tank.

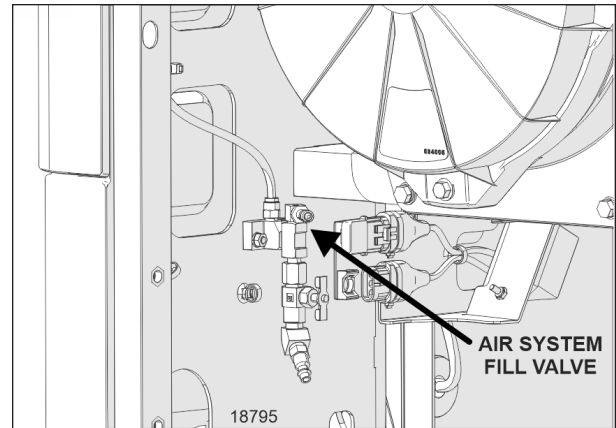


FIGURE 12: AIR FILL VALVE NEAR THE ENGINE AIR FILTER

2- One air fill valve fitted with standard tire valve stem located in the front service compartment supplies air for the accessories, secondary, wet, kneeling and parking brake overrule tanks.

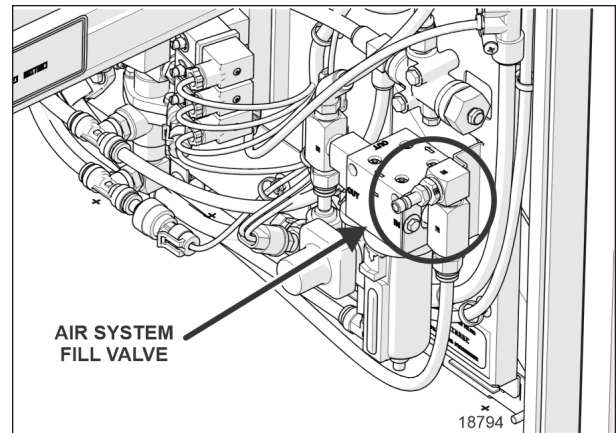


FIGURE 13: AIR FILL VALVE IN FRONT SERVICE COMPARTMENT

3- One quick coupling air fill fitting identified AIR SUPPLY located behind the flip down hatch on the front bumper supplies air from a tow truck for all systems through the air dryer.

One quick coupling fitting identified BRAKE located behind the flip down hatch on the front bumper supplies air for the operation of the vehicle service brake from the tow truck.

7-10 Safety Features and Equipment

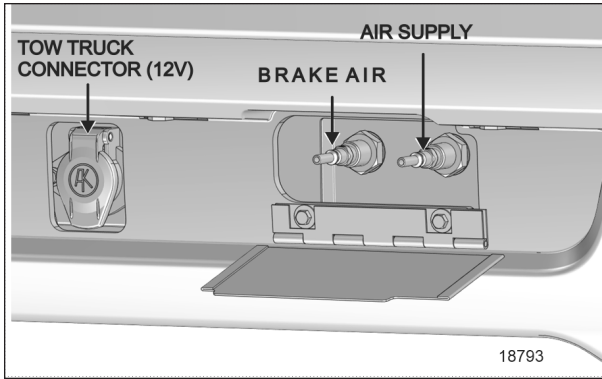


FIGURE 14: CLOSE-UP VIEW OF THE FRONT BUMPER

The tow truck connector provides electrical supply from the tow truck to the rear clearance lights, the rear flasher lights, the tail lights and the stop lights.



CAUTION

Air filled through the emergency fill valves must not exceed 144 psi.

EMERGENCY AND PARKING BRAKES

During normal operation, if air pressure in any brake circuit drops below 60 psi (414 kPa), spring-loaded emergency brake will be immediately applied at full capacity to the drive axle wheels to stop the vehicle.

Spring-loaded parking brake is applied by pulling up the control valve knob located on the L.H. lateral console.

Parking brake is not designed to be used as a service brake. For normal driving conditions, the control valve knob must remain depressed.



WARNING

Always apply the parking brake before leaving the driver's seat.

NOTE

Only use the parking brake to supplement the service brake to stop the vehicle in emergency conditions. The stopping distance will be considerably longer than when using normal service brake.

NOTE

Before releasing the parking brake by pushing down the control valve knob, check the pressure gages to make sure that the brake system air pressure is greater than or equal to 95 psi (655 kPa).

NOTE

The alarm will sound if the ignition switch has been turned to OFF without applying the parking brake. The same beep will sound if pressure is still applied to the service brake pedal.

NOTE

The stop lights automatically turn on when the parking brake is applied and the engine is running.

LOOSE WHEEL NUT INDICATORS

All vehicle wheels are equipped with loose wheel nut indicators that can help identify a loose wheel nut with a simple visual inspection.

When the wheel nuts are torqued to spec, the indicators are placed on the wheel nuts in a uniform pattern (clockwise orientation).

If a nut loosens, its corresponding indicator will become out of sequence (turned counter-clockwise). This out-of-sequence indicator will be visible during the walk around inspection.



FIGURE 15: LOOSE WHEEL NUT INDICATORS - UNSAFE DRIVING CONDITION



DANGER

Loose wheel nut indicators must always be visually checked before every trip.

If an indicator is out of sequence, the vehicle must be considered unsafe to drive and the wheel must be re-torqued.

Never operate a vehicle suspected to have a loose wheel nut.

TOWING AND JACKING POINTS

For detailed instructions, refer to Maintenance information [MI14-01](#), available at the end of Section 18 "Body" of the vehicle Maintenance Manual.

DAYTIME RUNNING LIGHTS

The daytime running lights system provides added safety by making the front of the vehicle more visible to other drivers during the day.

The daytime running lights system turns the headlights on when:

- Engine is running;
- Parking brake is released;
- The exterior lighting switch is set to the OFF position or pressed to the first position.



WARNING

At night, do not drive using the daytime running lights. When in use, the tail and rear marker lights are not turned on.

For night driving, turn the headlights lighting rocker switch to the second position.

PEDESTRIAN TURN WARNING (PTW)

The vehicle is equipped with a pedestrian turn warning system (PTW) that will emit an external audio message to warn surrounding pedestrians that the vehicle is turning left or right.

The system is using speakers located on both sides of the vehicle and turns on automatically when the vehicle speed is less than 10 mph (16

km/h) and the steering wheel is rotated at least 45deg (a quarter turn) left or right.



WARNING

The PTW system is independent system that does not activate or replace the vehicle turn signal lights.

Always uses the foot operated switches to activate the vehicle signal lights when making a turn.

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. The back-up alarm is automatically activated when the transmission is put into reverse gear (R) .

The back-up alarm can be momentarily disabled using the dashboard back-up alarm cancel switch .

ESSENTIAL FUNCTIONS TO OPERATE THE VEHICLE (BASIC LIMP-HOME FUNCTIONS)

Even with a defective CECM (Chassis Electronic Control Module) or a CAN network problem, essential base functions are maintained to rear start the vehicle from the engine compartment and drive in a secure manner.

AVAILABLE FUNCTIONS

- Startup: Turn on the ignition in the driver's area and rear start the vehicle from the engine compartment,
- Headlights: Low beams only,
- Stoplights: 2 upper stoplights + high-mounted stoplight are functional,
- Directional signals: Rear and front only,
- HVAC: Defroster fixed at medium speed.

7-12 Safety Features and Equipment



CAUTION

The following directives must be followed.

- Never connect a battery charger when the ignition is at the ON position on a vehicle with a defective CAN or certain functions will start up by themselves,
- Disconnect the charger before starting the vehicle, if not the default functions will not activate,
- If the default mode does not activate, try to turn the ignition OFF while ensuring that no charger is connected and then restart the vehicle.

CAMERA SYSTEM

The vehicle is equipped with 11 cameras. One back-up camera, two lateral rear cameras, one forward view camera and seven interior cameras.

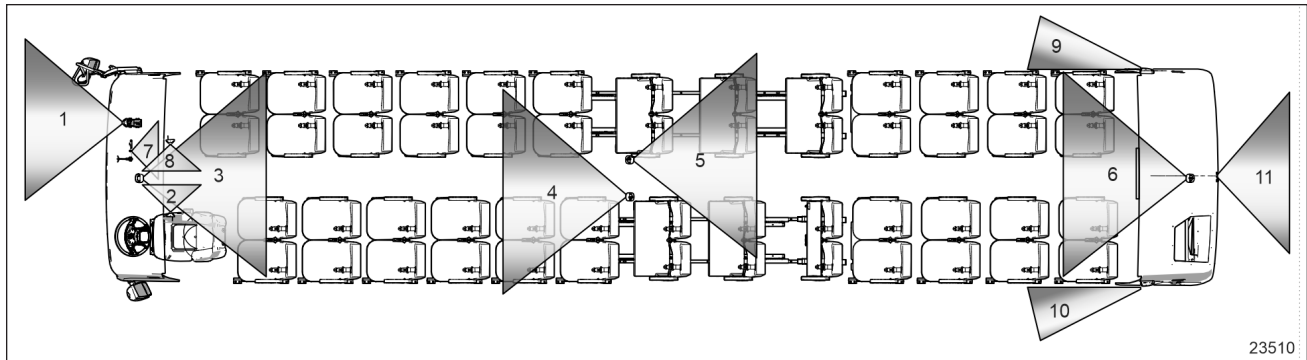


FIGURE 16: CAMERA LAYOUT

CAMERA	LOCATION	VIEW DESCRIPTION
1	INTERIOR	FORWARD VIEW (DASH MOUNTED)
2	INTERIOR	FRONT DOOR AND FARE BOX
3	INTERIOR	FRONT LOOKING BACKWARD
4	INTERIOR	CENTER LOOKING FORWARD
5	INTERIOR	CENTER LOOKING BACKWARD
6	INTERIOR	REAR LOOKING FORWARD
7	INTERIOR	FRONT LOOKING BACKWARD
8	INTERIOR	BUS OPERATOR'S AREA
9	EXTERIOR	CURBSIDE REAR LOOKING FORWARD
10	EXTERIOR	DRIVER SIDE REAR LOOKING FORWARD
11	EXTERIOR	BACKUP VIEW

7-14 Safety Features and Equipment

DRIVER MONITOR

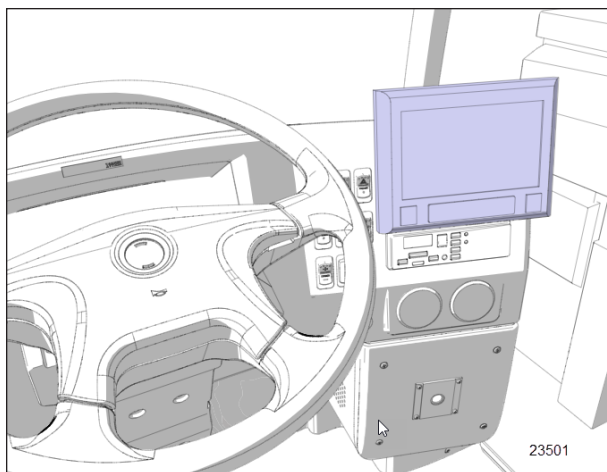


FIGURE 17: DRIVER MONITOR

The driver monitor is located on the R.H. side of the dashboard. It displays the view of the rear lateral external cameras at low speed and it shuts down when speed exceeds 20 mph.

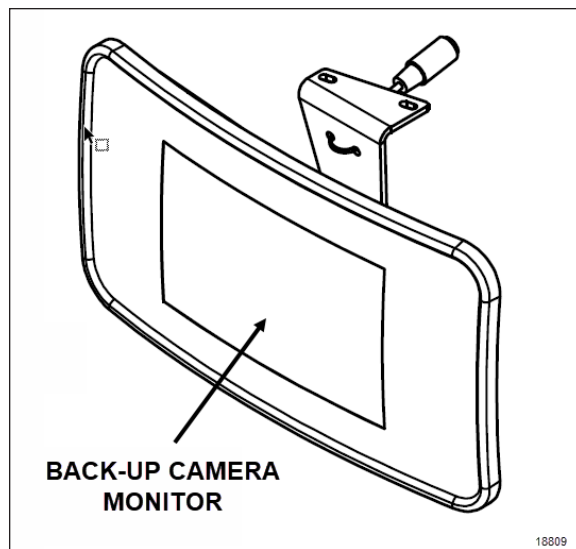
BACK-UP CAMERA

The back-up camera provides the driver with visual assistance when backing-up. The monitor is integrated in the interior central mirror and turns on automatically when the transmission is put into reverse gear (R).



