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NEW FLYER

KING COUNTY DEPARTMENT OF TRANSPORTATION

OPERATOR'S GUIDE

XCELSIOR® DIESEL-ELECTRIC 40FT. TRANSIT BUS

This operator's guide is effective for only those coaches with the following Identification Numbers:

SR1760

Vehicle Identification Number	Unit Number
5FYH8FR08EC044917	7200
5FYH8FR0XEC044918	7201
5FYH8FR01EC044919	7202
5FYH8FR08EC044920	7203
5FYH8FR0XEC044921	7204
5FYH8FR01EC044922	7205
5FYH8FR03EC044923	7206
5FYH8FR05EC044924	7207
5FYH8FR07EC044925	7208
5FYH8FR09EC044926	7209
5FYH8FR00EC044927	7210

SR1760 continued

Vehicle Identification Number	Unit Number
5FYH8FR02EC044928	7211
5FYH8FR04EC044929	7212
5FYH8FR00EC044930	7213
5FYH8FR02EC044931	7214
5FYH8FR04EC044932	7215
5FYH8FR06EC044933	7216
5FYH8FR08EC044934	7217
5FYH8FR0XEC044935	7218
5FYH8FR01EC044936	7219
5FYH8FR03EC044937	7220
5FYH8FR05EC044938	7221
5FYH8FR07EC044939	7222
5FYH8FR03EC044940	7223
5FYH8FR05EC044941	7224
5FYH8FR07EC044942	7225
5FYH8FR09EC044943	7226
5FYH8FR00EC044944	7227
5FYH8FR02EC044945	7228
5FYH8FR04EC044946	7229
5FYH8FR06EC044947	7230
5FYH8FR08EC044948	7231
5FYH8FR0XEC044949	7232
5FYH8FR06EC044950	7233
5FYH8FR08EC044951	7234
5FYH8FR0XEC044952	7235
5FYH8FR01EC044953	7236
5FYH8FR03EC044954	7237
5FYH8FR05EC044955	7238
5FYH8FR07EC044956	7239
5FYH8FR09EC044957	7240
5FYH8FR00EC044958	7241
5FYH8FR02EC044959	7242
5FYH8FR09EC044960	7243
5FYH8FR00EC044961	7244
5FYH8FR02EC044962	7245

SR1760 continued

Vehicle Identification Number	Unit Number
5FYH8FR04EC044963	7246
5FYH8FR06EC044964	7247
5FYH8FR08EC044965	7248
5FYH8FR0XEC044966	7249
5FYH8FR01EC044967	7250
5FYH8FR03EC044968	7251
5FYH8FR05EC044969	7252
5FYH8FR01EC044970	7253
5FYH8FR03EC044971	7254
5FYH8FR05EC044972	7255
5FYH8FR07EC044973	7256
5FYH8FR09EC044974	7257
5FYH8FR00EC044975	7258
5FYH8FR02EC044976	7259

Revision Index

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Current Revision Indicated by:

Rev	Section/Pages Affected	Date

The information contained in this manual is updated periodically. While great care is taken in compiling the information contained in this manual, New Flyer Industries Canada ULC cannot assume liability for losses of any nature arising from any errors and/or omissions.
The information and specifications contained throughout this manual are up to date at the time of publication. New Flyer Industries Canada ULC reserves the right to change the content of this manual at anytime without notice.

Printed in Canada

☞ **NOTE:**

The National Highway Traffic Safety Administration (NHTSA) has requested that the following statement be provided for your information.

If the property believes that its vehicle has a defect which could cause a crash or could cause injury or death, inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying New Flyer Industries Canada ULC.

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 and New Flyer Industries Canada ULC.

To contact NHTSA either call the Auto Safety Hotline toll-free at 1-888-327-4236 (or 366-0123 in the Washington, DC area) or write to: NHTSA, U.S. Department of Transportation, Washington, DC 20590. Other information about motor vehicle safety can be obtained from the Hotline.

Table of Contents

1. INTRODUCTION

This manual describes the operating features and safety equipment of the New Flyer transit vehicle. All personnel involved in the operation of the vehicle should be acquainted with this manual and should familiarize themselves with the vehicle, before providing any public service. Knowing the contents of this booklet and following its recommendations will help to assure safe and trouble-free operation.

It is not the intention or responsibility of this manual to give instruction in the use of common sense, basic skills and rules of driving; therefore, it is assumed that you, the operator, are fully qualified to operate a public transit vehicle.

This manual and any other supplied should be considered a permanent part of the vehicle and remain with the vehicle at all times. The information and specifications throughout this manual are up to date at time of publication. New Flyer reserves the right to change the content of this manual at any time without notice. Any malfunction which interferes with the safe operation of the vehicle should be reported immediately to the appropriate service personnel.

☞NOTE:

New Flyer urges you the driver to read this publication carefully, as well as the following manuals which are readily available from the respective manufacturer.

- *Cummins* ISL9L (EPA 2013) Series Engine Owner's Manual

Vehicle Patent Information

This New Flyer product and its components, and methods of manufacturing thereof, may be protected by one or more of the following patents, design registrations and patent applications. In addition, such products, components, and/or methods may be protected by one or more patent and design applications which may have not been published as of the date of this manual, in the United States, Canada, and elsewhere. Please direct all inquiries to our Corporate Offices. For a current listing of applicable patents, please refer to our Legal Notice at our corporate website, http://www.newflyer.com.

New Flyer Products	Patents, Patent Applications, Design Registrations & Design Applications
Xcelsior® Bus[1]	U.S.: 6,343,908; 6,397,965; 6,416,094; 6,556,899; 6,611,739; 6,681,174; 6,695,366; 8,109,551; 8,548,669; D637520; D639712; D660761; D678818; D680670; D687593; D692360; published applications 2012/0161469; 2013/0181679 Canada: 2,317,237; 2,455,153; 2,652,352; 2,794,822; 2,825,732; design registrations 129599; 132413; 132414; 132415; 132416; 132417; 133389; 133391; 133392; 133598; 133599; 133600; 133645; 133646; 133647; 133648; 133649; 133650; 133651; 136,266; 139456; 139757
MiDi® Bus[1]	U.S.: 6,343,908; 6,556,899; 6,611,739; 6,681,174; 6,556,899; 6,611,739; 6,681,174; 8,548,669 Canada: 2,306,413; 2,689,744
Invero® Bus[1]	U.S.: 6,257,652; 6,340,202; 6,343,908; 6,375,249; 6,397,965; 6,416,094; 6,416,116; 6,556,899; 6,611,739; 6,681,174; 6,695,366; 6,726,271; 8,548,669 Canada: 2,297,618; 2,297,623; 2,297,625; 2,297,719; 2,306,413; 2,317,237; 2,455,153
High Floor Bus[1]	U.S.: 6,343,908; 6,397,965; 6,416,094; 6,556,899; 6,611,739; 6,681,174; 6,695,366; 8,548,669 Canada: 2,317,237; 2,455,153
Low Floor Bus[1]	U.S.: 6,343,908; 6,397,965; 6,416,094; 6,556,899; 6,611,739; 6,681,174; 6,695,366; 8,548,669 Canada: 2,317,237; 2,455,153

New Flyer Products	Patents, Patent Applications, Design Registrations & Design Applications
Electric Bus	U.S.: published application 2013/0181679 Canada: 2,794,822
Passenger Ramps	U.S.: 6,343,908 Canada: 2,306,413
Energy Absorbing Bumpers	U.S.: 6,416,094; 6,695,366 Canada: 2,455,153
Engine Mounts	U.S.: 6,397,965 Canada: 2,317,237
New Flyer Connect™ Products & Services	U.S.: 6,556,899; 6,611,739; 6,681,174; 6,556,899; 6,611,739; 6,681,174; 8,548,669 Canada: 2,689,744
Note 1: Not all buses have features covered by all patents. Contact Legal@newflyer.com for further information.	

Vehicle Identification

The New Flyer vehicle identification plate is located in the driver's area of the vehicle interior. The plate lists the Gross Vehicle Weight Ratings (GVWR), the Vehicle Identification Number (VIN) and the Gross Axle Weight Ratings (GAWR) for all axles.

Danger, Warning, Caution & Note

Four types of headings are used in this guide to attract your attention. These notations will be highlighted with the icons below.

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Used when an operating procedure or practice, if not correctly followed, could result in personal injury or loss of life.

Used when an operating procedure or practice, if not strictly observed, could result in damage to or destruction of equipment.

☞NOTE:

Used to provide additional information that requires special attention by the operator.

Contacting New Flyer

If additional information is required, contact the Publications Department of:

New Flyer Industries Canada ULC
76-630 Kernaghan Ave.
Winnipeg, Manitoba
Canada
R2C 5G1
tel: (204) 982-8437
fax: (204) 667-5769

VEHICLE SPECIFICATIONS

VEHICLE TYPE	
Model	New Flyer XDE40 transit bus
Customer	King County Department of Transportation - SR1760
Build Year	2014
ENGINE	
Engine	*Cummins ISB 6.7L (EPA 2013)*
Horsepower	280 HP
Torque	660 ft-lb.
FUEL	
Fuel	Ultra low sulphur diesel
Usable Fuel Capacity	100 U.S. gallons (378 liters)
HYBRID DRIVE SYSTEM	
Traction Motor	*BAE* TB200 Alternating Current Traction Motor (ACTM)
Generator	*BAE* Integrated Starter Generator (ISG)
	265 HP (200 kw) continuous @ 2,300 RPM
Energy Storage System (ESS)	*BAE* roof-mounted lithium-ion battery modules
Control System	*BAE* roof-mounted Propulsion Control System (PCS)
DIMENSIONS	
Length (over bumpers)	41 ft. (12.5 m)
Width	8.5 ft. (2.6 m)
Height	10.5 ft. (3.2 m)
Wheelbase	23.6 ft. (7.2 m)
Turning Radius	44 ft. (13.4 m)
Approach/Departure Angle	9°
Gross Vehicle Weight Rating (GVWR)	42,540 lbs. (19,290 kg)

AXLES & SUSPENSION	
Front Axle	*MAN* VOK-07-F
Front Gross Axle Weight Rating (GAWR)	14,780 lbs. (6,700 kg)
Front Axle Ride Height	4" (102 mm)
Suspension Air Springs	*Firestone*
Suspension Shock Absorbers	*Koni*
Rear Axle	*MAN* HY-1350-F (4.56:1)
Rear Gross Axle Weight Rating	27,760 lbs. (12,590 kg)
Rear Axle Ride Height	3.8" (97 mm)
Suspension Air Springs	*Firestone*
Suspension Shock Absorbers	*Koni*
Driveshaft	*Prop Shaft Supply* 1710 with crosstooth flange & half-round connections
STEERING	
Steering Gear	*R.H. Sheppard* M110 with remote miter box
Oil Flow	3.6 gal/min
Pressure Relief	1,850 psi
Steering Column	*Douglas* Autotec 9204 Series
WHEELS & TIRES	
Tires	*Firestone*
Tire Size	305/70R22.5
Rim Mounting	10 Bolt hub piloted
Wheels	Steel
BRAKE SYSTEM	
Brakes, Mechanical (front)	*Knorr-Bremse* SN7000 air-actuated sliding caliper disc brakes
Brakes, Mechanical (rear)	*Knorr-Bremse* SN7000 air-actuated sliding caliper disc brakes
Wear Sensor (front)	End of life wear sensors in brake pads

Wear Sensor (rear)	End of life wear sensors in brake pads
Service Brake Chamber (front)	*MGM*
Service Brake Chamber (rear)	*MGM*
Antilock Braking System (ABS)	*Meritor Wabco* ABS on all wheels
Automatic Traction Control (ATC)	*Meritor Wabco* ATC on rear wheels
Parking Brake Application	Spring brake chamber applied with push/pull control valve located on side console
Parking Brake Release	Spring brake chamber released with application of air from push/pull control valve located on side console
HVAC SYSTEM	
HVAC Unit	*Thermo King* RLFE2 - M2 rootop unit
Defroster	*Mobile Climate Control*
Floor Mounted Heaters	2 *Mobile Climate Control* in passenger area
COOLING SYSTEM	
Engine Radiator	*Engineered Machined Products (EMP)* MH9 Radiator/CAC assembly with Fil-11 pusher-type fans
Power Steering Reservoir	*Cummins* reservoir
Power Steering Pump	*Ixetic*
Electronics Cooling Package (ECP)	*BAE/EMP* roof-mounted radiator with 2 electronically controlled fans
	BAE coolant reservoir
	BAE coolant pump
AIR SYSTEM	
Compressor	*Powerex* scroll compressor
Air Dryer	*QBA-15* air dryer
STARTING SYSTEM	
Starting System	*BAE* Integrated Starter/Generator (ISG)
CHARGING SYSTEM	
Voltage Equalizer	*Vanner Power Group* 12/24 Volt, 100 Amp

Batteries (4)	*Odyssey Extreme Battery*
Battery Type	High Cycle
Battery Group Size	31
Battery Charge Voltage	28.5 ± 0.3 Volts
EXTERIOR LIGHTING	
Headlights	Integrated unit with 12 Volt LED low beam, H11 incandescent high beam, & amber LED turn lights
Exterior Stop/Tail Lights	12 Volt LED
Side Turn/Marker Lights	12 Volt LED
Clearance Lights	12 Volt LED
INTERIOR LIGHTING	
Aisle Lights	*TCB* 24 Volt LED lights with dimmable Gen 3 clever boards
INSTRUMENTATION	
Instrument Panel	*Parker-Vansco* electronic
	User programmable inputs, outputs, gauges, telltales & LCD display
	2 Controller Area Network (CAN) ports for J1939 chassis/ drivetrain networks
	USB device port for communicating with a PC
Overhead Recess Panel	Destination sign controller
	Fire suppression display panel and manual actuator
	Front roof hatch control switches
	HVAC control panel
MULTIPLEXING SYSTEM	
Multiplexing Module (VMM) System with J1939 Network Communication	*Parker-Vansco* VMM 1615 modules (7)
Instrument Panel	*Parker-Vansco* electronic
AVA/AVL SYSTEM	
Driver/Vehicle Monitoring System	*New Flyer* Connect™ system

DESTINATION & ROUTE SIGNS	
Sign Control	*Luminator* Operator Display Keyboard 4 (ODK 4)
Front Destination	*Luminator* SMT series
Side Destination	*Luminator* SMT series
Street-Side Destination	*Luminator* SMT series
Rear Route	*Luminator* SMT series
DOORS	
Entrance Door	*Vapor* Electric
Entrance Door Opening Size	Medium
Limit Switches	Inductive proximity switches
Exit Door	*Vapor Electric*
Exit Door Opening Size	Medium
Limit Switches	Inductive proximity switches
Driver's Door Control	Push-button door controller located on the side console
Door Entry Control	Entrance door manual dump valve, located on vertical face of driver's side console
Passenger Door Control	Contactless Acoustic Sensors (CLASS)
Passenger Door Control	Exit door driver operated
WINDOWS	
General	*Arow Global*, top tip-in
Mounting	Frame
Frame	Black anodized aluminum
Glazing	Laminated glass
Tinting	Grey, 44% light transmittance
Driver's Window	Two piece slider with interior & exterior handles
Glazing	Laminated glass
Tinting	Green, 72% light transmittance
Emergency Escape	2 curbside & 4 streetside identified with labels

SEATING	
Driver's	*USSC* Q91
Passenger	*4ONE* Aries
Passenger Seating Quantity	20
Wheelchair Stations	2 (seats fold up & lock)
FLOOR & SUBFLOOR	
Subfloor	Plywood
Flooring	*Altro* Flooring
Sealant	*Altro*
SAFETY FEATURES	
Emergency Escape Exits	2 curbside windows identified with labels
	4 streetside windows identified with labels
	2 roof hatches, front motorized
Fire Extinguisher	5 lb ABC rating
Fire Extinguisher Location	Curbside luggage rack, in equipment box
Safety Triangles Location	Curbside luggage rack, in equipment box
Entrance Door Emergency Release	Rotary valve located in baseplate above entrance door
Exit Door Emergency Release	Rotary valve located behind breakable cover, forward of exit door
Accelerator & Brake Interlocks	Entrance or exit doors are open or enabled
	Exit door emergency release is actuated
	Vehicle is kneeling
	Parking brake is applied
	Hill holder switch is activated
Sensitive Edges	Exit door panels
Obstruction Detection System	Contactless Acoustic Sensors (CLASS) at exit door
Fire Suppression System	*Amerex* Safety Net (AVSN) System

ACCESSIBILITY FEATURES	
Wheelchair Ramp	Lift-U LU11 Gen 3, electric ramp
Wheelchair Ramp Width	Flip-out aluminum 32"
Wheelchair Ramp Slope Ratio	1:7 @ 9.5", 1:6 @ 10.6"
Wheelchair Ramp Max. Load Capacity	950 lbs. (430 kg.)
Kneeling	Front suspension, rapid recovery

Hybrid Operating Principles

This vehicle is powered by the Hybrid Drive Propulsion System, a hybrid system that blends both mechanical and electrical power paths to drive the vehicle. The system consists of a Diesel Engine, Alternating Current Traction Motor (ACTM), Integrated Starter Generator (ISG), Energy Storage System (ESS), Propulsion Control System (PCS), and System Control Unit (SCU).

The Starter Generator is directly coupled to the diesel engine and converts the engine's mechanical energy to high-voltage electric power for use by the propulsion system. The diesel engine runs at controlled optimal speeds to produce electrical power for the traction drive motor and Energy Storage System. The electric Traction Motor both propels the vehicle and captures kinetic energy during braking. The Energy Storage System supplies power during acceleration and hill climbing as well as stores energy recovered during regenerative braking. The Propulsion Control System, in conjunction with the System Control Unit, manages the entire system and optimizes emissions, fuel economy, and performance.

The Traction Motor is a high-power AC induction machine. When the accelerator treadle is depressed, the System Control Unit signals the Propulsion Control System to direct power to the Traction Motor to provide smooth, responsive acceleration. When the brake treadle is depressed, the System Control Unit signals the Propulsion Control System to extract power from the motor which slows the vehicle down and, in the process, captures a significant amount of the vehicle's kinetic energy which is directed to the Energy Storage System. This process of capturing the vehicle's kinetic energy during braking is called regenerative braking.

The Hybrid Drive Propulsion System uses a roof-mounted Energy Storage System with lithium-ion batteries to provide the highest possible level of performance. All charge management and health monitoring of individual modules inside is completely automatic and self-contained. The central energy storage management system continually monitors state-of-charge, temperature, voltage, and other parameters of all individual modules to provide the optimum combination of performance and service life.

The System Control Unit, in conjunction with the Propulsion Control System, directs the energy flow in the hybrid-electric system using data from the driver interfaces and system components. The System Control Unit and the Propulsion Control System control the diesel engine speed, Generator power, and Traction Motor torque. The System Control Unit is responsible for directing the Propulsion Control System to maintain the energy storage state of charge within the proper operating range.

2. EMERGENCY INFORMATION

Vehicle Evacuation & Shutdown

In the event of an emergency, follow the evacuation and shutdown procedure in the sequence shown:

1. Pull the vehicle over to a safe location.
2. Apply the parking brake
3. Open the front and rear passenger doors.
4. Shutdown the vehicle by setting the Master Run switch to the OFF position.
5. Direct all passengers to a safe area, away from the vehicle.
6. Alert the transit authority of the emergency.
7. Retrieve the Emergency Responder Guide and exit the vehicle.

WARNING

Assess the situation to determine whether it is safe to approach the rear curbside area of the vehicle before proceeding with the following steps.

8. Approach the rear curbside area of the vehicle and open the Battery Disconnect access door.
9. Shut off all 12/24 VDC electrical power to the vehicle by setting the Battery Disconnect switch to the OFF position. See “Figure 1: Battery Disconnect Switch” on page 14.
10. Wait for emergency response personnel to arrive and assist them by providing details of the emergency and handing over the Emergency Responder Guide.

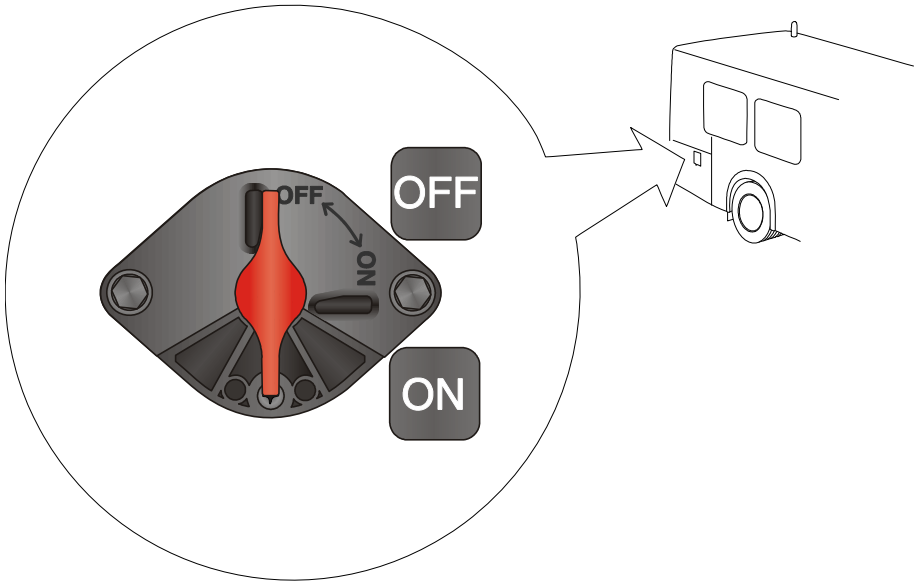

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Figure 1: Battery Disconnect Switch

Escape Exits

Side Windows

The windows which function as emergency exits are identified by labels.

To operate the emergency window, pull the red handle down and hold. Push out on the bottom of the window frame. The window will open on hinges at the top of the frame. To close, release the handle and slam window shut. See “Figure 2: Window Emergency Handle” on page 15.

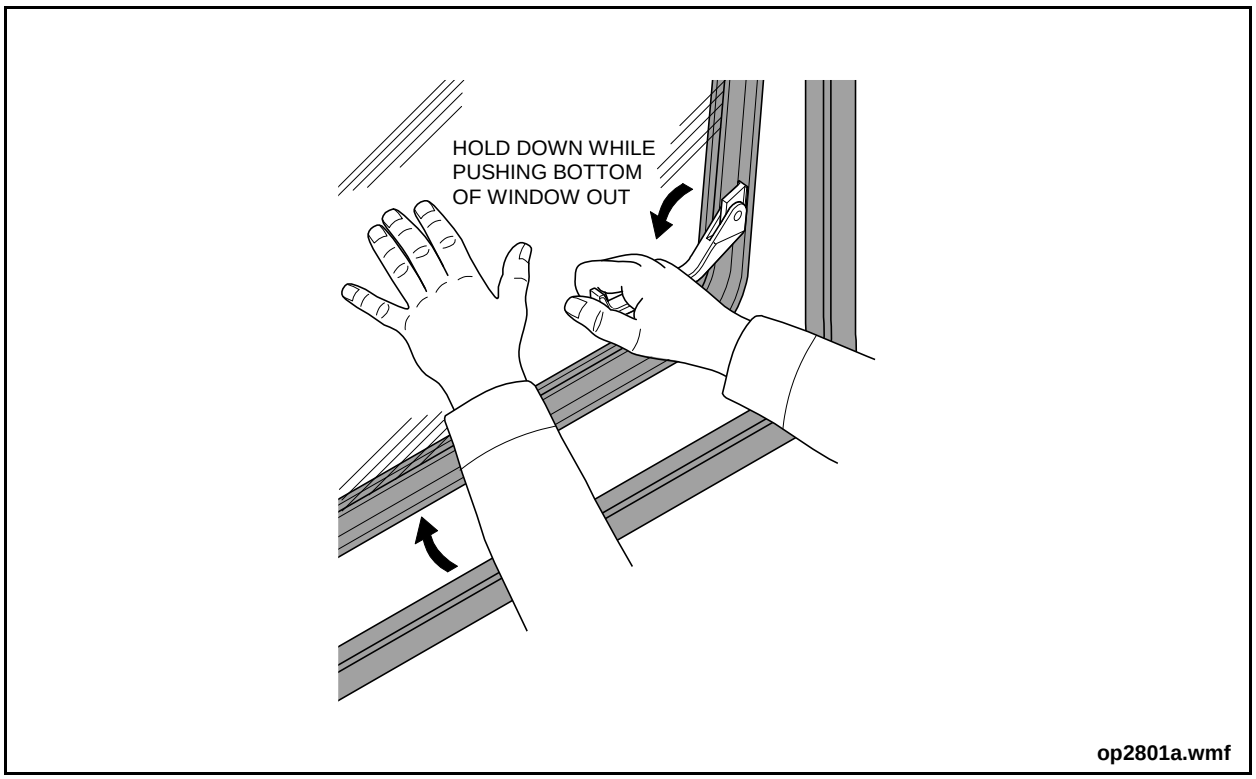

Figure 2: Window Emergency Handle

Roof Hatches

Both roof hatches function as emergency exits and are identified by decals on the hatch panel. Proceed as follows to operate the emergency exit: See “Figure 3: Roof Hatch Emergency Exit” on page 16.

