OPERATOR'S MANUAL

ORION VII HYBRID VEHICLE

SEATTLE 1343B

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INTRODUCTION

This manual describes the operating features and safety equipment of the Orion VII EPA10 Hybrid Vehicle. All personnel involved in the operation of this vehicle should read this manual before providing any public service.

For additional information or assistance, refer to the contact information located at the back of this manual.

GENERAL

The Orion VII EPA10 hybrid vehicle incorporates specially designed features that provide transportation to the mobility impaired and physically challenged. It is the operator's responsibility to assist each passenger in boarding, seating, attaching and securing restraining belts, and to provide assistance when leaving the vehicle.

Special features of the vehicle fulfill passenger needs in the following areas:

- Kneeling and wheelchair ramp features allow coach floor to street level access for the wheelchair bound individual.
- Restraining belts and securement devices are located at all wheelchair positions.
- Pull cords and push buttons alert the operator of the NEXT STOP request, are easily accessible.

HYBRID ELECTRIC VEHICLE (H.E.V.) SAFETY INFORMATION

Hybrid Electric Vehicle Propulsion System

Due to extremely high voltage supplied by the energy storage system (ESS), the propulsion system contains a battery isolator switch which allows the operator to cut off propulsion system power in special circumstances such as a vehicle accident. This switch is located in the curbside battery compartment. **See "Disconnection of Electrical System" on page 49.**

High Voltage Hazards

DANGER

Use extreme caution if any work has to be performed on the engine while it is running. High voltage is present at the generator terminals, traction motor terminals, and all high voltage cabling connecting the generator and traction motor to the Propulsion Control System (PCS).

DANGER

Use of the Battery Isolator Switch is mandatory during propulsion system maintenance. If the vehicle was running just prior to conducting main99tenance, allow four minutes for propulsion system components to discharge electricity before proceeding.

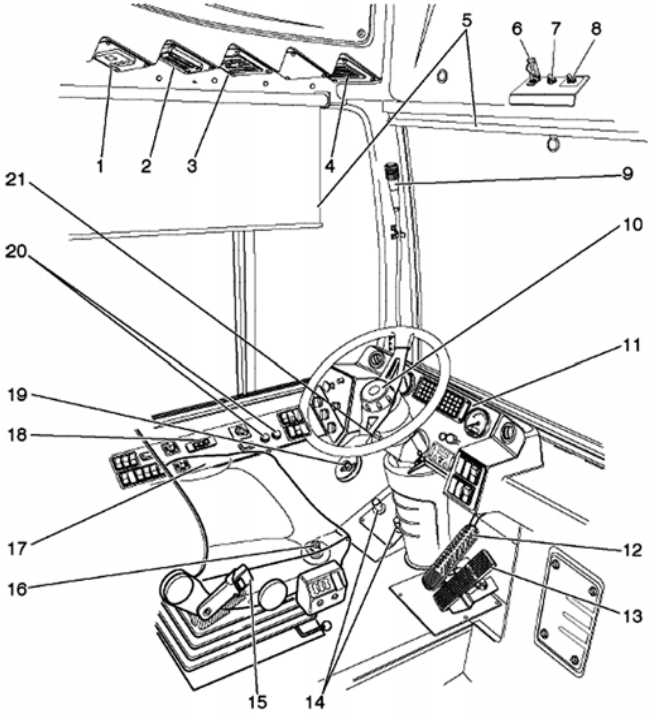
DANGER

Even with the Battery Isolator Switch in the OFF position, the traction battery system remains a severe shock hazard because the battery modules themselves are not disconnected by the use of this switch. Always use extreme caution when working around the rooftop tub.

Although the operator would rarely have access to any of the propulsion system components, he/she must be made aware of the potential hazards.

Should a problem exist which requires attention to the propulsion system, the matter should immediately be brought to the attention of qualified service personnel. For further information on the HEV system, refer to BAE Systems™ maintenance manual.

OPERATOR'S COMPARTMENT



LEGEND

1. IntelligAIRE III™ Display Panel
2. Passenger Stop Request Chime Unit
3. Destination Sign Keypad
4. Driver's Booster Blower Vent
5. Driver's Pull Down Sunvisors
6. Door Master Switch
7. Exhaust Regeneration Override Switch
8. Regenerative Braking Switch
9. Gooseneck Microphone
10. Horn Button
11. Front Instrument Panel
12. Brake Pedal
13. Accelerator Pedal
14. Directional Signal Foot Control Switches
15. Driver's Seat
16. Headlight Dimmer Foot Control Switch
17. Side Control Panel

LEGEND

18. Alternating Current Traction Motor (ACTM) Gear Selector
19. Door Emergency Release Valve
20. Driver's Door Control Push Buttons
21. Tilt/Telescopic Steering Column Lever

The following features and special equipment are used for normal vehicle operation.

1. **IntelligAIRE™ Display Panel**
   This display panel includes 4 touch keys, a 3 digit display and various display indicators. The panel provides outside and inside temperature readouts and setpoint adjustments only. **See "IntelligAIRE™ Climate Control System" on page 54.**
2. **Passenger Stop Request Chime Unit**
   A single chime will be heard from this unit when a passenger, requesting a stop, activates the touch tape. A double chime notifies the operator that a wheelchair passenger is requesting a stop.
3. **Destination Sign Keypad**
   This keypad is used for destination sign message selection and programming. **See "Operator's Display and Keyboard (ODK)" on page 26.**
4. **Driver's Booster Blower Vent**
   An auxiliary blower and vent located inside the overhead panel, above the operator's roadside window, provides the operator's area with additional climate control. **See "Fresh Air Ventilation" on page 53.**
5. **Driver's Pull Down Sunvisors**
   These adjustable pull down mechanisms, located above the operator windshield and operator's side window, prevents eye exposure to sunlight. A scissor type reinforcement retains the shades rigidity and prevents the shade from excessive swaying.
6. **Door Master Switch**

CAUTION !

Apply the parking or service brakes before removing the door master switch from its normally guarded position to prevent the vehicle from rolling.

The Door Master switch is a guarded two position (NORM, DISABLE) toggle switch used to override a door malfunction that is activating the door interlock system and preventing the service brakes and accelerator interlocks from releasing.

7. **Exhaust Regeneration Override Switch**
   The Exhaust Regeneration Override switch is used in situations where the front dash HEST lamp is illuminated and

the vehicles exhaust outlet is near an area that could be effected by high temperatures.

8. **Regenerative Braking Disable Switch**
   This two position (ON, OFF) toggle switch enables the operator to deactivate regenerative braking in the hybrid propulsion system. The Regenerative disable switch should be used only during slippery, hazardous road conditions.

9. **Gooseneck Microphone**
   This microphone allows for flexible operation of the vehicles’ public address system. A switch on the microphone allows the operator to activate the Public Address system.

10. **Horn Button**
    Pressing the disk in the center of the steering wheel activates two electrical horns.

11. **Front Instrument Panel**
    This panel, located in front of the operator, contains gauges, indicator lights, and controls for operating and monitoring various vehicle systems. **See “Front Instrument Panel” on page 9.**

12. **Brake Pedal**

NOTE

A "creep forward" mode is present in all EPA10 hybrid vehicles; as a result, the vehicle will creep forward when the gear range selector is in the D (drive) position and the brake pedal is released.

This foot-operated treadle valve, located on the compartment floor to the immediate right of the steering wheel, applies the vehicle service brakes.

13. **Accelerator Pedal**
    This foot operated pedal, remotely controls the engine fuel governor control, which in turn controls the speed of the vehicle.

    This pedal is located on the compartment floor to the right of the brake pedal.

14. **Directional Signal Foot Control Switches**
    These two foot switches, located on the floor to the left of the steering wheel, activate the left and right turn signal lights. Each switch must be pressed and held for the duration of the signal.

15. **Driver's Seat**
    The driver’s seat is equipped with comfort options to accommodate most operators. **See “Driver’s Seat” on page 29.**

16. **Headlight Dimmer Foot Control Switch**
    This foot switch, when activated, selects the headlight high or low beam settings.

17. **Side Control Panel**
    This panel, located on the left hand side of the operator, contains controls and switches necessary for various vehicle systems operations.

    These systems include climate control, front and rear door control, master control of the vehicle electrical system, lighting, etc. **See "Driver's Side Control Panel" on page 19.**

18. **Alternating Current Traction Motor (ACTM) Gear Selector**
    Drive modes available on this selector are Drive (D), Neutral (N), and Reverse (R). **See "Gear Range Selector Position" on page 43.**

19. **Door Emergency Release Valve**
    This rotary air valve overrides the air system to allow front doors to be opened manually. **See "Malfunction in Opening and Closing Front Door" on page 57.**

20. **Driver's Door Control Push Buttons**
    The rear and front door controller push buttons allow the operator to activate the front and/or rear doors. Press once to open and press again to close the doors.

21. **Tilt/Telescopic Steering Column Lever**

WARNING

Stop the vehicle and apply the parking brake before adjusting the steering column. Failure to do so could result in loss of vehicle control, causing personal injury and/or vehicle damage.

The steering column is equipped with adjustment features that accommodate the size and height of most operators. Tilt and height features are adjusted using a lever on the left hand side of the steering column.

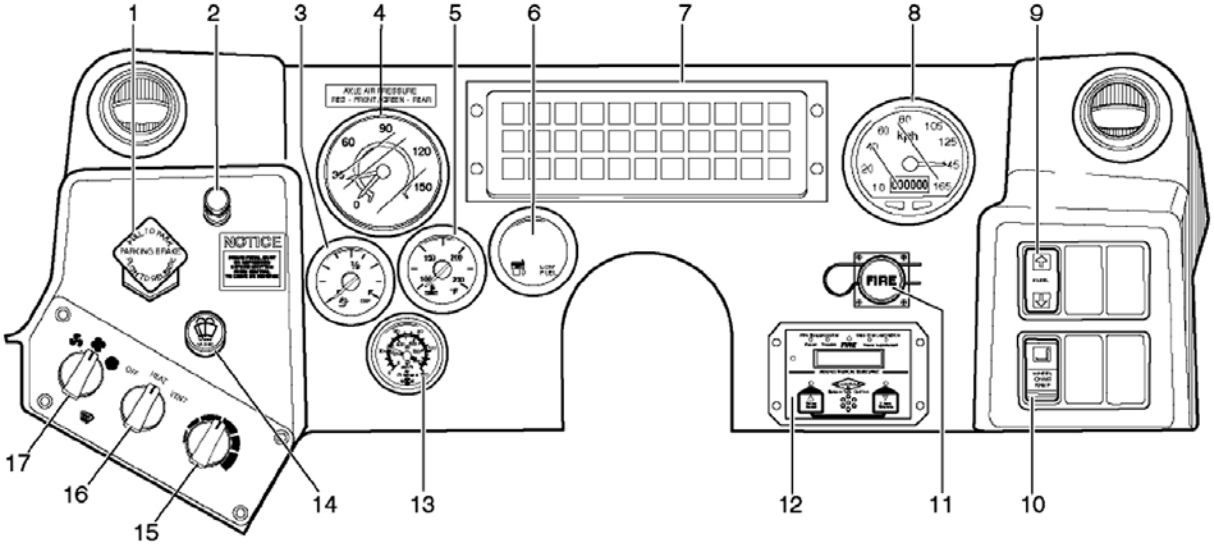
To adjust the tilt angle:

a. Pull back on the lever.

b. Grasp the steering wheel and adjust the angle forward and aft until the desired angle is reached.

c. Push down slightly on the lever and gently articulate the wheel until the column locks in place.

FRONT INSTRUMENT PANEL



LEGEND

1. Parking/Emergency Brake Control
2. Wiper Control Lamp
3. Diesel Emission Fluid (DEF) Gauge
4. Air System Pressure Gauge
5. Engine Coolant Temperature Gauge
6. Diesel Fuel Gauge
7. LED Warning Lights and Indicator Panel
8. Speedometer/Odometer Gauge
9. Kneeling System Switch
10. Wheelchair Ramp Switch
11. Manual Fire Suppression Button
12. Automatic Fire Suppression System (AFSS) Display Panel
13. Accessory Tank Air Pressure Gauge
14. Windshield Wiper/Washer Control Valve
15. Driver's Temperature Control
16. Driver's Heat/Ventilation Control
17. Driver's Heater/Defroster Control

The front instrument panel is a collection of gauges, controls, and warning indicators used to operate and monitor various vehicle systems.

1. **Parking/Emergency Brake Control**
   This Push/Pull valve applies the rear wheel spring brakes when parking. It may also be used to stop the vehicle in an emergency situation.

   PULL on the valve knob to apply brakes, and PUSH to release brakes. **See "Emergency/Parking Brake Control Valve" on page 33.**

2. **Wiper Control Lamp**
   This fixture illuminates the wiper controls.