WARNING

The back-up camera is intended as a driver assistance device only. Check surroundings before backing-up !



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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 supplier.

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:

Apply a nonflammable solvent to stained area with a clean, white absorbent rag;

Clean stain by starting at the outer edges of the stain and working in toward the center;

Blot affected area frequently with a clean, dry absorbent cloth to prevent stain rings caused by excess solvent.



WARNING

Use solvents in a well-ventilated area. Open all windows and doors.

Method Two:

Wet the stain with a solution of household detergent and lukewarm water. Do not soak the stain;

Rub the stain with a damp cloth;

Rinse cloth after each application.



CAUTION

Do not use soap, soap powder, ammonia, soda, bleach or cleaning products containing any of these compounds.

Beverage Stains

Remove beverage stains by following method 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.

8-4 Care and Maintenance

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 mineral spirits, 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 Prevest quoting part number 680356.

HIGH PRESSURE LAMINATE

Remove stains on laminated surfaces (Formica) with a household detergent, methylated spirits or mineral spirits. Clean with a mild liquid 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

To keep its original appearance, wash the floor regularly. Clean vinyl floors with a quality nonionic detergent cleaner or a household all-purpose 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 percent 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.



CAUTION

Using a water hose to clean the floor is prohibited since it could cause electrical shorts or damage the electrical system.


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 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 or condenser doors. This could damage the 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 and fluids levels 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

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

Check engine oil level when engine is still warm. 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.

8-6 Care and Maintenance

Do not let the oil level fall below the marking on the dipstick. **Do not** overfill so the level is above the upper marking on the dipstick. Add oil through the oil filler pipe as required in order to maintain level within the safe range.

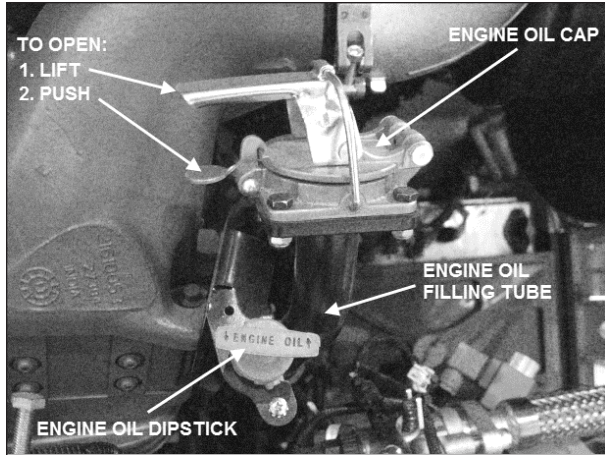


FIGURE 1: ENGINE OIL DIPSTICK & FILL TUBE

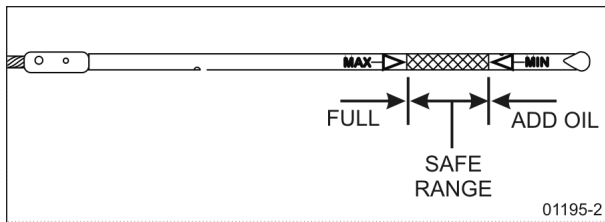


FIGURE 2: VOLVO D13 ENGINE OIL LEVEL DIPSTICK

TRANSMISSION FLUID LEVEL

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 antifreeze (Glycol).

Allison Automatic Transmission Fluid Level

The transmission fluid level can be checked with the dipstick or with the use of the shift selector

display. For more information on how to use the shift selector display to check the transmission oil level, refer to "[OIL LEVEL CHECK USING THE PUSHBUTTON SHIFT SELECTOR](#)" on page 2 in Appendix B.

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

To check the transmission fluid level, a "cold check" and a "hot check" must be performed. A cold check must be made when the transmission fluid is between 60°F and 120°F (16°C and 50°C).

NOTE

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

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.

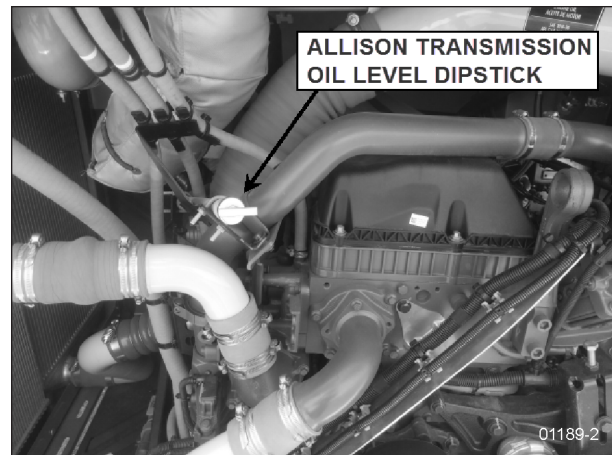


FIGURE 3: ENGINE L. H. SIDE (X3 SERIES)

• Cold Check

Run the engine until the transmission fluid 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). Shift transmission from forward (D) to reverse (R) and back into neutral (N) to fill clutch cavities with fluid. Remove and wipe the dipstick with a clean cloth. Check fluid level. If the fluid level is within the COLD RUN band, the fluid level is correct and a hot check can be

performed. If the fluid level is on or below the lower line of the COLD RUN band, add fluid until the level lies within the COLD RUN band. If the fluid level is above the COLD RUN band, drain fluid until the level is within the band.

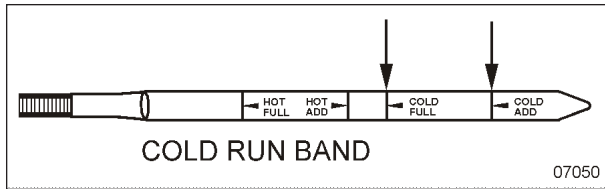


FIGURE 4: TRANSMISSION FLUID LEVEL DIPSTICK (TYPICAL)



CAUTION

The fluid level rises as fluid temperature rises. Do not add fluid 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 fluid temperature is between 160°F and 200°F (71°C and 93°C) before performing the hot check. With the engine idling between 500 and 800 RPM and the parking brake applied, shift transmission into neutral (N). Remove and clean dipstick, then check fluid level. If the fluid level is on or under the lower HOT RUN line, add just enough fluid to bring up the level to the middle of the HOT RUN band.

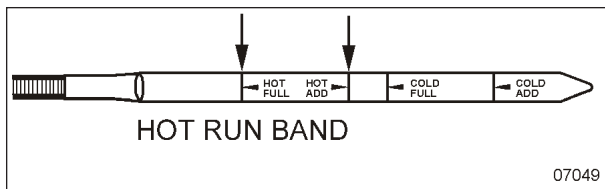


FIGURE 5: TRANSMISSION FLUID LEVEL DIPSTICK (TYPICAL)

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



CAUTION

Do not overfill transmission fluid reservoir. Severe damage may result.

POWER STEERING FLUID LEVEL

The power steering reservoir is located on the R.H. side of the engine compartment.

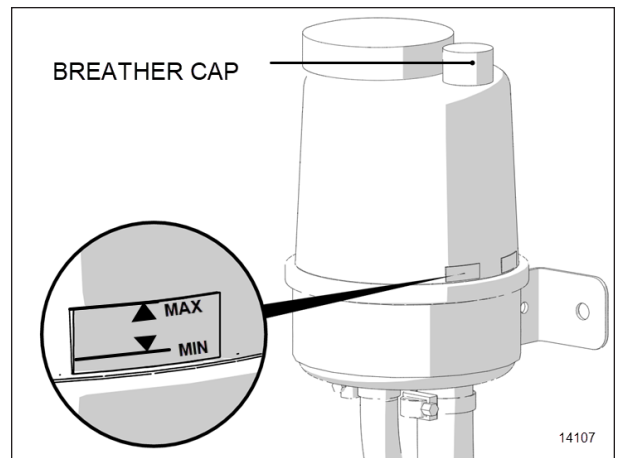
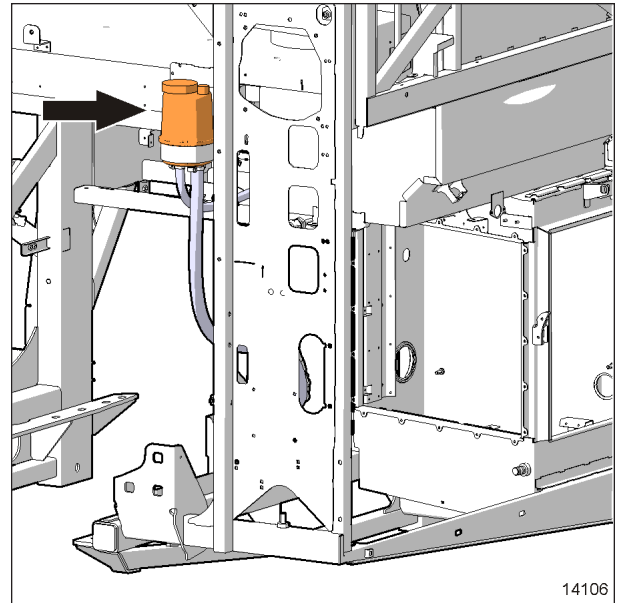


FIGURE 6: POWERSTEERING FLUID TANK

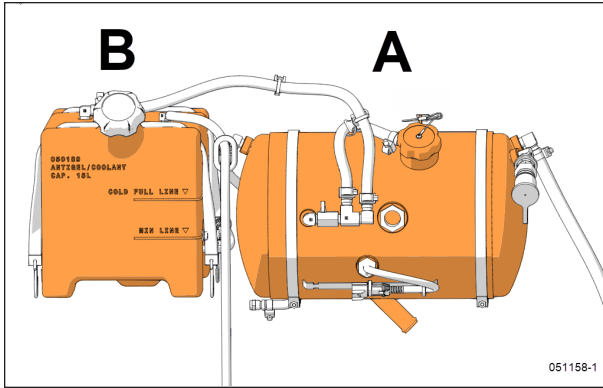
Check fluid level as follows:

1. Stop engine;
2. Open compartment door;
3. Thoroughly clean the reservoir and its immediate vicinity to protect the fluid from being soiled by impurities;
4. Check fluid level through the clear bowl and compare with the MIN & MAX marking affixed on the bowl;
5. Remove the breather cap and top up level to "MAX" mark;
6. Reinstall the breather cap.

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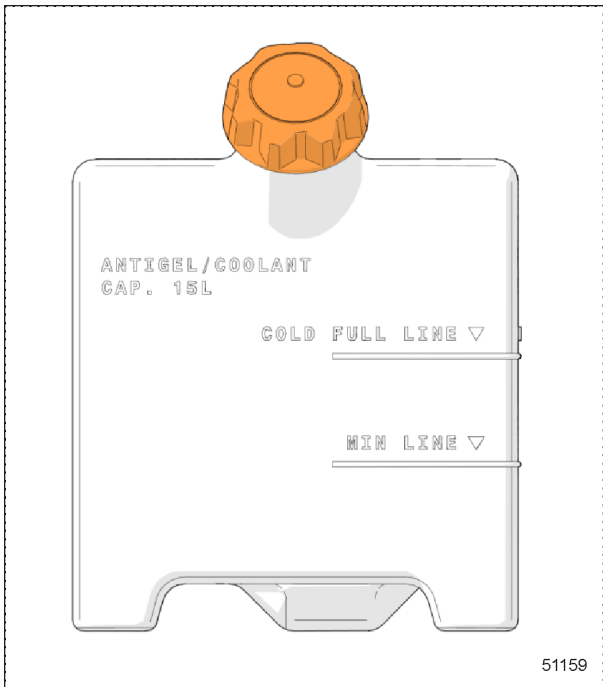
COOLANT FLUID LEVEL

The coolant system has two tanks; the surge tank (A) and the recovery tank (B).



Check the coolant level into the recovery tank (B) when the engine is cold (ambient temperature).

- If the coolant level into the recovery tank is lower than the MIN LINE, use the recovery tank filler cap to add coolant until reaching the FULL LINE.



Fill the recovery tank with the same 50/50 water-antifreeze mixture already in the cooling system. Do not mix two different types of coolant. Refer to the Maintenance Manual for proper coolant type specifications or see the label affixed near the coolant surge tank on the vehicle.

Level Switches

Both tanks are equipped with a level switch. A message will appear on the cluster according to which switch is activated.