1. Push the hatch up to the full OPEN venting position.
2. Turn the release latch knob 90° left or right to unlock.
3. Push the handle outward so the hatch swings open on the fixed hinge.
4. To close, return the hatch to its full OPEN position. Line up and push the separated hinge halves together. Turn the latch knob to the latched position.
5. Push up on the hatch to ensure proper engagement. Pull the hatch downwards to close.

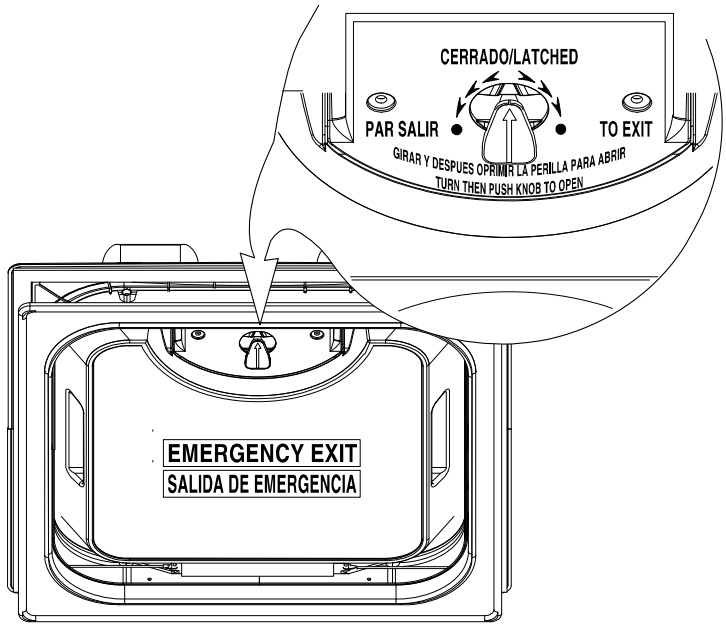

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Figure 3: Roof Hatch Emergency Exit

Emergency Release Control Valve - Entrance Door

The entrance door emergency release control valve is located behind a breakable window in the door mechanism access cover. In an emergency, break the window to access the control valve knob. Rotate the knob 90° counter-clockwise to depressurize the release cylinder and thereby release the mechanical lock Push the doors open. As the doors open they activate the header and curb lights. See “Figure 4: Entrance Door Emergency Release Control Valve” on page 17.

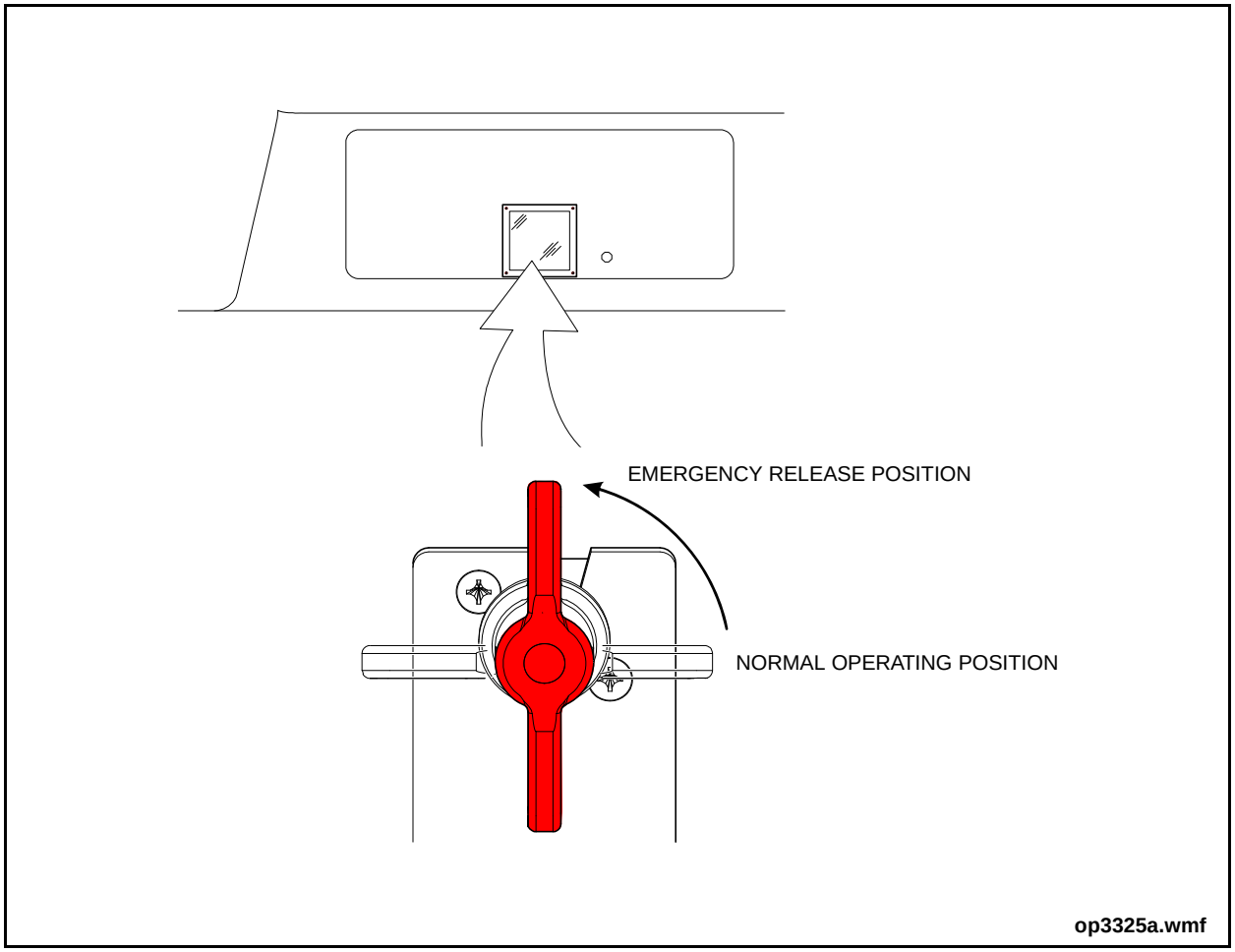


Figure 4: Entrance Door Emergency Release Control Valve

Emergency Release Control Valve - Exit Door

The exit door emergency exit control valve is located to the left of the exit door header, behind a breakable window. In an emergency, break the glass to access the control valve knob. Rotate the control valve knob 90° counter-clockwise to release air pressure from the release cylinder, then push the doors open. As the doors open they activate the header and curb lights, the brake interlocks, and the Rear Door Open indicator. See “Figure 5: Exit Door Emergency Release Control Valve” on page 18.

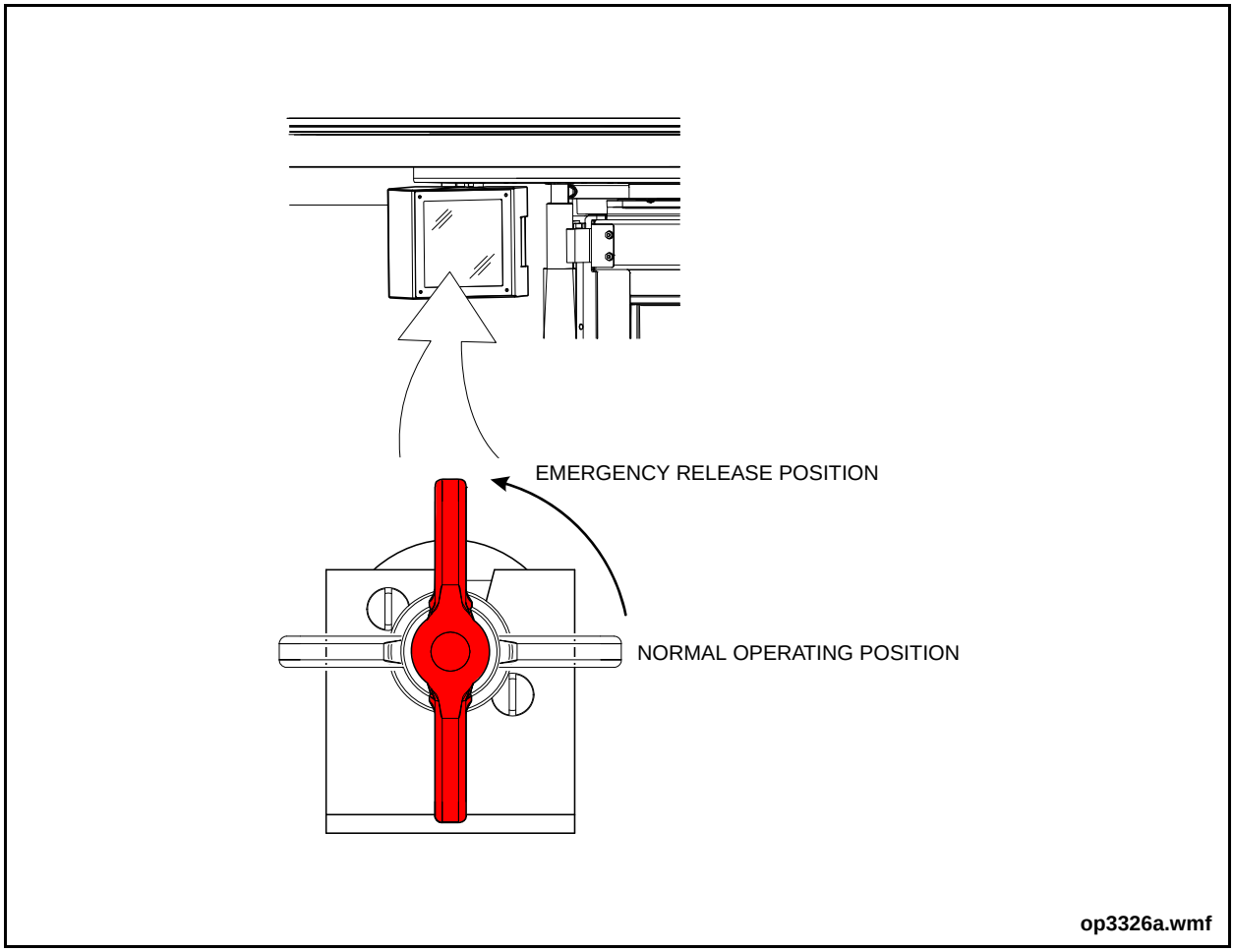


Figure 5: Exit Door Emergency Release Control Valve

3. SAFETY INFORMATION

Safety Procedures

Do not drive the vehicle if:

- Indicators, instruments or gauges show that a major vehicle operating system is malfunctioning.
- Exhaust fumes seep into the passenger compartment.
- Beneath the vehicle, puddles of engine oil, hydraulic fluid, or coolant have formed.
- Seating stanchions and grab rails are loose or damaged.
- Driving mirrors are broken, missing or cannot be properly adjusted.
- Any exterior or interior light is broken, discolored, or malfunctioning.

Report the occurrence of any of the above to maintenance personnel so the vehicle can be serviced before beginning revenue service.

- Do not operate the vehicle without fastening the seat-belt.
- Make sure obstructions do not block or interfere with your safe range of driving and operating vision.
- Have any debris or garbage removed from the passenger area and the doors. This is important to eliminate any foot obstructions that could cause tripping or falling.
- Make sure all exterior and interior access doors and panels are securely shut and latched.
- Do not smoke around the fuel storage areas, the fuel filling area or during refueling. Do not smoke in areas where fuel, hydraulic fluid, transmission oil or any other flammable fluid has leaked.

Safety Equipment

The following safety equipment is supplied with this vehicle:

- Hand-held fire extinguisher - Use the extinguisher only after the vehicle is in a safe location, and all passengers are evacuated. Use only if there is no risk to your personal safety. See “Figure 6: Safety Equipment” on page 20.
- Safety triangles - Position the triangles at the front and rear of the vehicle to warn other drivers during emergency situations.

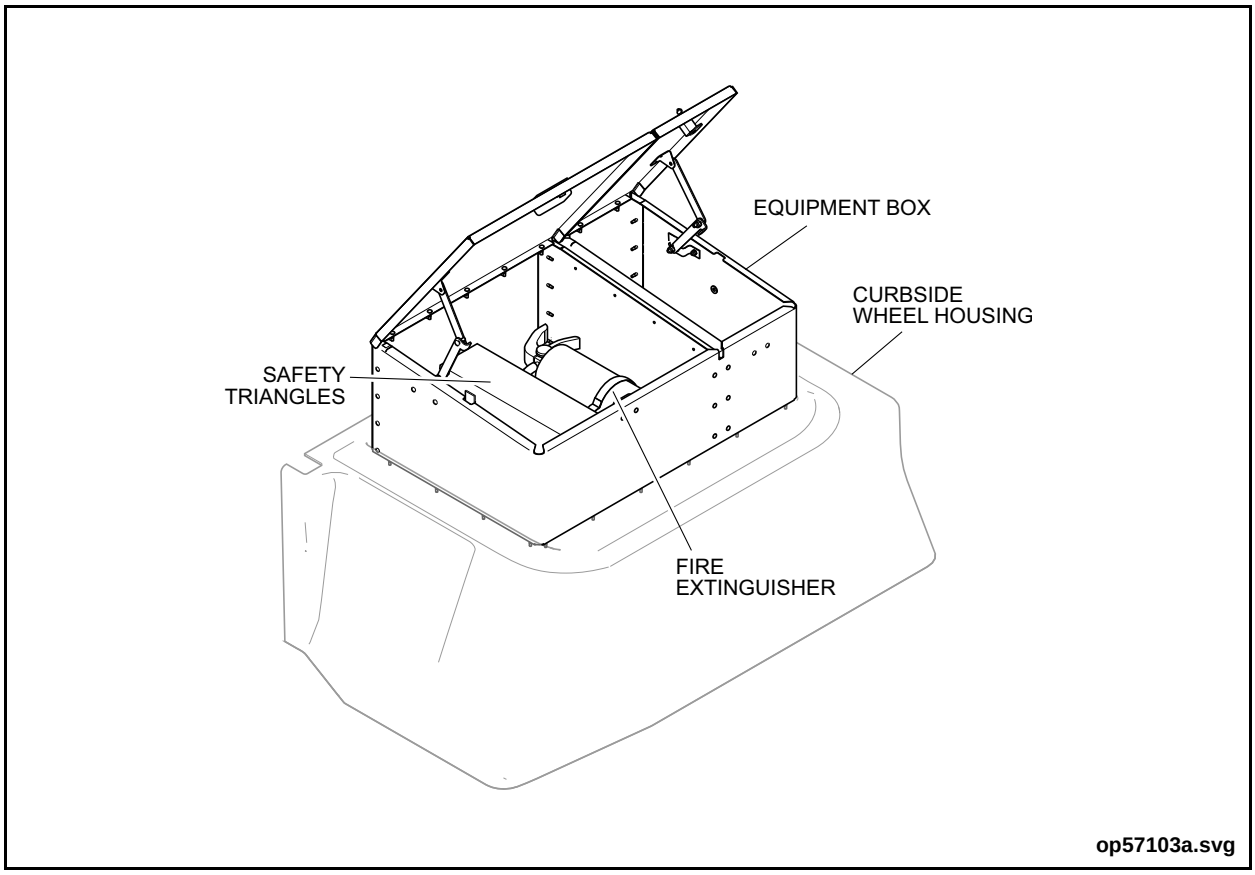


Figure 6: Safety Equipment

Fire Suppression System

The vehicle is equipped with a Fire Suppression System. The system protects the passengers and vehicle against fire. If a fire is detected in the engine compartment an extinguishing agent is discharged to suppress the fire.

The Fire Suppression System components that are located in the driver's area include the Manual Actuator switch and alarm panel. Refer to "10. FIRE SUPPRESSION SYSTEM" on page 89 in this manual for a description of these components and the system operation.

☞NOTE:

An alarm sounds and the engine shuts down when the Fire Suppression System is activated.

Exit Door Sensitive Edges

Pressure sensitive rubber seals are mounted to the leading edges of the exit door panels. If they encounter an object or passenger during door closure, an alarm sounds and the doors fully reopen. The doors will again close once they have fully reopened.

☞NOTE:

The Interlock System prevents the vehicle from moving until the exit doors have fully closed.

Obstruction Detection System

Acoustic sensors are mounted at the top of each door panel and in the center of the exit door header. These sensors enhance the sensitive edge function when the door is closing. They monitor the door pathway while the door is open to prevent premature closing. If they detect an object or passenger during door closure, the doors fully reopen. The doors will again close once they have fully reopened and the object or passenger has cleared the doorway.

☞NOTE:

The Interlock System prevents the vehicle from moving until the exit doors have fully closed.

Interlock System

Interlocks disable the accelerator and apply the brakes. The interlocks function only when the Master Run switch is in DAY-RUN or NIGHT-RUN position, the Door Master switch is in the ON position, the vehicle speed is below 2 mph (except where noted), and any of the following conditions occur:

- Entrance or exit doors are open or enabled.
- Exit door emergency release is actuated (regardless of vehicle speed).
- Vehicle is kneeling.
- Parking brake is applied.
- Hill holder switch is activated.

The Interlock System is intended to protect passengers from inadvertent vehicle movement. The Door Master switch can be used to disable the system for maintenance purposes or in an emergency. Refer to “ Door Master Switch” on page 74 in this manual for further information on switch operation.

☞NOTE:

The brake treadle drops slightly when the interlock system applies. When the interlocks apply, the Multiplexing System logs the application pressure in the brake lines. To release the interlocks, the operator must apply pressure to the brake treadle to “push through” the interlock application, exceeding the logged pressure by 10 psi. When released, the treadle will return with the operator’s foot to its normal position.

4. TO ENTER THE VEHICLE

1. Slide the front portion of the driver's window back to gain access to the front door push button on the side console. See "Figure 7: To Enter the Vehicle" on page 23.
2. Reach over the side console and press the green front door push button.
3. If the entrance door does not open, exhaust air by turning the door manual control valve on the side console to the OFF position. Open the door manually by pulling out the door halves at the seal.

☞NOTE:

Take care not to damage the door seal when pulling the door open.

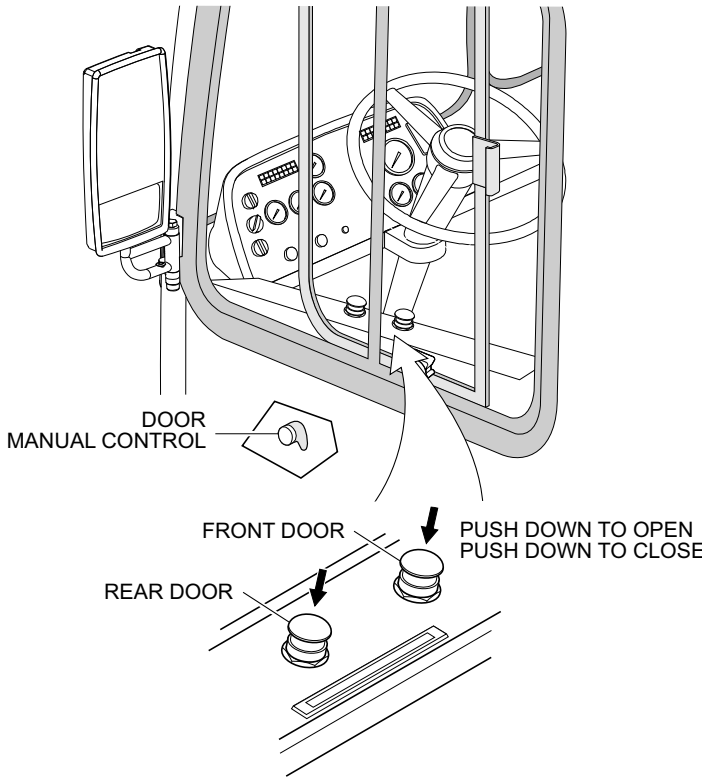


Figure 7: To Enter the Vehicle

5. DRIVER'S CHECK LIST

Check the following before putting the vehicle into transit service. Any problems discovered should be brought to the attention of the service personnel.

Exterior

General

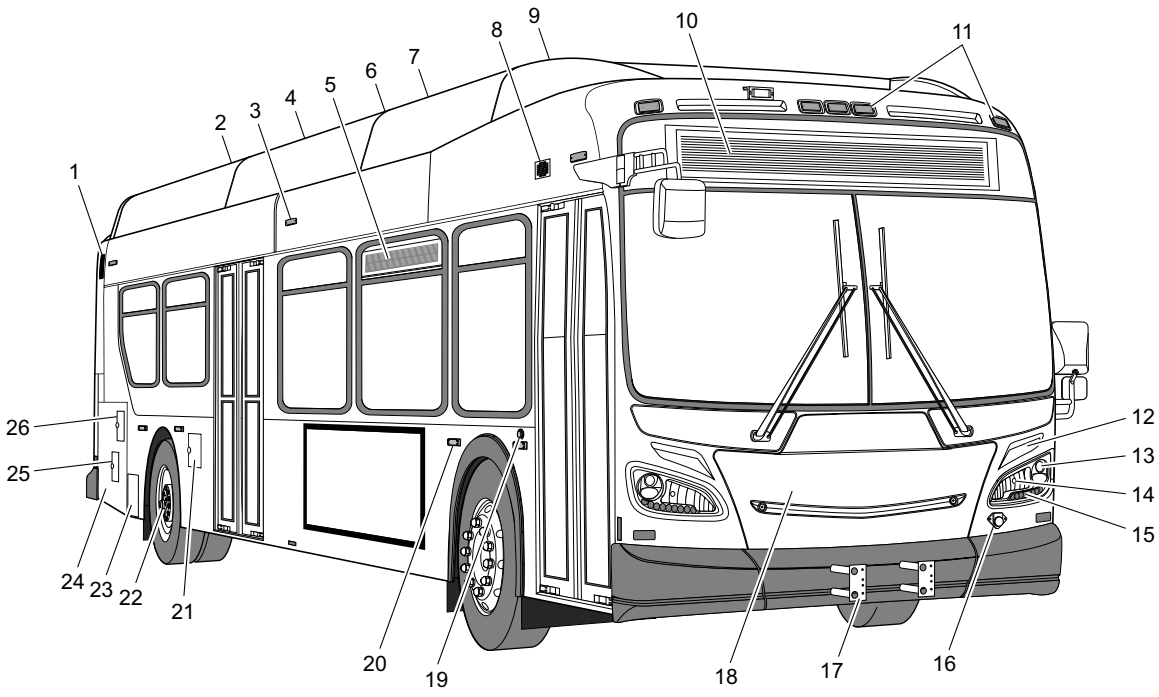
- Battery Disconnect switch is in the ON position.
- Engine Run switch in engine compartment is in the FRONT position.
- Check for any fluid puddles under the vehicle.
- Check all exterior panels for any visible damage.
- Check the air intake grille and the exhaust tailpipe for any blockage.
- Bumpers are securely mounted and no damage is evident.