3. **Diesel Emission Fluid (DEF) Gauge**
   This gauge measures the amount of DEF in the 10.6 gallon reservoir tank. Diesel emission fluid is mixed with hot exhaust, resulting in an alteration of the chemical composition of the exhaust to make it EPA10 compliant.

   A solid red light indicates an initial warning level of 16.6%; under such conditions, removed the vehicle from service immediately.

   A flashing red light indicates a critical warning level of 11%; under such conditions, immediately move the vehicle to a safe location and shutdown the engine.

4. **Air System Pressure Gauge**
   This dual indicator gauge monitors brake circuit air pressure for both primary and secondary air circuits.

   Normal air system pressure should not register below 70 psi.

   The spring brakes will gradually apply automatically if pressure

is lost, and will be fully applied if pressure drops to 40 psi. **See "Air Brake System Operation" on page 32.**

5. **Engine Coolant Temperature Gauge**
   This gauge registers the engine coolant temperature. The gauge is designed to register a temperature range from 100° - 260°F (38° - 127°C). The normal operating temperature is between 180° - 200°F (82° - 93°C). If the temperature continues to rise above this range, the excessive high temperature will trigger an audible alarm and illuminate the CHECK ENGINE indicator on the front instrument panel. If the engine temperature continues to rise above 212°F (100°C), the engine control unit (ECU) will commence shutdown sequence.

6. **Diesel Fuel Gauge**
   This gauge indicator monitors the amount of diesel fuel in the 125 gallon fuel tank. Approximately 18 gallons of fuel remains in the fuel tank when the low fuel light on the gauge illuminates. An EMPTY reading indicates 11.7 gallons of fuel remaining in the fuel tank.

NOTE

The vehicle will run out of fuel with 5.37 gallons remaining in the fuel tank.

7. **LED Warning Lights and Indicator Panel**
   The vehicle is equipped with a visual and audible signal system that is designed to indicate the various warnings and normal operating conditions during vehicle operation. **See "Warning Lights and Indicators" on page 13.**

8. **Speedometer/Odometer Gauge**
   This combination needle indicator and digital counter registers vehicle speed and records distance travelled. In addition, the speedometer is equipped with and audible text messaging feature which will notify the operator if a Low Coolant, or Low Oil Pressure situation exists.

9. **Kneeling System Switch**
   Kneeling is controlled by this momentary switch which lowers the front of the vehicle approximately 3 1/2 inches, to enable easier access when boarding the vehicle. **See "Kneeling System" on page 61.**

10. **Wheelchair Ramp Switch**
    This rocker switch controls the operation of the front door

ramp, allowing wheelchair access.

When activated, the green warning light flashes and an audible alarm sounds. **See "Wheelchair Ramp System" on page 63.**

11. **Manual Fire Button**
This button allows the operator to manually activate the fire bottle. To operate, break the seal, pull out the ring and press the FIRE button.

12. **Automatic Fire Suppression System (AFSS) Display Panel**
This display panel includes basic to read LED's and audio alarm indication. Detailed EVENTS are documented on the Vacuum Fluorescent Display (VFD) panel.

NOTE

The methane functions are not applicable to this vehicle.

13. **Accessory Tank Air Pressure Gauge**
This gauge monitors the amount of air remaining in the front accessory air tank.

14. **Windshield Wiper/Washer Control Valve**
This rotary knob controls the left and right windshield wiper and has a built in washer control.

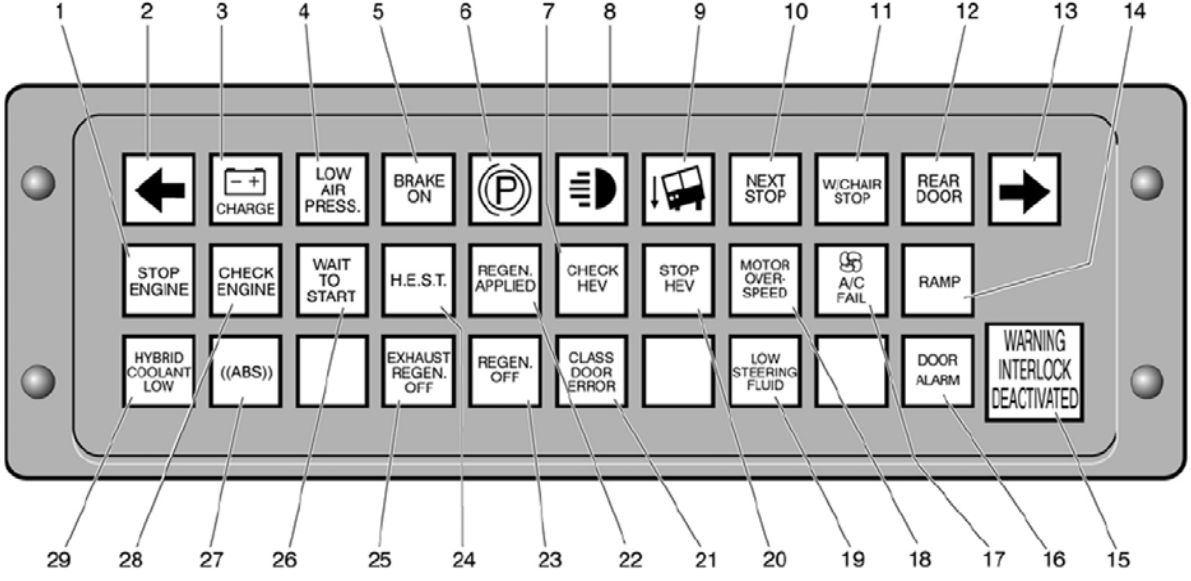
    Push in and hold to dispense washer fluid.

15. **Driver's Temperature Control**
This rotary control knob enables the operator to regulate the temperature in the operator's area compartment. **See "Heating, Air Conditioning, and Ventilation" on page 51.**

16. **Driver's Heat/Ventilation Control**
This three position (OFF, HEAT, VENTILATION) rotary control knob allows the operator to select either heat or air flow ventilation mode.

17. **Driver's Heater/Defroster Control**
This three position (LOW, MEDIUM, HIGH) control knob allows air to flow to the front windshield, and the front operator's area.

WARNING LIGHTS AND INDICATORS



LEGEND

1. Stop Engine Indicator
2. Left Turn Signal Indicator
3. Alternator Indicator
4. Low Air Pressure Indicator
5. Brake ON Indicator
6. Parking Brake Applied Indicator
7. Check Hybrid Electric Vehicle (HEV) Indicator
8. High Beam Indicator
9. Kneeling Indicator
10. Next Stop Indicator
11. Wheelchair Stop Indicator
12. Rear Door Indicator
13. Right Turn Signal Indicator
14. Wheelchair Ramp Indicator
15. Warning Interlock Deactivated Indicator
16. Door Alarm Indicator
17. Air Conditioning (A/C) Fail Indicator
18. Motor Over-Speed Warning Indicator
19. Low Steering Fluid Indicator
20. Stop Hybrid Electric Vehicle (HEV) Indicator

LEGEND

21. Class Door Indicator
22. Regenerative Braking Applied Indicator
23. Regenerative Braking OFF Indicator
24. High Exhaust System Temperature (HEST) Indicator
25. Exhaust Regeneration OFF Indicator
26. Wait to Start Indicator
27. Anti-Lock Braking System (ABS) ON Indicator
28. Check Engine Indicator
29. Hybrid Coolant Low Indicator

These LED warning lights and status indicators illuminate to alert the operator to normal operating conditions, as well as conditions that may affect normal vehicle operation.

All lights illuminate briefly at start-up, when the Master Switch is placed in the DAY RUN position.

The operator should verify all LED illuminations on a daily basis and report any dimmed or failed units to service/maintenance personnel.

Distinct audible alarms and illuminated indicators indicate conditions that require an immediate response.

1. Stop Engine Indicator
This red indicator illuminates when a serious malfunction is detected in the engine system. This malfunction could potentially prohibit safe operation of the engine and vehicle.

If this condition occurs, immediately remove the vehicle from service to a safe location, and shutdown the engine.

Report the fault to service/maintenance personnel immediately.

2. **Left Turn Signal Indicator**
   This green indicator flashes ON/OFF when the roadside directional signals are operating.

3. **Alternator Indicator**
   This red indicator illuminates when a fault occurs in the Electric Alternator System (EAS).

4. **Low Air Pressure Indicator**
   This red indicator illuminates, accompanied by an audible alarm, when the air pressure, in the primary and/or secondary reserve tanks, is low.

   Minimum primary air system pressure should be 70 psi, as indicated on the air system pressure gauge. The brake system automatically starts to apply as pressure drops below 40 psi.

   If this condition occurs, immediately remove the vehicle from service to a safe location and shutdown the engine. Do not operate the vehicle until the fault has been corrected.

   Report the fault to service/maintenance personnel immediately.

5. **Brake ON Indicator**
   This red indicator illuminates when a service brake application is made due to an application of the brake treadle valve, an application of the parking brake, or the activation of the brake interlock system.

NOTE

A firm brake application must be made after a door cycle in order to shift out of neutral, release the brakes and enable the throttle.

6. **Parking Brake Applied Indicator**
   This red indicator illuminates when parking brakes are applied.

7. **Check Hybrid Electric Vehicle (HEV) Indicator**
   This amber indicator illuminates when a fault has been detected in the HEV propulsion system.

   The vehicle may be driven safely but should be taken in to service for diagnosis as soon as possible to avoid serious damage to the system.

8. **High Beam Indicator**
   This blue indicator illuminates when headlight high beams are applied.

9. **Kneeling Indicator**
   This red indicator illuminates and an audible alarm is activated, when the kneeling system is activated.

This indicator remains illuminated until proper ride height has been attained. **See "Kneeling System" on page 61.**

10. **Next Stop Indicator**
    This amber indicator illuminates, accompanied by a sounding chime, when a passenger, requesting the next stop, has activated the touch tape.

    In addition, a STOP REQUEST sign, located on the ceiling at the standee line, will illuminate.

11. **Wheelchair Stop Indicator**
    This amber indicator illuminates, accompanied by a sounding chime *(double chime)*, when a passenger, requesting the next stop, has activated the touch tape at a wheelchair position.

    In addition, a STOP REQUEST sign, located on the ceiling at the standee line, will illuminate.

12. **Rear Door Indicator**
    This red indicator illuminates when the rear exit door is open or authorized by the operator under normal operation. In addition, this indicator will also illuminate if the rear door sensitive edge detects an obstruction which is preventing the door panels from closing completely.

13. **Right Turn Signal Indicator**
    This green indicator flashes ON/OFF when the curbside directional signals are operating.

14. **Wheelchair Ramp Indicator**
    This red indicator illuminates and an exterior audible alarm and amber flashing light is activated when the ramp is deployed. **See "Wheelchair Ramp System" on page 63.**

15. **Warning Interlock Deactivated Indicator**
    This red indicator will illuminate when the door master switch has been activated and the interlocks have been bypassed.

16. **Door Alarm Indicator**
    This red indicator flashes and an audible alarm sounds when the rear door emergency handle is pulled. In addition the rear door overhead light will flash continuously.

17. **Air Conditioning (A/C) Fail Indicator**
    This red indicator illuminates when the air conditioning (A/C) system operation is interrupted due to a system fault.

    Possible faults include high/low pressure and loss of refrigerant or condenser fan failure. The A/C system will switch automatically to ventilation mode.

Report the fault to service/maintenance personnel.

18. **Motor Over-Speed Warning Indicator**
This red indicator illuminates when the vehicle's speed exceeds the maximum limits of the hybrid propulsion system.

    Speed must be reduced by activating the vehicle brakes, failure to do so may result in damage to the hybrid propulsion system.

19. **Low Steering Fluid Indicator**
This red indicator illuminates when the fluid level in the steering pump reservoir is low.

    Report the fault to service/maintenance personnel immediately.

20. **Stop Hybrid Electric Vehicle (HEV) Indicator**
This red indicator illuminates and an audible alarm is activated when a severe fault is detected within the hybrid propulsion system.

    Immediately move the vehicle to a safe location and shutdown engine. **See "Stop HEV Indicator" on page 44.**

21. **Class Door Error Indicator**
This red indicator illuminates when a fault has been detected with the rear door Contact-less Acoustic Sensing System.

    The class error fault will not prohibit operation of the rear doors.

22. **Regenerative Braking Applied Indicator**
This red indicator illuminates when regenerative braking is occurring in the hybrid propulsion system.

23. **Regenerative Braking OFF Indicator**
This red indicator illuminates when regenerative braking switch, located in the front destination sign compartment, is placed in the OFF position.

24. **High Exhaust System Temperature (HEST) Indicator**

CAUTION !

Exhaust heat can reach 812°F (433.3° C). Ensure that the exhaust outlet is away from areas that could potentially be damaged by severe heat.

This amber indicator illuminates to notify the operator of a high heat hazard caused by the exhaust system entering the process of active regeneration.