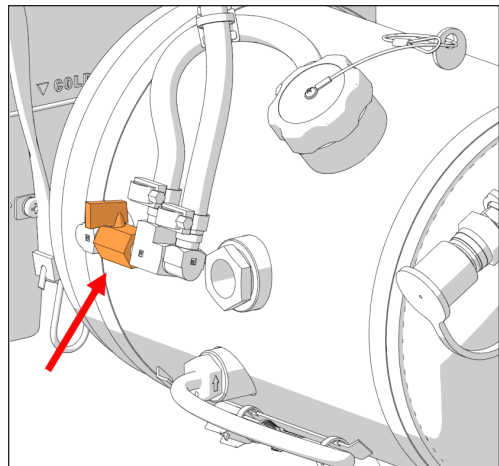
The table below shows the message and the description.

MESSAGE	DESCRIPTION
Check Engine Coolant Level at next stop	Low engine coolant level Warns the driver that the engine coolant level has reached the recovery tank low level switch. Add coolant whenever possible. Use recovery tank filler cap.
Engine Coolant Level critically Low	Critically low coolant level Warns the driver that the engine coolant level has reached the surge tank low level switch. Stop and add coolant. Use recovery tank filler cap.

Level from the level switches does not match with the level lines on the recovery tank.

!
WARNING

Allow engine to cool down before adding coolant. There is no pressure into the recovery tank. If necessary, use the valve attached to the surge tank to release the pressure into the surge tank and the cooling system. Close the valve after releasing the pressure.



WINDSHIELD WASHER RESERVOIR

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

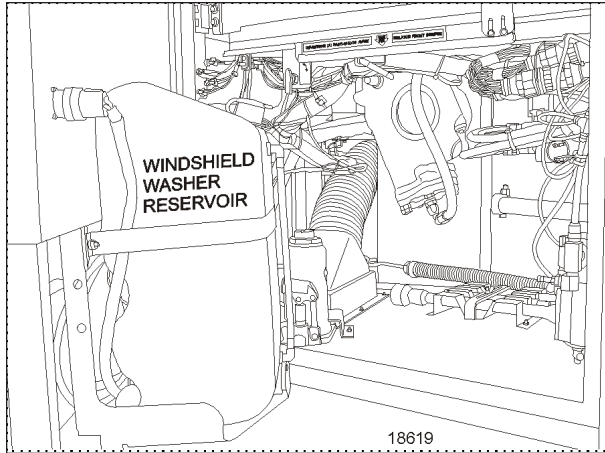


FIGURE 7: WINDSHIELD WASHER RESERVOIR

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



CAUTION

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

OTHER VERIFICATIONS

It is good practice to regularly inspect the vehicle for signs of component wear and to perform safety and maintenance routines.

ELECTRIC COOLING FANS

Inspect fan blades regularly, check for dirt or grime accumulations on the blade that could cause vibrations, clean as necessary using water and regular strength degreaser:

Check for cracks and signs of abrasion on the blades that could indicate contact with debris or obstruction during operation;

Check the bottom of the shroud cover and remove debris that could have accumulated. In sub-zero winter area, also check for snow and ice accumulation that could block the fan blades rotation;

Unlatch (two latches) & open the fan shroud as necessary to facilitate cleaning and debris removal;

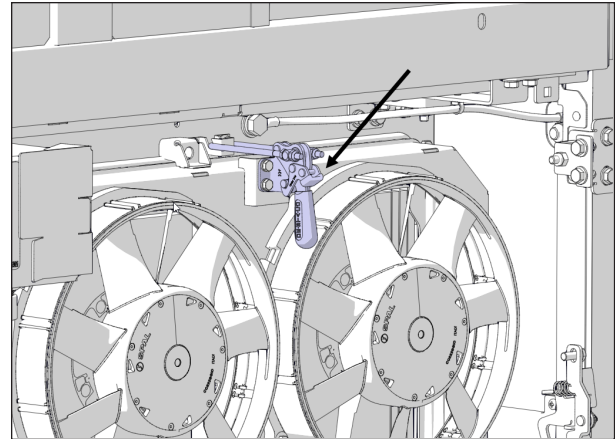


FIGURE 8: FAN SHROUD LATCH (UPPER)

NOTE

Electric cooling fan motors are sealed and certified IP6K9K and IP68. They can therefore be safely power/pressure washed.

AIR TANK PURGE

The vehicle pneumatic system is equipped with several air tanks . The wet tank and it's oil separator are equipped with automatic drain valves that can be manually activated though the use of a push button located in the engine compartment (below the rear engine start panel). It is recommended to activate the button before each trip (during the pre-trip inspection).

All other tanks (primary, secondary, accessories, kneeling, parking brake overrule and ping tank) must be purged at every oil change or at least every 12,000 miles (20 000 km). They are equipped with a drain cock underneath the tank. Drain tanks by turning cocks counterclockwise.

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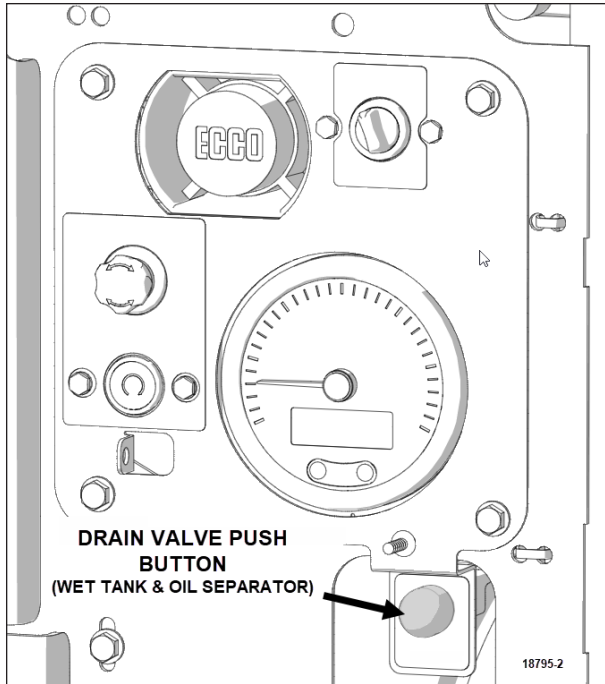


FIGURE 9:
WET TANK & OIL SEPARATOR DRAIN VALVE
PUSH BUTTON (REAR ENGINE START PANEL)

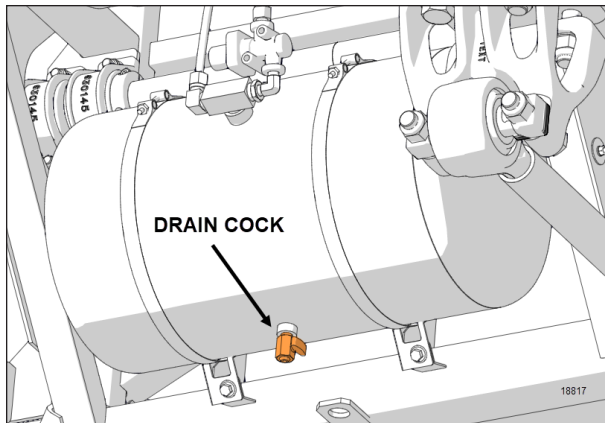


FIGURE 10: AIR TANK DRAIN COCK
(EXCEPT WET TANK)

FIRE EXTINGUISHER

Inspect the fire extinguisher monthly to ensure operation in emergency situations.

The pressure gauge 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 obstructions;

Keep fire extinguisher clean.

FUEL FILTER

The Fuel Pro heated fuel filter system consists of a permanently mounted fuel processor, a replaceable filter element, a filter element cover and collar and a fluid filter base assembly. This system is installed between the fuel tank and the fuel pump. The filter serves as a water separator (with water-in-fuel sensor) as well as a fuel filter. To drain water, loosen the drain valve below the separator one quarter turn. Close the drain valve when finished.

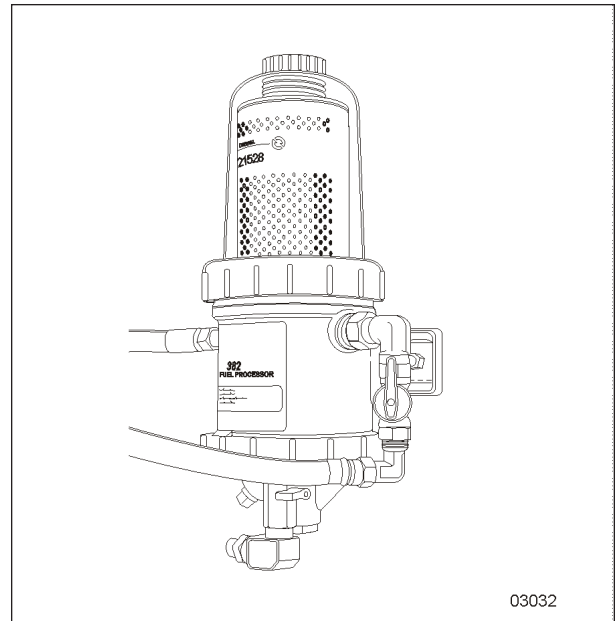


FIGURE 11: DAVCO FUEL PRO INSTALLATION

CENTRAL A/C COMPRESSOR BELTS

The air conditioning compressor is driven by two V-belts.

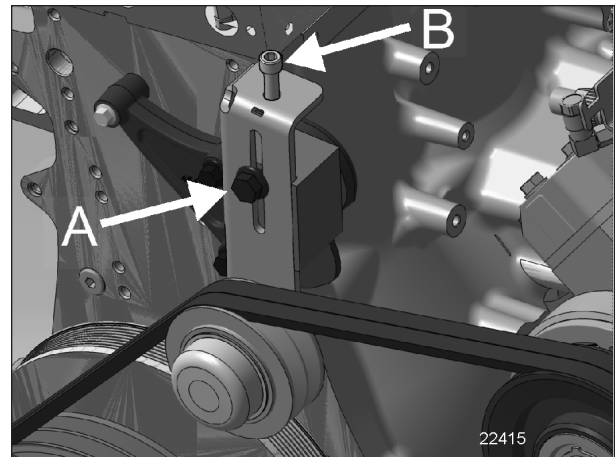


FIGURE 12: BELT TENSIONER

Belt tensioning is applied through the tensioner adjustment screw B. Loosen lock bolt A prior adjustment. Tighten lock bolt A to 43 lbf-ft once completed.

Belt tension should be within the following values:

- New belts: 90-100 lbs.
- Used belts: 75-85 lbs.

Check belt tension using a belt strand tension gauge.

- Once adjustment completed, allow the engine to run for about ten minutes. Check belt tension and adjust if needed.
- Do not treat belts with any compounds. Keep belts dry.
- Periodically inspect belt and pulleys for wear or damage;

ALTERNATOR DRIVE BELTS

Automatic belt tensioners keep the correct tension so these belts do not require adjustment.

BACK-UP CAMERA

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

WARNING

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

CAUTION

To prevent scratches to the camera protective glass, do not wipe with dry rag. Use a clean damp rag.

ENGINE AIR FILTER RESTRICTION INDICATOR

An air filter restriction indicator is used to monitor the vacuum level between the air filter and the turbocharger inlet. A red marker is displayed when the air filter is clogged. Replace the air filter

when a red marker is displayed or after a maximum of two years. Reset by pressing on the indicator's extremity.

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

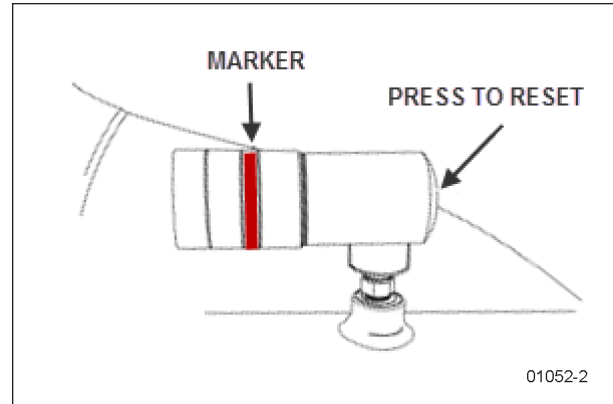


FIGURE 13: AIR FILTER RESTRICTION INDICATOR

A/C AND HEATING SYSTEM AIR FILTERS

For maximum air conditioning and heating system efficiency, air filters should be inspected and cleaned as required in maintenance schedule to ensure proper ventilation of the evaporator and heating radiator cores.

CAUTION

Be sure not to reverse filter upon installation.