Access Doors

- Visually inspect door panels for any evidence of damage.
- Check that the access doors unlatch and open easily. Ensure gas struts function properly and maintain door in opened position (where applicable).
- Inspect door panel interior rubber bumpers condition or whether missing.
- All access doors must be closed and securely latched (where applicable) prior to operating vehicle.

Windows

- Check that all windows are closed.
- Ensure window glass is clean and no visible evidence of cracks or other damage.
- Inspect condition of window frames and seals for any damage.



1. Engine Air Intake Grille
2. Accessory Power System (APS)
3. Side Marker Light
4. Propulsion Control System (PCS)
5. Side Destination Sign
6. Electronic Cooling Package (ECP)
7. Energy Storage System (ESS)
8. Exterior Speaker
9. HVAC Unit
10. Front Destination Sign
11. Clearance Marker Lights
12. Driver's Lower Vent
13. Headlight, High Beam
14. Headlight, Low Beam
15. Front Turn Light
16. Tow Connector
17. Bike Rack Receiver
18. Defroster/Wiper Access Door
19. Kneeling/Ramp Warning Light
20. Side Turn Light
21. Fuel Filler Access Door
22. Hubodometer
23. Battery Access Door
24. Fusebox Access Door
25. Battery Cutoff Switch Access Door
26. Diesel Exhaust Fluid Manual Fill Access Door

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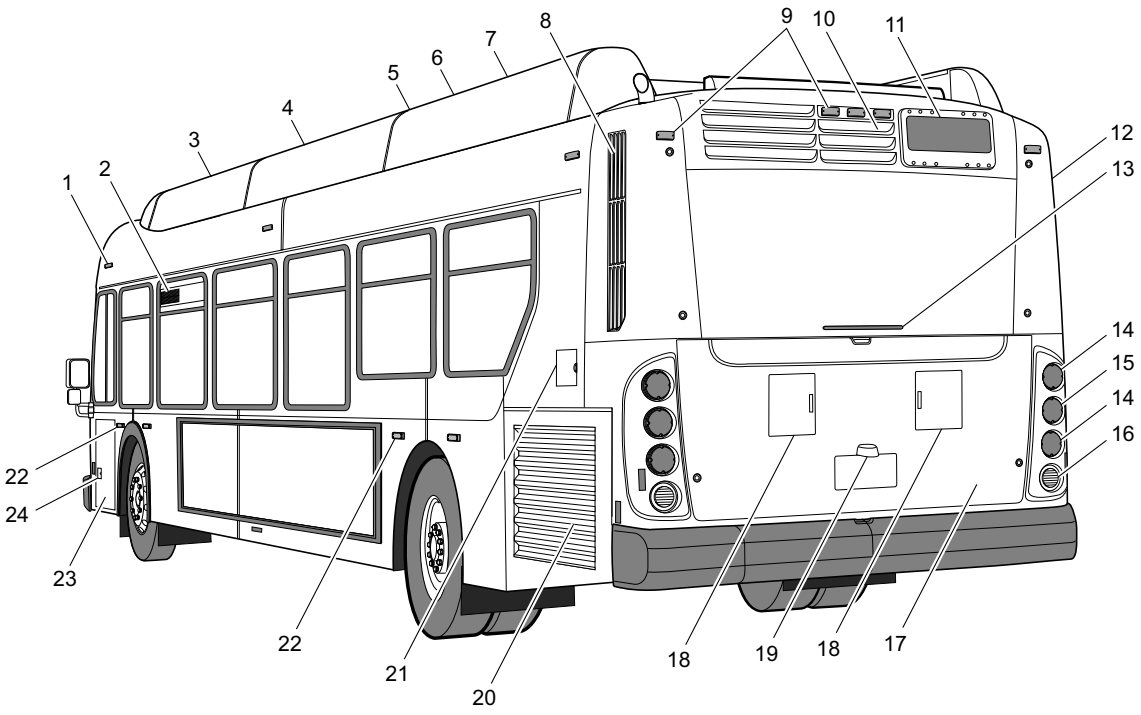
Figure 8: Front Exterior View



1. Side Marker Light
2. Side Destination Sign
3. HVAC Unit
4. Energy Storage System (ESS)
5. Electronics Cooling Package (ECP)
6. Propulsion Control System (PCS)
7. Accessory Power System (APS)
8. Muffler Access Door
9. Clearance Marker Lights
10. Exhaust System Grille
11. Rear Route Sign
12. Fresh Air Intake
13. Center Stop Light
14. Stop/Tail Light
15. Turn Signal/Tail Light
16. Backup Light
17. Engine Access Door
18. Engine Accessories Access Door
19. License Plate Light
20. Radiator Access Door
21. Surge Tank Access Door
22. Side Turn Light
23. Side Console Access Door
24. Windshield Washer Filler

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Figure 9: Rear Exterior View

Mirrors

- Inspect condition of mirror housing, glass, and mounting brackets.
- Check that mirror head can be easily rotated for adjustment (where applicable).

Lights

- Ensure all lights are clean and not obstructed in any way.
- Check that lights are securely mounted with no missing attaching hardware.
- Inspect lenses for cracks or other damage.

Tires

- Check tire air pressure and ensure it is within the manufacturer's recommended range.
- Inspect tire tread for abnormal wear, cuts, separation, missing tread, or any other visible defects.
- Inspect tire sidewalls for bulges, cuts, gouges, abrasions, or any other visible defects.

Wheels

- Check for any missing or loose wheel nuts.
- Closely inspect condition of wheel studs if any wheel nuts were found to be loose or missing.
- Visually inspect wheel for any evidence of dents, cracks, deformation, or other damage.
- Inspect wheel surface for pitting or excessive corrosion.

Interior

General

- Ensure farebox is securely mounted and operates properly.
- Check all interior panels for any visible damage.
- Ensure front and side destination signs are securely mounted.
- Roller blinds are securely mounted and function properly.
- Check that roof hatches open in all ventilation positions and close properly.
- Ensure that roof hatches function properly in the emergency release position.
- Visually inspect condition of passenger signal system and verify operation.
- Ensure door push buttons operate doors accordingly.
- Door Master switch is in the ON position.
- Check that all driver's seat adjustments function properly and maintain position.
- Inspect condition of driver's seat-belt and ensure that it functions properly.
- Inspect condition of wheelchair restraint system and ensure that all mechanisms function properly.
- Check steering wheel operation with engine running. Steering should operate smoothly without binding or erratic movement.
- Check steering wheel tilt/telescope lever functions properly.
- Ensure that the wheelchair ramp functions properly and that the alarm sounds when stowing or deploying the wheelchair ramp.

Fire Suppression System

- Ensure the safety pin on the Manual Actuator switch is securely installed.
- Ensure all indicators on the fire suppression control panel illuminate properly.

Access Doors

- Visually inspect interior door panels for any evidence of damage.
- Check that the access doors unlatch and open easily. Ensure gas struts function properly and maintain door in opened position (where applicable).
- Check for any missing or damaged rubber bumpers on the inside of the door panel.
- All access doors must be closed and securely latched (where applicable) prior to operating vehicle.

Seats

- Ensure seats are clean and there is no evidence of cuts, tears, or other damage.
- Ensure seats are securely mounted to seat rail and floor (where applicable).

Floor

- Check overall condition of flooring for cleanliness.
- Inspect flooring for any evidence of excessive wear, cuts, or other damage.
- Inspect edges of flooring and nosing for evidence of lifting or separation.
- Ensure the wheelchair ramp is fully stowed flush with the flooring surface and does not provide a tripping hazard.

Windows

- Check that windows are clean and undamaged.
- Check operation of emergency release mechanism on all windows so equipped. Ensure windows release from the frame and open fully outward for emergency egress and latch securely upon closing.
- Check operation of all windows equipped with slider or tilt openings. Windows should slide or tilt easily, not be loose in the frame and latch securely upon closing.

Mirrors

- Check condition of mirror glass for cracks or other damage.
- Ensure mirrors are securely mounted and maintain their adjusted position.
- Ensure mirrors offer a clear view and are not obstructed.

Passenger Doors

- Check that doors open/close properly.
- Check door panels for dents, deformation or other damage.
- Inspect door panel glass for cleanliness and ensure glass is not cracked or otherwise damaged.
- Inspect door edges and seals for condition and proper sealing.

Modesty Panels/Barriers

- Inspect condition of panels for sharp edges, cracks, or any other damage.
- Ensure panels are securely mounted to stanchions and vehicle structure.

Stanchions & Grab Rails

- Inspect for bent or cracked tubing, rails, or any other damage.
- Ensure that all stanchions and grab rails are securely mounted.
- Inspect for any sharp edges.
- Inspect for any missing attaching hardware.
- Inspect condition and secure mounting of grab straps (where applicable).

Lights

- Ensure all lights are clean and not obstructed in any way.
- Check that lights are securely mounted with no missing attaching hardware.
- Inspect lenses for cracks or other damage.

Indicator Lights

☞NOTE:

From this point on, items on the driver's check list require activating the vehicle's Multiplexing System and starting the engine. Turning the Master Run switch on the side console to DAY-RUN or NIGHT-RUN activates the Multiplexing System. Wait for the system to activate before starting the engine. Refer to "11. VEHICLE OPERATION" on page 93 *in this manual for details on engine starting.*

- The Stop Request indicator illuminates when the passenger signal system is activated.
- The W/C Stop Request indicator illuminates when the wheelchair passenger signal system is activated.
- The Parking Brake indicator illuminates when the parking brake is applied.
- The Stop indicator illuminates when the brakes are applied.
- The Turn indicator illuminates and flashes when the turn signal switch is activated or the Hazard switch is turned on.
- The Rear Door Open indicator illuminates when the exit door is open.
- The High Beam indicator illuminates when the high beam headlights are on.
- The Kneel indicator illuminates when the kneeling system is activated.
- The No Gen and Stop Engine indicators illuminate momentarily, then extinguish.
- The remaining indicators relate to vehicle operation concerns and should be checked by service personnel.

Electrical Control Systems

- The Master Run switch controls the electrical circuits. Refer to "9. INSTRUMENTATION & CONTROLS" on page 51 in this manual for more information.
- Light switches, located inside the service compartments, activate the compartment lights.
- Windshield washers spray washer fluid onto windshield.
- Wipers operate (on wet windshield) without streaks, scraping or noisy operation.
- Hazard lights function with the Master Run switch in any position.
- Horn sounds when horn button on steering wheel pressed.
- Rear brake lights illuminate when the brake pedal is applied.
- Destination/route sign circuits function with the Master Run switch in DAY-RUN, NIGHT-RUN or NIGHT-PARK positions.
- All side console control switches function.
- Passenger stop request signal and chime circuits function.
- Accelerator treadle accelerates the engine.
- Shift Selector switch functions.
- Backup lights illuminate when the transmission is shifted to reverse.
- HVAC System functions when the engine is running.
- Speedometer functions when the vehicle is moving.

Air Control Systems

- Normal vehicle operation pressure ranges from 117 to 131 psi (807 to 903 kPa).
- Low Air indicator illuminates and an alarm sounds if the air system pressure drops below 75 psi (517 kPa).
- Entrance and exit doors open and close smoothly.
- Brake treadle application slows and stops the vehicle smoothly.
- Parking brake valve application holds the vehicle stationary when level or on a 20% maximum incline grade when on dry concrete.
- Door manual control valve, located below the side console, shuts off the air supply to the entrance door mechanism. When in the OFF position, the doors can be pushed open.
- Splash guards clear the ground (vehicle on level surface) with the air system pressure at or above 117 psi (807 kPa).
- Compressor cuts in when the air system pressure drops to approximately 117 psi (807 kPa) and shuts off at approximately 126 to 131 psi (869 to 903 kPa).

6. DRIVER'S AREA

The driver's area includes the first eight feet of interior space measured from the front windshield. This section describes the controls and components within the driver's area. A brief outline of the functions and operating procedures of each accompanies the description. See "Figure 10: Driver's Front Area" on page 32. See "Figure 11: Driver's Side Area" on page 33.

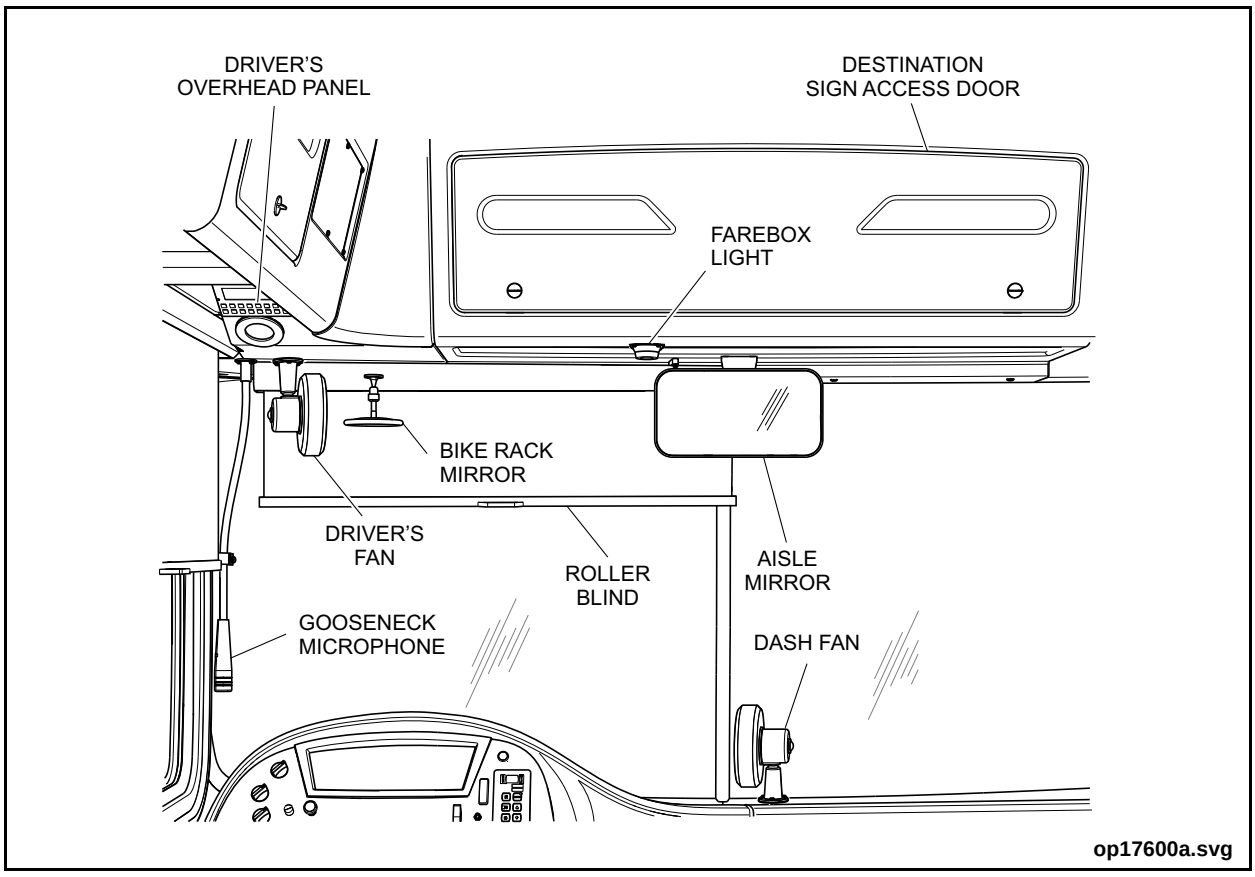


Figure 10: Driver's Front Area

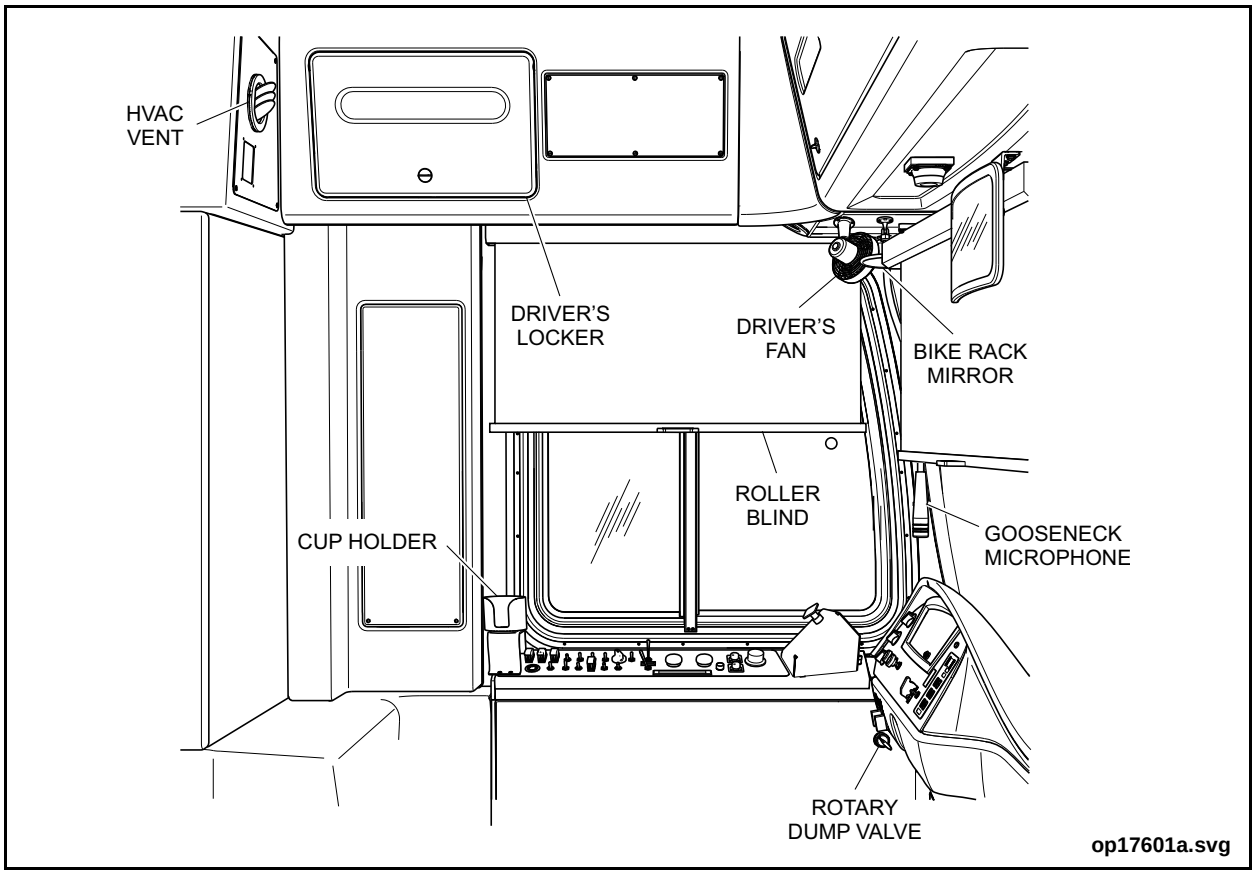


Figure 11: Driver's Side Area

Driver's Window

Front Portion

Pull the sash handle back to open the front portion of the window. Push the handle forward to close.

Aft Portion

Pinch the sash handle to release the lock. Pull the handle forward (keeping handle pinched) to open the rear portion of the window.

Push the handle rearward, pinch and release to close and lock the aft sash.

Mirrors

The vehicle is equipped with the following mirrors:

Aisle Mirror

The aisle mirror is located under the front destination sign closeout. Its convex glass surface provides a wide view of the entrance door and passenger area.

Upper Right Mirror

Located to the right of the aisle mirror, the upper right mirror is used to view the rear mirror.

Exit Door Area Mirror

The exit door area mirror is located on a stanchion at the exit door. It provides a view of the exit door area when looking through the upper right mirror from the driver's seat.

Bike Rack Mirror

The bike rack mirror is located to the right of the aisle mirror. Adjust this mirror to provide a view of the bike rack.

View Behind Driver's Mirror

Located above the entrance door, this mirror provides a view behind the driver's seat.

Roller Blinds

There are two roller blinds in the driver's area; one for the front windshield and the other for the driver's window. The blinds can be extended or retracted by either pushing or pulling on their handles.

Electronic Equipment Enclosure

The electronic equipment enclosure is located on the streetside wheelhousing and is used for storing the vehicle communication and monitoring equipment. The lockable access door provides security for the stored contents and the slide-out trays provide easy access for servicing the electronic equipment.

Driver's Locker

Located above the driver's window, the driver's locker is for storing personal belongings.

Driver's Overhead Panel

The driver's overhead panel is a recessed panel located above the driver that contains the the following components: See "Figure 12: Driver's Overhead Panel" on page 36.

- Destination sign controller - Refer to " Destination/Route Signs" on page 42 in this manual for information on the operation of the destination sign controller.
- Fire suppression display panel and manual actuator - Refer to "10. FIRE SUPPRESSION SYSTEM" on page 89 in this manual for a description of the fire suppression components and the system operation.
- HVAC control panel - Refer to " Driver's Climate Controls" on page 70 in this manual for information on the HVAC control panel.
- Front Roof Hatch Switches - Refer to " Miscellaneous Controls" on page 87 in this manual for information on the operation of these switches.

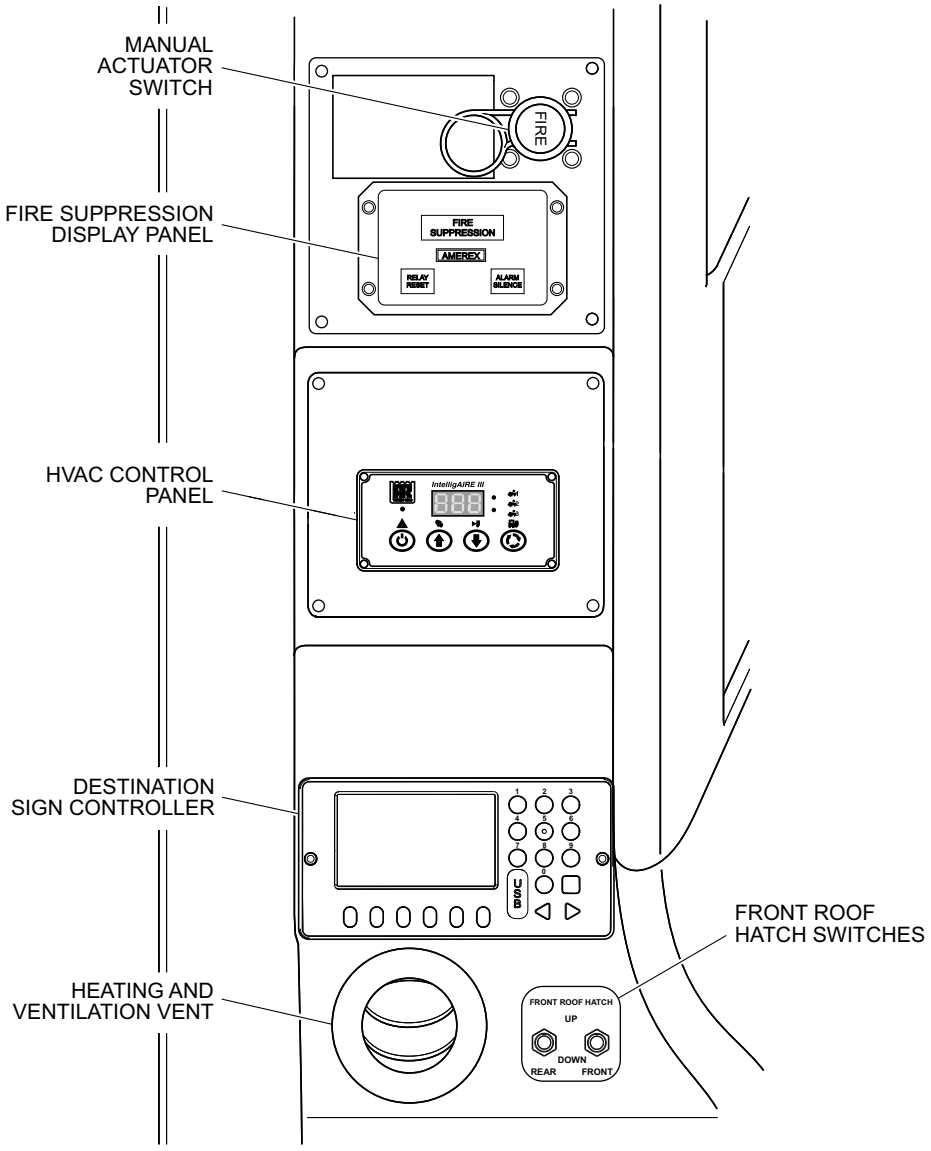
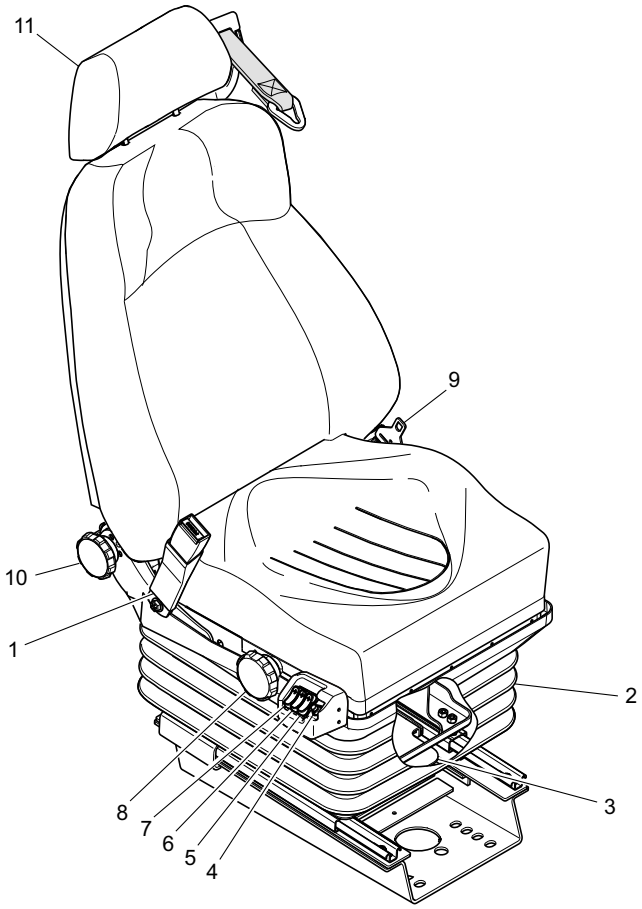


Figure 12: Driver's Overhead Panel

Driver's Seat

The USSC Q91 driver's seat is an adjustable air suspension seat consisting of a steel frame base and back panel and molded foam cushions. The seat-belt retracts to holders beside the seat cushion. See "Figure 13: Driver's Seat" on page 37.