When the vehicle is engaged in active regeneration, the exhaust will produce temperatures in excess of 812°F (433.3°C) and caution must be taken to ensure a two foot minimum clearance of the

exhaust outlet from other items that can be effected by high temperatures. In such situations, activate the Exhaust Regeneration OFF switch, located on the front instrument panel.

25. **Exhaust Regeneration OFF Indicator**
This amber indicator illuminates to notify the operator that the EXHAUST REGEN OFF switch is activated and no active regeneration is possible. This may force the necessity of a Stationary Regeneration.

26. **Wait to Start Indicator**
This amber indicator will illuminate when the Master Switch is placed in the DAY RUN position, prior to activating the ENGINE START button.

    This allows the Cummins ISB™ intake air grid heater to warm up the air intake manifold to a sufficient temperature 4.4°C (40°F) for start up.

    Once the operating temperature has been reached, the indicator lamp will turn OFF and the engine will be ready for start up.

27. **Anti-Lock Braking System (ABS) ON Indicator**
This amber indicator illuminates momentarily, for a bulb check only, when the ABS is initially activated.

    The indicator illuminates, and remains illuminated, when a fault is detected in the ABS system. **See “ABS Warning Light” on page 35.**

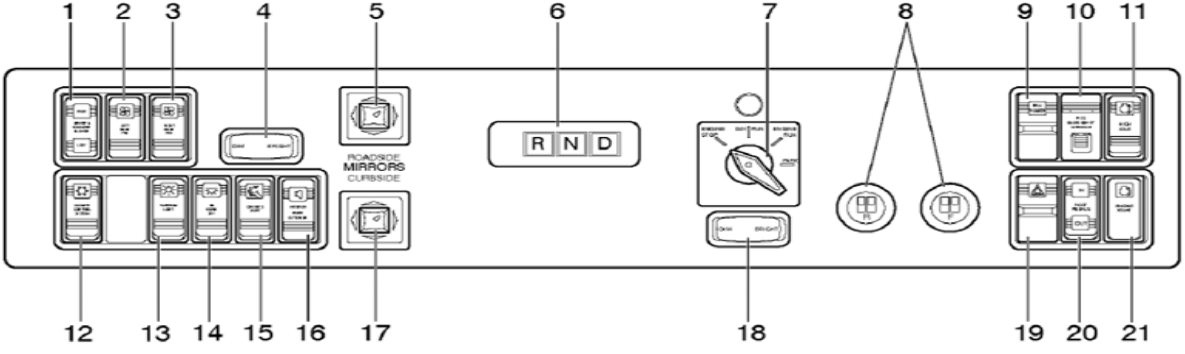
28. **Check Engine Indicator**
This amber indicator illuminates when the engine electronic control unit detects a malfunction in the engine system. This condition will NOT prohibit safe operation of the engine or vehicle.

    Report the fault to service/maintenance personnel as soon as possible.

29. **Hybrid Coolant Low Indicator**
This red indicator illuminates and an audible alarm sounds when the fluid level in the MTS coolant reservoir is low.

    Report the fault to service/maintenance personnel immediately.

DRIVER'S SIDE CONTROL PANEL



LEGEND

1. Driver's Booster Blower Switch
2. Left Dash Fan Switch
3. Right Dash Fan Switch
4. Driver's Light Dimmer Switch
5. Roadside Mirror Control
6. Alternating Current Traction Motor (ACTM) Gear Selector
7. Master Switch
8. Driver's Push Button Door Controller
9. Hill Holder Switch
10. Propulsion Control System (PCS) Emergency Override Switch
11. High Idle Switch
12. Climate Control System Switch
13. Farebox Light Switch
14. Interior Light Switch
15. Driver's Light Switch
16. Speakers Switch
17. Curbside Mirror Control
18. Instrument Panel Dimmer Switch
19. Hazard Switch
20. Foot Pedals Switch
21. Engine Start Switch

The driver's side control panel is equipped with controls for activating, deactivating, and overriding vehicle control systems.

Systems include interior and exterior lighting, engine control, door control, suspension kneeling, climate control, and P.A. systems. All are enabled/disabled, depending on the position of the Master Switch. **See "Master Switch" on page 25.**

1. **Driver's Booster Blower Switch**
   This three position (HIGH, OFF, LOW) rocker switch allows the operator to activate the overhead blower unit in the operator's compartment, for increased circulation.
2. **Left Dash Fan Switch**
   This three position (HIGH, OFF, LOW) rocker switch allows the operator to activate the left front dash mounted fan.
3. **Right Dash Fan Switch**
   This three position (HIGH, OFF, LOW) rocker switch allows the operator to activate the right front dash mounted fan.
4. **Driver's Light Dimmer Switch**
   This momentary rocker switch allows the operator to increase or decrease the intensity of the operator's light; located directly above the operator.
5. **Roadside Mirror Control**
   This four-way push button control remotely adjusts the exterior roadside mirror to the operator's individual needs.

   The operator can adjust the position of the mirror by pushing the knob either UP, DOWN, LEFT or RIGHT.
6. **Alternating Current Traction Motor (ACTM) Gear Selector**
   The drive modes available on this selector are Drive (D), Neutral (N), and Reverse (R). For gear transition, Neutral

must always be activated first. **See "Gear Range Selector Position" on page 43.**

7. **Master Switch**
   This four position rotary switch enables various electrical systems under the following selected positions: ENGINE STOP, DAY RUN, NIGHT RUN, or PARK. **See "Master Switch" on page 25.**

8. **Driver's Door Control Push Buttons**
   The rear and front door controller push buttons provides the operator with complete control over the front and rear doors. Press once to open and press again to close the doors.

NOTE

When the front or rear door is opened, the activated button will remain illuminated until the door is closed.

9. **Hill Holder Switch**
   This two position momentary (ON, OFF) rocker switch manually activates the brake interlock circuit to prevent the vehicle from rolling when on an inclined surface.

NOTE

The throttle will still be active while the Hill Holder switch is activated. Releasing the Hill Holder switch will release the brake interlocks.

NOTE

Releasing the brake pedal while the Hill Holder switch is in the ON position and the doors are closed, will cause the vehicle to slowly creep forward.

10. **PCS Emergency Override Switch**
    This rocker switch will override the HybriDrive™ protection system. This will allow the propulsion system to operate with known faults for as long as the switch is depressed.

    To activate the PCS Emergency Override switch, release the locking tab by pushing and

holding the tab towards the top of the switch.

NOTE

If the engine will not start, the PCS Emergency Override switch can be used to power the traction motor directly from the batteries.

NOTE

Activation of the PCS Emergency Override Switch does not guarantee that the vehicle will be able to be moved after the fault is detected.

See "Propulsion Control System (Emergency) Override Switch" on page 43.

11. **High Idle Switch**
    This two position rocker switch increases the engine idle speed to improve combustion efficiency during long periods of idling.

    Low idle is approximately 800 rpm. High idle increases engine speed to 1,100 rpm (or as required by accessories).

    Excessive idling at low rpm's is damaging to the engine and also forces the engine to perform at its least efficient condition, which could seriously effect other engine components.

    High idling optimizes the performance of the climate control system (air conditioning).

12. **Climate Control System Switch**
    This two position (ON, OFF) rocker switch allows the operator to activate or deactivate the vehicles climate control system.

13. **Farebox Light Switch**
    This two position (ON, OFF) rocker switch, when in the ON position illuminates the overhead farebox light. When the Master Switch is in the NIGHT RUN, PARK or DAY RUN position, and the Farebox switch is left in the OFF position, the farebox light will illuminate whenever the front door is opened.

14. **Interior Light Switch**
    This three position rocker switch (ON, NORM, OFF) controls the interior lights in the passenger area. With the master switch in the NIGHT RUN position and the interior light switch in the NORM position, all interior lights are illuminated when the front door is opened. The first light fixture on each side of the interior row are extinguished when the front door is closed.

With the Interior Light switch in the ON position, all interior light fixtures illuminate.

15. **Driver's Light Switch**
This two position (ON, OFF) rocker switch controls the ceiling mounted light above the driver's area.

16. **Speakers Switch**
This three position toggle switch allows the operator to select either interior (INT), exterior (EXT), or ALL public address speakers. Selection of EXT or INT overrides automated control of the voice annunciator system.

17. **Curbside Mirror Control**
This four-way push button control remotely adjusts the exterior curbside mirror to the operator's individual needs.

    The operator can adjust the position of the mirror by pushing the knob either UP, DOWN, LEFT or RIGHT.

18. **Instrument Panel Dimmer Switch**
This momentary rocker switch controls the illuminated brightness levels on the operator's front instrument panel and side control panel.

19. **Hazard Switch**
All exterior signal lights will flash simultaneously and the front dash indicator lights will also flash when this rocker switch is engaged.

NOTE

With the Master Switch in the NIGHT RUN position, the side marker lights will also flash when the Hazard switch is activated.

20. **Foot Pedals Switch**
This (IN, OUT) rocker switch allows the operator to adjust the distance between the operator and the brake and accelerator pedals.

    The IN position moves the pedals towards the operator and the OUT position moves the pedals away from the operator.

NOTE

The Master Switch must be placed in the Park position and the parking brake must be applied in order to operate the foot pedal switch.

21. **Engine Start Switch**
This rocker switch engages the electric starter motor at start up when the master switch is in the DAY RUN or NIGHT RUN positions.

    Allow time for the WAIT TO START indicator light on the front instrument panel to extinguish, then press and hold

the ENGINE START switch to start the engine. If the engine does not start within 14 seconds, the starter interlock will not allow the operator to engage the starter until an additional 60 seconds have elapsed.

MASTER SWITCH

The Master Switch controls the electrical system and lights under the selected ENGINE STOP, DAY RUN, NIGHT RUN, or PARK positions.

Engine Stop Position

The following essential circuits are energized.

- Fire suppression
- All other circuits are de-energized.

Day Run Position

All electrical control circuits are energized, except for:

- Exterior lighting.

Night Run Position

Used for night and inclement weather operation. All electrical control circuits are energized, including the running lights and headlights.

When the interior light switch is placed in the NORMAL position, running lights and headlights illuminate as the Master Switch is placed in the NIGHT RUN position.

The heater, defroster, and air conditioning blower motors only operate when the Master Switch is placed in the DAY RUN or NIGHT RUN position with the engine running, and with the desired side control panel switch selected.

Park Position

All electrical control circuits are de-energized, except for the clearance and tail lights.

When the Master Switch is placed in the PARK position, the engine shuts down.

DESTINATION SIGNS

Electronic Destination Sign

There is a front destination sign and a side destination sign. The front sign is located above the windshield. The side destination sign is located at the front curbside window of the vehicle.

To select the required destination on all signs, use the Operator's Display Keyboard located on the upper left side of the operator's compartment.

Operator's Display and Keyboard (ODK)

NOTE

The destination information has been pre-programmed into the system and cannot be modified by the operator through the console unit.

The operator uses the ODK to control and verify the sign system's message displays during normal operation.

Refer to the destination sign code list of your transit authority for programmed destination and public relations (P/R) messages.

For further information on the ODK, please refer to your Luminator™ display system manual.

Keypad Key Definitions

Menu Key

This key is used to access advanced programming options.

Select Key

Used to select additional characters from G to Z on the message entry.

Route Key

Press to allow route number entry. This function is determined by the transit authority programming.

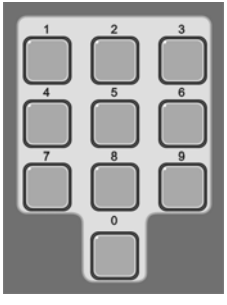
Public Relations (P/R) Message

This key is used to enable public relations message code entry. This switch may not be enabled if public relation messages are not available.

DEST A and DEST B Keys

These keys are used to set a destination or to change a destination display.

0 through 9 Keys

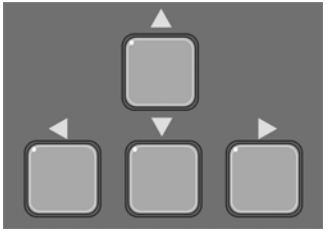


Used to select a given address in the transit authority destination listing.

Alpha: A - F Keys

These keys are permanently enabled and are sequence dependent. They function only after a destination or enabled public relations key is pressed.

Arrow Keys



The Up and Down keys are used to increase/decrease the display brightness levels.

The left and right keys are used to scroll through the route an selection menus.