Driver's Area Air Filter

The driver HVAC system's air filter is located behind the dashboard R.H. side and it can be removed for cleaning or replacement. To gain access to the A/C filter, unscrew the grill located at the top step of the entrance door steps, remove the plastic cover holding the filter and slide out the air filter.

NOTE

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

FIGURE 14: DRIVER'S AREA AIR FILTER GRILL REMOVAL

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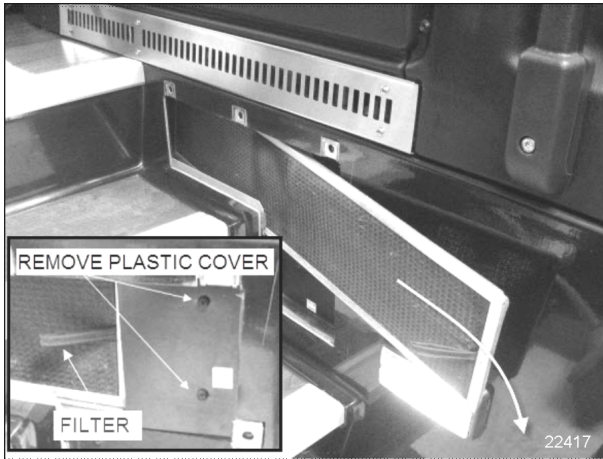


FIGURE 15: REMOVING DRIVER'S SECTION AIR FILTER

Cabin Area Air Filter

The central HVAC system's air filters are located in the evaporator compartment on driver's side of the vehicle. To access open the evaporator compartment. An access panel labeled "AIR FILTER" is located above the evaporator and heating coils. It is held shut by quarter-turn screws. Slide out the filters for maintenance purposes.



FIGURE 16: CABIN AREA AIR FILTER

The evaporator door is equipped with a replaceable air filter, to remove the filter, disengage the spring tab and slide the filter out.

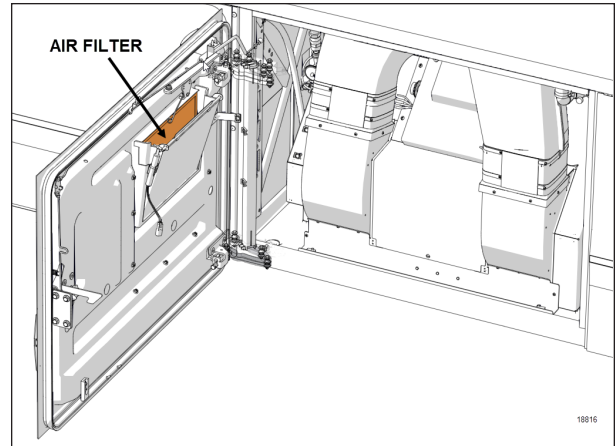


FIGURE 17: EVAPORATOR DOOR AIR FILTER

Air Filters In The Overhead Compartments

Remove, clean or replace the air filter located behind each overhead baggage compartment fan. Slide the filter in and out using the loop fixed on the side of the filter.

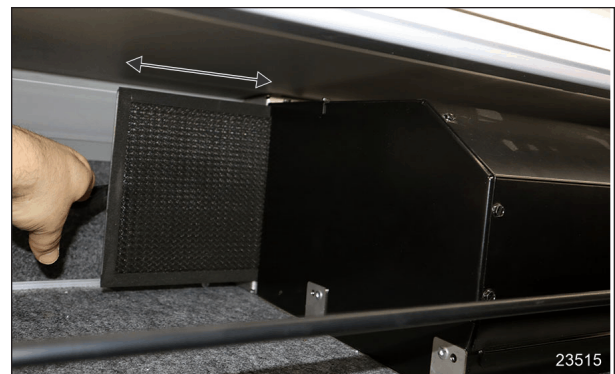


FIGURE 18: OVERHEAD COMPARTMENT FAN AIR FILTER

HOSE INSPECTION

Inspect hoses for leaks regularly to ensure efficient, economical and safe operation of the engine and related equipment. 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, frequently inspect and tighten or replace as necessary.

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



WARNING

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 seven service years. Be certain replacement hoses are matching the original equipment manufacturer's specifications.

LUBRICATION

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

WHEELS AND TIRES VERIFICATIONS

Check for loose wheel nuts. Inspect rims for cracks. Cracks can appear in many places but typically radiate out from where a load is applied. Steel wheel nuts should be tightened from 450 to 500 foot-pounds (610 to 680 N.m.) torque.

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

NOTE

For coaches, 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. When special tires are installed by Prevost on a new vehicle, a special tire inflation chart is added next to the certification plate.



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.



WARNING

If replacement tires are different from those specified on the certification plate, pressure must be adjusted following manufacturer recommendations.

WHEEL BEARINGS

Check wheel bearing cover for overheating (especially after using the service brakes) during fuel stops by touching the wheel bearing cover.

SERVICE BRAKE TEST

Check for correct pressure build-up. Stop engine and check pressure gauge. Pressure loss should not exceed 3 psi/min (21 kPa/min) with engine stopped and without brake pedal applied. Air loss should not exceed 7 psi/min (48 kPa/min) with engine stopped and brake pedal fully applied.

A convenient way to proceed to the service brake test is with the use of the DID menu "Air Leakage Monitor". For more information, refer to ["DRIVER INFORMATION DISPLAY" on page 30](#) in Section 5 Other features.

PARKING BRAKE TEST

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

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

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EXTERIOR LIGHTING VERIFICATION WITH 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), press simultaneously the left and right directional lights foot switches 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.

NOTE

Lighting test mode can also be initiated and stopped using the DID menu "Exterior Lamp Inspection". For more information, refer to ["DRIVER INFORMATION DISPLAY" on page 30](#) in Section 5 Other Features.

Stopping The Test Mode:

To stop the test mode, press one of the directional lights foot switch or turn the ignition OFF or remove the parking brake.

NOTE

The test mode is useful to check the operation 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 cluster telltale light illuminates.
- Activate the left directional signal and check that the corresponding cluster telltale light illuminates.
- Activate the hazard warning flashers and check that the corresponding cluster telltale lights illuminate.
- Press the headlights rocker switch in first position and confirm that the instrument panel illuminates.
- Press the headlights rocker switch in second position and confirm that the headlights illuminate.
- Turn on the high beams and check that the corresponding cluster 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.

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

- Left and right directional signals.
- Identification lights and clearance lights.
- Low beams.
- High beams.

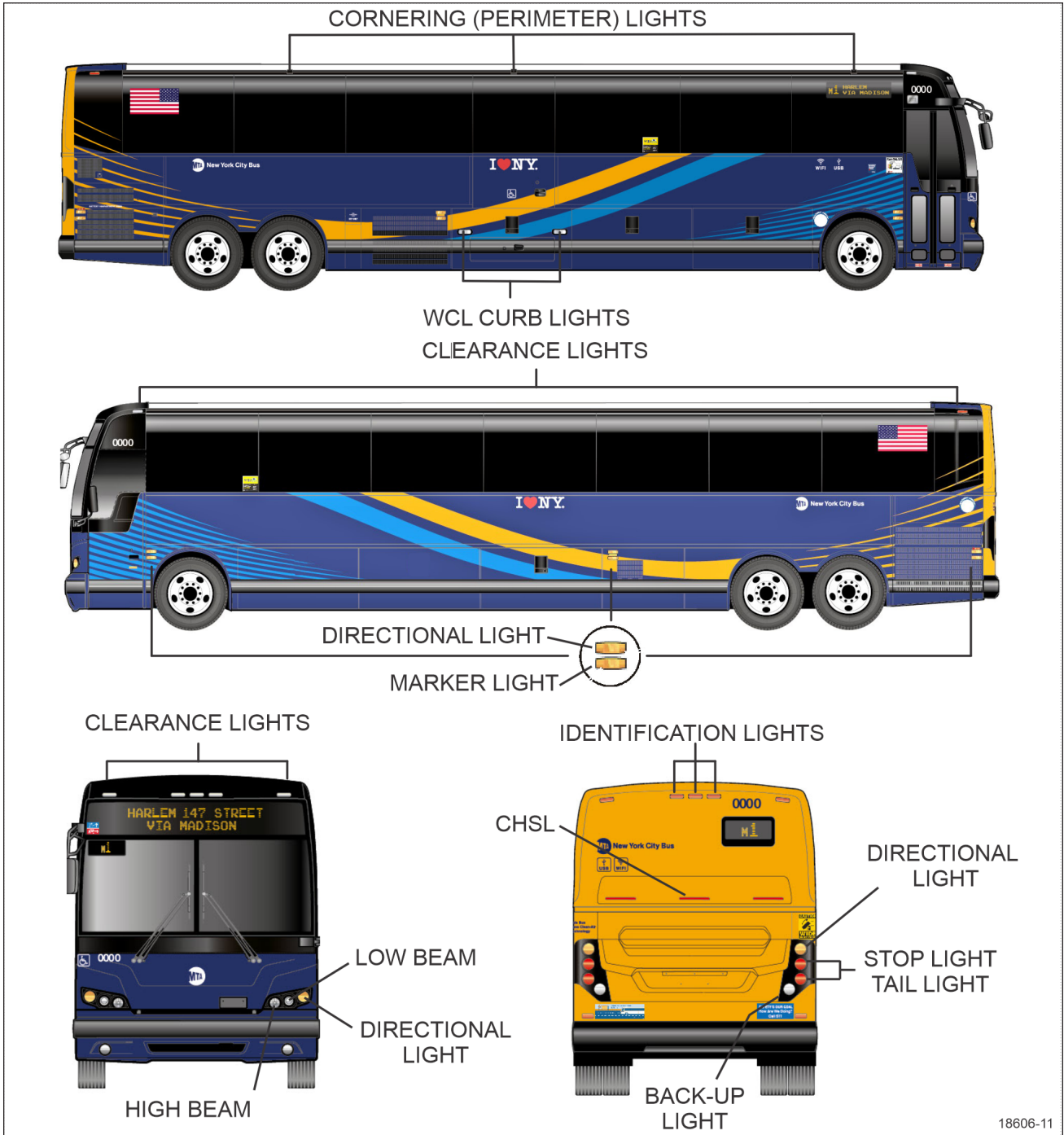
Left side and right side of the vehicle:

- Directional signals.
- Marker lights.
- Perimeter lights

Rear of the vehicle:

- Directional signals.
- Identification lights and clearance lights.
- Stoplights and tail lights.
- Back-up light.
- Center High mounted Stop Light (CHSL)

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FIGURE 19: EXTERIOR LIGHTING

GENERAL RECOMMENDATIONS

- Understand the 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 normal idle before shutting off;
- Engine should be at idle when shifting from neutral (N) to forward (D) or from neutral (N) to reverse (R);



CAUTION

Fast idle should always be turned off before releasing the parking brake and putting the coach in gear. Driveline damage can result if the fast idle switch is always left on.

- 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 the coach;
- The vehicle may be damaged if towed with the axle shafts or driveshaft connected;

- A 5 lbs chemical fire extinguisher is provided with the vehicle. It is located behind the driver seat (L.H. side) . Instructions for use are found on the extinguisher.
- In case of fire, immediately evacuate all occupants. Occupant 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 a Prevost service center. Have problems corrected immediately.



FIGURE 20: X3 COMMUTER SERIES COMPONENT IDENTIFICATION (MAY DIFFER SLIGHTLY FROM ACTUAL VEHICLE)

- | | | | |
|----|--|----|---|
| 1 | Accessories air filter | 23 | Engine oil filter |
| 2 | Accessories air tank fill valve | 24 | Allison transmission oil dipstick |
| 3 | Steering drag link | 25 | Engine coolant surge tank |
| 4 | Height control valve (front) | 26 | Coolant filter & conditioner |
| 5 | Steering tie rod | 27 | Engine air filter restriction indicator |
| 6 | Accessories air tank | 28 | Engine air filter |
| 7 | Steering column U-joints | 29 | DEF tank |
| 8 | Steering knuckle pins | 30 | DEF pump |
| 9 | Steering damper cylinder | 31 | Engine oil dipstick and filler tube |
| 10 | Secondary air tank | 32 | Diesel particulate filter |
| 11 | Kneeling air tank | 33 | SCR catalytic converter |
| 12 | Air dryer | 34 | Diffuser assembly |
| 13 | Height control valve (rear) | 35 | Diesel fuel tank |
| 14 | Wet air tank | 36 | Power steering fluid tank |
| 15 | Primary air tank | 37 | Air compressor |
| 16 | Differential | 38 | R.H. side alternators |
| 17 | Propeller shaft | 39 | L.H. side alternators |
| 18 | Transmission | 40 | Emergency / parking brakes overrule control valve |
| 19 | Starter | 41 | Twin Haldex condenser/separator |
| 20 | Primary fuel filter/Davco Fuel Pro 382 | 42 | Radiator core & charge air cooler (CAC) |
| 21 | Secondary fuel filter | 43 | Brake caliper |
| 22 | Power steering fluid tank | 44 | Steering gear |

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WALK-AROUND INSPECTION (BEFORE EVERY TRIP)

It is good practice to make a visual inspection of key areas on the vehicle every day (or before every trip for private coaches) and to correct any problem found.