Eight controls adjust the positioning of the seat and seat cushions to suit the needs of the individual. Make position adjustments to provide for the best driving visibility and control.



1. Seat Belt Receptor
2. Bellows
3. Fore/Aft Locking Device
4. Fore/Aft Adjustment Button
5. Bottom Lumbar Adjustment
6. Middle Lumbar Adjustment
7. Top Lumbar Adjustment
8. Seat Tilt Control
9. Seat Belt
10. Backrest Adjustment
11. Adjustable Headrest

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Figure 13: Driver's Seat

Lumbar Adjustment

Three rocker switches on the right side of the seat adjust the top, middle and bottom lumbar. The rocker switches admit or release air pressure to three air bags in the seat back. When making adjustments, momentarily hold the switches in position to allow time for air movement.

Height Adjustment

The knob on the front left corner of the seat adjusts the height. Turn the knob counter-clockwise to raise the seat and clockwise to lower it. Pull the knob out to dump air pressure and reset to the previous adjustment by pushing the knob in.

Tilt Adjustment

Adjust the seat's fore and aft tilt with the large control knob on the side of the seat. Turn the knob clockwise to tilt forward and counter-clockwise to tilt rearward.

Fore & Aft Track Adjustment

The fore and aft track adjustment has nine position settings. Push the button located in front of the lumbar adjustment switches to unlock and slide the seat to the desired position. Release the button and move slightly fore or aft to set lock. Raising the slide handle below the bellows at the front of the seat will release the slides and allow the seat to move front or back.

Back Recline Adjustment

Adjust the backrest to the desired recline position by turning the control knob located at the bottom of the backrest.

Suspension Lockout/Limiter Control

Located on the left rear of the seat is a three-position lever to control seat suspension movement. The outward position allows full seat suspension movement; the middle position limits the suspension and the inward position locks the suspension.

Steering Wheel & Horn

Steering Wheel

WARNING

DO NOT make adjustments to the tilt steering while the vehicle is in motion.

CAUTION

DO NOT turn the steering wheel if the engine is not operating except in emergency situations.

CAUTION

DO NOT OPERATE THE VEHICLE if any of the following conditions exist:

- **Binding or resistance in the steering wheel operation (with the vehicle in motion).**
- **Unusual noises related to steering.**
- **Steering wheel vibration.**
- **Looseness, binding or resistance in the tilt/telescopic mechanism.**

A hydraulic powered steering system turns the front wheels when moving the steering wheel left or right (the engine must be operating to power the system). The tilt/telescopic steering column offers a range of positions for the steering wheel. A lever on the left of the column controls both tilt and telescopic functions. Push to telescope and pull to tilt. See "Figure 14: Steering Wheel Adjustment" on page 40.

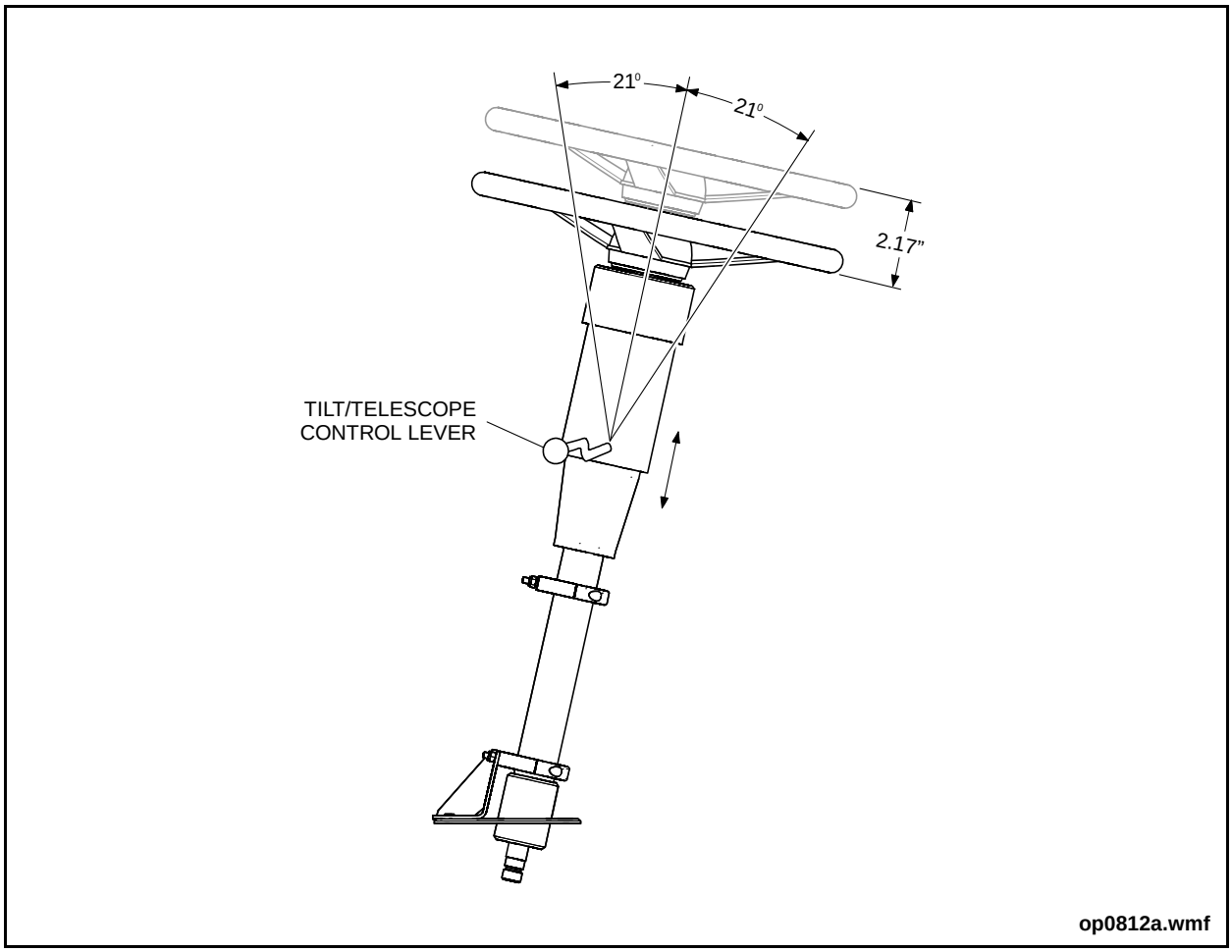


Figure 14: Steering Wheel Adjustment

Horn

The horn button, located in the center of the steering wheel, operates the dual horn.

Public Address System

The Public Address System (P.A.) allows the communication of messages to the public both inside and outside the vehicle. Components of the system include: See "Figure 15: P.A. System Layout" on page 41.

- A goose neck microphone located at the left windshield pillar.
- A P.A. amplifier located in the driver's overhead panel.
- Six interior speakers located above the side windows.
- An exterior speaker located above the entrance door.
- A speaker select switch on the side console switch panel.

☞NOTE:

Several components of the P.A. System are installed by the transit Property. Consult your transit authority for complete information on operation of the P.A. System.

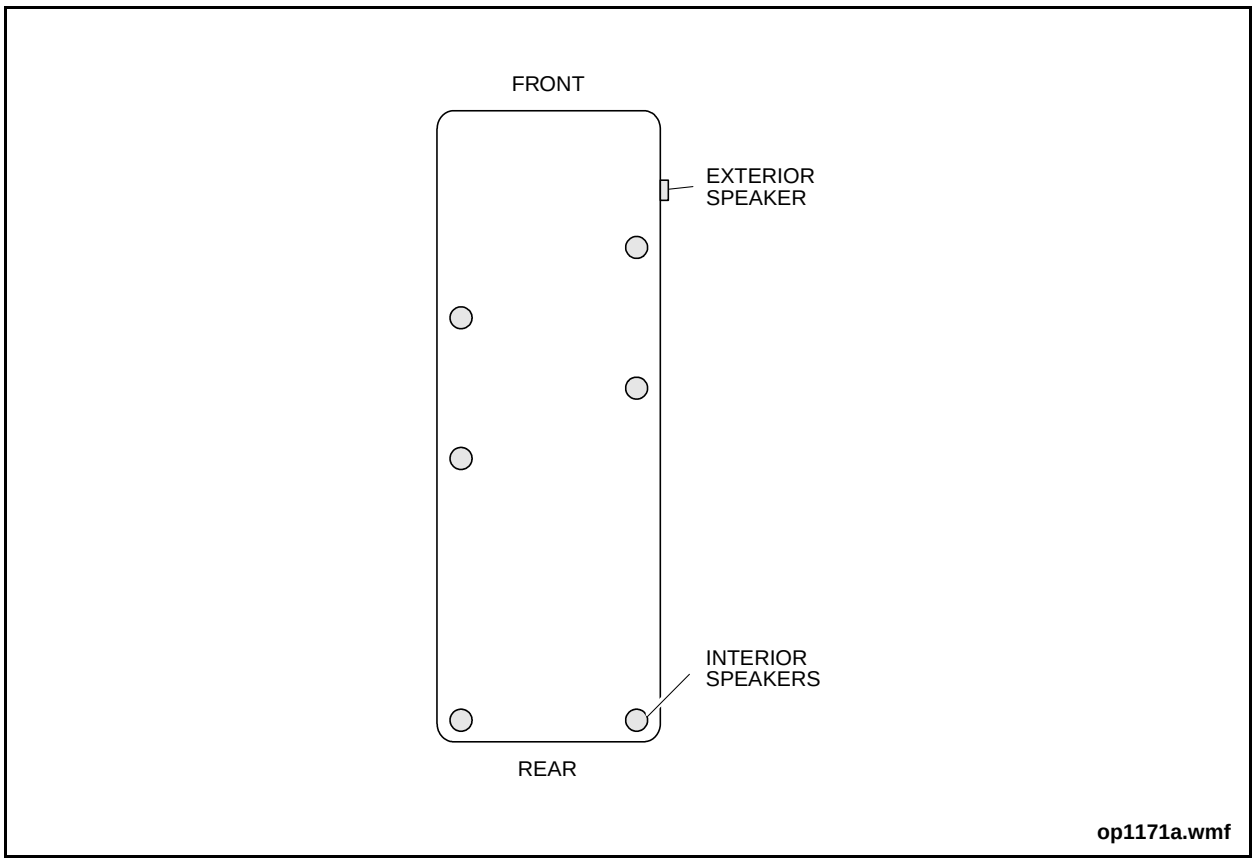


Figure 15: P.A. System Layout

Destination/Route Signs

☞NOTE:

The following information provides basic introductory information on ODK and Luminator Destination Sign System operation. Your transit authority management establishes policies about system operation and should be consulted before its use. Manuals are available from Luminator which provide more information about the Operator's Display Keyboard and the Luminator Destination Sign System.

System Description

The vehicle's destination/route signs are controlled by an Operator's Display Keyboard (ODK4) located in the driver's overhead panel. The ODK consists of a liquid crystal display (LCD) display screen with six soft keys, six corresponding hard keys, keypad with numbered (0-9) switches, enter key, and left/right arrow keys.

The sign system is controlled through programmed instructions stored in ODK memory through its liquid crystal display (LCD) touchscreen and keypad. Messages displayed on the vehicle signs can also be displayed on the ODK touchscreen.

☞NOTE:

The touch sensitive soft keys labeled on the LCD touchscreen will vary per the menu being displayed and are functionally identical to the blue hard keys located directly beneath them and can be used interchangeably.

The codes translate into message writing data preprogrammed into the system's memory. The message writing data then controls the signs to display the selected information.

The system data processor begins sending and updating message writing data for the ODK to display when the system is powered-up. Turning the Master Run switch from STOP-ENGINE to DAY-RUN or NIGHT-RUN will power-up the system. Boot and application code versions momentarily display when power is applied to the ODK, followed by a brief system initialization message. The last message entered before power shutdown then displays on the ODK.

Powering-down occurs when the Master Run switch is turned to STOP-ENGINE. Upon powering-down, front and side destination signs will blank immediately or after a preset delay.

Operating the ODK4

Basic operation of the Sign System involves presetting transit authority message codes into the sign system using the ODK. The message codes correlate to preprogrammed destination names, public relations messages, and route numbers unique to each transit authority. If required, multiple sets of message codes may be entered to allow for a quick and complete sign change while in route. Key function and basic operation instructions are described in the two sections that follow.

ODK4 Operating Keys

Six soft keys are located on the bottom of the LCD display screen. The function of these softkeys is identical to the corresponding hard keys located directly below the display screen. The soft keys and hard keys can be used interchangeably. The keys function as follows:

- MENU - used to access advanced programming (some may require a password).
- RUN - used to enter run number. This function is determined by transit authority programming.
- ROUTE - used to enter route number. This function is determined by transit authority programming.
- P/R - used to enable public relations message code entry. This switch may be disabled if public relation messages are not available.
- ROUTE - press to enable route number entry. Route number entry may be either coded or be the actual route number for display.
- DEST A and DEST B - used to enable respective destination message code entry for message display change. These switches are permanently enabled.

All destination and public relations (P/R) messages can be set an viewed from the ODK. See "Figure 16: Operator's Display Keyboard (ODK)" on page 44.

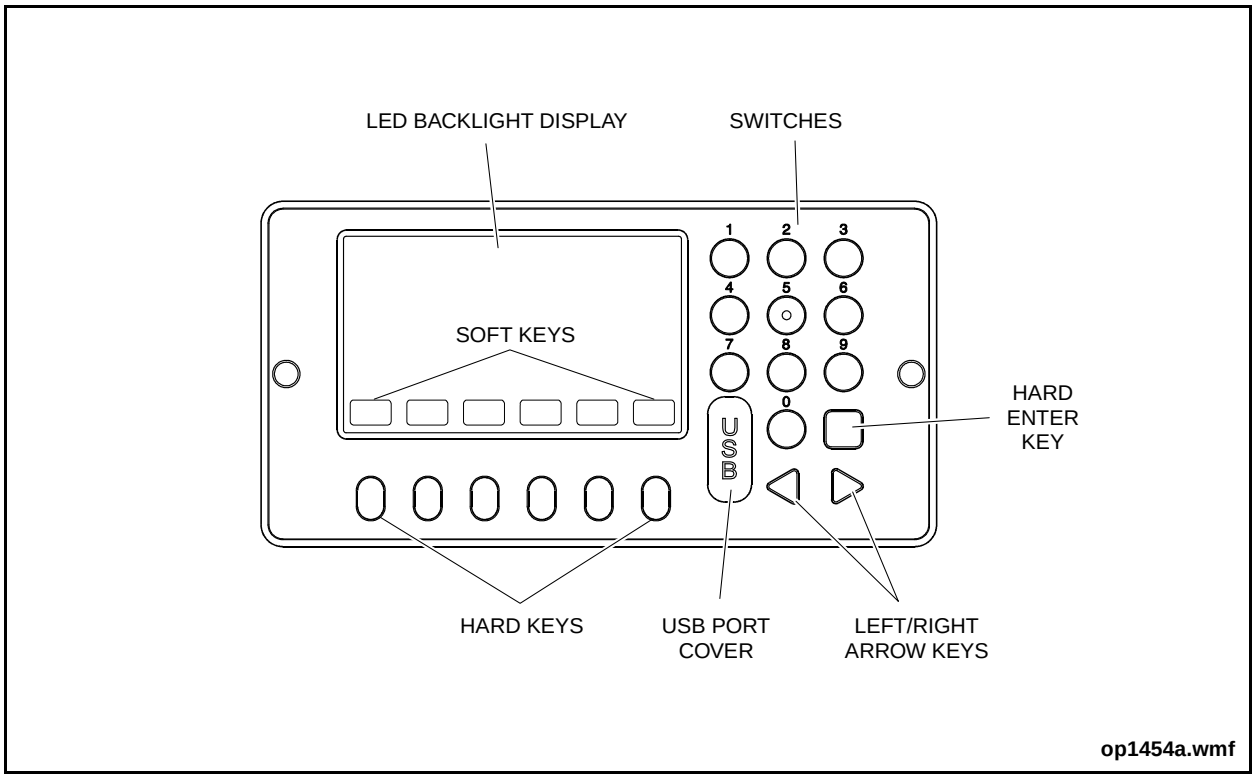


Figure 16: Operator's Display Keyboard (ODK)

Basic Operating Procedures

Basic operating procedures are as follows:

- Set RUN number - press the RUN key on the default screen. Enter the run number via the ODK number pad and then press ENTER. The message "RUN button not used" will appear if the manual entry feature has been disabled.

☞NOTE:

To change a RUN number, use the left/right arrow keys to highlight a number and then press CLEAR (or press DEL to delete an entire string).

- Set ROUTE number - press the ROUTE key on the default screen. Use the ODK keypad to enter a route number or left/right arrow keys to highlight a letter, then press SELCT to select it. After entering the route number, press the hard ENTER key. The route number just entered will be displayed on the ODK as well as on the route signs. This route number will persist when you go from DEST A to DEST B without having to re-enter it.

☞NOTE:

To change a ROUTE number, use the right arrow key to move the square cursor to the end of the string and then use the left arrow key to move cursor back to the left to erase existing numbers (you cannot simply overwrite them).

- Set Public Relations (P/R) message - press the P/R key on the default screen. Enter the P/R message code number via the ODK number pad and press ENTER. The P/R code number will display on the ODK display screen and the route signs approximately 5 seconds after it is entered.

☞NOTE:

To change a P/R code number (or clear the message altogether) use the left/ right arrow keys to highlight a number and press CLEAR to erase it (or press DEL to delete an entire string) then press ENTER.

- Set Destination A or B message - press the DestA key on the default screen to set the DestA message. Enter the destination code number via the OKD number pad and press the hard ENTER key. The destination code number will display on the ODK display screen and the route signs approximately 5 seconds after it is entered. Setting Destination B is performed in the same manner as setting Destination A.

☞NOTE:

To change a destination number, use the right arrow key to move the square cursor to the end of the string and then use the left arrow key to move cursor back to the left to erase existing numbers (you cannot simply overwrite them).

- Set Display Brightness Level - press MENU on the default screen to access menu options. From the MENU screen press the PREF key. From the PREF screen press the BRGHT key. From the BRGHT screen touch the brightness level bar at the top of the screen or use the left/right arrow keys to set the brightness level, then press OK.

☞NOTE:

To return the display to the original factor default brightness level press the DFLTS key from the PREF screen, then press YES

- Set Aisle Light Dimming Level - press MENU on the default screen to access menu options. From the MENU screen press the DIMNG key. From the DIMNG screen touch the dimming level bar at the top of the screen or use the keypad left/right arrow keys to set the dimming level, then press OK.

Driver/Vehicle Monitoring System

The New Flyer Connect™ Driver/Vehicle Monitoring System measures and records vehicle operating parameters and location in real time. The system consists of:

- A Main Board Unit (MBU) located in the electronic equipment enclosure.
- A GPS/Data Modem Unit mounted on the ceiling of the vehicle, above the driver.
- A Driver Maneuver Awareness System (DMAS) display mounted on the instrument panel.

The Driver/Vehicle Monitoring System is connected to the vehicle's J1939 networks. Information from these networks is monitored and transmitted, in real time, to allow transit authorities to monitor driver performance and vehicle condition.

The Main Board Unit contains a 3-axis accelerometer to monitor hard acceleration and braking and fast turning. The Driver Maneuver Awareness System (DMAS) is an LED bar graph display that provides the driver with feedback on these parameters and warns when accepted values are being exceeded. Refer to "9. INSTRUMENTATION & CONTROLS" on page 51 in this manual for more information on the DMAS Display.

7. ENTRANCE DOOR AREA

The entrance door area includes the following components: See “Figure 17: Entrance Door Area” on page 48.

- A slide glide style door that is electrically operated.
- An entrance door emergency release valve.
- An entrance door header light.

Pressing the front door push button will open the entrance door.

When the Master Run switch is in DAY-RUN, the door header lights will illuminate when the entrance door is open and the wheelchair ramp is deployed. In NIGHT-RUN or NIGHT-PARK the door header lights will illuminate when the entrance doors are opened.

Boarding passengers can use the door mounted handles to assist in entering the vehicle.

In the event of an emergency situation with an inoperable door, the emergency release valve located behind the mechanism access door, can be operated to release air pressure from holding the door closed. Refer to “2. EMERGENCY INFORMATION” on page 13 in this manual for emergency release valve operating instructions.