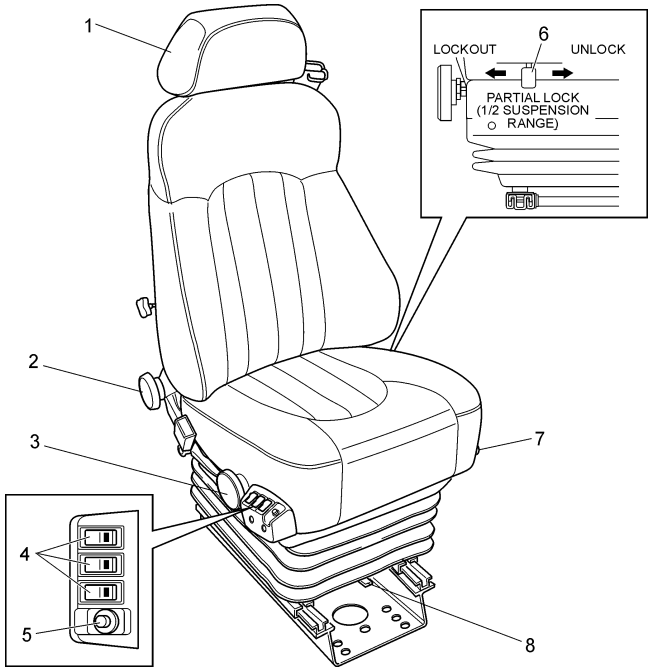
ENTER Key

This permanently enabled key is used to activate a selected message code. It functions only if the code entry field *(reading on the message display after a destination or public relations code has been keyed in)* contains a code.

Destination Sign Dimming Feature

An optical sensor on the front and side destination signs will allow the intensity of the LED sign lights to change in response to exterior daylight conditions.

DRIVER'S SEAT



LEGEND

1. 4-Way Adjustable Headrest Support
2. Back Inclination Handle
3. Seat Inclination Handle
4. Air Lumbar Adjustments
5. Auto Actuator Button
6. Suspension Limitor
7. Height Adjuster
8. Manual Slide Release

USSC™ Q91 Driver's Seat

WARNING

Stop the vehicle and apply the parking brake before adjusting the seat. Failure to do so could result in loss of vehicle control, causing personal injury and/or vehicle damage.

The USSC Q91™ driver's seat is equipped with a pneumatic suspension system, air adjustable upper and lower lumbar support, a retractable three-point seat belt, and various electrical and manual controls which enable a wide range of comfort adjustments.

NOTE

A switch is installed inside the front seat cushion which will cause the Park Brake LED light to illuminate and an audible alarm to sound if the driver leaves the seat without applying the parking brake.

Manual Controls

1. **4-Way Adjustable Headrest Support**
   Adjust height and angle of the headrest. Pull up from the bottom of the headrest to raise it or push down from the top to lower it. Pull forward or push back on the top of the headrest to adjust the angle.
2. **Backrest Inclination Handle**
   Adjust backrest by turning this knob clockwise or counter clockwise.
3. **Seat Inclination Handle**
   This handle allows the seat cushion angle to be adjusted from 1° to +9°.
4. **Air Lumbar Adjustments**
   Three rocker switches are used to adjust the air lumbar requirements.

   Push switch forward to inflate and push switch rearward to deflate. The switch next to the auto actuator button is for the bottom lumbar, next is for the middle lumbar and then the top lumbar adjustments.
5. **Auto Actuator Button**
   Pressing this button activates an air cylinder which in turn releases the tracks so that the seat can be moved foreward and backward.

6. **Suspension Limitor**
   This three position range limiter allows adjustments to the suspension. The inward position allows full suspension range. The middle position limits the vertical suspension range and the far left position locks out the suspension

   The suspension limiter should always be in the right hand "unlocked" position.

7. **Height Adjuster**
   Pull out to lower and push in to reinflate.

8. **Manual Slide Release**
   Pulling up the handle allows the driver to move the seat forward or backward.

Driver's Seat Belt

The driver's seat comes complete with a retractable seat belt assembly. The seat belt is fastened by slowly pulling the buckle over and across the lap and then engaging the buckle on the tongue. A quick tug on the belt will lock the reel device. The reel device is self-adjusting.

The belt should be worn low and snug on the hips to prevent abdominal injuries during sudden stops.

Report defective seat belts to service/maintenance personnel.

Clean seat belts and retractors regularly. Ensure they are free of dust or other foreign material which could inhibit the effectiveness, or reduce the life of the unit.

Never use solvents or harsh cleaners to clean seat belts.

For heavily soiled belts, wash with a mild soap and warm water solution. Rinse the belts thoroughly and allow to dry.

AIR BRAKE SYSTEM OPERATION

The vehicle is designed with a dual circuit air-operated brake system, activated by the brake treadle valve, located to the right of the steering column.

Braking is controlled by the operator's foot pressure applied to the treadle. The most effective braking is obtained by making the initial brake application gradually to the extent of braking required.

In HEV propulsion systems power can be recovered through REGENERATIVE BRAKING **See "Alternating Current Traction Motor (ACTM)" on page 42.**

Reduce the pressure applied to the brakes as speed is reduced. When the vehicle comes to a complete stop, only slight pressure remains in the brake chambers. This procedure, otherwise known as **threshold braking**, will prevent the annoying jerking motion as the vehicle stops.

Stop lights on the rear of the vehicle, along with the REGENERATIVE APPLIED indicator, illuminate when the Regenerative Braking is activated by applying the brakes.

Air pressure must be above 70 psi before air brakes can develop their full effectiveness. The operator should observe the air pressure gauge frequently.

If the LOW AIR PRESSURE indicator illuminates and the buzzer sounds during operation, stop the vehicle and determine the cause of air pressure loss. Manual pressure on the treadle will not operate the brakes without air pressure.

Loss of Air Pressure

A red LOW AIR PRESSURE indicator illuminates and an audible alarm sounds when air pressure in the system drops below 70 psi.

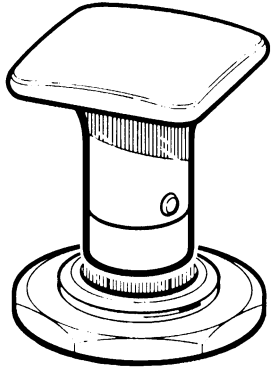
Remove the vehicle from service to a safe location, to determine and correct the fault before continuing service.

Wet Weather Operation

If driving through deep water is unavoidable, lightly apply the brakes to dry out wet brake linings. A significant reduction in braking efficiency may be experienced if brake linings are wet.

Emergency/Parking Brake Control Valve

The parking brake control valve is located just below the side control panel and must be applied when the vehicle is parked.



To apply:

CAUTION !

The emergency parking brake is not to be applied while the vehicle is in motion, except in emergency situations.

- Pull the knob upwards; pulling upwards on the knob applies the rear wheel spring brakes. These brakes are designed to remain applied until released.

To release:

- To release, push the control knob all the way down.

Brake Interlock

CAUTION !

The vehicle air pressure must be above 70 psi in order for the system to function properly. Failure to maintain a pressure of 70 psi will jeopardize braking efficiency.

NOTE

A "creep forward" mode is present in all EPA10 hybrid vehicles; as a result, the vehicle will creep forward when the gear range selector is in the D (drive) position and the brake pedal is released.

The brake interlock is used in conjunction with rear door, kneeling, and wheelchair ramp operations.

When these systems are enabled or active, partial air pressure is applied to the rear service brakes. Brakes are designed to remain applied as long as these systems are functioning and enabled.

The BRAKE ON indicator illuminates when the interlocks are activated. Brakes are released when the doors are closed and the door control button is placed in the door close position.

A firm brake application is necessary to release the interlock.

CAUTION !

The LOW AIR PRESS warning indicator illuminates and the alarm will sound if vehicle air pressure is below 70 psi. Failure to maintain a pressure above 70 psi will jeopardize braking efficiency.

Remove the vehicle from service and report a LOW AIR PRESS fault to dispatch.

Rear Axle Brakes Safety Circuit

The rear axle brakes contribute to most of the braking effort required to stop a loaded vehicle.

Air loss is indicated by the pressure gauge located on the front instrument panel. An audible alarm will sound if the pressure drops below 70 psi.

When this circuit is activated, safely stop the vehicle and report the loss of air to dispatch. The vehicle should not be used for transit operation until the air loss is corrected.

In a situation where air leakage occurs, the spring brakes apply automatically when the system air pressure drops below 70 psi.

The brakes apply in stages, and will be fully applied if the pressure continues to fall below 40 psi.

Anti-Lock Braking System (ABS)

NOTE

Normal brake application is required to stop in time. When the ABS is activated, do not release the brake pedal. Maintain brake pressure, DO NOT pump brakes.

ABS monitors wheel speed at all times and controls braking during wheel lock situations. This system improves vehicle stability and control by reducing wheel lock during braking.

ABS Warning Light

The ABS warning lamp functions as follows:

Under Normal operations

The ABS indicator light allows the operator to monitor ABS system. In the event of a malfunction in the ABS system, the ABS indicator light, located on the front instrument panel, will stay illuminated. The ABS in the affected wheel(s) will be disabled, however, the wheels will retain normal brake function. The remaining unaffected wheel(s) will retain their ABS function.

After Servicing ABS System

If the ABS light does not go out at ignition, the vehicle must then be driven over 4 m.p.h. (6.4 k.p.h.) before the light will extinguish.

Existing Fault

If the ABS light illuminates and will not go out at ignition or if the light does not extinguish at speeds above 4 m.p.h. (6.4 k.p.h.), a fault exits in the ABS system. If this condition occurs, notify service personnel immediately.

NOTE

An ABS fault condition does not affect normal braking operation.

ENGINE OPERATION

Pre Start-Up Inspection

Maintenance and Service personnel are required to perform a daily pre start-up check to ensure adequate levels of oil, coolant, and fuel.

Inspect and verify that all safety equipment is functioning properly, such as lights, brakes, and tires, clear windshield, side windows, and adjust and clean mirrors.

For further information on the Cummins™ ISB engine, refer to your Cummins™ ISB Operation and Maintenance manual.

Starting an Electronically Controlled Engine

CAUTION !

Check that the battery voltage is above 24 volts before starting the engine. Failure to do so can result in damage to the starter.

NOTE

The engine is equipped with a starter interlock protection feature. This feature allows for a maximum of 14 second cranking time.

1. Ensure the parking brake valve is applied and the entrance door is closed.
2. Place the Master Switch in the DAY RUN position.

   The red STOP ENGINE and an amber CHECK ENGINE light, located on the front instrument warning indicator panel, will illuminate for approximately 10 seconds for a bulb check.
3. Check all unnecessary lighting and other controls are switched OFF.
4. Place the transmission selector in the NEUTRAL position.
5. Wait for the WAIT TO START indicator light, located on the front instrument panel, to extinguish.
6. Press and hold the ENGINE START button to start the engine.

   No application on the accelerator (throttle) pedal is necessary during start up. The

engine is programmed to inject sufficient fuel for starting.

NOTE

If the engine does not start within 14 seconds, allow one minute for the starter to cool, before the next attempt.

NOTE

A safety feature in the starting circuit prevents re-engagement of the starter, while the engine is running.

Engine Warm Up

When the engine maintains a steady oil pressure and the other systems are functioning normally, the engine is ready for operation.

If possible, avoid full throttle at the start of operation until the engine has reached an engine coolant temperature of 140°F (60°C), or until an appropriate period of time has elapsed.

Operating the Engine

WARNING

Exhaust gases present in the vehicle are potentially lethal. Do not run the engine indoors, unnecessarily.

Exhaust gases, particularly carbon monoxide, are potentially lethal. Carbon monoxide is colourless and odorless. If exhaust fumes are present in the vehicle, report to maintenance personnel immediately.

Avoid idling the engine for prolonged periods of time. Idling the engine wastes fuel and may shorten engine life. Deposits of unburned fuel may form on the cylinder walls, promoting unnecessary wear.

If idling is unavoidable, use the High Idle feature.

High Idle

This feature increases engine idle speed from the normal 800 rpm to 1,100 rpm.

The High Idle switch, located on the side control panel, can be left in the ON position during normal vehicle operation.

The system operates when the High Idle switch is in the ON position, the parking brakes are applied, and the gear selector is placed in the NEUTRAL position.

Using the high idle feature is recommended for pre-service for the following reasons:

1. High oil pressure is maintained in the engine to ensure correct lubrication.
2. Cold weather affects battery power. A high engine rpm

ensures the alternator is performing efficiently, and batteries are constantly charged.

3. The vehicle climate control system operation is more efficient when the engine runs at high idle.

Stopping the Engine

1. Bring vehicle to a complete stop.
2. Place the gear selector in Neutral and apply parking brakes.
3. Turn Master Switch to the ENGINE STOP position.