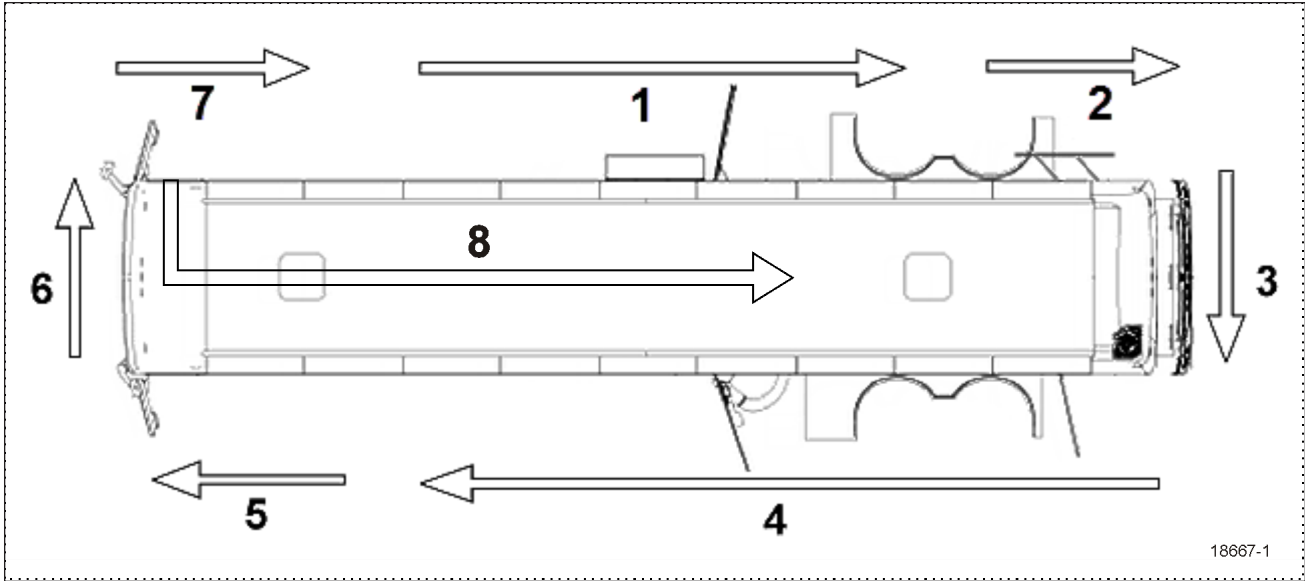


FIGURE 21: X3 SERIES WALK-AROUND INSPECTION

NOTE

Inspect the coach in a circular manner as shown in the illustration.

APPROACHING THE VEHICLE

- Check under the coach for oil, fuel or coolant leaks or other signs of damage.
- Check exterior body surfaces for signs of damage.

PREPARATION

- Drain accumulated water from accessories 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: RIGHT SIDE

- Check that baggage and service compartment doors are properly latched and locked.
- Check condition of wheels and rims. Especially look for cracks, missing nuts, bent or broken studs.
- Check the loose wheel nut indicators for signs of loose wheel nut.
- 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 2: ENGINE COMPARTMENT RIGHT SIDE AREA

- Check engine and surrounding areas for coolant, oil and fuel leaks.

- Check primary fuel filter/water separator and drain if necessary. Close drain valve after draining.
- Check power steering reservoir fluid level, add if necessary.
- Check wiring harness for signs of damage.

STEP 3: ENGINE COMPARTMENT

- Check engine and surrounding areas for coolant, oil and fuel leaks.
- Check wiring harness for signs of damage.
- Check for loose, worn or broken belts.
- Check belts tension adjustment.
- 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 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, they should be clean.
- Drain the wet tank and the oil separator by pressing the purge button located below the rear start panel.

STEP 4: REAR LEFT SIDE

- Check condition of wheels and rims. Especially look for cracks, missing nuts, bent or broken studs.
- Check the loose wheel nut indicators for signs of loose wheel nut.

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- 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.
- Check that baggage and service compartment doors are properly latched and locked.
- Check optional auxiliary coolant heater for fuel leaks.

STEP 5: FRONT LEFT SIDE

- Check condition of wheel rim. Especially look for cracks, missing nuts, bent or broken studs.
- Check the loose wheel nut indicators for signs of loose wheel nut.
- 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 washer reservoir fluid level and add as necessary.
- Drain accessory air tank by opening drain cock. Close drain cock when completed.

STEP 6: FRONT

- Check windshield 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.
- Check high and low beams, they should be clean. If equipped, check fog lights.

- Check left and right directional signals, they should be clean.

STEP 7: FRONT RIGHT SIDE

- Check condition of wheel rim. Especially look for cracks, missing nuts, bent or broken studs.
- Check the loose wheel nut indicators for signs of loose wheel nut.
- 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 8: 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 coach entry/exit hazardous.
- Adjust and clean mirrors for adequate rear view vision.
- Verify proper operation of windshield wiper/washer.
- Check the fire extinguisher and make sure it is ready for operation.
- Check that emergency exit windows and roof escape hatches can be opened then close all windows and hatches securely.

WITH ENGINE RUNNING

- Start engine and check for proper operation of all gauges. Perform a telltale light test (see [DIAGNOSTICS MENU](#) under Cluster Selftest in Section 5 Other Features). Indicator lights and buzzers should all be OFF before driving.

- Using the message center display, perform a system diagnostic to check if error codes and anomalies were recorded in the vehicle electronic modules.
- Check for proper operation of electric and air horns and back-up alarm.
- Check automatic transmission oil level, using the pushbutton shift selector (see "[OIL LEVEL CHECK USING THE PUSHBUTTON SHIFT SELECTOR](#)" on page 2 in Appendix C).
- Check that there is enough fuel in the tank.
- Perform a parking brake test. Check both primary and secondary pressure gauges. Refer to "Other Verifications" in this section.
- Perform the exterior lighting verification using the test mode. Refer to "[OTHER VERIFICATIONS](#)" on page 9 in this section.
- Walk around the vehicle and listen for air leaks.
- Check for leaks and listen for unusual sounds coming from the turbocharger.

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VEHICLE IDENTIFICATION NUMBER (VIN)	13
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DIMENSIONS AND WEIGHTS

DIMENSIONS AND WEIGHTS	X3-45 COMMUTER
Overall length (including bumpers)	45.5' (13,8 m)
Overall width	101.5 (2.57 m)
Overall height	133 7/8" (3.4 m)
Wheelbase (center of front axle to center of drive axle)	334.4" (8494 mm)
Floor height from ground	49" (1,24 m)
Ground clearance	11 3/32" (282.8 mm)
Step height from ground NORMAL/KNEELING	Normal: 14" (356 mm) Kneeling: 9 3/8" (239 mm)
Step height (other steps)	7" (178 mm)
Headroom	79 1/2" (1988 mm)
Curb weight	38 500lb. (17486 kg)
Gross Vehicle Weight Rating (G.V.W.R.)	48 000 lb (21770 kg)
Front axle Gross Axle Weight Rating (G.A.W.R.)	16 500 lb (7 500 kg)
Drive axle (G.A.W.R.)	22 500 lb (10 206 kg)
Tag axle (G.A.W.R.)	14 000 lb (6 350 kg)

NOTE

Curb weight is given as an indication only and is subject to vary from coach to coach, mostly due to optional equipment

The actual 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.

9-4 Technical Information

CAPACITIES

CAPACITIES	X3-45 COMMUTER
Volvo D13 Engine oil (refill volume with filter change)	40 US quarts (38 l)
Fuel tank (legal capacity equal to 95% of volume)	189 US gal (716 l)
Diesel Exhaust fluid tank (DEF)	16 US gal (60 l)
Cooling system (excluding heating syst.)	27.5 US gal (104 liters)
Allison Automatic Transmission (does not include external circuit)	10.03 US gal (38 l) initial 6 US gall (23 l) refill 6.9 US gal (26.5 l) refill with retarder
Differential oil	19.5 US qts (18.5 l) ZF A-132 axle
Power steering reservoir	4.0 US qts (3,7 l)
A/C compressor oil	2.8 US quarts (2.6 liters)
Windshield washer reservoir	5.3 US gal (20 l)
Refrigerant	24 lb (11 kg) 26 lb (11.8 kg) with parcel rack cooling
Additional Refrigerant with parcel rack evaporator	2 lb (0.9 kg)
(Baggage compartment	Total volume: 350 ft ³ Loading capacity: 2500 lbs/compartment

TURNING RADIUS

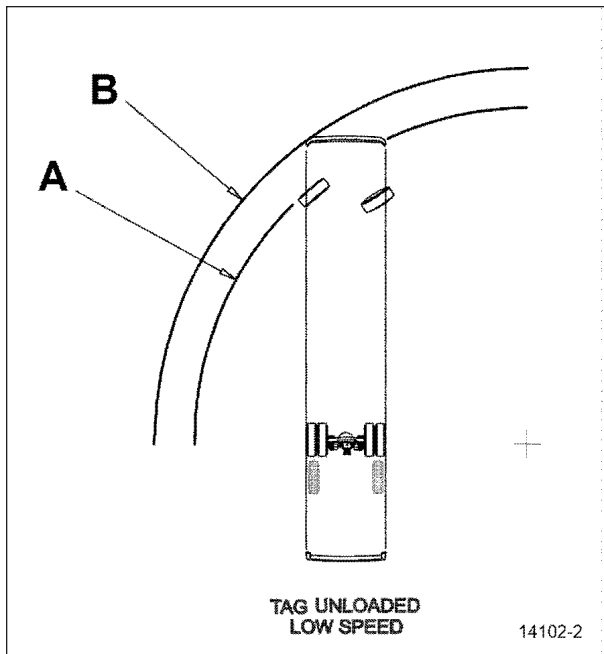




FIGURE 1: TURNING RADIUS DIAGRAM

Table below shows the turning radius values. Values are for low speed (below 20 mph) maneuvering where the tag axle is unloaded. Curb to Curb (value A) corresponds to the outer tire's track on the ground, Wall to Wall (value B) includes the vehicle's body overhang.

NOTE

Supplied values are theoretical. Factors such as ground surface, vehicle speed and road conditions may significantly affect the turning radius.

Turning Radius	X3 COMMUTER
A (Curb to Curb) 	12.80m (42'0")
B (Wall to Wall) 	13.94m (45'9")

9-6 Technical Information

FUEL TYPE

Your Prevost vehicle is powered by a diesel engine designed to operate only with Ultra Low Sulfur Diesel (ULSD) fuel, which can contain no more than 15 ppm sulfur.



WARNING

ULSD fuel is necessary to avoid fouling the engine's Exhaust Aftertreatment System. Use of fuel other than ULSD will reduce the efficiency and durability of the engine.

BIODIESEL FUEL

Biodiesel with up to a maximum of 5% biofuel (B5) may be used and will not affect the manufacturer's mechanical warranty as to engine and emissions system related components. The biofuel used in the various blends must conform to ASTM D6751; therefore B1 to B5 blends conforming to ASTM D975. Also, any engine performance problem related to the use of biodiesel fuel would not be recognized nor considered as Volvo or Prevost's responsibility.

However, Volvo engines are certified to comply with U.S. EPA and California emissions standards based upon the use of test fuels with specifications established by these regulatory agencies.

Alternative fuels, including biodiesel, that are not substantially similar to the required test fuels may adversely affect engine emissions compliance. As a result, Volvo does not warrant the engine will conform to applicable Federal or California emissions limits when operated on biodiesel or other alternative fuels that are not substantially similar to specified test fuels used for certification.

Additional maintenance is required and is covered in Section 03: FUEL SYSTEM of the maintenance manual.

WHEELS AND TIRES

All wheels and tires are leased.