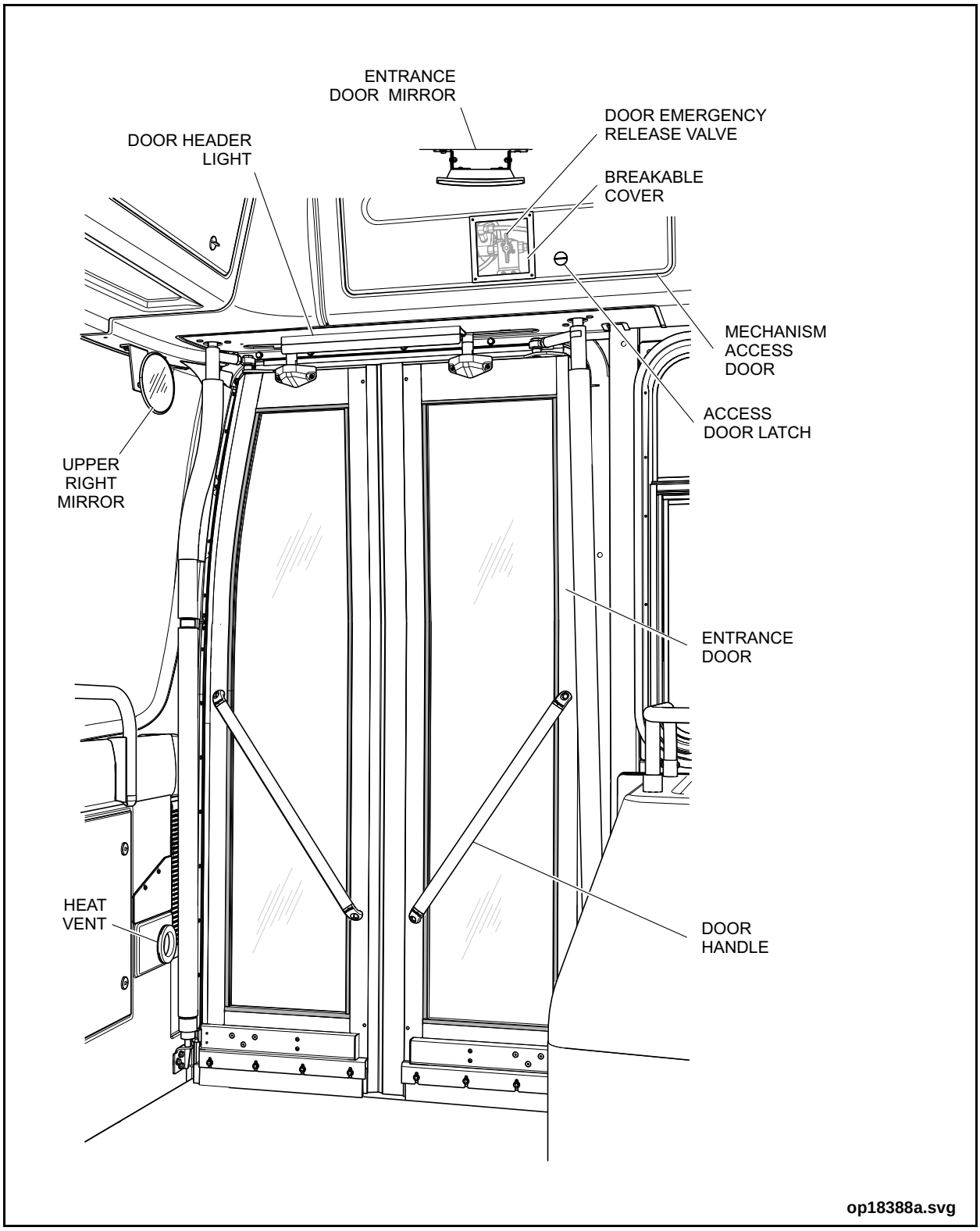


Figure 17: Entrance Door Area

8. EXIT DOOR AREA

The exit door area includes the following components: See “Figure 18: Exit Door Area” on page 50.

- A slide glide style door that is electrically operated.
- An exit door emergency release valve.
- A green LED exit door enabled light.
- Stop request buttons on the exit door stanchions.
- An acoustic sensor door operating system.

Pressing the rear door push button will enable the exit door. The green overhead light will illuminate when the exit door is enabled. The disembarking passenger is required to break the acoustic sensor beam, which will cause the door to open. The door header lights will illuminate as soon as the exit door is enabled and will remain illuminated for five seconds after the door closes.

In the event of an emergency situation with an inoperable door, the emergency release valve located in the upper left corner can be operated to release air pressure from holding the door closed. Refer to “2. EMERGENCY INFORMATION” on page 13 in this manual for emergency release valve operating instructions.

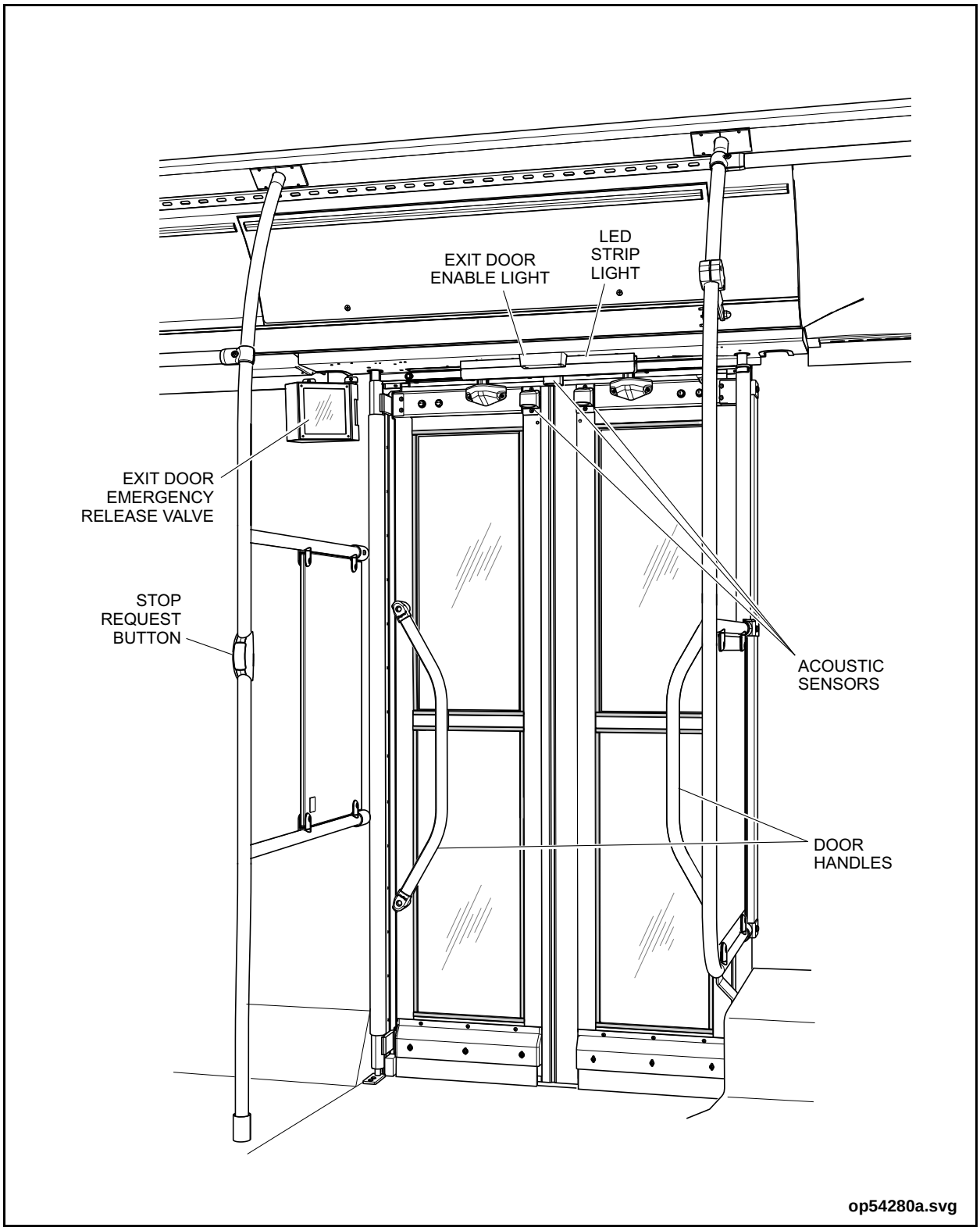
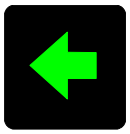


Figure 18: Exit Door Area

9. INSTRUMENTATION & CONTROLS

Instrument Panel

The instrument panel is located directly in front of the driver and provides a visual display of the vehicle operating systems as well as providing controls for the various systems. The instrument panel cluster is a programmable electronic unit with diagnostic capabilities. See “Figure 19: Instrument Panel” on page 52.



Turn Indicators (Green)

If turn signal indicators do not operate as described, DO NOT OPERATE THE VEHICLE.

The turn indicators, symbolized by directional arrows, flash on either side of the instrument panel when the right-hand or left-hand floor-mounted turn signal switch is pressed.

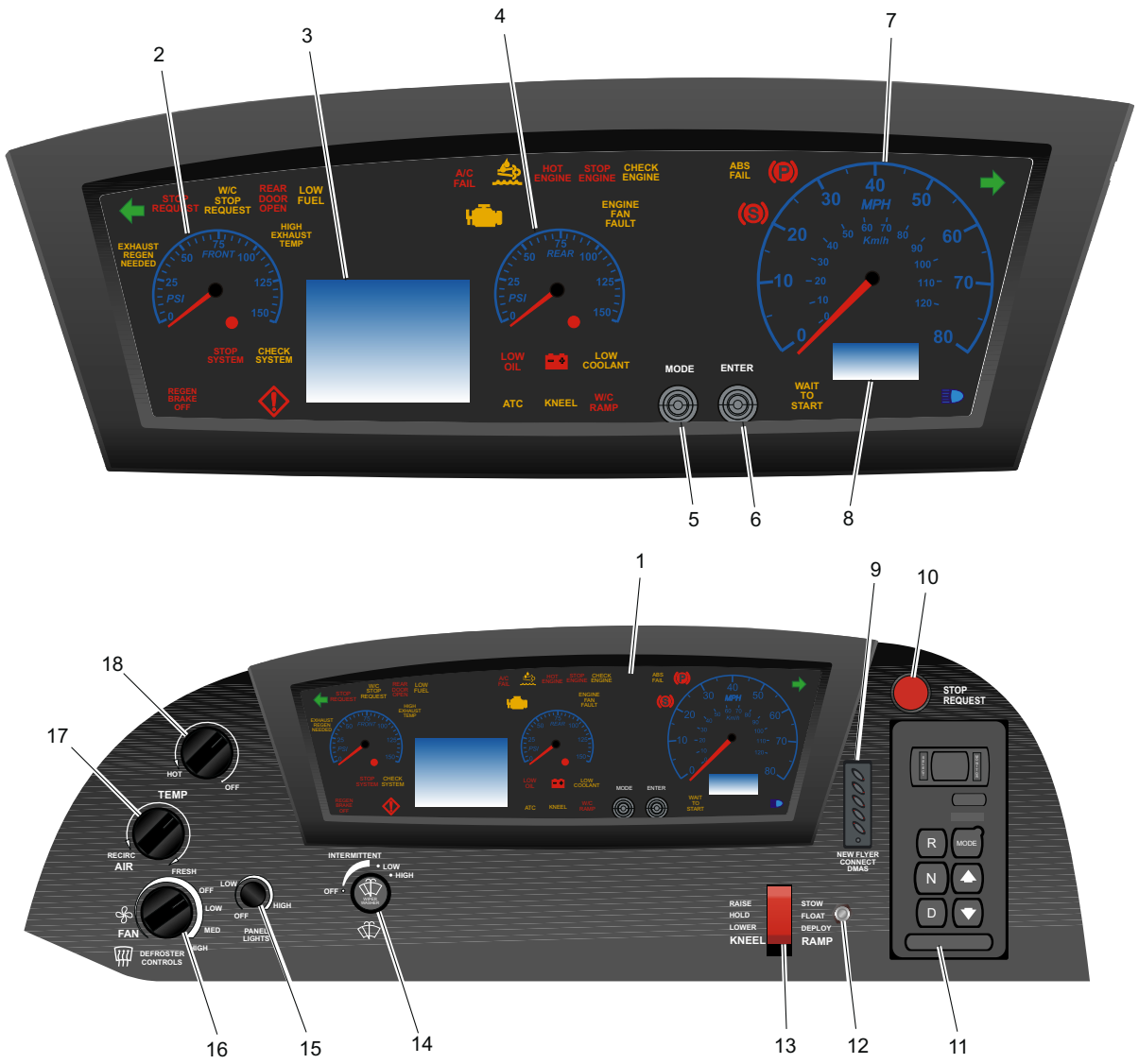
When the Hazard switch is activated, both turn indicators flash together. Failure of these lights to flash normally indicates that the flasher module is not functioning.

Stop Request Indicator (Red)

The Stop Request indicator illuminates when the passenger signal system has been activated.

W/C Stop Request Indicator (Amber)

The Wheelchair Stop Request indicator illuminates when the wheelchair passenger signal system has been activated.



1. Instrument Cluster
2. Front Air Pressure Gauge
3. LCD Screen
4. Rear Air Pressure Gauge
5. Mode Button
6. Enter Button
7. Speedometer
8. LCD Odometer
9. New Flyer Connect™ DMAS
10. Stop Request Indicator
11. Shift Selector
12. Ramp Switch
13. Kneel Switch
14. Wiper/Washer Control
15. Panel Lights Dimmer Switch
16. Defroster Fan Control
17. Defroster Air Recirculation Control
18. Defroster Temperature Control

op03443a.svg

Figure 19: Instrument Panel

Rear Door Open Indicator (Red)

The Rear Door Open indicator illuminates when the rear door control is activated and the exit door opens.

Low Fuel Indicator (Amber)

The Low Fuel indicator illuminates when the diesel fuel in the tanks has reached the minimum level for reliable vehicle operation.

A/C Fail Indicator (Red)

The A/C Fail indicator illuminates if the heating, ventilating and air conditioning (HVAC) unit malfunctions.

Diesel Exhaust Fluid (DEF) Indicator (Amber)

The DEF symbol will illuminate to indicate that the fluid level in the tank is low and needs to be refilled. Notify maintenance personnel if this indicator illuminates.

Hot Engine Indicator (Red)

The Hot Engine indicator will illuminate if the engine exceeds its normal operating temperature and overheats. The Hot Engine indicator is accompanied by a warning buzzer.

☞NOTE:

If this indicator remains illuminated, the Engine Protection System engages, initiating an automatic engine shutdown sequence.

Stop Engine Indicator (Red)

The Stop Engine indicator illuminates if an engine operating condition occurs that will result in damage to the engine. The indicator is controlled by the vehicle's Multiplexing System which monitors engine sensor output. If the Multiplexing System illuminates the indicator it also initiates an engine shut-down sequence.

As an operation check, the Stop Engine indicator should remain illuminated momentarily when the engine is started.

☞NOTE:

If this indicator remains illuminated, the engine will continue running for 30 seconds. Use the time to drive out of traffic to a safe area.

Check Engine Indicator (Amber)

⚠CAUTION

If after engine start-up the Check Engine indicator remains illuminated, advise service personnel. Avoid extended periods of operation with this indicator illuminated.

The Check Engine indicator illuminates if the engine requires service. The indicator is controlled by the vehicle's Multiplexing System which monitors engine sensor output. The Multiplexing System will illuminate the indicator if sensor output signals fall outside of a predetermined range.

ABS Fail Indicator (Amber)

The ABS Fail indicator illuminates if the ABS System requires service. Engine start-up illuminates the indicator momentarily as part of a system check. It is also used during diagnostics to display the blink code. Refer to "11. VEHICLE OPERATION" on page 93 in this manual for further information.

Parking Brake Indicator (Red)

The parking brake indicator, symbolized by a circled letter “P” illuminates when the parking brake control valve is applied. Activating the parking brake illuminates the stop lights indicator and all red stop lamps.

Exhaust Regen Needed Indicator (Amber)

This indicator will either illuminate steady or flash and may illuminate in combination with the Check Engine indicator to indicate the various stages of soot buildup in the muffler particulate filter. Refer to the following chart for a description of various conditions and actions required when this indicator illuminates.

EXHAUST REGEN NEEDED INDICATOR FUNCTION

DPF Soot Level	Exhaust Regen Needed Indicator	Check Engine Indicator	Stop Engine Indicator	Engine Derate	Procedure
Low to Medium	On	Off	Off	None	Increase vehicle duty cycle to allow mobile active regeneration.
Medium to High	Flashing	Off	Off	None	Increase vehicle duty cycle to allow mobile active regeneration.
High	Flashing	On	Off	Derate (Note 1)	Notify service personnel. Perform stationary regeneration (Note 3)
Severe	Off	Off	On	Severe Derate (Note 2)	Stop engine at earliest opportunity & notify service personnel. (Note 3)

Note 1: Moderate derate of engine torque.
Note 2: Severe derate or engine speed.
Note 3: Stationary regeneration will be disabled.

High Exhaust Temp Indicator (Amber)

WARNING

If the High Exhaust Temp indicator on the instrument panel illuminates, ensure the exhaust outlet is not located where it could cause damage to persons or any materials which could melt or explode, and that nothing is within 2 feet of the outlet. Ensure no combustible materials are within 5 feet of the outlet. Exhaust outlet temperatures can reach 1500°F (800°C) when this indicator illuminates.

The High Exhaust Temp indicator illuminates during the regeneration process when exhaust temperatures are high.

☞NOTE:

Illumination of this indicator does not signify the need for any kind of vehicle or engine service.

Exhaust Malfunction Indicator (Amber)

The Exhaust Malfunction indicator will illuminate when a malfunction related to the Emissions Control System is detected.

Engine Fan Fault (Amber)

The Engine Fan Fault indicator will illuminate if a fault is detected with the electronically-controlled radiator cooling fans. Notify maintenance personnel if this indicator illuminates.

Stop Lights Indicator (Red)

WARNING

If the stop lights indicator does not operate as described, DO NOT OPERATE THE VEHICLE.

The stop lights indicator, symbolized by a circled letter S, illuminates each time the service brake or parking brake control valve is applied. If under these circumstances the indicator does not illuminate, then any or all rear stop lights are malfunctioning.

STOP SYSTEM

Stop System Indicator (Red)

The Stop System indicator illuminates if a major fault or unsafe operating condition is detected in the Allison electric drive system. Immediately move the vehicle to a safe area and shut down the system.

CHECK SYSTEM

Check System Indicator (Amber)

CAUTION

If the Check System indicator illuminates for more than 30 seconds, remove the vehicle from traffic to a safe location, shut the engine down and apply the parking brake.

The Check System indicator illuminates if a non-critical fault is detected in the electric drive system.

LOW OIL

Low Oil Indicator (Red)

CAUTION

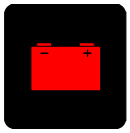
If the Low Oil alarm continues and the indicator lamp remains illuminated, DO NOT OPERATE THE VEHICLE.

The Low Oil indicator illuminates if the engine oil pressure is too low for proper engine lubrication. The Low Oil indicator is accompanied by a warning buzzer.

Before starting the engine, positioning the Master Run switch to DAY-RUN or NIGHT-RUN illuminates the Low Oil indicator and sounds its alarm. This occurs momentarily and is a normal electrical system test.

☞NOTE:

If this indicator remains illuminated, the Engine Protection System engages to initiate an automatic engine shutdown sequence.



No Gen Indicator (Red)

CAUTION

If the no gen indicator remains illuminated while the engine is operating, DO NOT OPERATE THE VEHICLE.

The no gen indicator, symbolized by a battery, illuminates when the alternator is not charging. The no gen indicator illuminates when the Master Run switch is in the DAY-RUN or NIGHT-RUN position and the engine is not operating. The no gen indicator turns off once the engine is operating.

Low Coolant Indicator (Amber)

The Low Coolant indicator illuminates if too little coolant is in the engine to maintain normal engine operating temperature.

☞NOTE:

If this indicator remains illuminated, the Engine Protection System engages to initiate an automatic engine shutdown sequence.

Regen Brake Off Indicator (Red)

The Regen Brake Off indicator illuminates when the regenerative braking system has been disabled by toggling the Regen Brake switch to the OFF position. The Regen Brake switch is located inside the destination sign compartment.

Exclamation Symbol (Red or Amber)

The Exclamation Symbol will illuminate when a text message tell tale appears in the Message Display Screen. The color of the exclamation symbol will change to match the message currently being displayed on the screen.

ATC Indicator (Amber)

The ATC indicator illuminates when the Automatic Traction Control System is operating to limit drive wheel spin on slippery surfaces.

Kneel Indicator (Amber)

The Kneel indicator illuminates when the front suspension is in the kneeling mode and is lowering the vehicle to the curb.

☞NOTE:

The Kneel toggle switch is located on the instrument panel.

W/C Ramp Indicator (Red)

The Wheelchair Ramp indicator illuminates to indicate operation of the wheelchair ramp.

☞NOTE:

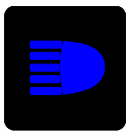
The Ramp toggle switch is on the instrument panel.

Wait to Start Indicator (Amber)

The Wait to Start indicator illuminates before engine start-up with the Master Run switch in the DAY-RUN or NIGHT-RUN position. The indicator will remain illuminated for up to 45 seconds while the intake air heater system operates.

☞NOTE:

The Wait to Start indicator and the intake air heater system will only operate in temperatures below 66°F (19°C).



High Beam Indicator (Blue)

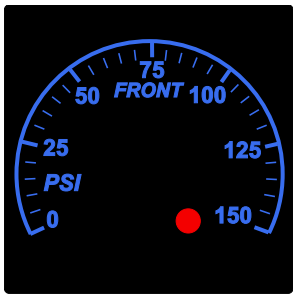
The high beam indicator, symbolized by a lit headlight, illuminates when the vehicle headlights are in the high beam mode of operation. Pressing the dimmer switch returns the headlights to normal low beam operation.

Mode Button

The Mode button is used primarily to navigate between the Message Display Screen and the Odometer/Hourmeter Display Screen and to navigate through the menus and select various options available on the selected screen. The button function is dependent on the length of time it is pressed. Refer to " Message Display Screen" on page 61 and Refer to " Odometer/Hourmeter Display Screen" on page 65 in this manual for information on the operation of this button.

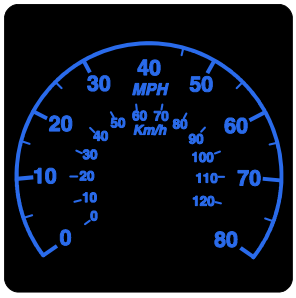
Enter Button

The Enter button is used to navigate through the menus on the Message Display Screen and to switch screen formats on the Functional Readout Screen, The Enter button can also be used to reset the tripmeters on the Odometer Display Screen. The button function is dependent on the length of time it is pressed. Refer to " Message Display Screen" on page 61 and Refer to " Odometer/Hourmeter Display Screen" on page 65 in this manual for information on the operation of this button.



Air Pressure Gauges

Individual analog air pressure gauges are used to monitor the vehicle's front and rear air brake systems. An LED indicator at the bottom of the gauge illuminates and a warning buzzer sounds if air pressure drops below 75 psi (517 kPa). If air pressure exceeds the normal operating range, the LED indicator will flash. Normal operating pressure range is 117 to 131 psi (807 to 903 kPa).



Speedometer

This gauge indicates the vehicle's forward speed. The speedometer will initialize as soon as the Master Run switch is set to the DAY-RUN or NIGHT-RUN position. During this self-test process the gauge will sweep full scale and then return to the zero point.

☞NOTE:

Refer to " Odometer/Hourmeter Display Screen" on page 65 *in this manual for information on the odometer.*

Message Display Screen

The larger of the two LCD screens is located between the air pressure gauges and is used to display text messages to warn the driver of potential problems. The screen will change color, from blue to amber to red, depending on the severity of the warning message.

The message display screen has four separate menus. Navigate through the menus by performing a long press (over 3 seconds) on the ENTER button.

- Function Readout (default screen) - change the readout between bar graph and digital using a short press (1 to 3 seconds) on the ENTER button.
- Active LCD Tell Tale Overview - this screen displays a list of the active tell tale messages.
- IP Software Version - this screen displays the IP software version, configuration file label, and routing table label.
- VMM Query - this screen displays the application and ladder logic version of the VMM multiplexing modules on the vehicle.

☞NOTE:

There are no operator navigable or resettable features in the IP Software Version or VMM Query screens.

Perform a long press (greater than 3 seconds) on the MODE button to navigate between the Message Display Screen and the Odometer/Hourmeter Display Screen. If the Odometer/Hourmeter Display Screen has been selected, then an arrow pointing to it will appear in the lower right-hand corner of the Message Display Screen.

Function Readout Displays

- Diesel Exhaust Fluid Level - displayed on a bar graph as percentage of fluid remaining in the tank. See “Figure 20: Function Readout” on page 62.
- Engine Temperature - The Engine Temperature gauge indicates the engine coolant (water) temperature in degrees Fahrenheit (°F). The gauge will read 190° during normal operating conditions.
- Auxiliary Air Pressure - displayed on bar graph as PSI of air pressure in the auxiliary air tank.