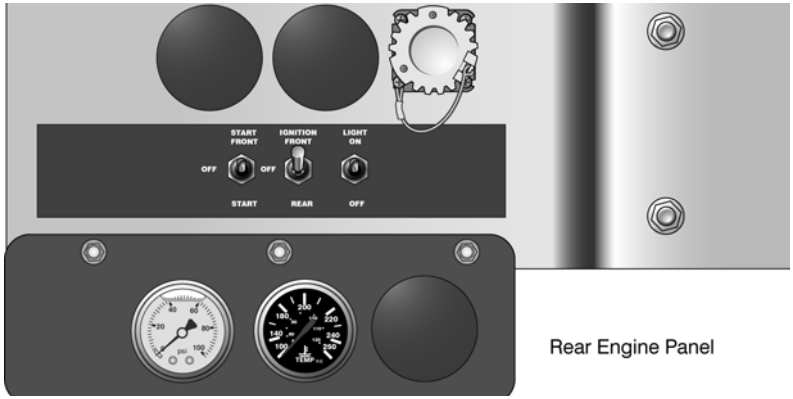
Starting Engine From Rear Control Panel

DANGER

Use extreme caution if any work has to be performed on the engine while it is running. High voltage is present at the generator terminals, traction motor terminals, and all high voltage cabling connecting the generator and traction motor to the PCS.

CAUTION !

Ensure the gear selector is in neutral and the parking brake is applied before starting the engine from the rear control panel. Failure to do so can cause unexpected vehicle motion and result in personal injury and/or damage to the vehicle.



Rear Engine Panel

1. Apply parking brake, and put gear range selector into NEUTRAL.
2. Place the Master Switch, located in the operator's compartment to the DAY RUN position.
3. Place ignition Control Switch, located at the rear of the vehicle on the engine control panel box, to the REAR position (*allow 7 seconds for the engine diagnostic self test to complete*).
4. Hold the Starter Control switch in the START position, until engine has started.

   Do not engage the starter for longer than 14 seconds at a time.

   If engine does not start immediately, allow one minute for the starter to cool before the next attempt.

Stopping Engine From Rear Control Panel

1. Place the Ignition Control switch in the OFF position.
2. When engine work is complete, return Ignition Control and Engine Starter switches to the FORWARD position.

Engine Protection System - Electronically Controlled Engines (Cummins ISB™)

The ISB engine is equipped with an engine protection system. This system monitors critical engine temperatures and pressures.

Engine protection features exist for:

Low Coolant Level

The engine protection system is activated when the coolant level is at an unacceptable level. An audible alarm and an amber CHECK ENGINE indicator light, located on the front instrument panel, will illuminate. An audible alarm and a red STOP ENGINE indicator light will notify the operator of an imminent engine shutdown situation. During an engine shutdown, the operator will have 30 seconds to move the vehicle to a safe location and shutdown the engine.

Low Oil Pressure

The engine protection system is triggered when the oil pressure falls below a given value dependent on rpm. An audible alarm and a red STOP ENGINE indicator light, located on the front instrument panel, will illuminate. The STOP ENGINE signal notifies the operator of an imminent engine shutdown situation. During an engine shutdown, the operator will have 30 seconds to move the vehicle to a

safe location and shutdown the engine.

High Coolant Temperature

The engine protection system is triggered whenever the coolant temperature is greater than 220°F (104°C). The Check Engine indicator illuminates at 212°F (100°C).

If one of these conditions is detected, the CHECK ENGINE and/or STOP ENGINE dash indicator lights will illuminate.

The Electronic Control Module (ECM), which activates the system, immediately limits current available throttle to 80% of full throttle.

Power continues to be limited to a minimum of 40% throttle.

Thirty seconds after a fault is detected, the fuel delivery is completely stopped.

NOTE

The Engine Protection system will remain active unless the fault condition clears or the ignition circuit is cycled off and on again.

B.A.E.™ HYBRID PROPULSION SYSTEM

Hybrid Electric Vehicle (HEV) Propulsion System Operation

In a HEV propulsion system, the engine converts the energy contained in the fuel into mechanical energy. The Alternating Current Traction Generator (ACTG) converts this mechanical energy into electrical energy at the proper voltage and current to charge the traction batteries and to provide power for the Alternating Current Traction Motor (ACTM). The Propulsion Control System (PCS) converts the output voltage from the ACTG, and lithium-Ion energy storage system (ESS), to AC voltage for the ACTM. In addition to this, the HEV provides the ability to stop the vehicle by using regenerative energy. This is the transfer of kinetic energy of the moving vehicle into energy which is stored in the ESS for later use.

Refer to your BAE™ service manual for further information on the HybriDrive® system.

Propulsion Control System (PCS)

The Hybrid Propulsion System has an electronic protection system that is activated whenever a fault is detected. The Propulsion Control System (PCS) automatically protects the propulsion system from various fault conditions such as component over temperature, over-voltage, under-voltage, over-charging, under-charging and over speed.

Alternating Current Traction Generator (ACTG)

The ACTG converts the mechanical energy of the engine into electrical energy for the propulsion system. The Generator is coupled directly to the engine flywheel. The generator operates between 800 and 2000 rpm. The maximum transient power attainable from the generator is over 170 kilowatts.

The output energy from the Generator is modified in the PCS and is connected in parallel with the Energy Storage System. In this way, both the ESS and Generator can provide energy to the Traction Motor.

Alternating Current Traction Motor (ACTM)

The ACTM converts the electrical energy from the Alternating Current Traction Generator (ACTG) and the Energy Storage System (ESS) into mechanical energy to drive the vehicle wheels.

The motor drives the differential, which in turn drives the wheels and propels the vehicle for acceleration. During deceleration, the reverse torque from the wheels is directed back through the motor. This allows the Traction Motor to act as a generator and return energy that is normally dissipated as heat in the braking system into the battery system for use. This condition is known as REGENERATIVE BRAKING and is similar to the transmission retarder feature of a conventional vehicle.

Motor Speed Warning Indicator

WARNING

If the speed is not reduced by using the vehicle brakes when the Motor Speed indicator comes on, damage to the hybrid propulsion system may result.

This red audible indicator warning light illuminates if the vehicle's speed exceeds 103% of the rated speed.

When this condition occurs, the operator should apply the brakes in order to reduce vehicle speed (ACTM rotor speed).

If the vehicle speed continues to increase, the PCS will automatically reduce the torque applied to the rear wheels to zero in order to slow down the vehicle.

The indicator light will remain illuminated and an audible alarm will continue to sound until the ACTM rotor speed drops below 100% rated speed.

If the ACTM rotor speed (vehicle speed) continues to increase to 110% rated speed, the PCS will shutdown the Traction Motor.

Electric Alternator System (EAS)

New with the EPA10 vehicle, the EAS is located inside the rear upper compartment door to the right of the PCS. The EAS was introduced to replace the functions of the standard engine alternator. For additional information on the EAS, consult your Orion Service manual.

Propulsion Control System (Emergency) Override Switch

CAUTION !

Operation of the vehicle in the Emergency Override state may cause failures or damage to the components of the propulsion system and subsequently void warranty coverage.

NOTE

Activation of the PCS override switch does not ensure that the vehicle will be able to move after a fault is detected.

When a STOP HEV fault condition occurs, activation of the Propulsion Control System Override switch, which is located on the right hand side of the front instrument panel, will override the HEV protective limits and allow the operator short term operation in order to move the vehicle to a safe location.

If a shutdown occurs, and it is still necessary to move the vehicle to a safe location, the Master Switch must be placed in the ENGINE STOP position and then returned to the DAY RUN position.

Throttle and Brake Pedals

The HEV propulsion system interfaces with an electronic throttle pedal. When the gear range selector is in Drive or Reverse and the throttle pedal is depressed, the pressure switch is activated and sends a signal to the PCS which determines how much power is to be delivered to the rear axle via the ACTM and at what speed the engine will run.

When a brake pedal is depressed, the pressure switch sends a signal to the PCS, which in turn determines how much regenerative power is to be extracted from the rear brakes via the ACTM.

Gear Range Selector Position

NOTE

A firm brake pedal application is required in order to engage the forward or rear gear ranges from the NEUTRAL position.

NOTE

A "creep forward" mode is present in all EPA10 hybrid vehicles; as a result, the vehicle will creep forward when the gear range selector is in the D (drive) position and the brake pedal is released.

The HEV propulsion system does not require a transmission resulting in a smooth vehicle acceleration.

The gear selector drive modes are Drive (D), Neutral (N), and Reverse (R).

Prior to gear selection (Drive or Reverse), the operator must first select Neutral. Failure to do so will cause the PCS to detect a failure in the Hybrid Propulsion system resulting in the STOP HEV light to illuminate and preventing the vehicle from moving.

Stop HEV Indicator

This red indicator illuminates when a severe fault is detected within the hybrid propulsion system. When this condition occurs, the vehicle should be removed from service immediately.

Some possible causes:

1. Neither Drive, Neutral nor Reverse gear has been selected.
2. Both Drive and Reverse gears have been selected.
3. The front instrument panel gear selector switch has failed.
4. The wiring connecting the gear selector switch to the PCS has failed or shorted.
5. The PCS has failed.
6. Throttle pedal output voltage is lower than the minimum allowed value when the pedal is not depressed.
7. Throttle pedal output voltage is higher than the maximum allowable value when pedal is fully depressed.
8. Throttle pedal output voltage and the Throttle Pedal Idle validation switch position do not correlate.
9. When the ACTM begins to overheat.

DRIVER'S PRE-SERVICE INSPECTION

In order to maintain safe operation, perform the following inspections daily.

Make any necessary repairs or adjustments before the vehicle is put into service.

Report any problems to service/maintenance personnel.

Driver Walk Around Test

1. With Master Switch in any position, set the Park Brake *(not in sleep mode)*.
2. Press both foot turn signal switches at the same time.
3. For 2 minutes the Clearance, Backup, License/Tail and Interior Kneeling/Ramp will remain ON.
4. For 2 minutes the Stop, Signal and Kneeling lights will flash and the Backup and Kneeling/Ramp beepers will sound.
5. Headlights will be ON and must be changed with the foot dimmer switch to test both HI and LOW beams.

Exterior Inspection

1. Clean all windows, mirrors, and lights.
2. Check and inspect tires for correct air pressure, wear, and damage.
3. Inspect the vehicle body for loose or damaged panels.
4. Inspect all vehicle hoses, air lines etc., for leaks.
5. Ensure all service access doors are properly secured.
6. Check all exterior lights for proper operation.

Interior Inspection

1. Rotate Master Switch to the RUN position.
2. Start the engine. Look and listen for abnormal operation. Report findings to maintenance personnel.
3. Check all gauges are functioning.
4. Adjust driver's seat and steering column to suit individual needs.
5. Check and adjust mirrors.
6. With the parking brake applied, check that passenger entrance and exits doors, egress windows, and roof hatches are closed and properly secured.
7. Inspect interior for debris.
8. Check interior and stepwell lights.

9. Check all interior doors. Ensure they are secure, and emergency equipment is in place.
10. Adjust interior mirror to maximize view of passengers.
11. Check operation of front heater/defroster unit, passenger heaters, and air conditioning unit.
12. Ensure correct operation of the horn, windshield wipers, and washer.
13. Activate hazard warning lights to verify proper operation.
14. Check the destination sign, P.A. system, and voice annunciator for proper operation and initialization.

LIGHTING AND ELECTRICAL

Lighting Operation

All interior and exterior lighting circuits are activated by placing the Master Switch in the DAY RUN position.

When the Master Switch is placed in the ENGINE STOP position, all lighting circuits are de-energized except for the radio, fire suppression, hazard lights and operator's light.

The interior lighting switches, located on driver's side panel, control the interior lights and operate in conjunction with various Master Switch positions.

NOTE

All interior lights turn OFF when the transmission gear selector is placed in the Reverse position.

Interior Lighting

The programmable LED lighting units, mounted along each side of the vehicle, illuminate the vehicle interior.

The interior lighting operation, in relation to Master Switch and the different lights switch positions, is explained:

Front Driver's Light Switch

The driver's light switch works independantly of the Master Switch. When the driver's light switch is placed in the ON position, the light directly above the driver will illuminate.

A dimmer switch, located above the Driver's Light switch, allows the operator to adjust the driver light intensity.

Interior Light Switch - Master Switch in DAY RUN Position

When the Master Switch is placed in the DAY RUN position and the Interior Light switch is placed in the ON position, all interior lights will illuminate.

When the Interior Light switch is placed in the NORM position, all interior lights will remain off.

Interior Light Switch - Master Switch in NIGHT RUN position.

When the Master Switch is placed in the NIGHT RUN position and the Interior Light switch is placed in the

NORM position, all interior lights, with the exception of the front first row curbside and roadside lights, will illuminate.

NOTE

The front first row curbside and roadside lights will illuminate when the front door is opened and extinguish when the doors are closed.

When the Interior Light switch is placed in the ON position, all interior lights will illuminate.

Entrance and Exit Door Area Flood lights

The entrance and exit door flood lights, located on the door headers inside the vehicle and alongside the doors on the exterior of the vehicle will illuminate when the doors are authorized.

NOTE

The lights will extinguish 5 seconds after the doors are closed.

Exterior Lighting

Headlamps

Turning the Master Switch to the NIGHT RUN position activates the headlamps.

The heel operated foot dimmer switch, located on the floor to the left of the operator, activates the high beams. The high beam indicator illuminates on the indicator panel located on the driver's front instrument panel, when high beam headlamps are activated.