WHEELS DIMENSION

Steel wheels: 9" X 22½"

Inner drive axle steel wheels : 8¼" X 22½"

TIRE DIMENSIONS

Front & auxiliary axles: 315/80 R22.5 load range L tires on both axles or 365/70 R22.5 load range L tires on both axles

Drive axle: 315/80 R22.5 load range L tires

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, minimum cold tire inflation pressures are listed on the Department of Transport (DOT) certification plate, affixed on the left wall near the driver's seat.



CAUTION

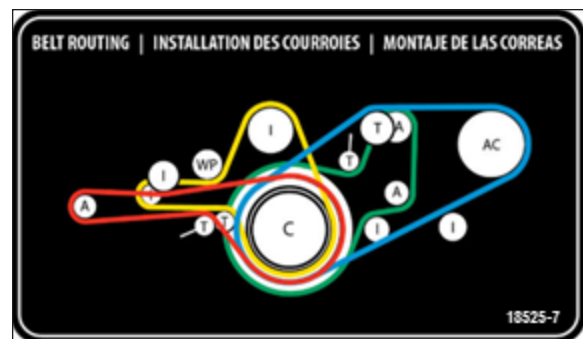
These tire pressures are established in accordance with the maximum allowable load on each axle. A lower pressure is recommended if the axle load is less than the above specifications. Weigh vehicle fully loaded and pressurize according to tire manufacturer's recommendations. For non-standard tire and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



WARNING

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

BELTS



A: Alternator

I: Idler

T: Tensioner

C: Crank

WP: Water pump

AC: A/C compressor

Belt application	Type	Qty
A/C compressor - high capacity HVAC system	V Belt BX71	2
Alternator - twin Bosch, curb side	Multi-V-8 Rib 8PK1575	1
Alternator - single Bosch, street side	Multi-V-10 Rib 10PK1695	1
Coolant pump	Multi- V- 10 Rib 10PK1512	1

NOTE

Belts specifications and configurations may vary. For proper belt selection, always consult your vehicle "Coach Final Record".

VOLVO D13 ENGINE

Type: 4-stroke / inline six cylinders
 Displacement: 12.8 l, SOHC, 4-valve /cylinder
 Power: 435 HP
 Torque: 1665 lbf-ft (2257 Nm) @1050 TO 1300 RPM
 Full dress, dry weight:2582 lb / 1174 kg

ALLISON TRANSMISSION

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

GEAR RATIOS

1 st	3.51
2 nd	1.91
3 rd	1.43
4 th	1.00
5 th	0.74
6 th	0.64

Reverse: 4.80
 Converter: 1.90
 Differential ratio (ZF A-132 axle): 3.82

PROPELLER SHAFT

Dana Spicer SPL250 type tubular shafts, provided with heavy-duty universal joints.

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. The emergency/parking brakes are located on the drive axle. To ensure a constant running clearance between pads and disc, the brakes are equipped with a non-wearing, automatic adjuster mechanism.

BRAKE CHAMBER EFFECTIVE AREA

Front axle: 24 in²
 Drive axle: 24/24 in² (service /emergency)
 Tag axle: 16 in²

AIR SYSTEM

Compressed air is provided by a twin cylinder, 31.8 cfm Wabco, gear-driven, water-cooled and engine oil lubricated air compressor.

ANTILOCK BRAKING SYSTEM (ABS)

The antilock braking system has one Electronic Control Unit (ECU) controlling a 6- sensor/5- modulator (6s/5m) system. A wheel slip sensor is mounted at each wheel.

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

The solenoid control valves are maintenance free. Their operating voltage is 24 (+4.8, -2.4) volts DC. The rated current draw is 1.65 amps.

9-8 Technical Information

The thermal operating range of the solenoid control valves is from -40 to 176°F (-40 to 80°C).

TRACTION CONTROL

In service, tag axle will be unloaded when the system detect wheel spinning. By doing this way, traction on drive axle is increased. This is an automatic feature and no driver action is needed.

NOTE

When speed is below 5 Km/h and tag is unloaded, tag wheels can slip for a short distance when driver brakes. The reason of this behavior comes from ABS system, which stop controlling brakes pressure when vehicle speed is below 5 Km/h. Therefore, because the same break pressure is applied on drive and tag axle, the wheels can slip

STEERING

ZF 8098 integral hydraulic assisted steering gear

- Hydraulic pump gear driven from engine .
- ZF Servocomtronic variable ratio and variable assistance in function of vehicle speed available.
- Hydraulic reservoir and dipstick accessible from engine compartment.
- System pressure: 2320 psi (160 bars).
- Steering wheel diameter 18". Tilt steering wheel and telescopic steering column; pneumatically locked with foot- operated switch for adjustment.
- Number of turns: 5¾.
- Outside turning radius: see Dimensions and Weight table.

ELECTRICAL SYSTEM

- 24-volt, negative ground;
- 12-volt exterior lighting;

- Three 24 volts, 150 amp, self-regulated, belt-driven, air-cooled HD 10 Bosch alternators;
- Four 12 Volts, group 31 AGM type batteries connected in series/parallel. Each one has a reserve capacity of 205 minutes and a cold cranking capacity of 1150 amps.
- 100 amp battery equalizer.

SUSPENSION

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

I-BEAM AXLE FRONT SUSPENSION

- 2 Bellows;
- 2 Shock absorbers;
- 4 Radius rods;
- 1 Transverse radius rod;
- 1 Height control valve;
- 1 sway bar;

DRIVE AXLE

- 4 Bellows;
- 4 Shock absorbers;
- 3 Radius rods;
- 1 Panhard rod;
- 2 Height control valves;
- 1 Anti-roll bar;

TAG AXLE

- 2 Bellows;
- 2 Shock absorbers;
- 3 Radius rods;
- 1 Panhard rod;

ALIGNMENT SPECIFICATIONS

Use static wheel alignment systems which work with angle measurements only, such as Josam or

Hunter systems. Static alignment specifications are listed in the following tables:

FRONT I-BEAM AXLE			
	Minimum value	Nominal value	Maximum value
Right camber	-0.25°	0.125°	0.375°
Left camber	-0.25°	0.125°	0.375°
Right caster	2.0°	2.75°	3.5°
Left caster	2.0°	2.75°	3.5°
Total toe	0.04°	0.06°	0.08°

DRIVE AXLE - ZF A132			
	Minimum value	Nominal value	Maximum value
Thrust angle	±0.11°		
Total toe	0.15° toe-in	0°	0.15° toe-out

TAG AXLE			
	Minimum value	Nominal value	Maximum value
Thrust angle*	-0.02°	0	0.02°
Total toe	0.08° toe-in	0°	0.02° toe-out
(*) Use the drive axle as reference			

COOLING SYSTEM

- Extra capacity, Aluminum radiator and aluminum charge air cooler arranged side by side.
- Eight 24V speed controlled by ECU electrical cooling fans.

- Radiator fans: pusher type, 6 high power 24 Volts electrical fans, 12 inches diameter.
- CAC fans: pusher type, 2 high power 24 Volts electrical fans, 12 inches diameter.
- Rubber insulated from the body.
- Expansion & recovery tanks above radiator and remote mounted.
- System pressure 15 psi.
- Coolant: - Fleet Charge Fully formulated Coolant (50/50 premix antifreeze mixture).
- Thermostat: 82 / 92 °C (180 / 198 °F) – (cracking / fully open).
- Full system capacity 27.5 US gal (104 l).
- Coolant filter with Supplemental Coolant Additive (SCA).

FUEL SYSTEM

Steel 189 US gal. (716 l) fuel tank centrally located.

- Anti-spill device.
- Safety filler cap on right side of coach (Emco-Wheaton fuel filling system).
- Pressure relief valve.
- Electric fuel gauge.
- Low level signal at 26 US gallons (98.4 liters).
- Fuel Pro 382 10 microns heated primary filter (with water-in-fuel sensor).
- Secondary filter 3 to 5 microns.
- Shut-off valve on fuel supply line.

HEATING AND AIR CONDITIONING

A large capacity central HVAC system provides enough conditioned and filtered air for all climatic

9-10 Technical Information

conditions. Fresh air is drawn into the system from the evaporator compartment on 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 passenger's unit. An air mixture selector enables air to be drawn into the system from outside the vehicle or recirculated.

CENTRAL HVAC SYSTEM	
Air conditioning capacity	9 tons
Refrigerant type	134A
Heating capacity	150 000 Btu/h
Air flow	2 600 cfm (73,6 m ³ /min)
Air flow, overhead compartment.	450 cfm (12,7 m ³ /min)

COMPRESSOR (central HVAC system)	
Number of cylinders	4
Operating speed	500 to 3500 rpm
Oil capacity	2.8 US quarts (2.6 liters)
Approved oil	Bitzer BSE55 (POE)

NOTE

The above oils are suitable for use with reciprocating compressors using refrigerant R134a and with evaporator temperatures above 40°F (-40°C).

OIL SPECIFICATIONS

Oil specifications for the vehicle's systems.

ENGINE

Volvo D13N (OBD20)

Recommended: SAE Viscosity Grade 5W-30 meeting Volvo specification VDS-5 or API FA-4.

Minimum requirement: Volvo specification VDS-4.5 or API CK-4 oils

ALLISON TRANSMISSION

Allison Transmission recommends the following fluids:

- Castrol TranSynd™ or TES668 or TES-295 specification equivalent fluid;
- TES-389 specification equivalent fluid.

DIFFERENTIAL

The ZF A-132 drive axle uses Mobil Delvac Synthetic Gear Oil 80W-140 (refer to ZF List of lubricants TE-ML 12 for other approved lubricants).

POWER STEERING RESERVOIR

Use Automatic Transmission Fluid (ATF) Dexron-III (F, G or H) or Dexron-IV for this system.

EXHAUST SYSTEM

One all stainless steel exhaust & aftertreatment system including:

- Catalytic converter to reduce NOx.
- Aftertreatment system made of a DPF (Diesel Particulate Filter), DOC (Diesel Oxidation Catalyst) and SCR system. Noise & vibration damped, this ATD is mounted to the vehicle structure and is accessible through an exterior access door.
- Tail pipe diffuser and rain deviation device.
- Exhaust pipe with flexible section.
- Exhaust to rear rooftop left hand corner.
- Diesel exhaust fluid (DEF) tank (60 liters) and injection system.

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 data plate is located on the rocker cover. The engine serial and model number and a list of the optional engine equipment are written on this plate. Refer to this information when ordering replacement parts. Also the engine data plate certifies that the engine conforms to federal and any state exhaust emissions regulations.

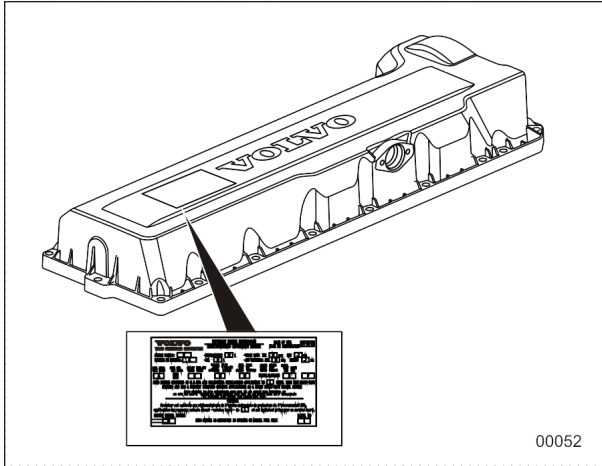


FIGURE 2: VOLVO D13 ENGINE DATA PLATE

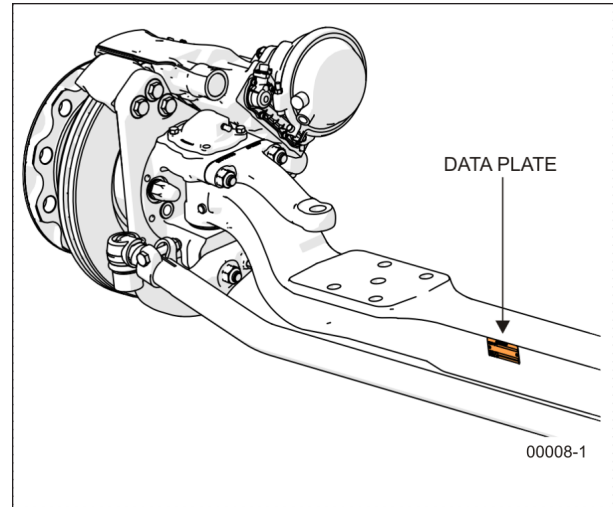


FIGURE 5: I-BEAM FRONT AXLE

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.