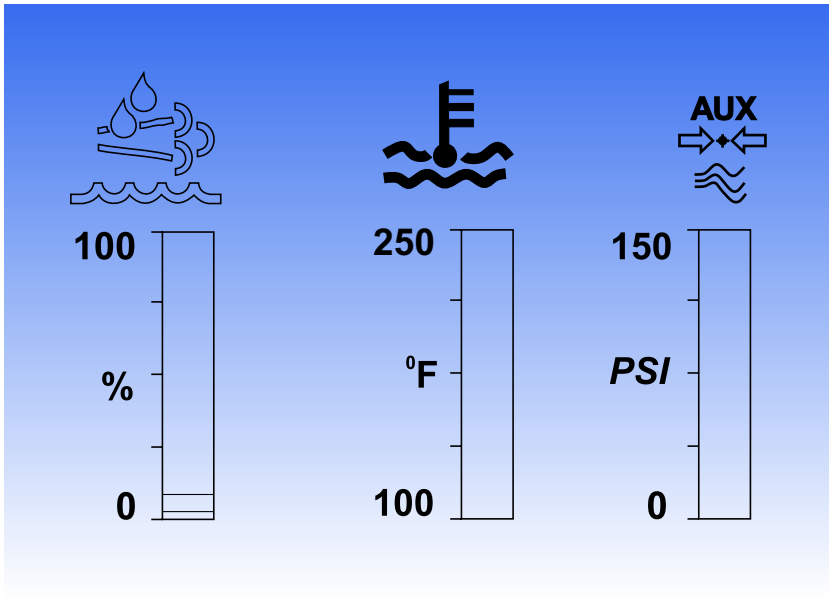


Figure 20: Function Readout

Text Messages

- RH Headlight Fault (Amber) - The RH Headlight Fault message will appear on the LCD screen to indicate a fault with a low beam headlight.
- RH Turn Fault (Amber) - The RH Turn Fault message will appear on the LCD screen to indicate a fault with the right-hand turn light.
- LH Headlight Fault (Amber) - The LH Headlight Fault message will appear on the LCD screen to indicate a fault with the low beam headlight.
- LH Turn Fault (Amber) - The LH Turn Fault message will appear on the LCD screen to indicate a fault with the left-hand turn light.
- Starter Lock Out (Amber) - The Starter Lock Out message will appear if the starter enters the protect mode after 14 cumulative seconds of cranking.
- Charge Mode (Green) - The Charge Mode message will appear if the engine is running and EV mode is selected.
- Interlock (Red) - The interlock message appears when the interlock system applies the brake interlocks. The message disappears when the interlock system releases.

☞NOTE:

Refer to " Foot Operated Controls" on page 84 *in this manual for information on the brake treadle and interlock operation.*

- Kneel Snsr Fault (Amber) - This message will appear if the kneeling sensors malfunction during the kneeling process.

☞NOTE:

If the Kneel Snsr Fault message appears, kneeling will continue to function using time-based kneel and raise intervals.

- Fire (Red) - The Fire message appears and an alarm sounds if there is a fire in the engine or muffler compartment.
- Door Alarm (Red) - This message appears and a buzzer sounds if the Object Detection System detects an obstruction at the exit door.
- Motor Overspeed (Red) - This message with buzzer will advise that the traction motor rotor speed is exceeding 10,500 RPM. Apply the service brakes to slow the vehicle.

☞NOTE:

This message will remain active until the traction motor rotor speed drops below 10,300 RPM.

- Front Brake Worn (Amber) - The Front Brakes Worn message will appear on the LCD screen to indicate that the brake disc pads have worn to a limit where service is required.

- Rear Brake Worn (Amber) - The Rear Brakes Worn message will appear on the LCD screen to indicate that the brake disc pads have worn to a limit where service is required.
- Auxiliary System Fault - This message will advise that a breaker or contactor in the High Voltage Junction Box for the vehicle's auxiliary electrical devices is open. The vehicle's auxiliary electrical devices include the HVAC system and the electric motor driving the air compressor and power steering pump.
- EV Mode ON (Green) - This message will advise that the propulsion system is operating in electric mode. The vehicle can be moved without starting the engine by activating the EV Mode switch on the side console.
- EV Mode warning (Purple) - This message will advise that the propulsion system, operating in EV Mode, will shut down in 1 minute due to battery state of charge. If this indicator activates, the EV Mode must be disengaged and the vehicle engine started to continue operation.
- Interlock Off (Red) - This message will appear on the LCD Screen to indicate the brake interlocks have been disabled with the door master switch.
- Bike Rack (Amber) - The Bike Rack message will appear on the LCD screen to indicate the bike rack is not securely latched.
- Incline Mode (Amber) - The Incline Mode message appears when the vehicle is in Incline Levelling mode.
- Stop Lamp Fault (Red) - This message will appear on the LCD screen and the buzzer will sound to indicate a fault with a stop lamp circuit. Notify service personnel if this message appears on the screen.
- Tail Lamp Fault (Amber) - This message will appear on the LCD screen to indicate a fault with a tail lamp circuit. Notify service personnel if this message appears on the screen.
- Ext Lamp Fault (Amber) - This message will appear on the LCD screen to indicate a fault with an exterior lamp circuit. Notify service personnel if this message appears on the screen.
- CLNT Fill Mode (Red) - This message will appear on the LCD screen to indicate that the coolant fill mode is active.
- Regen Brake On Indicator (Amber) - The Regen Brake indicator illuminates to indicate operation of the regenerative braking system.

Odometer/Hourmeter Display Screen

The smaller of the two LCD screens is located directly below the speedometer and contains the odometer, two trip odometers and an engine hour meter. The display screen has four separate menus. Navigate through the menus by performing a quick press (less than 1/2 second) on the MODE button. See “Figure 21: Odometer/Hourmeter Display Screen Options” on page 65.

☞NOTE:

The trip odometers can be reset by navigating to the appropriate screen with the MODE button, and then performing a short press (1 to 3 seconds) on the ENTER button.

Perform a long press (greater than 3 seconds) on the MODE button to navigate between the Message Display Screen and the Odometer/Hourmeter Display Screen.

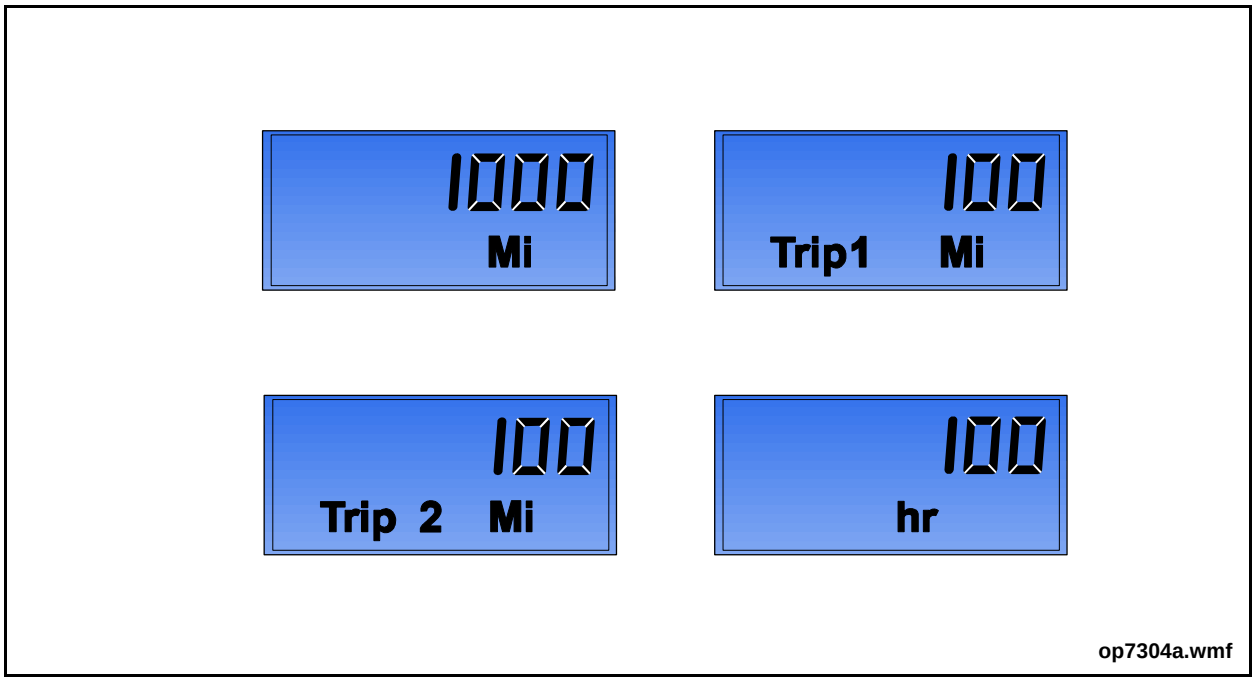


Figure 21: Odometer/Hourmeter Display Screen Options

DMAS Display

The Driver Maneuver Awareness System (DMAS) provides the driver with visual feedback as to whether he/she is operating the vehicle within acceptable driving limits. The display consists of five LED indicators that will illuminate in response to the severity of the driving parameter being exceeded. These driving parameters include acceleration, braking, and turning. See “Figure 22: DMAS Display” on page 66.

The function of the LED indicators is as follows:

- The small round white indicator at the base of the display indicates that a problem exists with the system.
- The blue LED indicates that power is on and the system is functioning properly.
- The green LED indicates vehicle operation within normal limits.
- The amber, orange, and red LED’s indicate the degree to which the vehicle is being operated outside acceptable limits.

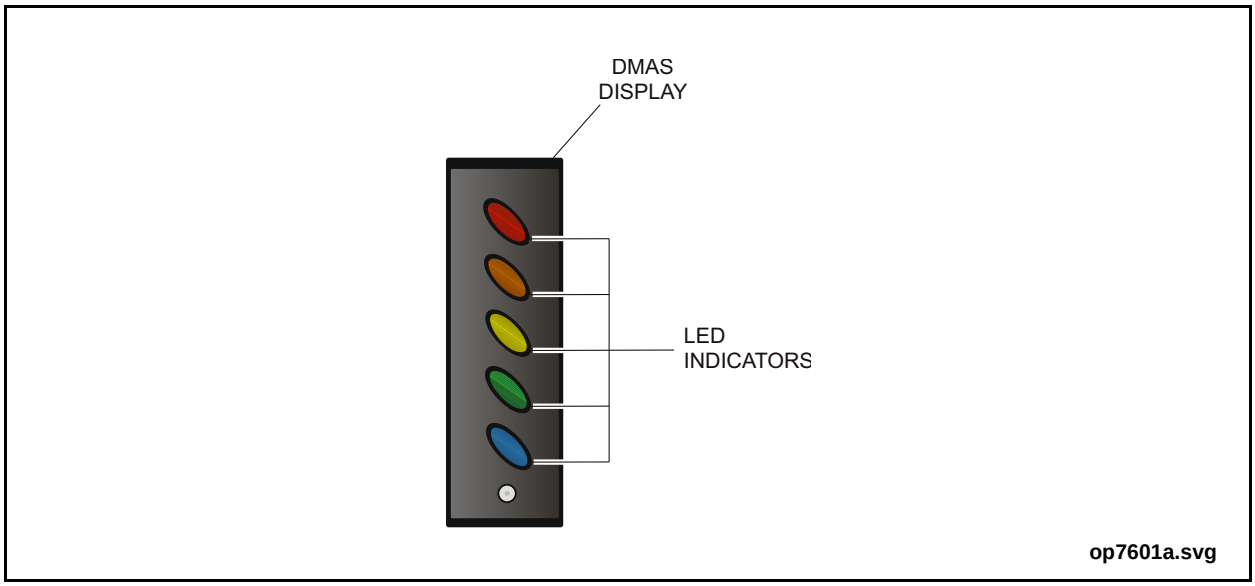


Figure 22: DMAS Display

Shift Selector

CAUTION

Be sure to bring the vehicle to a full stop before shifting from drive [D] to reverse [R] or vice versa.

The shift selector is located on the right hand side of the instrument panel. The shift selector module has three push-button switches which illuminate when pushed.

The drive modes available with this switch are Drive (D), Neutral (N), and Reverse (R). In order for the operator to transition from Drive to Reverse, or vice versa, Neutral must be activated first.

☞NOTE:

A back-up alarm activates when reverse [R] is selected.

Take care that one of the gears is always selected and that two gears are never selected at the same time.

Ramp Switch

CAUTION

The Ramp toggle switch is a momentary type. If pressure is removed, the switch returns to the center FLOAT position and operation ceases.

This is a three-position switch that controls the wheelchair ramp.

DEPLOY

This position activates the ramp from the closed position to the open position.

FLOAT

This position shuts off power to the pump, allowing the ramp to free-fall to either the open or the closed position. Upon cycle completion this becomes an off position.

STOW

This position is used to move the ramp from the open to the closed position.

☞NOTE:

Refer to “12. WHEELCHAIR SYSTEM” on page 112 *in this manual for operating procedures.*

Kneel Switch

⚠CAUTION

When placed in the RAISE position, the Kneel toggle switch will latch and continue to raise the vehicle until full ride height is reached at which point the raising action will automatically stop. In order to interrupt the raising operation during its cycle, the toggle switch must be set to the HOLD position.

This three-position momentary switch is used to operate the vehicle’s kneeling system. The kneeling system lowers the front of the vehicle approximately 3 to 4 inches by exhausting air from both front suspension air springs. Boarding the vehicle becomes easier, particularly for small children and the handicapped.

LOWER

This position lowers the vehicle, activating the interlocks, the audible alarm and the exterior warning light. The instrument panel Kneel indicator also illuminates.

☞NOTE:

The Kneel toggle switch is a momentary spring loaded switch that will operate in the LOWER position only as long as pressure on the switch is maintained.

RAISE

This position raises the vehicle automatically to its full ride height. Once the vehicle has reached normal ride height, the interlocks will release (with doors closed), the alarm will silence and the exterior warning light and Kneel indicator will both extinguish.

☞NOTE:

Closing the switch guard locks the switch in the RAISE position.

HOLD

During the kneeling cycle, this position stops kneeling operations, silences the alarms and extinguishes the exterior warning light. The Kneel indicator and the interlocks remain activated.

Wiper/Washer Controls

The Wiper Control switch operates the left-hand and right-hand wiper motors. Rotating the control knob through the intermittent range will vary the delay of the wiper sweep for differing rain conditions. In the low or high position the wipers operate at fixed speeds. Pushing down on the knob operates the windshield washer pump to spray fluid onto the windshield.

☞NOTE:

The windshield washer bottle filler is located in the side console access door.

Panel Lights Dimmer Switch

The Panel Lights Dimmer switch controls the brightness of the instrument panel lighting. Rotating the dimmer knob clockwise increases the brightness and counter-clockwise decreases the brightness of the panel lights.

Driver's Climate Controls

See "Figure 23: Driver's Area Climate Controls" on page 71.

Defroster Fan Control

The defroster Fan knob on the instrument panel controls the speed of the driver's heater/defroster fan. Turning the knob from the extreme left (OFF position) to the right provides variable fan speed settings.

Defroster Air Recirculation Control

The Air knob on the instrument panel controls the amount of fresh air circulated through the driver's heater/defroster system. This knob can be set to recirculate all or a portion of air entering the heater compartment and admit a corresponding amount of fresh air.

Defroster Temperature Control

The Temp knob on the instrument panel controls the temperature of the air blowing from the defroster. Turn the knob from left to right to decrease temperature and from right to left to increase temperature.

Driver's Vent

The vehicle is equipped with a lower vent that allows outside air to enter the vehicle interior during forward motion. The lower vent inlet is located on the left front corner below the windshield. The vent control is located below the instrument panel. Turn the knob clockwise to increase air flow.

Driver's Floor Heat

The driver's floor heat control is located below the instrument panel and controls the defroster/heater outlet to the floor area of the driver's platform. Turn the knob counter-clockwise to increase the foot heat setting.

☞NOTE:

Use the Temperature control knob on the instrument panel to set the floor heat air temperature.

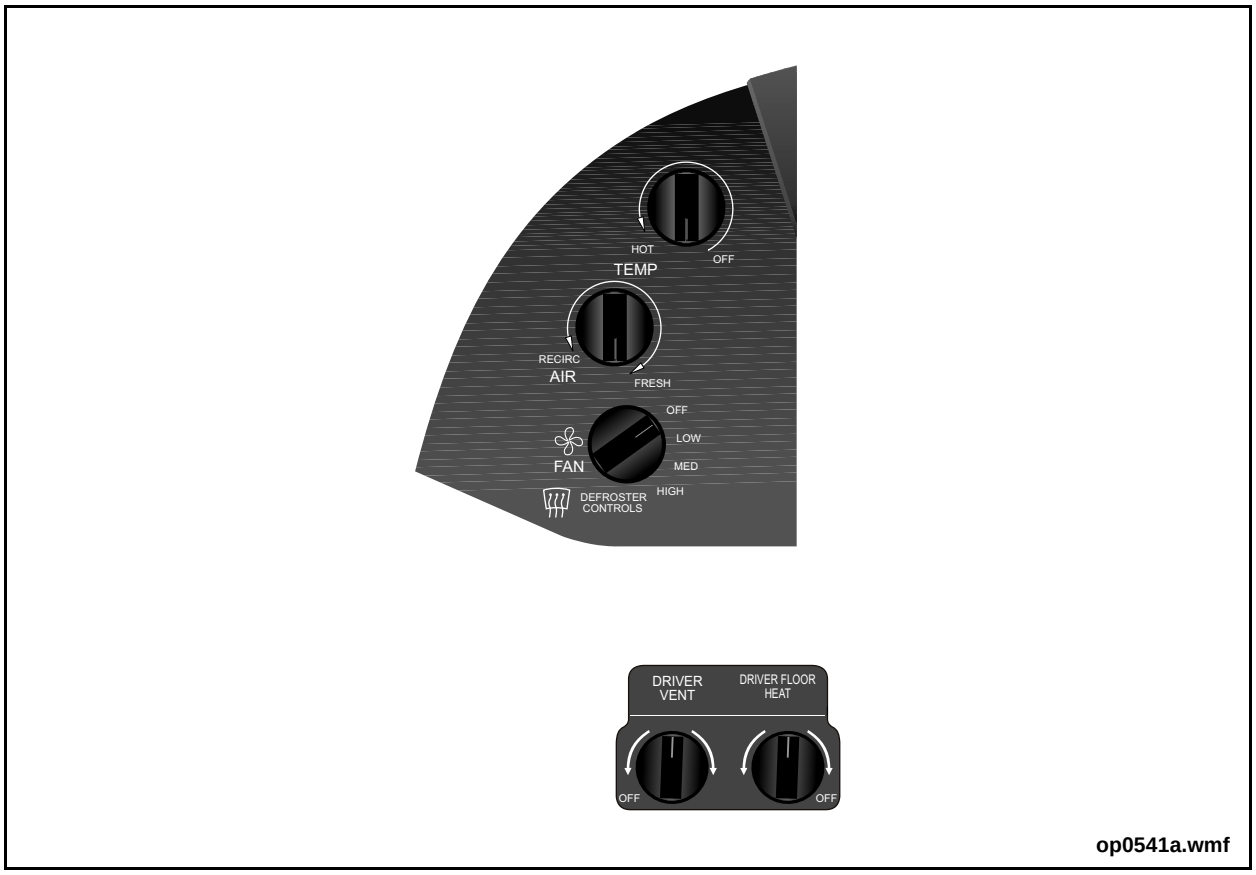


Figure 23: Driver's Area Climate Controls

HVAC Control Panel

The HVAC control panel provides an interface with the HVAC operating system Use the buttons to operate the system as follows: See “Figure 24: HVAC Control Panel” on page 73.

Power Button

The power button is used to turn the system on and off. If the power button is off and power is applied to the display module, the back lighting for the buttons will remain on and the LED indicators and 3-digit display will be turned off. In this mode, the display module will continue communicating with the main module. If the power button is on, the LED indicators and 3-digit display will be lit as determined by the operating mode.

Set Point Up & Down Buttons

The temperature set point is adjusted by first selecting the zone to be configured, and then pressing the up or down button once. The set point icon will light and the 3-digit display will show the current temperature set point. Pressing the up or down button again will increment or decrement the set point by 1 degree. If no button is pressed within a 3 second timeout period, the display will return to the inside temperature for the zone selected.

Zone Select Button

The temperature set point for the three inside zones and the outside ambient temperature can be displayed. The information displayed on the 3-digit display will coincide with the zone that is selected. Pressing the zone select button will cycle through each enabled zone as well as the outside ambient temperature.

Alarm Indicators

The yellow alarm indicator will light to indicate a “check” alarm is currently active. These alarms include sensor readings out of range, open or shorted loads, etc. and may be viewed using the alarm code readout mode on the display module or by using the CAN Diag PC tool. These alarms will clear automatically when the condition is corrected.

The red alarm indicator will light to indicate a “shutdown” alarm has occurred. These alarms include high pressure cut out, low pressure cut out and compressor over temperature conditions. The compressor remains off in this mode and can only be reset by cycling the power button.

Heating & Cooling Indicators

The red and blue LED indicators on the right hand side of the 3 digit display will light to indicate the current operating mode of the HVAC unit. The blue indicator will light whenever the compressor is running and the red indicator will light whenever the heat valve is operating.

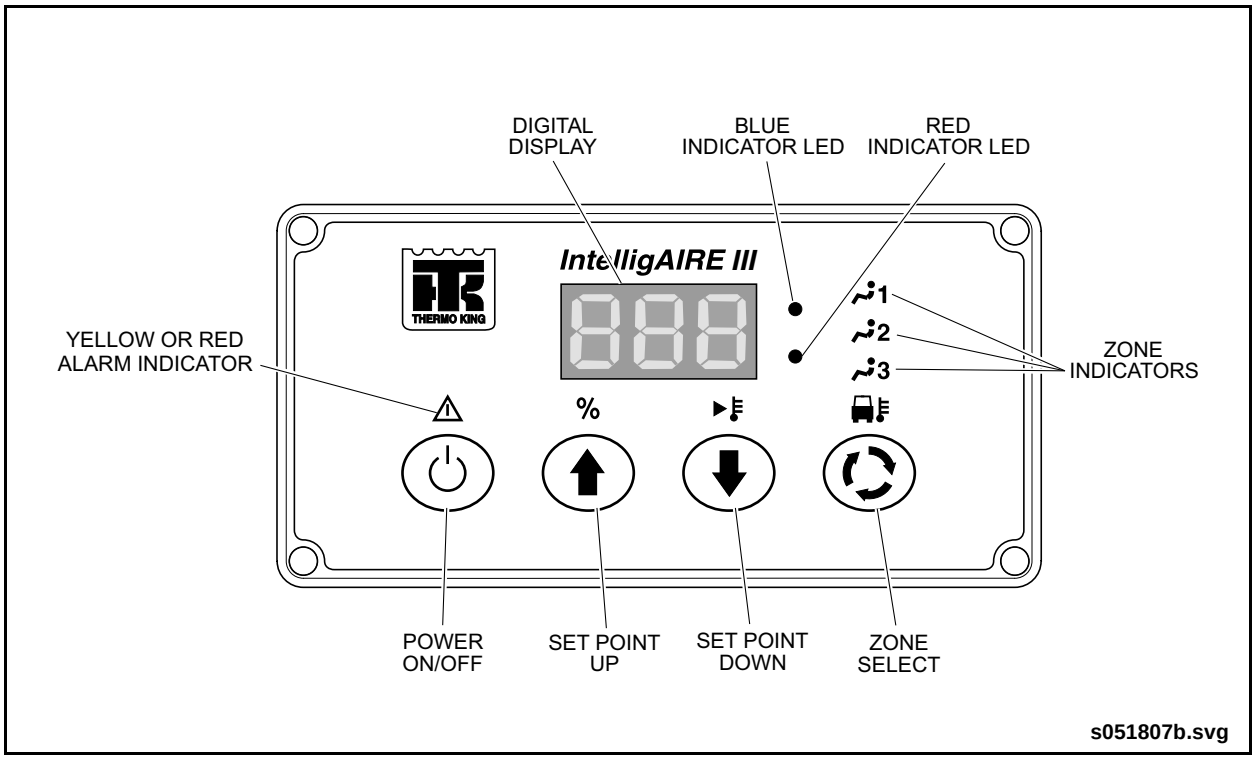


Figure 24: HVAC Control Panel

Side Console Switch Panel

See “Figure 25: Side Console Panel” on page 75.