Compartment Lights

There are two lights located inside the radio compartment and are controlled by two (ON, OFF) toggle switches. Another light is located in the rear electrical compartment and is controlled by a (ON, OFF) push button switch.

Back-Up Lights

Back-up lights are located below the stop lights, on the rear of the vehicle, and illuminate when the transmission is shifted to Reverse while the Master Switch is in the DAY RUN or NIGHT RUN positions.

NOTE

The vehicle back up alarm sounds when the transmission is shifted to the (R) reverse position.

Stoplights

Four stoplights, two on each side on the rear of the vehicle, illuminate when the brakes are applied.

A third stop light is included, located below the upper centre line above the rear engine door.

Hazard Warning Lights

A switch, located on the lower right side of the driver's front instrument panel, activates the hazard warning lights.

Engine Compartment Lights

These lights are controlled by a toggle switch located on the engine panel box in the rear engine compartment.

Batteries

WARNING

Do not contact the positive battery pole with the vehicle body, either directly or through any metal conductors. Such contact can produce a short circuit resulting in possible injury. Keep fire or electrical sparks away from batteries as they emit highly combustible hydrogen gas. Wear eye protection while working with batteries. If battery fluid comes in contact with eyes, immediately flush eyes thoroughly with water.

Four 12-volt, heavy duty batteries are installed on a battery tray located on the curbside, behind the rear axle.

A booster jumper cable connector is located in the rear engine compartment directly below the engine panel and a second jumper cable is located in the curbside engine compartment.

Disconnection of Electrical System

This vehicle is equipped with a 24 volt electrical system located on the battery tray and is accessible through the manual shut-off door.

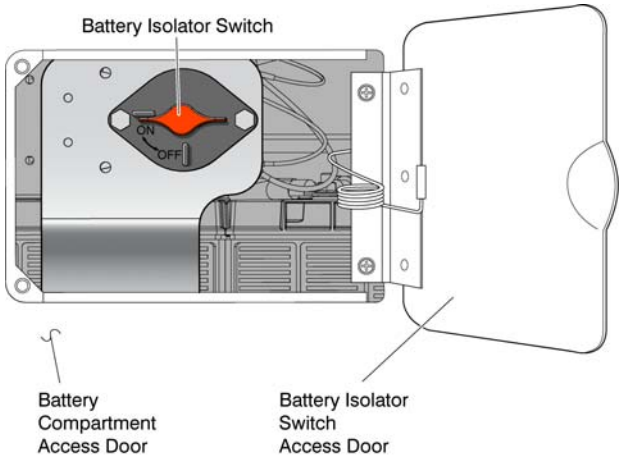
NOTE

Placing the battery isolator switch in the OFF position while engine is running will shutdown the engine and all safety systems with the exception of the fire suppression system which is directly wired to the batteries.

This switch, while in the OFF position, disconnects power to all electrical circuits preventing possible personal injury and/or damage to the vehicle.

If service is to be performed on the engine or electrical system:

- Place the battery isolator switch to the OFF position.



HEATING, AIR CONDITIONING, AND VENTILATION

In addition to controlling the engine operating temperature, the engine coolant is circulated throughout the vehicle to heat exchangers. A forced air system directs the heated air through various outlets for operator and passenger comfort.

Front Heat/Defrost Blower Switch

A three position rotary control knob, located on the front instrument panel, controls a three-speed blower motor for the front heater/defroster/ventilation unit.

In order for the unit to operate, place the Master Switch in either the DAY RUN or NIGHT RUN position, with the engine running.

The front heater/defroster/ ventilation unit has three individual outlets. The first outlet allows air to be deflected against the windshield and operator's side window for defrosting.

The other two outlets allow air to be directed to the operator's compartment. The unit draws 100% filtered, fresh air into the vehicle on a continuous bases.

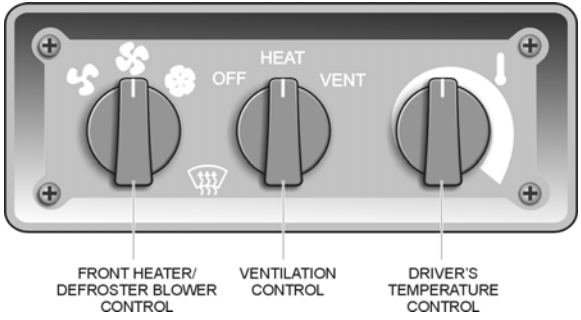
There are three rotary controls located on the left side of the driver's instrument panel to control air flow/ventilation or heat to the operator's compartment.

Ventilation Control

This three position (OFF, HEAT, VENTILATION) rotary control knob allows the operator to select either heat (red icon) or air flow ventilation (blue icon) mode.

Driver's Temperature Control

This rotary control knob governs the flow of hot engine coolant to the front heater/defroster core. Turning the control clockwise increases the air temperature.



Climate Control System

A combination heating/air conditioning/ventilation system is used to provide passenger comfort by automatically cooling, heating, ventilating, dehumidifying, and filtering air.

In order for the climate control system to operate, the vehicle alternator must be charging and engine operating.

This air is force-circulated throughout the vehicle, using fixed overhead diffuser outlets in the passenger area. One adjustable outlet is also located in the operator's area, above the side window.

For the system to operate effectively, all windows, driver's vents, and hatches must be closed.

Climate Control System Switch

This two position (ON, OFF) rocker switch, located on the side control panel, allows the operator to activate the air conditioning/heating throughout the vehicle. The system switch also controls the blowers and floor heater.

NOTE

The EAS must be charging in order for the System Switch to activate the climate control system.

Driver's Booster Blower Switch

This three position (HIGH, OFF, LOW) rocker switch, located on the

side control panel, allows the operator to activate the overhead blower unit in the operator's compartment for increased circulation.

venting of 20% outside air is required.

Fresh Air Ventilation

The following methods can be used to introduce fresh air into the vehicle:

Windows

The driver's and passenger windows can be opened for ventilation.

Roof Hatch

To extract or exhaust air, the front and rear roof hatch can be positioned to gain desired effect.

Front Defroster Unit

To draw fresh filtered air into the vehicle:

1. Turn the TEMP control knob OFF.
2. Place the front defroster control knob, located to the left of the ventilation control knob on the front instrument panel, in the HIGH or LOW position.
3. Open diffusers.

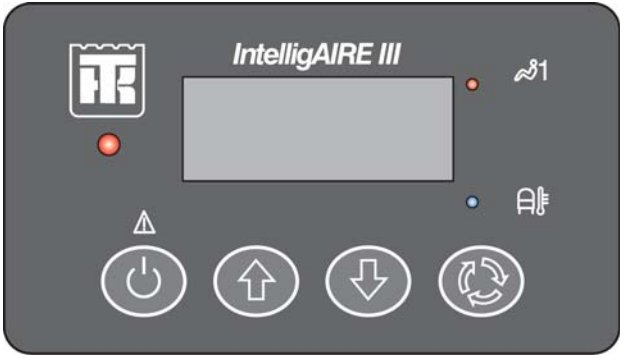
Driver's Vents

Five vents, one located above the driver's windshield and the other four on either side and below the instrument panel, allow direct outside air to enter the driver's area.

Driver's Fan

There are two dash mounted fans, which are controlled by two (left and right) rocker switches, located on the driver's side control panel.

IntelligAIRE™ Climate Control System



A combination heating/air conditioning ventilation system used to provide passenger comfort by automatically drawing air through the return air grille, which in turn passes through a filter, evaporator coils and heater coil where it is dehumidified and cooled or heated as per mode of system operation. This air is then circulated throughout the vehicle using fixed overhead diffuser outlets in the passenger area. Adjustable outlets are also located in the operator's area, above the side window, and through the outlet located in the front face of the heater defroster unit.

For the system to operate effectively, all windows, driver's vents and hatches must be kept closed as well as:

- The master switch in the Day Run or Night Run position.
- The engine running.
- The side control panel climate control system switch activated.

Display Panel

The display panel consists of four touch keys, three digit display and a number of display indicators. The panel provides temperature readouts and setpoint adjustments only - the system and blower switches are required for mode selection.

Power key

This touch button turns on the IntelligAIRE™ display panel.

Up key

This touch button is used to manually raise the setpoint temperature in increments of 1°. The maximum setpoint limit is pre-set.

Down key

This touch button is used to lower the setpoint temperature in increments of 1°. The maximum setpoint is pre-set.

Select key

This touch button is used to select the data to be displayed: INSIDE TEMP, OUTSIDE TEMP, or SETPOINT TEMP. When the unit is first turned ON, the display will default to INSIDE TEMP.

Alarm Indicator

When illuminated, this amber warning indicator notifies the operator that a fault has been detected in the heating/air conditioning/ventilation system.

Outside Temperature Indicator

When illuminated, the outside temperature will be displayed on the screen. A red light to the left of this indicator notifies the operator that the heating system is ON.

Inside Temperature Indicator

When illuminated, the inside temperature will be displayed on the screen. A blue light to the left of this indicator notifies the operator that the air conditioning unit is ON.

PASSENGER ENTRANCE AND EXIT DOORS

All vehicle operators must be familiar with the purpose and functions of the various door controls and related systems, in order to safely and successfully operate the vehicle.

The rear and front door controller push buttons allows the operator to activate the front and/or rear doors. Press once to open and press again to close the doors. The front and rear doors are controlled by the operator.

Accelerator Interlock

The accelerator pedal is isolated from the throttle control, preventing the operator from increasing engine rpm when doors are open.

Door System Operation

To board and unload passengers:

Front Door

1. Bring the vehicle to a complete STOP, as close to the curb as possible.
2. Press the door control F (Front) button.

NOTE

If kneeling and/or wheelchair ramp features are required, set the parking brake. See Kneeling System on page 61 and/or Wheelchair Ramp System on page 63 for detailed operation.

3. After passengers have entered or exited the vehicle, press the door control FRONT button again.
4. Check the curbside mirror to ensure passengers are a safe distance from the vehicle before proceeding.

Rear Door

1. Bring the vehicle to a complete STOP as close to the curb as possible.
2. Press the door control R (Rear) button. The passenger can now activate the door touchbars to open the door.

NOTE

The BRAKE ON indicator and REAR DOOR Indicator light will illuminate on the operator's front instrument panel when the rear doors are activated by the operator.

3. After passengers have exited or entered the vehicle, press the door control R (Rear) button again.
4. Check the curbside mirror to ensure passengers are a safe distance from the vehicle before proceeding.

NOTE

Apply brakes to authorize and disengage rear doors and rear interlocks

Pull Cord Stop Request

A passenger's signal to the operator for a request stop, is accomplished by pulling down on a cord. The cord is mounted along the length of the vehicle.

A chime will only operate once, until the front or rear door control button is pressed again, and only then will the system reset itself.

A sign located on the center line of the front bridge compartment, which faces the passengers, also illuminates when a passenger requests a next stop.

NOTE

There is one push button stop request device, located at the rear door forward vertical stanchion.

Speed Sensing Interlock

Front and rear doors will not open if the vehicle is moving in excess of 2 m.p.h.

Malfunction in Opening and Closing Front Door

In the event of an entrance door malfunction, or during an emergency, the front door(s) can be manually opened for emergency exit.

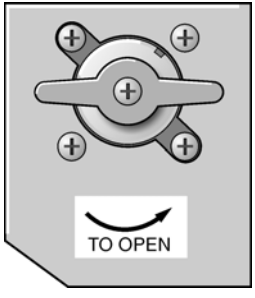
This is accomplished by opening an exhaust valve located in the operator's area by the operator's left knee.

CAUTION !

Place the door control button to the front door open position before closing the exhaust valve. This will prevent the front doors from slamming shut.

Emergency Procedure:

1. Turn the door emergency release valve handle in the direction of the arrow.
2. Ensure air has exhausted from the door air system before attempting to open doors.
3. Using both hands, push outward on the center line of the door(s), until they are in the fully open position.



4. The front door can also be manually opened by breaking the frangible panel, located on the right side of the front door, and turning the valve handle counter-clockwise.

Door Master Switch

This two position (NORM, DISABLE) guarded toggle switch, located inside the front destination sign compartment, deactivates the brake interlocks. The accelerator and brake interlocks will be released when the toggle switch is placed in the DISABLE position. This switch may also be used to override a door malfunction that is activating the interlock system and preventing the service brakes from releasing.

NOTE

The Door Master switch should be used only in an emergency.

Malfunction in Opening and Closing Rear Doors

Emergency Procedure

In the event of a rear door malfunction, or during an emergency, the rear doors can be manually opened.

Break the frangible panel, located on the right side of the rear doors, and pull the handle down. Doors

can now be opened by pushing outward on door panels.