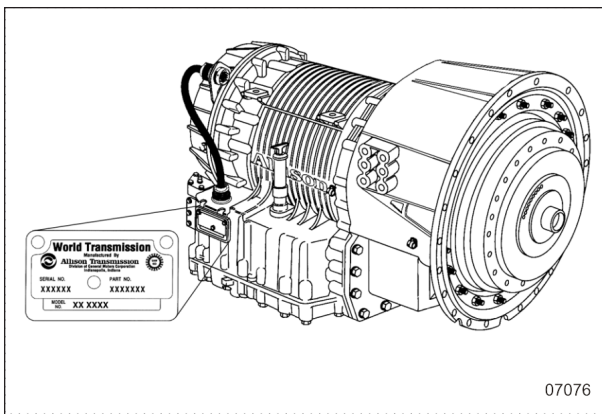


FIGURE 3: ALLISON TRANSMISSION

DOT CERTIFICATION PLATE

This certifies that vehicles manufactured by Prevost comply with all Federal Motor Vehicle Safety Standards at the time of manufacture. Information such as the date of manufacture, model year, gross vehicle weight rating, tire types and inflation pressure is also etched on this plate.

The DOT Certification plate is affixed to L.H. control panel.

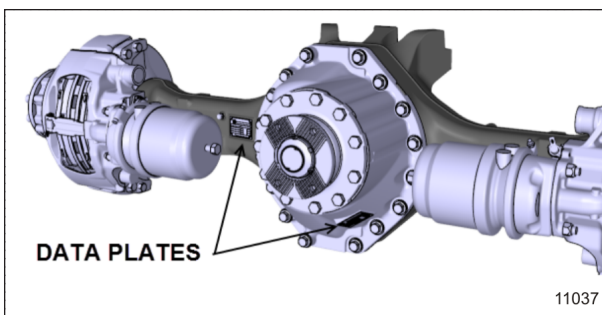


FIGURE 4: ZF A-132 DRIVE AXLE

9-12 Technical Information



		PREVOST ®		MANUFACTURED BY : PREVOST FABRIQUE PAR : STE-CLAIRE, QUE.			
G. V. W. R. : 21772 KG. (48000 LBS). P. N. B. V. :		DATE OF MFG. DATE DE FAB.					
AXLES/ ESSTEUX	G. A. W. R. / P. N. B. E.	TIRES/ PNEUS	RIMS/ JANTES	COLD INFLATION PRESS. / FROID	SINGLE OR DUAL SIMPLE OU DOUBLE		
	KG (LBS)			KPA (PSI)			
FRONT: AVANT :	7484 (16500)	315/80R22.5 (J)	22.5X9	827 (120)	S		
INT. DIFF. :	10206 (22500)	315/80R22.5 (J)	22.5X9	586 (85)	D		
REAR: TANDEM:	6350 (14000)	315/80R22.5 (J)	22.5X9	689 (100)	S		
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.							
VEHICLE IDENTIFICATION NO. NO. IDENTIFICATION VEHICULE							
TYPE: BUS B/A				407644			
00016							

FIGURE 6: DOT CERTIFICATION PLATE

EPA ENGINE LABEL

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

PREVOST	VEHICLE EMISSION CONTROL INFORMATION PREVOST, A DIVISION OF VOLVO GROUP CANADA INC.
	VEHICLE FAMILY IDENTIFICATION: γ VPT2VOCVF00 VIN: xxxxxxxxxxxxxxxx REGULATORY SUB-CATEGORY: Compression-ignition Heavy HDV vocational DATE OF MANUFACTURE: mm/yyyy VEHICLE EMISSION CONTROL SYSTEM: xxx
THIS VEHICLE COMPLIES WITH CALIFORNIA AND U.S. EPA REGULATIONS FOR yyyy MODEL YEAR VEHICLES.	
010303	
00064	

FIGURE 7: EPA CERTIFICATION LABEL

COACH FINAL RECORD

The Coach Final Record is a record of all data pertaining to the assembly of the vehicle. This record is shipped to the new customer via a courier company. Retain this record in the company records office for reference and safe-keeping.

VEHICLE IDENTIFICATION NUMBER (VIN)

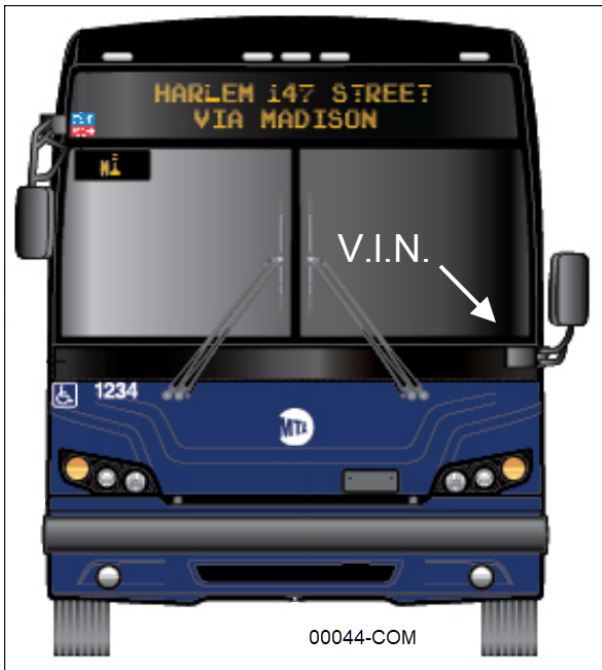


FIGURE 8: VEHICLE IDENTIFICATION NUMBER (X3 COMMUTER)

The Vehicle Identification Number is stamped on the DOT certification plate and also 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, service reference needs and for obtaining vehicle insurance coverage.

9-14 Technical Information

VIN DEFINITION

VIN Example

2 P C H 3 3 4 9 5 E C 7 1 2 8 5 0

WMI

VDS

VIS

2PC = PREVOST CANADA
SAINTE-CLAIRE

4RK = PREVOST CAR (US)
PLATTSBURG

B = X3-45 VIP MOTORHOME
C = X3-45 VIP COMMERCIAL USE
E = XL ENTERTAINER
G = X3-45 COACH
H = H3 COACH
J = X3-45 COMMUTER
L = XL COACH
M = XL MOTORHOME
V = H3 VIP MOTORHOME
W = XLII MOTORHOME
X = XLII COACH
Y = XLII ENTERTAINER

3 = INTEGRAL STRUCTURE
S = SLIDE-OUT STRUCTURE

3 = VOLVO D13 ENGINE

3 = INTEGRAL STRUCTURE
S = SLIDE-OUT STRUCTURE

3 = VOLVO D13 ENGINE

0 = 40 ft LONG
1 = 41 ft LONG
9 = 45 ft LONG

AIR BRAKE SYSTEM

SEQUENCE NUMBER
0 - 4999 H3 SERIES RANGE
5000 - 9999 XL, XLII, X3 SERIES RANGE
 5000 - 6999 SAINTE-CLAIRE
 7000 - 9999 PLATTSBURG

SEQUENTIAL NUMBER 0, 1, 2, 3...

ALWAYS 7

PLANT OF MANUFACTURE
1 or C (SAINTE-CLAIRE QC) or 9 (PLATTSBURG NY)

MODEL YEAR

CHECK DIGIT

VIN Vehicle Identification Number: A structured combination of characters assigned to a vehicle by the manufacturer for identification purposes.

WMI World Manufacturer Identifier: Designating the manufacturer of the vehicle.

VDS Vehicle Descriptor Section: Provides information describing the general attributes of the vehicle.

VIS Vehicle Identifier Section: Combination of characters assigned by the manufacturer to distinguish one vehicle from another.

YEAR	CODE	YEAR	CODE	YEAR	CODE
1997	V	2005	5	2013	D
1998	W	2006	6	2014	E
1999	X	2007	7	2015	F
2000	Y	2008	8	2016	G
2001	1	2009	9	2017	H
2002	2	2010	A	2018	J
2003	3	2011	B	2019	K
2004	4	2012	C	2020	L

00063

ABBREVIATIONS

ABS	Antilock Brake System
A/C	Air Conditioning
ACB	Adaptive Cruise With Braking
ACM	Aftertreatment Control Module
AFSS	Automatic Fire Suppression System
APC	Automatic Passenger Counter
ATC	Automatic Traction Control (Bendix)
CECM	Chassis Electronic Control Module
DCDL	Driver Controlled Differential Lock
DDR	Diagnostic Data Reader
DEF	Diesel Exhaust Fluid
DID	Driver Information Display
D-MIC	Driver Microphone
DPF	Diesel Particulate Filter
DTC	Diagnostic Troubleshooting Code
ECM	Electronic Control Module
ECU	Electronic Control Unit
EECU	Engine Electronic Control Unit
EGR	Exhaust Gas Recirculation
ELD	Electronic Logging Device
ESC	Electronic Stability Control
ESC	Escape
ESP	Electronic Stability Program (Bendix)
E+	Eco-Roll
FDA	Following Distance Alert
GAW	Gross Axle Weight
GECU	Gear Selector Electronic Control Unit
G-MIC	Guide Microphone
GVW	Gross Vehicle Weight
HVAC	Heating, Ventilation And Air Conditioning
IA	Impact Alert
IFS	Independent Front Suspension
LED	Light Emitting Diode
LLS	Level Low System
MCM	Master Chassis Module
MPH	Miles Per Hour
PPT	Premium Tech Tool
PRIME	Power Recovery By Intelligent Management Of Energy
PTO	Power Take Off
SCR	Selective Catalytic Reduction
TCM	Transmission Control Module
TCS	Traction Control System
TECU	Transmission Electronic Control Unit
TPMS	Tire Pressure Monitoring System

10-2 Abbreviations

TWS	Threshold Warning System
ULSD	Ultra Low Sulfur Diesel
VCADS	Volvo Computer Assisted Diagnostic System
VEB	Volvo Engine Brake
VECF	Vehicle Electrical Center Front
VECR	Vehicle Electrical Center Rear
VECU	Vehicle Electronic Control Unit
VSS	Video And Sound Selector
WCL	Wheelchair Lift

APPENDIX A - SERVICE LITTERATURE

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DECLARATION OF THE MANUFACTURING DEFECTS TO PREVOST	3

A-2 Service Literature

SERVICE LITERATURE

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

Additional copies of the following service literature are available on request and at low cost. These can be helpful to mechanics and drivers alike.

- Maintenance Manual
- Operator's Manual
- Parts Manual
- Service Center Directory

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

PREVOST PARTS

2955-A Watt Street
Sainte-Foy, (Quebec)
Canada G1X 3W1

Specify the complete vehicle serial number (VIN). 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 Prevost.

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 Prevost.

To contact NHTSA you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 366-0123 in Washington, D.C. area) or write to:

NHTSA
U.S. Department of Transportation
Washington, D.C. 20590

You can also obtain other information about motor vehicle safety from the Hotline.

DECLARATION OF THE MANUFACTURING DEFECTS TO THE CANADIAN GOVERNMENT

If you live in Canada, and if you believe that your vehicle has a safety defect, you should immediately inform Transport Canada and Prevest. You may write to:

**Transport Canada
Box 8880
Ottawa, Ontario, K1G 3J2**

DECLARATION OF THE MANUFACTURING DEFECTS TO PREVOST

In addition to NHTSA (or Transport Canada) notification, please contact Prevest at 1-418-831-2046. Or write to:

**Prevest
After-sales service department
850 ch. Olivier,
Lévis (Quebec)
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APPENDIX C - ALLISON TRANSMISSION OTHER FEATURES

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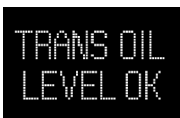
OIL LEVEL CHECK USING THE PUSHBUTTON SHIFT SELECTOR

The oil level sensor (OLS) is standard in your transmission. With the OLS and Allison 5th generation shift selector, you can get a more accurate electronic fluid level check than with a dipstick.

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. Wait for at least 2 minutes to allow the oil to settle;
3. Press simultaneously the ▲ (Upshift) and ▼ (Downshift) arrow buttons once.
4. Oil level codes are displayed once the following parameters are met:
 - The vehicle has been stationary for approximately 2 minutes to allow the oil to settle;
 - Engine at idle;
 - Oil at normal operating temperature, between 104°F (40°C) and 220°F (104°C);
 - Transmission in «N» (Neutral);
 - Transmission output shaft stopped;
 - Oil level sensor present and working.

5. *Correct fluid level* is displayed as shown.



6. *Low fluid level* is displayed as shown. The number indicates the number of quarts of fluid the transmission requires.