Door Master Switch

WARNING

Greater attention to passenger safety must be given when-ever operating the vehicle with the Door Master switch in the OFF position, as this position disables several safety features and will allow the following conditions to occur:

- **Vehicle can be moved with entrance and/or exit door open (brake interlocks disabled).**
- **Vehicle can be shifted without foot on brake treadle.**
- **Vehicle can be shifted and vehicle moved with wheel-chair ramp deployed.**
- **Exit doors can be opened at any speed by using the emergency release control valve.**

The Door Master toggle switch, located on the driver’s side console, controls power to the brake interlocks and exit door. When the switch is in the ON position, the entrance and exit doors are fully functional. In this mode, opening the exit door, kneeling the vehicle or operating the wheelchair ramp engages the interlocks. Engaging the interlocks applies the rear brakes and deactivates the accelerator. When the switch is In the OFF position, the brake interlocks are released (interlocks will not engage). The entrance door remains fully functional and the exit door does not function. A warning buzzer sounds and the Rear Door Open indicator illuminates on the instrument panel. In this mode, the exit door only opens if the emergency release control valve is activated. The control valve is located behind the breakable window to the left of the exit door.

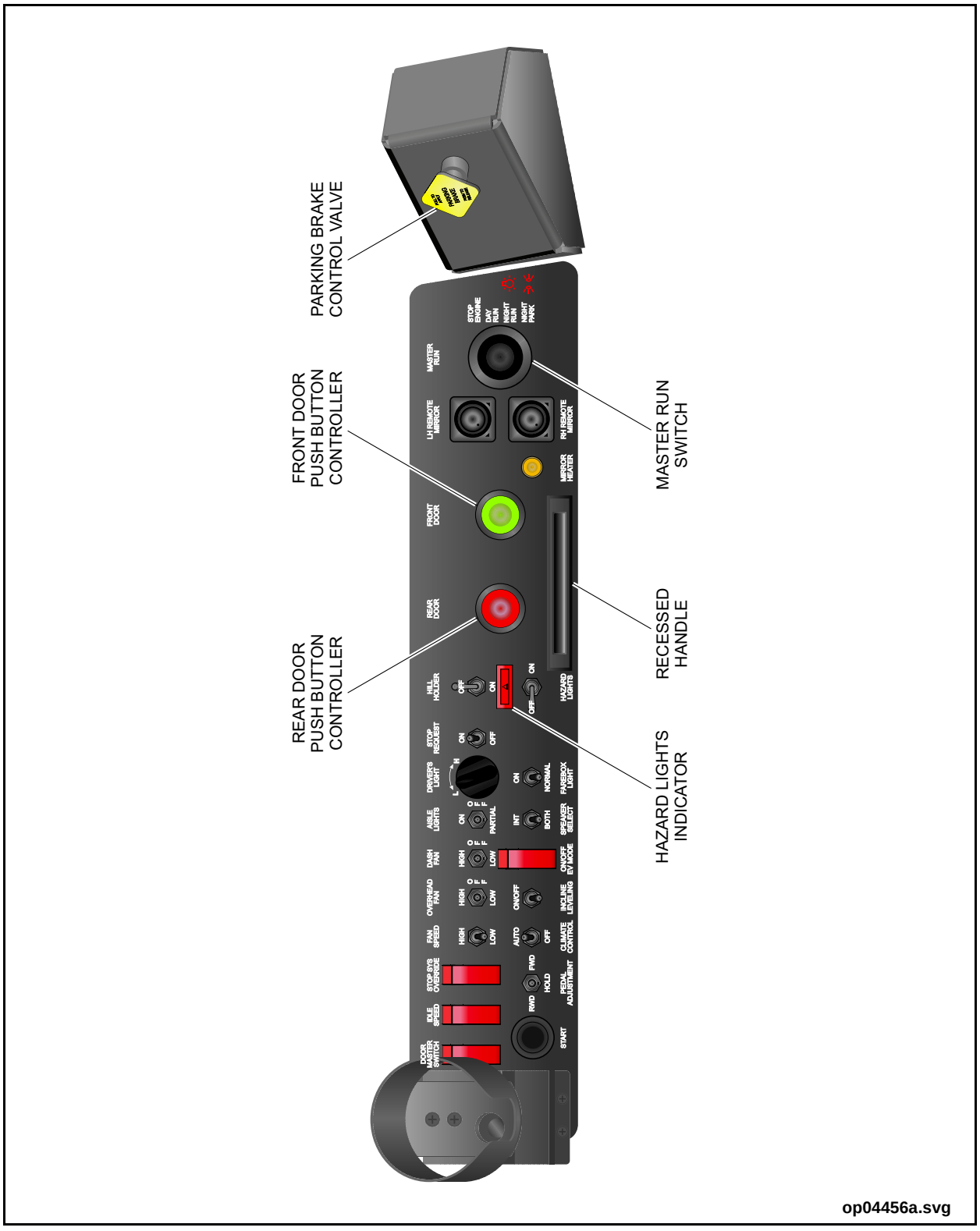


Figure 25: Side Console Panel

Idle Speed Switch

CAUTION

Excessive engine idling is not recommended by the engine manufacturer. Operate engine at fast idle speed if idling for periods longer than 10 minutes. Consult your local transit authority for operating policy.

The Idle Speed toggle switch activates the preset fast idle to increase the engine RPM to maintain optimum engine operating temperature during periods of extended idling. Activating the fast idle following a cold engine start also allows quicker engine warm-up.

☞NOTE:

The FAST position on the Idle Speed switch only operates if the engine is running, the transmission shift selector is in the neutral [N] position and the parking brake is applied.

Stop System Override Switch

WARNING

Apply the Stop System Override switch only for emergencies, such as moving the vehicle from traffic to a safe stopping area. The override interval is 30 seconds. Repeat the switch cycle to activate a repeat override sequence, if necessary.

The Stop System Override toggle switch is used to override the engine shutdown system in an emergency.

Fan Speed Switch

The Fan Speed toggle switch controls the fans of the HVAC system. Position the switch to HIGH or LOW for a desired fan speed.

Overhead Fan Switch

The Overhead Fan switch is a three-position toggle switch that controls the overhead fan located above the windshield. Position the switch to either the LOW or HIGH position for the desired fan speed. The OFF position deactivates the fan.

Dash Fan Switch

The Dash Fan switch is a three-position toggle switch that controls the lower dash fan. Position the switch to either the LOW or HIGH position for the desired fan speed. The OFF position deactivates the fan.

Aisle Lights Switch

The following table displays the lights that will be illuminated based on the positions of the Aisle Lights switch and Master Run switch. See “Figure 26: Interior Lighting Panels” on page 78.

AISLE LIGHTS SWITCH OPERATION

AISLE LIGHTS SWITCH POSITION	MASTER RUN SWITCH POSITION	ILLUMINATED LIGHTS
ON	DAY-RUN	Streetside (1,3,4) Curbside (1,2,4)
ON	NIGHT-RUN	Streetside (1,3,4) Curbside (1,2,4)
ON	NIGHT-PARK[1]	Streetside (None) Curbside (None)
NORMAL	DAY-RUN	Streetside (1,2,3,4) Curbside (1,2,3,4)
NORMAL	NIGHT-RUN	Streetside (1,2,3,4) Curbside (1,2,3,4)
NORMAL	NIGHT-PARK[1]	Streetside (1,2,3,4) Curbside (1,2,3,4)
OFF	ANY POSITION	Streetside (None) Curbside (None)

Note 1: In NIGHT-PARK, the lighting system will remain active for 30 minutes.

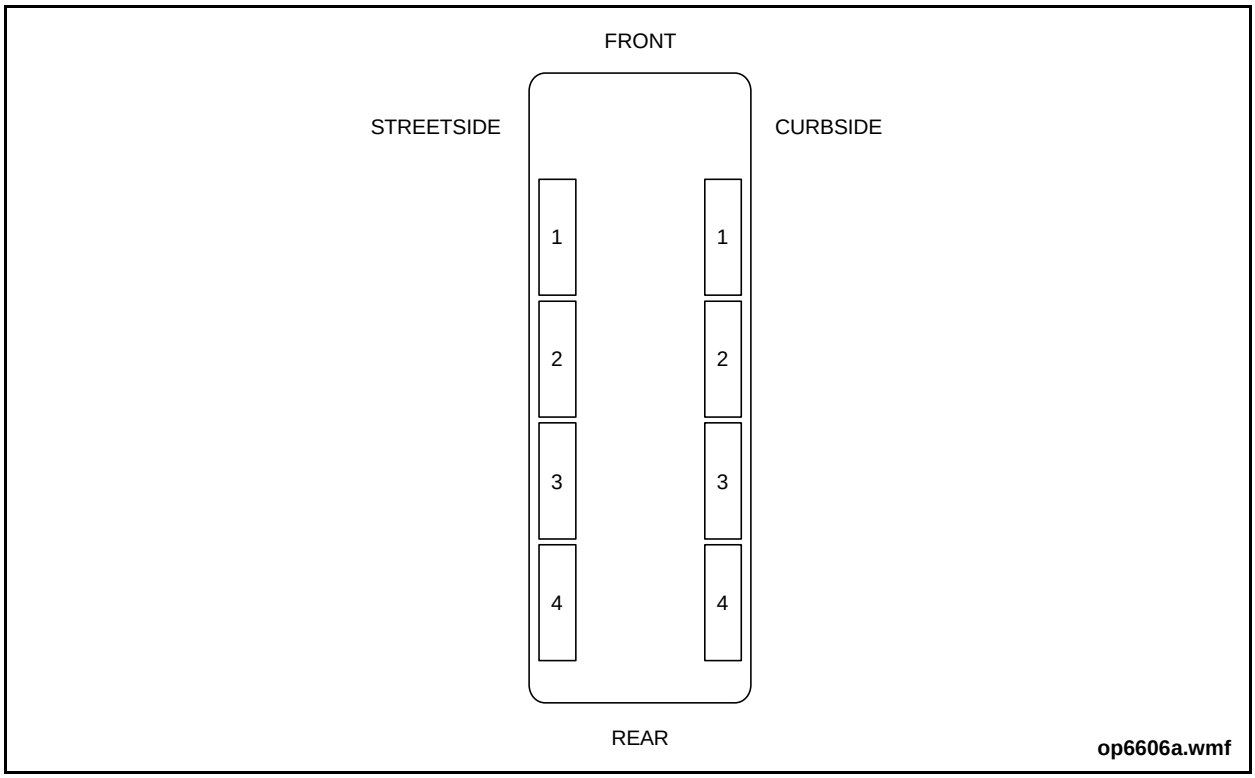


Figure 26: Interior Lighting Panels

Driver's Light Control Knob

The Driver's Light knob controls the light above the driver's area. Turning the knob from the extreme right [OFF] to high [H] illuminates the light. Setting the knob to a position between high [H] and low [L] adjusts the light's brightness.

Stop Request Switch

The Stop Request toggle switch controls the stop request indicators of the passenger signal system. Setting the switch to the OFF position deactivates the stop request sign, the instrument panel indicator, and the chime.

Hill Holder Switch

The Hill Holder switch is a momentary toggle switch that operates the vehicle's brakes. Positioning and holding the switch to ON applies the brakes. Release the switch when the vehicle torque can move the vehicle in the desired direction. Use the switch to prevent unexpected motion when starting on a hill.

Rear Door Control

The exit door control is a push switch that controls the exit door. Push the switch once to open the door. Push the switch a second time to close the door.

Front Door Control

See "Figure 27: Door Controller" on page 79.

The entrance door control is a push switch that controls the entrance door. Push the switch once to open the door. Push the switch a second time to close the door.

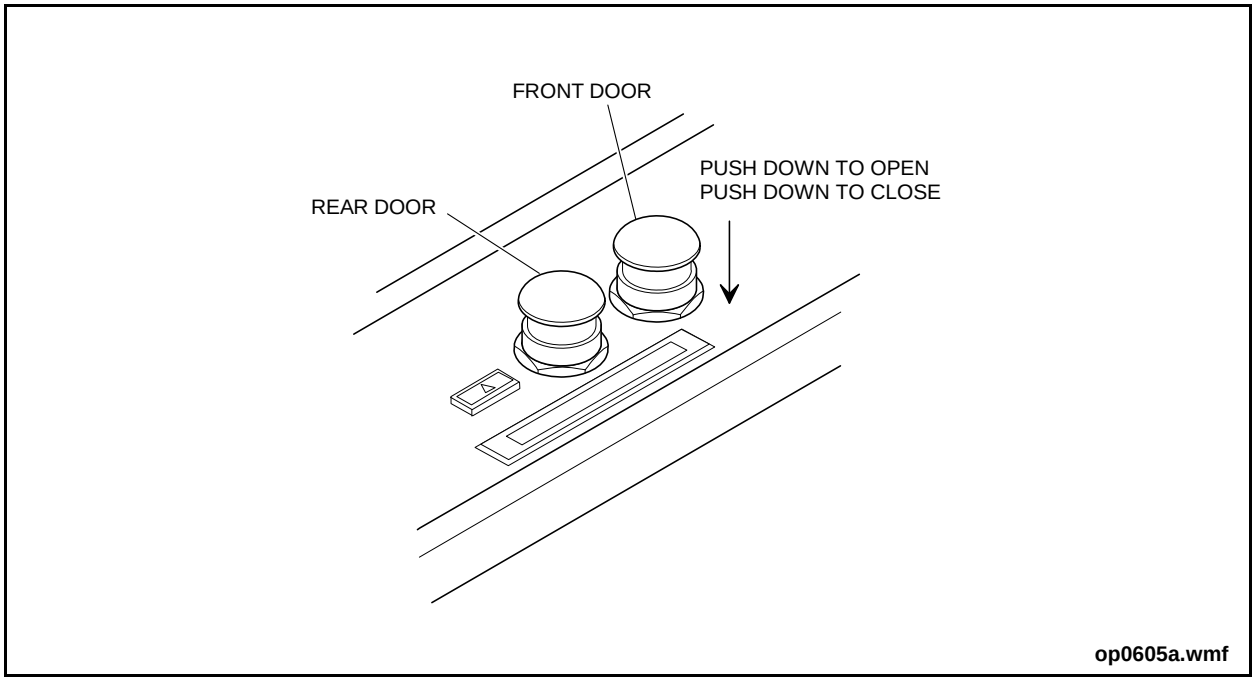


Figure 27: Door Controller

LH Remote Mirror Control

The LH Remote Mirror Control allows the operator to adjust the street side mirror from the driver's seat, by moving the four directional tilt function of the dial to the desired position.

Master Run Switch

The Master Run Switch is a 4-position rotary switch. The DAY-RUN, NIGHT-RUN, and NIGHT-PARK positions are used to activate the vehicle Multiplexing System and energize various 12/24V electrical circuits. The STOP-ENGINE position is used to shutdown the engine and de-energize the Multiplexing System and most 12/24V electrical circuits except those associated with safety functions. The Battery Disconnect switch must be set to the OFF position in order to disconnect the remaining 12/24V circuits from the vehicle batteries. The following table provides a list of circuits energized by the various Master Run switch positions:

☞NOTE:

The Multiplexing System is programmed to remain active for 30 minutes after the Master Run Switch is set to the STOP-ENGINE position.

MASTER RUN SWITCH OPERATION				
CIRCUIT OR SYSTEM	**STOP-ENGINE**	**DAY-RUN**	**NIGHT-RUN**	**NIGHT-PARK**
Headlights, high beam			x	
Headlights, low beam		x	x	
Four-way hazard lights	x	x	x	x
Turn lights (Note 3)	x	x	x	x
Stop lights		x	x	
Clearance/marker lights			x	x
Tail lights			x	x
License plate light			x	x
Backup lights & alarm (Note 1)		x	x	
Aisle lights, normal (Note 3)		x	x	x
Aisle lights, on (Note 3)	x	x	x	x

MASTER RUN SWITCH OPERATION				
CIRCUIT OR SYSTEM	**STOP-ENGINE**	**DAY-RUN**	**NIGHT-RUN**	**NIGHT-PARK**
Instrument panel illumination			x	x
Instrument panel dimmer			x	x
Driver's lamp (Note 3)	x	x	x	x
Service compartment lights (Note 3)	x	x	x	x
Entrance & exit door lights with door open (Note 2)		x	x	x
Instrument panel warning indicators		x	x	
Shift selector		x	x	
Brake & accelerator interlocks		x	x	
Destination sign operation		x	x	x
Door controller		x	x	x
Horns	x	x	x	x
Regenerative braking operation (Note 1)		x	x	
Driver's alarm		x	x	
Parking brake alarm (Note 3)	x			x
Kneeling operation & alarm		x	x	
Wheelchair ramp & alarm		x	x	x
Passenger signal system		x	x	
Public address system		x	x	
HVAC system (Note 1)		x	x	
Wiper controls		x	x	
Remote heated mirrors		x	x	
Note 1: Engine must be running Note 2: DAY-RUN also requires W/C ramp deployed Note 3: Multiplexing system must be active				

Parking Brake Control Valve

WARNING

If the air pressure is below 40 psi (276 kPa), the parking brake valve will return to the applied position.

The parking brake control valve controls the application or the release of the parking brake. Pulling up on the control knob applies the parking brake. Pushing down on the knob releases the parking brake.

RH Remote Mirror Control

The RH Remote Mirror Control allows the operator to adjust the curb side mirror from the driver's seat, by moving the four directional tilt function of the dial to the desired position.

Mirror Heater Button

This push button powers the heater elements behind the right and left exterior mirrors. The button illuminates to confirm heater element operation.

Hazard Lights Switch Indicator

The Hazard Lights Switch indicator illuminates when the Master Run switch is in the NIGHT-RUN or NIGHT-PARK position. It serves only to highlight the position of the Four-Way Hazard Lights switch.

Four-Way Hazard Lights Switch

The Hazard Lights toggle switch has an ON and OFF position. When the switch is ON, the instrument panel turn indicators and the exterior signal lights flash.

When the switch is OFF, the exterior signal lights function only as turn signals. The exterior signal lights and instrument panel turn indicators flash when the left or right turn signal foot-switch is pushed and held.

Activate the four-way hazard lights when the transit vehicle is stopped or parked in an area and may block traffic or present a possible hazard to following or approaching vehicles. Also use the four-way hazard lights when the vehicle is being towed.

Farebox Light Switch

The Farebox Light toggle switch controls the light above the farebox. When in the ON position the light illuminates. The OFF position disables the light.

Speaker Select Switch

The Speaker Select toggle switch controls the interior and exterior speakers of the public address (P.A.) system. Position this toggle switch to INTERIOR, EXTERIOR or BOTH to direct the P.A. announcement to the desired audience.

EV Mode Switch

The EV Mode switch is a guarded, momentary toggle switch that activates the propulsion system to operate the vehicle without the engine running. Positioning the switch to ON and releasing requests EV Mode. When the vehicle enters EV Mode the green indicator in the LCD display will illuminate.

☞NOTE:

EV Mode is intended for short duration operation only. If vehicle operation in EV Mode exceeds the battery capacity, the propulsion system will shut down.

Incline Leveling Switch

The Incline Levelling toggle switch is a two-position switch that controls the Incline Levelling mode of the vehicle. Placing the switch to the ON position raises the vehicle 1" and is used when approaching or exiting steep inclines. Incline levelling mode can only be entered when the vehicle is stationary and vehicle speed will be governed to 3 mph.

Climate Control Switch

The Climate Control toggle switch is a two-position toggle switch that controls the HVAC System. In the AUTO position, the system will heat or cool the vehicle interior to maintain a preset temperature. The OFF position disables the system.

Pedal Adjustment Switch

The pedal adjustment switch controls the position of the brake and accelerator pedals. The FWD position moves the pedal assembly forward, the RWD position moves the assembly back and the Hold position will maintain the desired adjustment.

☞NOTE:

The Pedal Adjustment switch is not functional unless the parking brake is applied.

Start Push Button

⚠WARNING

Put the shift selector in neutral [N] and apply the parking brake before starting the engine. If the parking brake indicator does not illuminate, DO NOT OPERATE THE VEHICLE.

This momentary push button on the side console allows the operator to start the engine without leaving the driver's seat.

☞NOTE:

The Multiplexing System limits continuous starting system operation to 14 seconds; the starter circuit is then disconnected for 60 seconds to allow the starting system to cool down.

Foot Operated Controls

See "Figure 28: Driver's Foot Controls" on page 85.

Brake Treadle

The brake treadle, located to the left of the accelerator treadle, controls the application and release of the service brakes. The brake treadle also controls the retarder function. Refer to "11. VEHICLE OPERATION" on page 93 in this manual for specific operating procedures on the retarder.

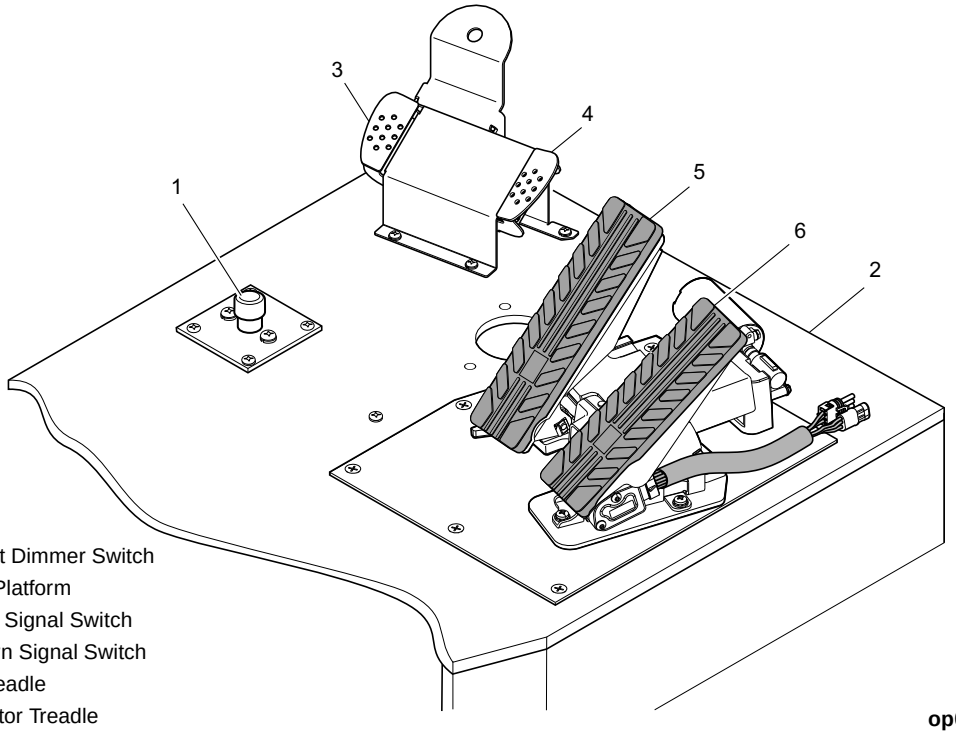
Brake application is proportional to the amount of treadle movement applied. Pressing the brake treadle illuminates the stop lights and the stop lights indicator.

☞NOTE:

The brake treadle drops slightly when the Interlock System applies. To release the brake interlock system, apply sufficient pressure to the brake treadle to "push through" the interlock application. The interlock message will disappear from the instrument panel LCD screen and the treadle will return with the operator's foot to its normal position.

Accelerator Treadle

The accelerator treadle, located to the right of the brake treadle, controls the engine throttle. Acceleration of the engine is proportional to the amount of treadle movement applied.