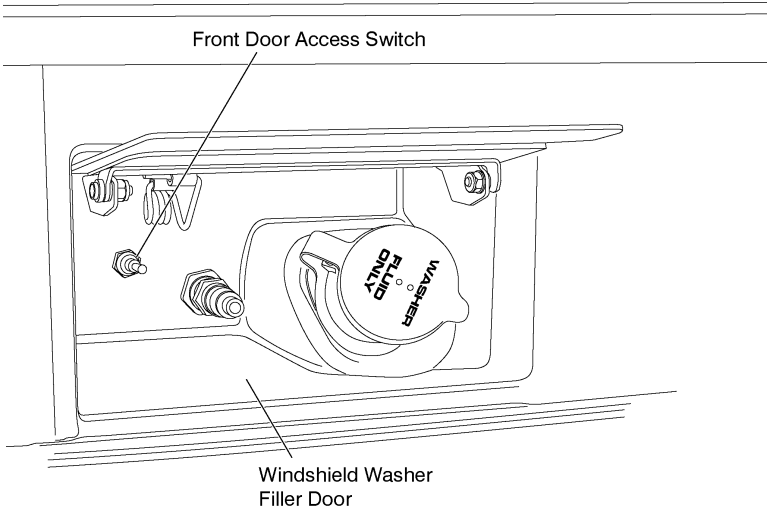
If pulled by mischief, the operator can reset by authorizing the rear door.

External Front Door Access Switch

The front doors can be opened by the operator from outside the vehicle by activating a toggle switch, located in the windshield washer filler door compartment.

NOTE

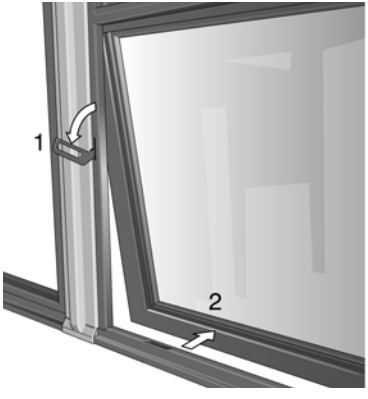
The Master switch must be placed in the ENGINE STOP position in order to activate the front door access switch



EMERGENCY ESCAPE EXITS

In extreme emergencies, where the doors cannot be used, the following escape exits are provided:

Push Out Egress Windows



Windows designated as emergency exit passenger windows are hinged at the top and can be pushed out at the bottom for emergency egress.

Become familiar with the location of all egress windows and any other emergency exits before putting the vehicle into service.

To push out the windows:

1. Pull the red handle down.
2. Push the bottom of the window out.

Rear Roof Hatch

To operate the rear roof hatch:

1. Turn the red knob to the exit position.
2. Push up on the red knob to swing the hatch fully open for use as an emergency exit door.

KNEELING SYSTEM

The kneeling system is designed to lower the front of the vehicle approximately 3.5 inches, by exhausting air from the front axle suspension air bags.

Kneeling is controlled by a switch, located on the front instrument panel.

A warning alarm alerts boarding passengers that the vehicle is kneeling or rising.

Brake and accelerator interlocks are energized during the kneeling position.

Kneeling System Operating Procedure

Lowering the vehicle

1. Bring the vehicle to a complete stop. Push the front door control button to open the front doors.

NOTE

The kneeling system will only operate when the doors are open.

NOTE

Releasing the kneeling switch at any time during the lowering of the vehicle will stop the kneeling operation and retain the vehicle height in that position. Release the kneeling switch while kneeling the vehicle. This will also cause the kneeling alarm to stop sounding.

NOTE

A kneeling LED indicator on the front instrument panel will illuminate whenever the kneeling function is activated.

2. Set the Parking Brake.
3. Press and hold down on the Kneeling System switch to lower the front of the vehicle approximately 3 1/2 inches.

NOTE

Pressing and holding the kneeling switch in the DOWN position will cause the red front dash kneeling indicator light to illuminate and an audible alarm to sound; the exterior kneeling/ramp light will also flash.

Raising the vehicle

CAUTION !

Boarding passengers must stand clear and wait until the vehicle has been completely lowered before entering the vehicle. Allow passengers to board safely before placing the Kneeling Switch in the UP mode.

1. Press and release the kneeling switch in the UP position. The electrical system is programmed to raise the vehicle in 4 seconds.

NOTE

The kneeling alarm will sound for the duration of the UP cycle.

2. Press the front door control button again to the close the front door. The vehicle is now ready for operation.

NOTE

A firm brake application is required in order for the accelerator and brake interlock to be released, and for the vehicle to resume service.

WHEELCHAIR RAMP SYSTEM

An electro-hydraulically operated wheelchair ramp is located in the front door step area. The ramp platform pivots around a hydraulic actuator mounted directly to the ramp at the aft pivot point.

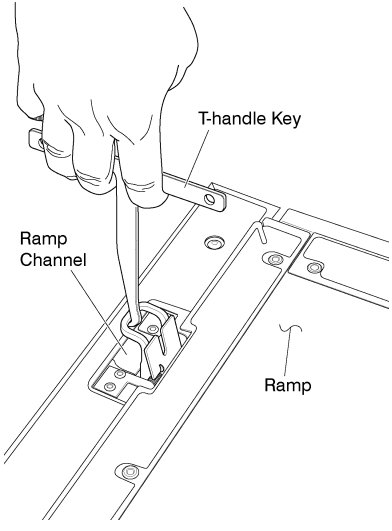
CAUTION !

The vehicle ramp system is designed as a passenger access feature and not as a load lifting device. Do not attempt to lift any object with the ramp. Doing so can result in damage the ramp.

The ramp control switch is located on the front instrument panel beside the kneeling system switch.

Ramp Malfunction

If a ramp malfunction occurs, the ramp can be operated manually by using a T-handle key, located in the driver's barrier compartment. Insert the hook on the T-handle key into ramp channel and lift ramp upward. Grab hold of the handle strap on the ramp and slowly lower the ramp into position. To stow the ramp, use the grab handle and lift the ramp back into the stow position.



Operation

WARNING

Ensure boarding passengers stand clear and wait until the ramp has been completely deployed before entering the vehicle. Allow passengers to board safely before placing the ramp control switch in the STOW mode. Failure to do so may result in personal injury.

1. To open the front door, place the drive mode shifter selector in NEUTRAL, apply the parking brake, and kneel the vehicle.

CAUTION !

Ensure the ramp deploy area is level. Damage can result if weight is exerted unevenly on the ramp platform.

2. To deploy the ramp, press the upper part of the control switch until the ramp has been completely deployed.

NOTE

A warning beeper, and interior and exterior flashing lights activate when the ramp is energized.

3. To stow the ramp, press the lower part of the ramp switch until the ramp has stowed and returned to its original position in the vehicle.
4. Raise the vehicle to its normal ride height, close the front door, and release the parking brake.

   The vehicle is now ready for normal operation.

WHEELCHAIR RESTRAINT SYSTEM

Mobility Device Securement Instructions

WARNING

Incorrect use of the securement devices can result in serious personal injury or death. Please read additional warnings located at the bottom of the wheelchair flip-up seats.

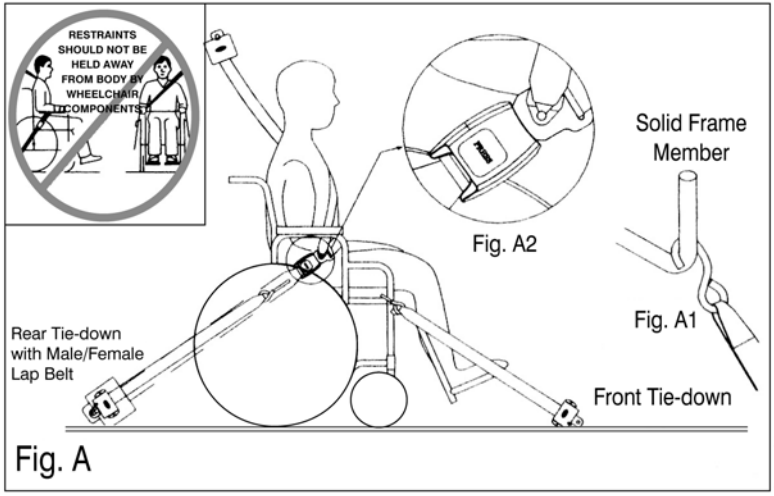
The securement system consists of a series of restraint belts which anchor the mobility device, and a lap/shoulder belt assembly for the occupant.

Follow the instructions to safely secure passengers with mobility aid devices.

These instructions are also affixed to the bottom of the flip-up seats at each wheelchair position.

Step 1: Secure Wheelchair

1. Center the wheelchair (facing forward) in the vehicle's securement position; between the (2) front tie-downs and two (2) rear tie-downs.
2. Secure two (2) front tie-downs: Pull hooks and attach to a solid frame member of the wheelchair (Fig. A1).



Side View of standard Wheelchair Securement

(Press red lever or pull cable release if retractors function manually).

3. Secure two (2) rear tie-downs: Pull hooks and attach to a solid frame member of the wheelchair (Fig A1). (Press red lever or pull cable release if retractors function manually).
4. Once all tie-downs are attached, gently move the wheelchair back and forth to ensure they are locked.
5. Apply the wheel lock mechanism of the wheelchair.

Step 2: Restraint Occupant

1. Extend both ends of the lap belt (male & female) towards the occupant's hip (aisle - side) and fasten together (Fig. A2).
2. Pull shoulder belt tongue diagonally across the upper torso of the occupant's hip (aisle - side) and fasten together (Fig. A2).

Step 3: Release Wheelchair and Occupant

1. Carefully remove occupant's lap and shoulder belt.
2. Release rear tie-downs: Press the red lever (or pull cable release if available) and remove the hooks from the wheelchair.
3. Check belt locks by pulling firmly on each end after the passenger is secured. If any locks are faulty, move passenger to another securement location within the vehicle. Report defect to vehicle operator.
4. To exit, remove the lap shoulder assembly, release the front belts and store. Release any braking mechanisms on the mobility aid, push the mobility aid forward and release the rear securement belts. All belts must be returned to their stored position once released.

ENGINE COOLING SYSTEM

Under normal driving conditions, the coolant temperature gauge should read between 170°-195°F (76°-90.6°C), and the temperature should not exceed 205°F (96°C).

When the engine coolant temperature reaches 212°F (100°C), the alarm and indicator lights are activated. If engine coolant temperature continues rising to 220°F (104.4°C), engine shutdown occurs.

Engine cooling is accomplished through the use of a belt-driven 3 speed electro-magnetic fan clutch.

The clutch engages after the engine fan controller monitors both water and oil temperatures. When both electro-magnetic couplings are de-energized, the fan operates at between 200 to 300 rpm.

When coupling 1 engages, the fan operates at 800 rpm. Coupling 2 operates at 2200 rpm.

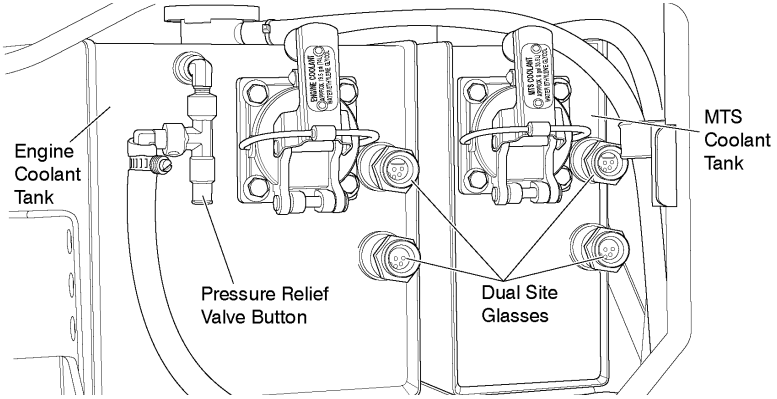
The engine coolant tank is located above the radiator compartment on the roadside of the vehicle.

As an additional safety precaution, two sight glass are installed on the tank for convenience.

Checking and Replenishing Engine Coolant

CAUTION !

Hot coolant under pressure. Extremely hot steam and coolant can cause severe burns and eye damage. Exercise extreme care when opening filler cap.



Check and replenish engine coolant through an access door located at the rear, above the radiator compartment door, on the roadside of the vehicle.

1. Before opening the filler cap, release the pressure by pushing up on the pressure release valve button. Hold button until all pressure is released.
2. With a clean rag over the surge tank handle, slowly pull handle.
3. When all pressure has dissipated, release the safety tab and pull back the surge tank handle completely.
4. Add coolant until the correct level is shown on the sight gauge of the surge tank.

High Coolant Temperature

Engine shutdown will occur if coolant exceeds normal operating temperature.

Wait until boiling has stopped and the engine is cool, before adding coolant.

Low Engine Coolant Level

The vehicle is equipped with a warning system designed to indicate a low coolant level in the cooling system.

CAUTION !

If the cooling system is frozen, do not operate the engine. Notify maintenance personnel if water was added to system while on a run during freezing weather. A frozen cooling system can cause equipment damage.