7. *High fluid level* condition with the number of quarts in excess is displayed as shown.



NOTE

Confirm a low fluid level condition by making a manual fluid level check.

8. To exit the Oil Level Display Mode, press any range button «R», «N» or «D» at any time.

NOTE

Note that the quantities LO 4 and HI 3 are the largest values displayed and that the actual variation in oil level may exceed these numbers.

If the fluid level check cannot be completed, an Invalid for Display fault is reported. Refer to table below to review the codes and conditions.

CODE	CAUSE OF FAULT CODE
SETTLING OK	Settling time too short
ENG RPM TOO LOW	Engine speed (rpm) too low
ENG RPM TOO HIGH	Engine speed (rpm) too high
MUST BE IN NEU	N (Neutral) must be selected
OIL TEMP TOO LOW	Sump fluid temperature too low
OIL TEMP TOO HIGH	Sump fluid temperature too high
VEH SPD TOO HI	Output shaft speed
SENSOR FAILED	Sensor failure

DIAGNOSTIC TROUBLESHOOTING CODES (DTC) — ALLISON 5TH GENERATION CONTROLS

Diagnostic features are provided with the transmission control system to assist in

troubleshooting of malfunctions and/or the monitoring of specific operating parameters.

DIAGNOSTIC TROUBLESHOOTING CODES (DTC) OVERVIEW

When a control system malfunction is detected, a series of Diagnostic Trouble Codes (DTCs) are used to identify and clarify the nature of the malfunction. These DTCs are each named by a 5 characters alphanumeric string that refers to a diagnostic algorithm running pass/fail tests to help identify a malfunction in the transmission or vehicle operation. Most DTCs have some kind of diagnostic response that the operator notices, such as an illuminated CHECK light, selector display change, lock in range, or inhibit shifts condition.

DTCs are logged in the Transmission Control Module (TCM) memory by severity and by their active/inactive status with the most severe and active codes listed first. A maximum of five DTCs (numbered d1- d5) from most recent to oldest may be read from the shift selector. As DTCs are added, the oldest inactive DTC (historic) is dropped from the list. If all DTCs are active, the DTC with the lowest priority is dropped from the list.

An active code is any code that is current in the TCM decision-making process and has failed the DTC test (s) associated with that specific diagnostic algorithm. Historical codes, which are by definition inactive, are codes that are no longer failing their algorithm but are retained in the TCM in order to help the technician analyze possible causes and provide them direction if the vehicle is brought in before they are cleared from the queue.

DTCs can be cleared manually by the operator or they clear automatically from last (d5) to first (d1) in the queue after a number of engine starts, without becoming active again.

USING SHIFT SELECTOR FOR ACCESSING DIAGNOSTIC INFORMATION

DTCs can be displayed on the display portion of the shift selector. A DTC is either active or historic. An active DTC is a DTC that is current in the TCM decision-making process. Historic DTCs are retained in the TCM memory and do not

necessarily affect the TCM decision-making process.

Display Sequence

Up to five DTCs may be displayed one at a time from the selector once the diagnostic display mode has been initiated by the operator. Each DTC is 5 characters in length. The DTC status active or inactive is shown below the DTC.



Shows active DTC P0730

The operator presses the MODE button to read the next DTC in the queue (if any) or requests to exit diagnostics mode. The diagnostic mode times out and returns the selector to normal operating mode after approximately 10 minutes of operator inactivity.

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DIAGNOSTIC CODE DISPLAY AND CLEARING PROCEDURE

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 ▲ (Upshift) and ▼ (Downshift) arrow buttons five times (Prognostics enabled) to access the Diagnostic Display Mode. With Prognostics disabled, press the ▲ (Upshift) and ▼ (Downshift) arrow buttons twice.
2. Press the MODE button to read the next code in the queue, if any.

To clear all active stored codes:

While in Diagnostic Mode, clear all active codes by pressing and holding the MODE button for approximately three seconds until the MODE message flashes. Release the MODE button. The MODE message should not remain illuminated if the active DTC shown in the display has cleared.

While in Diagnostic Mode, press and hold the MODE button for 10 seconds to clear both active codes and inactive codes. The MODE message flashes a second time indicating all codes are cleared from the queue.

EXITING DIAGNOSTIC MODE

Exit the diagnostic mode by one of the following methods:

1. Press simultaneously the ▲ (Upshift) and ▼ (Downshift) arrow buttons at the same time on the push button shift selector.
2. Press any range button «D», «N» or «R» on the push button shift selector.
3. After approximately 10 minutes of inactivity at the push button shift selector, the diagnostic mode automatically exits and returns to normal operating mode.
4. Turn off power to the TCM (shut off the engine using the ignition key).

NOTE

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

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 TROUBLE CODE RESPONSE

The electronic control system is programmed to inform the operator of a problem with the transmission system via the CHECK light and shift selector display while it automatically takes action to protect the operator, vehicle, and transmission. When the Transmission Control Module (TCM) flags a Diagnostic Trouble Code (DTC) as active, the TCM may take a combination of diagnostic responses as listed in the table below.

RESPONSE CATEGORY	ACTIONS TAKEN
DNS - Do Not Shift	Release lock up (LU) clutch and inhibit lock up operation. Inhibit shifts from the current attained range. Turn on the CHECK light. Display the current attained range in the MONITOR window of the shift selector. Blank the SELECT window of the shift selector. Ignore any range selection inputs from the shift selector.
SOL OFF - Solenoid OFF	All solenoids are commanded off, resulting in hydraulic default operation of the transmission – PCS1 & PCS2 are on hydraulically when off electrically.
RPR - Return to Previous Range	When the speed sensor ratio or PS1 tests do not pass, the TCM commands the same range as commanded before the shift.
NNC - Neutral No Clutches	When certain speed sensor ratio or PS1 tests do not pass, the TCM commands a neutral condition with no clutches applied.
DNA - Do Not Adapt	The TCM stops adaptive shift control while the code is active.

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DIAGNOSTIC TROUBLESHOOTING CODES (DTC) LIST - ALLISON 5TH GENERATION CONTROLS

DTC	Description	CHECK 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 Circuit Low Voltage	No	Use default throttle values. Freezes shift adapts.
P0123	Pedal Position Sensor Circuit High Voltage	No	Use default throttle values. Freezes shift adapts.
P0218	Transmission Fluid Over Temperature	Yes	Use default sump temp
P0562	System Voltage Low	No	Inhibit TCC Operation, DNA
P0602	TCM Not Programmed	Yes	Lock in Neutral
P0604	Control module random access memory (RAM)	Yes	Lock in Neutral
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)
P0642	Sensor Reference Voltage "A" Circuit Low	Yes	Default sensor data used
P0643	Sensor Reference Voltage "A" Circuit High	Yes	Default sensor data used
P0657	Actuator Supply Circuit Voltage 1 Open (HSD 1)	Yes	SOL OFF, DNA, Inhibit TCC operation, Inhibit main modulation
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)

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DTC	Description	CHECK Light	Inhibited Operation Description
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
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
P0715	Turbine Shaft Speed Sensor Circuit	Yes	DNS, Lock in current range
P0716	Turbine Shaft Speed Sensor Circuit Performance	Yes	DNS, Lock in current range
P0717	Turbine Shaft Speed Sensor Circuit No Signal	Yes	DNS, Lock in current range
P071A	RELS Input Failed On	Yes	Inhibit RELS operation
P071D	General Purpose Input Fault	Yes	None
P0720	Output Shaft Speed Sensor Circuit	Yes	DNS, Lock in current range
P0721	Output Shaft Speed Sensor Circuit Performance	Yes	DNS, Lock in current range
P0722	Output Speed Sensor Circuit No Signal	Yes	DNS, Lock in current range
P0725	Engine Speed Sensor Circuit	No	Default to turbine speed
P0726	Engine Speed Sensor Circuit Performance	No	Default to turbine speed
P0727	Engine Speed Sensor Circuit No Signal	No	Default to turbine speed
P0729	Incorrect 6 th Gear Ratio	Yes	DNS, Attempt 5 th , then 3 rd
P0731	Incorrect 1 st Gear ratio	Yes	DNS, Attempt 2 nd , then 5 th

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DTC	Description	CHECK Light	Inhibited Operation Description
P0732	Incorrect 2 nd Gear ratio	Yes	DNS, Attempt 3 rd , then 5 th
P0733	Incorrect 3 rd Gear ratio	Yes	DNS, Attempt 4 th , then 6 th
P0734	Incorrect 4 th Gear ratio	Yes	DNS, Attempt 5 th , then 3 rd
P0735	Incorrect 5 th Gear ratio	Yes	DNS, Attempt 6 th , then 3 rd , then 2 nd
P0736	Incorrect Reverse Gear ratio	Yes	DNS, Lock in Neutral
P0741	Torque Converter Clutch System Stuck Off	Yes	None
P0752	Shift Solenoid 1 Valve Performance-Stuck On	Yes	DNS
P0776	Pressure Control Solenoid (PCS) 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 Fluid Pressure Switch 1 Circuit Low	Yes	DNS, Lock in current range
P0843	Transmission Fluid Pressure Switch 1 Circuit High	Yes	DNS, Lock in current range
P0847	Transmission Fluid Pressure Switch 2 Circuit Low	Yes	None
P0848	Transmission Fluid Pressure Switch 2 Circuit High	Yes	None
P088A	Transmission Fluid Filter Maintenance Alert	No	None
P088B	Transmission Fluid Filter Maintenance Required	No	None
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	Unexpected Mechanical Gear Disengagement	Yes	DNS, Lock in first
P0897	Transmission Fluid Deteriorated	No	None
P0960	Main Pressure Modulator Solenoid Control Circuit Open	Yes	None
P0962	Main Pressure Modulator Solenoid Control Circuit Low	Yes	DNS, SOL OFF (hydraulic default)
P0963	Main Pressure Modulator Solenoid Control Circuit High	Yes	None

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DTC	Description	CHECK Light	Inhibited Operation Description
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)
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
P097A	Shift Solenoid 1 (SS1) Control Circuit Open	Yes	Lock in range
P097B	Shift Solenoid 2 (SS2) Control Circuit Open	Yes	7- speed: Allow 2 through 6, N, R
P0989	Retarder Pressure Sensor Circuit Low	No	None
P0990	Retarder Pressure Sensor Circuit High	No	None
P1739	Incorrect Low Gear Ratio	Yes	Command 2 nd and allow shifts 2 through 6, N, R
P1790	Gear Shift Module 1 Calibrated Invalid	Yes	Shift selector language or units incorrect
P1791	Gear Shift Module 2 Calibrated Invalid	Yes	Shift selector language or units incorrect
P1891	Throttle Position Sensor PWM Signal Low	No	Use default throttle values
P1892	Throttle Position Sensor PWM Signal High	No	Use default throttle values

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DTC	Description	CHECK Light	Inhibited Operation Description
P2184	Engine Coolant Temperature Sensor 2 Circuit Low Input	No	Use default engine coolant values
P2185	Engine Coolant Temperature Sensor 2 Circuit High Input	No	Use default engine coolant values
P2637	Torque Management Feedback Signal (A)	Yes	Inhibit SEM
P2641	Torque Management Feedback Signal (B)	Yes	Inhibit LRTP
P2669	Actuator Supply Circuit Voltage 2 Open (HSD2)	Yes	SOL OFF, Inhibit TCC operation, Inhibit Main modulation, ONA
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)
P2684	Actuator Supply Circuit Voltage 3 Open (HSD3)	Yes	SOL OFF, Inhibit TCC operation, Inhibit Main modulation, ONA
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)

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DTC	Description	CHECK Light	Inhibited Operation Description
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
P273F	Retarder Oil Temperature Sensor Over Temperature Condition	No	None
P2742	Retarder Oil Temperature Sensor Circuit – Low	No	Use default retarder temp values
P2743	Retarder Oil Temperature Sensor Circuit – High	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
P2789	Transmission Clutch Life Expired (Clutch Adaptive Learning at Limit)	No	None
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)
U0073	CAN Communication Bus 1 Off	No	Use default values
U0074	CAN Communication Bus 2 Off	No	Use default values
U0100	Lost Communications with ECM A	Yes	Use default values
U0103	Lost Communication with Gear Shift Module (Shift Selector) 1	Yes	Maintain range selected, observe gear shift direction circuit

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DTC	Description	CHECK Light	Inhibited Operation Description
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)	Yes	Ignore shift selector inputs
U0333	Incompatible Gear Shift Module 2 (Shift Selector)	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