A loss of coolant or if the coolant level falls below the probe assembly in the surge tank, the CHECK ENGINE indicator will illuminate, and an audible alarm will sound. After 30 seconds the STOP ENGINE indicator will illuminate and the engine will then automatically begin shutdown sequence. The operator should move the vehicle to a safe location and shutdown the vehicle.

NOTE

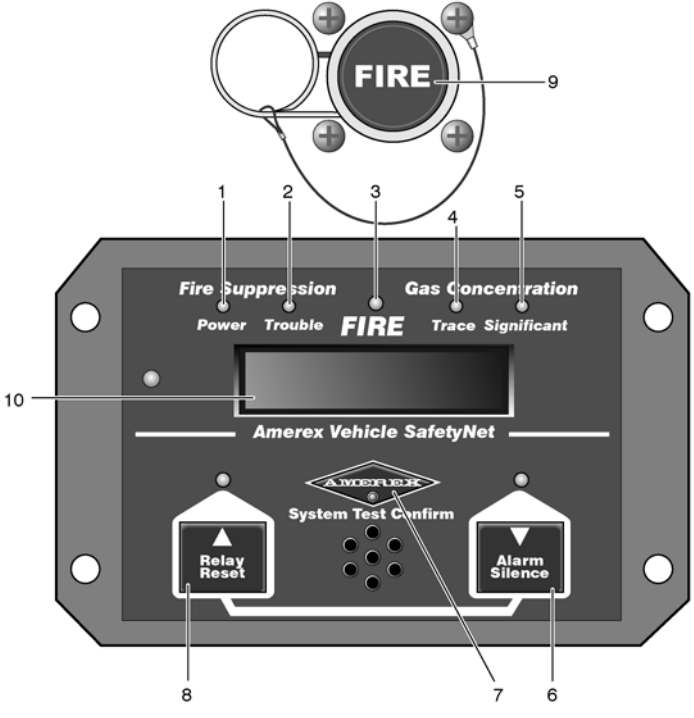
Refer to the Engine Manual for recommended anti-freeze and additives.

Modular Traction System (MTS) Coolant

A loss of coolant or if the coolant level falls below the probe assembly in the MTS coolant tank, a red HYBRID COOLANT LOW indicator light, located on the front instrument panel, will illuminate and an audible alarm will sound. The operator should notify maintenance immediately.

If the HEV dash indicator light illuminates along with the HYBRID COOLANT LOW dash indicator light, remove the vehicle from the road to a safe location and shutdown the engine.

AMEREX™ FIRE SUPPRESSION SYSTEM



LEGEND

1. Power Indicator
2. Trouble Indicator
3. Fire Indicator
4. Trace Gas Level Indicator
5. Significant Gas Level Indicator
6. Alarm Silence Indicator
7. System Test Button
8. Relay Reset Indicator
9. Manual Activator
10. Fluorescent Display Panel

NOTE

The methane detection system is not applicable to this vehicle.

1. Power Indicator
Indicates that the Fire suppression system is ON and all electrical circuits are working properly.

2. **Trouble Indicator**
   This indicator light notifies the operator that there is a fault in the fire suppression system. Notify service personnel immediately.
3. **Fire Indicator**
   This indicator illuminates when the fire suppression system has been discharged. When this conditions occurs, the operator should halt the vehicle immediately and evacuate the bus.
4. **Trace Gas Level Indicators (not applicable)**
   These indicators illuminate when small concentration of gas has been detected. A light will illuminate in the zone in which the gas concentration has been identified. Have maintenance personnel service vehicle as soon as possible.
5. **Significant Gas Level Indicators (non applicable)**
   These indicators illuminate when a dangerous gas concentration has been detected. A light will illuminate in the zone in which the gas concentration has been identified. Suspend all vehicle operations immediately and evacuate the bus. **See "Fire Suppression System" on page 71.**
6. **Alarm Silence Indicator**
   Push to silence audible alarm.
7. **System Test Button**
   Tests LED's and all electrical circuits.
8. **Relay Reset Button**
   Pushing this button resets the relay after gas or fire alarm has been cleared.

NOTE

Only when the gas has cleared and the alarms are OFF can you press the Relay Reset button to reset the internal relay.

9. **Manual Activator**
   Pushing this button allows the operator to manually discharge the dry chemical.
10. **Fluorescent Display Panel**

Fire Suppression System

A total of six temperature detection sensors are installed in the vehicle; four in the engine compartment, one in the battery compartment and one in the after treatment compartment. The temperature sensors are

activated when a heat source of over 280°F (138°C) is detected. The sensors activate an audible alarm and a front dash mounted red FIRE indicator light illuminates alerting the operator of a problem. The fire suppression system automatically shuts down the engine and dry chemical extinguishing agent is propelled throughout the engine compartment.

WARNING

A fire may be present in the engine compartment. Do not delay activation of the fire suppression system longer than necessary to move the vehicle to a safe location. Failure to do so can cause serious damage to the vehicle and jeopardize passenger safety.

A 30 second countdown delay occurs, prior to engine shutdown, when the fire suppression system is activated. The engine SHUTDOWN or RELAY RESET button may be pushed at any time before the countdown timer reaches zero (which resets the timer to 30 seconds). Upon releasing the delay button, the countdown resumes. The RELAY ENGAGED indicator illuminates prior to the timer reaching zero. This notifies the operator that shutdown is about to occur, allowing the operator to move the vehicle to a safe location. When the timer reaches zero, the engine will begin the shutdown sequence again and the RELAY ENGAGED light will remain illuminated.

An internal diagnostic test button is also present, but should be utilized by maintenance personnel only.

CAUTION !

Do not restart the engine unless absolutely necessary as engine damage may occur.

The vehicle may be moved after the fire suppression system automatically shuts down the engine and the extinguishing agent has been released. Use the normal restart procedures to restart engine.

Automatic Operation

If the audible alarm and dash-mounted indicator light activate, the operator should:

1. Stop the vehicle in a safe location.
2. Shut off engine.
3. Immediately evacuate the vehicle.
4. Report problem to dispatch.
5. Take the appropriate action as recommended by the transit authority.

Manual Operation

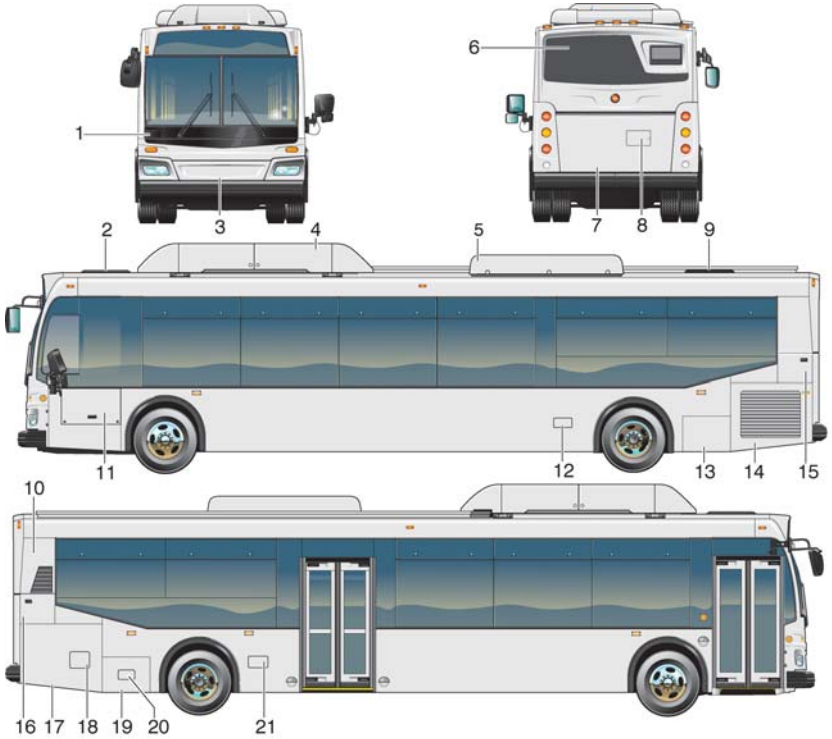
In the event an engine compartment fire does not activate the automatic

fire suppression controls, a manual override system can be utilized.

In this situation, the operator should proceed to take the following steps:

1. Stop the vehicle in a safe location.
2. Shut off engine.
3. Pull the ring pin on the manual actuator, located on the front instrument panel. This will activate the fire suppression system, propelling dry chemical extinguishing agent throughout the engine compartment.
4. Immediately evacuate the vehicle.
5. Report problem to dispatch.
6. Take the appropriate action recommended by the transit authority.

EXTERIOR COMPARTMENT AND SERVICE ACCESS DOORS



LEGEND

1. Windshield Washer Filler Door
2. Front Roof Hatch
3. Front Heater/Defroster Access Door
4. Lithium-ion Energy Storage System Enclosure (ESS)
5. Thermo King Air Conditioning Unit
6. Rear Upper Compartment Access Door
7. Rear Engine Compartment Access Door
8. Engine Oil Filler Access Door
9. Rear Roof Hatch
10. EAS Access Door
11. Air Rail Access Door
12. Fuel Level Sensor Access Door
13. Air Dryer Access Door
14. Radiator Compartment Door
15. Surge & MTS Tank Filler Door
16. Air Cleaner Access Door
17. Webasto Heater Access Door

LEGEND

18. DEF Filler Access Door
19. Battery Compartment Door
20. Battery Shut-Off Access Door
21. Fuel Filler Door

The following is a list of the vehicle exterior compartment and service access doors

CAUTION !

Do not slam compartment doors or service access doors. Slamming doors can cause damage to hinges, locks, and door structure.

1. **Windshield Washer Filler Door**
   Access to the windshield washer filler cap, shop air and front access door toggle switch are accessible through this door.
2. **Front Roof Hatch**
3. **Front Heater/Defroster Access Door**
4. **Lithium-Ion Energy Storage System (ESS) Enclosure**

WARNING

High Voltage: Only qualified maintenance personnel should access these compartments.

5. **Thermo King Air Conditioning Unit**
6. **Rear Upper Compartment Access Door**

WARNING

High Voltage: Only qualified maintenance personnel should access these compartments.

After treatment/exhaust system, PCS, EAS and two fire suppression bottles (25 and 15 lbs) are accessible through this door.

7. **Rear Engine Compartment Access Door**
   Complete access to engine, belts, A/C compressor, jumper cable and other components are available through this door.
8. **Engine Oil Filler Access Door**
9. **Rear Roof Hatch**
10. **Surge and MTS Tank Filler Door**
    HEV maintenace test button and (Diesel Particulate Filter) DPF service test buttons are also accessible through this door.

11. **Air Rail Access Door**
12. **Fuel Level Sensor Access Door**
13. **Air Dryer Access Door**
14. **Radiator Compartment Door**
15. **Surge and MTS Filler Access Door**
16. **Air Cleaner Access Door**
17. **Webasto Heater Compartment Door**
    Webasto heater fuel filter, air conditioning compressor, power steering pump reservoir and diesel exhaust fuel tank are also accessible through this door.
18. **Diesel Emission Fluid (DEF) Filler Access Door**
19. **Battery Compartment Door**
20. **Battery Shut-Off Access Door**
    Quick access to battery shut-off switch.
21. **Fuel Filler Door**

GENERAL DATA AND TECHNICAL INFORMATION

Body, Axle, and Propulsion System Data

Length (over bumpers)	40’ - 5” (12.319 m)
Height	132” (3.35 m)
Width (Including mirrors)	102” (2.59 m)
Turning Radius (Over bumper)	43’ 2” (13.1 m)
Wheelbase	286” (726.4 cm)
Front Axle	Meritor™ FH-946
Rear Axle	Meritor™ 71163
Tire Size (Bridgestone)*	305/70R22.5 Rating: H Model: R192FZ
Wheel Size (FIRESTONE™)	White steel 8.25 X 22.5
Engine	Cummins ISB™ EPA10 Hybrid 260 hp
HybriDrive® Alternating Current Traction Motor (ACTM)	B.A.E. Systems
HybridDrive® Alternating Current Traction Generator (ACTG)	B.A.E. 120 kW (140 kW available temporarily)
Batteries	96 Lithium Ion cells

Fluid Capacities

	US Gal	Litres
Engine Oil	7	26.5
Modular Traction System Fluid	3	11.4
Diesel Emission Fluid (DEF) Tank	11.4	43.3
Fuel Tank	125	473.2
Cooling System	22	83
Windshield Washer Fluid	6	22.7
Power Steering Fluid	1	3.8

****The bus speed must not exceed over 20 MPH when tire chains have been installed.***

Reporting Safety Defects

If you believe that your vehicle has a 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 Daimler Buses North America. 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 Daimler Buses North America.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1–800– 424–9393 (or 366–0123 in Washington, DC area) or write to: NHTSA, U.S. Department of Transportation, Washington, DC 20590. You can also obtain other information about motor vehicle safety from the Hotline.

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