1. Headlight Dimmer Switch
2. Driver's Platform
3. Left Turn Signal Switch
4. Right Turn Signal Switch
5. Brake Treadle
6. Accelerator Treadle

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Figure 28: Driver's Foot Controls

Headlight Dimmer Switch

The Headlight Dimmer switch is a heel-activated click-in switch located adjacent to the side console. Pressing the switch changes the headlight operating mode between either high beam or low beam. The blue high beam indicator on the instrument panel indicates the high beam mode.

Turn Signal Switches

Two bracket-mounted, momentary-on switches control the right and left turn signal lights when held depressed. Left or right turn signal indicators on the instrument panel illuminate when respective floor switch is activated.

Miscellaneous Controls

See “Figure 29: Miscellaneous Switches” on page 87.

Regen Brake Switch

The Regen Brake toggle switch is located inside the front destination sign compartment and controls power to the regenerative braking system. Moving the switch to the OFF position will deactivate the regenerative braking system and illuminate the REGEN BRAKE OFF indicator on the instrument panel. The ON position will restore operation of the regenerative braking system.

☞NOTE:

Consult your transit authority for specific operating conditions during which the Regen Brake switch should be used.

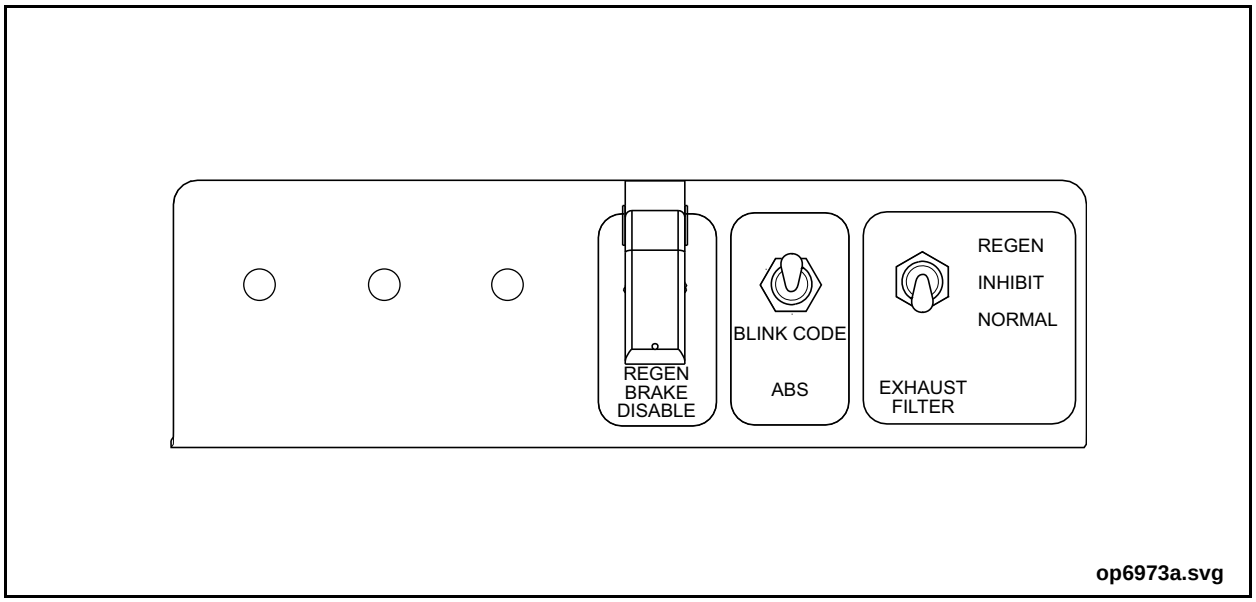


Figure 29: Miscellaneous Switches

ABS Switch

The ABS switch is used by service personnel to troubleshoot the ABS System. Pulling the switch to BLINK CODE and releasing activates the blink code diagnostic capabilities. The blink code sequence displays on the instrument panel ABS Fail indicator.

Exhaust Filter Switch

The Exhaust Filter switch is a 3-way toggle switch with NORMAL, INHIBIT and REGEN positions. This switch is used by service personnel as required to regenerate or burn soot off of the muffler filter. The function of the switch settings is as follows:

- NORMAL - this position is used for everyday vehicle operation. Regeneration will occur as needed while the vehicle is being driven.
- INHIBIT - this position is used when the vehicle is parked inside for servicing or any other situations where the regeneration process must be disabled for safety reasons.
- REGEN - this position is used by service personnel to initiate a forced regeneration when the vehicle is parked in a safe location. The engine speed and exhaust temperature will increase as the muffler filter regenerates.

Entrance Door Manual Control Valve

This air control valve is located beside the driver, just below the side console. Turning it to the OFF position releases the air controlling the entrance door. This allows manual operation of the door for initial vehicle entry. For normal entrance door operation, position the door manual control valve to ON.

Roof Hatch Switches

Two toggle switches are located on the driver's overhead panel and are used to control the rear roof hatch. The roof hatch is controlled by the toggle switches that function as follows:

- Select the toggle switch labeled REAR to operate the aft end of the roof hatch. Move the toggle switch either UP or DOWN to obtain the desired opening.
- Select the toggle switch labeled FRONT to operate the forward end of the roof hatch. Move the toggle switch either UP or DOWN to obtain the desired opening.
- Position both toggle switches to the UP position to obtain a fully-opened roof hatch.

10.FIRE SUPPRESSION SYSTEM

Monitoring and operating the Fire Suppression System effectively requires a basic understanding of the components and the operation of each in the system. The following gives a brief explanation of the components and their function.

Major System Components & Location

- Fire Suppression Control Panel (1) - located in the driver's overhead panel
- Heat Sensors (7) - four in engine compartment, two in the muffler compartment, and one in the battery compartment.
- Discharge Nozzles (4) - in engine compartment
- Extinguishing Agent Cylinders (1) - in the streetside light compartments
- Manual Actuator Switch (1) - located in the driver's overhead panel

Description

The Fire Suppression System protects the passengers and vehicle against fire. A dry chemical extinguishing agent discharges through four fixed nozzles to suppress a fire. Driver's area components include:

Manual Actuator Switch

The Manual Actuator switch is located in the driver's overhead panel and is used to manually initiate the discharge of the extinguishing agent. Pulling a safety pin out and pressing down on the switch initiates the discharge. Check that the safety pin is installed before operating the vehicle.

Fire Suppression Control Panel

The control panel is used to inform the operator or service personnel of the fire suppression system status. The LED indicators and audible alarm indicate basic system status. Detailed event text messages are shown on the panel display. The control panel serves as the fire suppression central control and coordinates communication between all modules. Ensure that the "System OK" message is displayed on the panel before operating the vehicle. See "Figure 30: Fire Suppression Control Panel & Manual Actuator Switch" on page 90.

The “System Test Confirm” button tests the audible alarm and LED indicator function. This test button is also used to confirm system configuration. Press and hold the test button for one second to initiate a self-test of the audible alarm and LED indicator lights. This test will take approximately 10 seconds to complete.

Pressing and holding the test button will engage and test all relay operations in addition to testing the audible alarm and LED indicator circuits. Press the Relay Reset button to reset all the relays. Pressing the test button will also display “Vehicle Safety Network, Firmware:, and Configuration:”

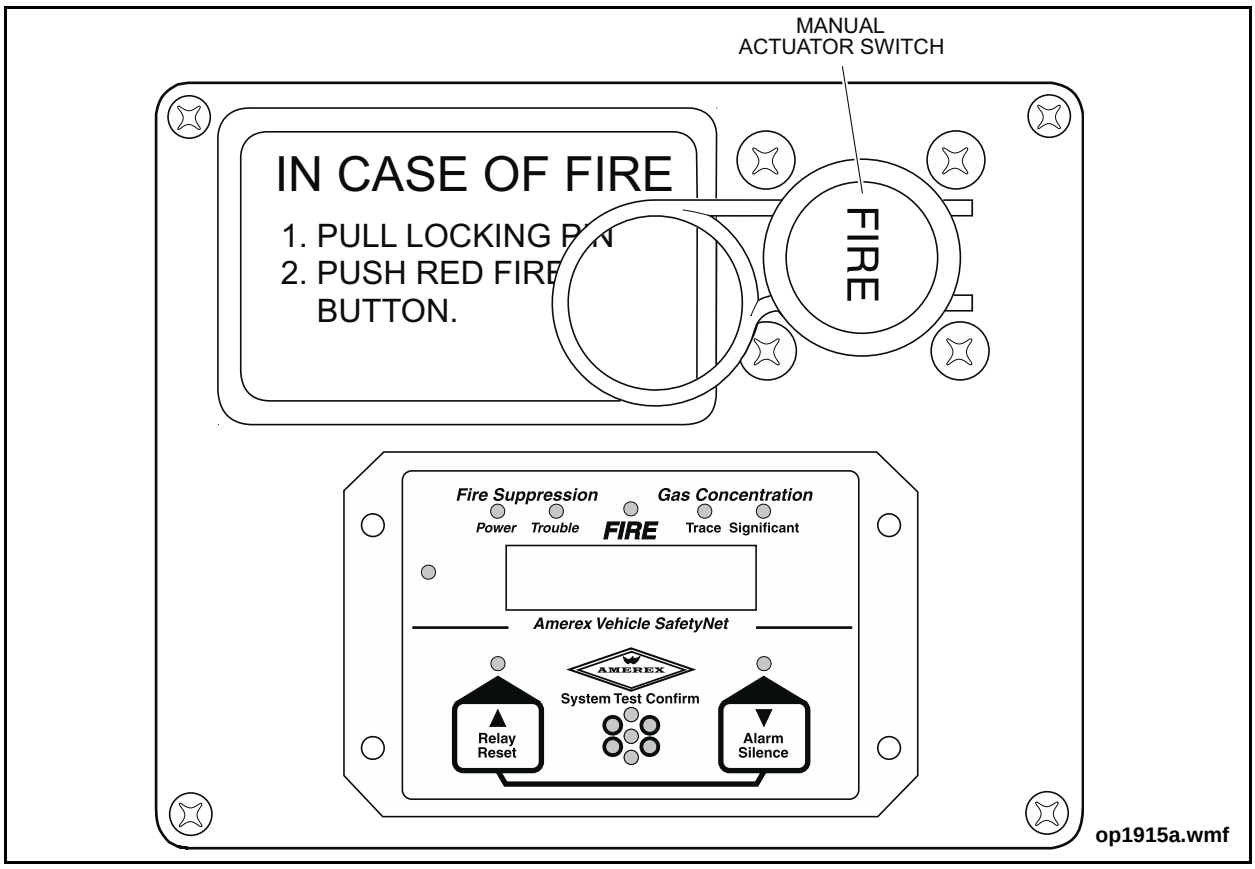


Figure 30: Fire Suppression Control Panel & Manual Actuator Switch

Screen Display Messages

The following table lists the various events that provide a screen display.

SCREEN DISPLAY MESSAGES					
EVENT TYPE	**EVENT CAUSE**	**EVENT RECORD**	**OPERATION DISPLAY**	**LED INDICATION**	**AUDIBLE ALARM**
Trouble	Communications Error	No Response Invalid Response Invalid Module Missing Module Invalid Command Software Error	Trouble Module# Comm	Yellow Trouble Steady	Pulsed
Trouble	Sensor Trouble	Sensor Missing Sensor Wrong Sensor Disables	Trouble Module# Sensor#	Yellow Trouble Steady	Pulsed
Trouble	Over-Temperature Level 1	Variable Overheat Sensor Level 1 Exceeded		Yellow Trouble Steady	Single Pulse
Trouble	Over-Temperature Level 2	Variable Overheat Sensor Level 2 Exceeded		Yellow Trouble Steady	Steady On
Trouble	Discharge	Open Circuit at Actuator	Trouble Module# Discharge	Yellow Trouble Steady	Pulsed
Trouble	Pressure Low	Open Circuit at Pressure Switch Input	Trouble Module# Press. Low	Yellow Trouble Steady	Pulsed
Fire	Fire	Fire	FIRE Module# Sensor#	Red Fire Steady	Steady On
None	System	Clock Set Configuration Written Configuration Erased Configuration Reset Self-Test Relays Cleared Alarm Silenced Reset (at power-on) User Reset (logo button) Event Log Erased Configuration Mismatch Power Failure Maintenance Schedule Set Maintenance Schedule Reset Maintenance Disabled	None	No	No

Operation

Heat from a fire will close the normally open contacts of one of the heat sensors. Infrared light generated by a fire will also actuate the optical sensor. This action will short the system's electrical circuit and electrically actuate the solenoid in the agent cylinder. The system can also be manually activated using the manual actuation switch on the driver's side console. The dry chemical extinguishing agent will then be routed to the distributor and released from the discharge nozzles. The control panel in the driver's area will display the current system condition.

Actuation of the Fire Suppression System will also cause the engine protection system to shut down the engine, ensuring that the fuel flow stops. Bring the vehicle to a safe stop and ensure that all passengers exit the vehicle safely.

During system discharge of the suppressant expect a high noise level and possibly a large cloud of extinguishing chemical.

☞NOTE:

Avoid breathing the dry chemical dust. It will irritate the throat and lungs.

11.VEHICLE OPERATION

WARNING

ALWAYS shift the vehicle into neutral [N] and apply the parking brake before leaving the driver's seat for any reason. Failure to apply the parking brake does not properly secure the vehicle from inadvertent movement.

DO NOT rely on the Interlock System alone to secure the vehicle.

Pre-Start Checks & Adjustments

A daily routine inspection of the vehicle should reveal any required repairs or adjustments. These need to be reported to service personnel to maintain the best operating condition of the vehicle. When it is ready for service perform the following steps upon entry.

- Activate the Multiplexing System by turning the Master Run switch to the DAY-RUN or NIGHT-RUN position.
- Adjust the driver's seat for individual comfort.
- Adjust the tilt/telescopic steering column to suit.
- Adjust all mirrors for unobstructed views.
- Check that the Door Master switch is in the ON position.
- Check horn operation.
- Fully kneel the vehicle. Refer to " Kneeling" on page 109 in this manual for kneeling procedure.

Shift Selector Operation

CAUTION

Be sure to bring the vehicle to a full stop before shifting from drive [D] to reverse [R] or vice versa.

The shift selector module on the instrument panel is used to select the vehicle's operating direction. The module has three buttons for reverse [R], neutral [N] and drive [D]. The accelerating process will feel a bit different from a conventional vehicle. Although the vehicle will respond quickly to acceleration commands, acceleration will be generally smooth across all speed ranges. The vehicle does not shift gears, as the propulsion system does not employ a transmission. The electric motor can rotate fast enough to operate the vehicle through its full speed range. Operate the shift selector using the following procedure:

1. Before starting the vehicle:
   a. Set the shift selector to the neutral [N] position.
   b. Apply the parking brake.
   c. Apply the brake treadle.
2. Push the Start button on the side console.
3. With the vehicle running, apply firm pressure on the brake treadle and select [D] or [R] on the shift selector.
4. Release parking brake and the brake treadle to proceed.
5. To change direction, bring the vehicle to a full stop, apply firm pressure on the brake treadle and shift to neutral before selecting the desired direction.

☞NOTE:

A back-up alarm activates when reverse [R] is selected. To switch from one direction to the other, e.g., from forward to reverse, first shift into Neutral [N] before selecting [R]. A solid light indicates proper shift engagement. If the light is blinking, repeat shift instructions. While switching from one direction to the other, if you do not first shift into Neutral [N], the propulsion system will not accept your request and you will have to select Neutral [N] before selecting either direction again.

NEVER leave the driver's seat while the shift selector is in an operating position [R] or [D].

6. When parking or shutting down the vehicle, come to a full stop, apply the parking brake, select neutral [N] and release the brake treadle.

Regenerative Braking System

When the brake pedal is depressed, the regenerative braking is blended with the vehicle service brakes in order to slow the vehicle. During vehicle deceleration the traction motor is driven, through the drive-line, by the weight of the vehicle. Under this condition the motor imposes a load on the driveline, slowing the vehicle as it captures kinetic energy to create electrical energy.

The energy recovered from the moving vehicle by the regenerative braking is stored in the ESS battery modules. The ESS battery modules are never fully charged by the traction generator so that there will be room in the ESS battery modules to store the regenerative braking energy.

The regenerative braking system can be disabled by using the Regen Brake Disable switch located inside the destination sign compartment.

☞NOTE:

Consult your local transit authority for specific operating conditions under which the Regen Brake Disable switch should be used to disable the regenerative braking system.

Anti-Lock Braking System

The Anti-Lock Braking System (ABS) functions to bring the vehicle to a safe, controlled stop during emergency braking situations. Through computer monitoring of wheel speeds the system controls brake pressure to prevent wheel lock-up. If during brake application the ABS system senses imminent wheel lock-up it engages automatically thus increasing vehicle stability and control. The ABS is inactive (no ABS event) whenever wheel deceleration difference remains within programmed limits.

An ABS Indicator on the instrument panel indicates any active faults and is also used by service personnel to retrieve codes.

⚠WARNING

Keep stopping distances the same as those for similar non-ABS equipped vehicles.

To operate under normal conditions use the standard braking technique. For emergency braking apply firm and constant pressure to the brake treadle. If required the ABS system will activate automatically producing a pulsing sensation to the brake treadle and a hissing sound. These are normal indications of ABS system operation. During emergency braking avoid “pumping” the brakes as this defeats the pulsing action of the ABS system and will increase your stopping distance.

If the ABS on one wheel malfunctions the system will retain normal braking on that wheel. Should the entire ABS System malfunction the system will also retain normal braking. The ABS Fail indicator on the instrument panel will illuminate if a malfunction occurs.

☞NOTE:

After ABS System service the ABS Fail indicator will remain illuminated at engine start-up. Driving the vehicle above 4 mph (6 km/h) should extinguish the indicator. If the indicator remains illuminated, active faults are still present; contact service personnel.

Automatic Traction Control

The vehicle's Automatic Traction Control (ATC) System activates automatically to prevent drive wheel spin when accelerating or starting the vehicle from a stand still.

The system uses components of the ABS System to apply the brakes to a drive wheel that loses traction and spins. This transfers the engine torque to the wheel with better traction. If both drive wheels spin, the system reduces engine torque to improve traction. The ATC indicator on the instrument panel illuminates to confirm system operation.

☞NOTE:

Shutting down the vehicle will also deactivate the deep snow/mud mode.

Starting the Engine

⚠WARNING

Put the shift selector in neutral [N] and apply the parking brake before starting the engine. If the parking brake indicator does not illuminate, DO NOT OPERATE THE VEHICLE.

To operate the vehicle the Battery Disconnect switches must be in the ON position. Check the switches by opening the battery disconnect access door at the rear of the vehicle. These connect the vehicle electrical circuits to the battery power. See “Figure 31: Battery Disconnect Switch” on page 98.

☞NOTE:

Refer to “5. DRIVER’S CHECK LIST” on page 24 *in this manual before operating the vehicle.*

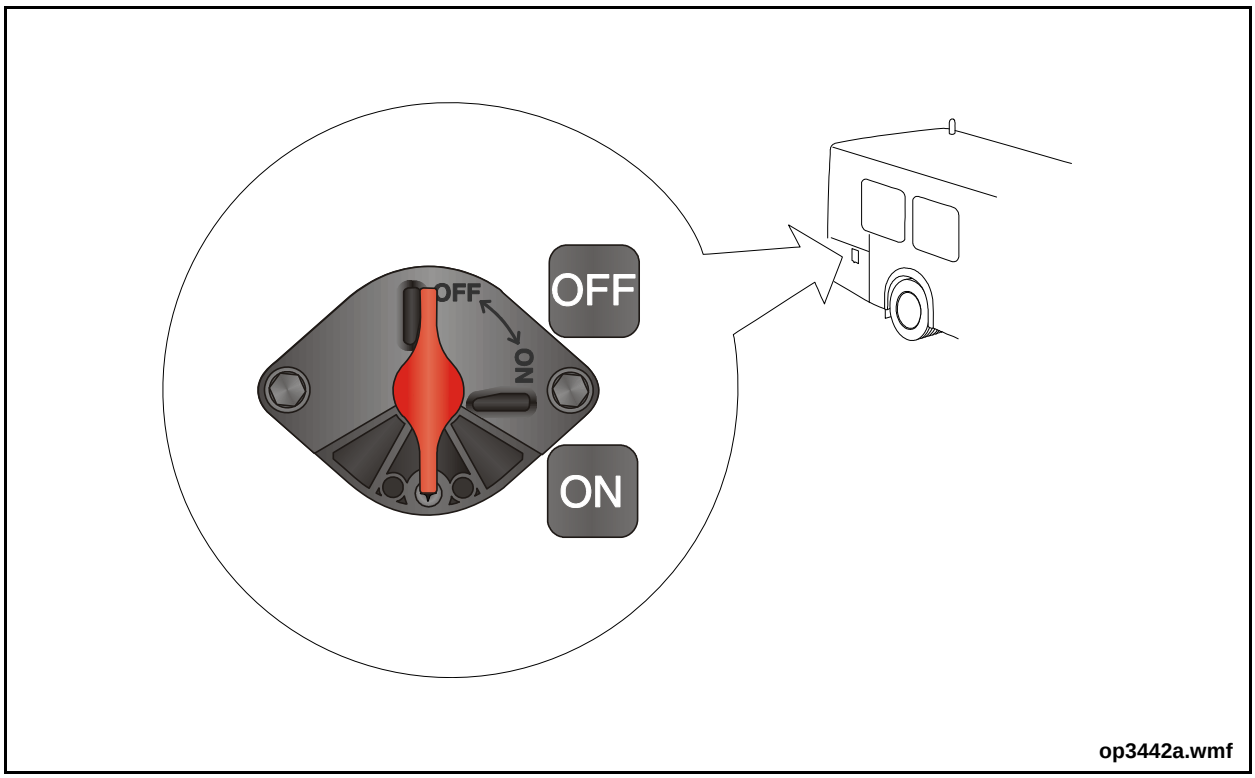


Figure 31: Battery Disconnect Switch

Master Run Switch

Turn the Master Run switch (on side console) to DAY-RUN or NIGHT-RUN position. This activates the vehicle's Multiplexing System. Illuminated indicator lights and sounding alarms signify an active Multiplexing System.

☞NOTE:

When restarting less than 30 minutes after engine shut down, the Multiplexing System responds instantly.

Start Push Button

⚠WARNING

Put the shift selector in neutral [N] and apply the parking brake before starting the engine. If the parking brake indicator does not illuminate, DO NOT OPERATE THE VEHICLE.

With the vehicle's Multiplexing System active, push and hold the Start push button until the engine starts. Release the push button as soon as the engine starts.

If the starter fails to operate, check the following:

- The Master Run switch is in the DAY-RUN or NIGHT-RUN position.
- The Transmission Selector indicator shows neutral [NN].
- The engine compartment Engine Run switch is in the FRONT position.
- The parking brake is applied.

☞NOTE:

The Multiplexing System limits continuous starter operation to 14 seconds; the starter circuit is then disconnected for 60 seconds to allow the starter to cool down.

Operational Checks

Once the engine is operating the operator should observe the following:

- The air system pressure is within normal operating range and the suspension is at full height.
- The No Gen indicator is off when the engine is operating.
- Shift selector neutral [NN] indicator remains illuminated.
- Parking brake and stop light indicator remain illuminated as long as the parking brake is applied.
- Door controller is operational.
- Position the Door Master switch to the OFF position and attempt to open the exit door by using the side console door controller. The exit door should not be operational; the entrance door should remain operational.
- Return the Door Master switch to the ON position.
- Wiper and washer controls are operational.
- Defroster/heater controls (on dash) are operational.
- Exterior lights operate during exterior light test. To conduct test, ensure engine is running and parking brake is applied, then press both turn switches simultaneously. All exterior lights will illuminate for two minutes. The lights are extinguished by shifting the transmission out of neutral [N]. This feature enables one person to test the exterior light system.
- The destination sign controller is active.

Parking Brake

The parking brake indicator illuminates when the parking brake is applied. If the parking brake indicator is not illuminated, apply the parking brake by pulling up on the parking brake control valve knob. If the parking brake indicator does not illuminate, DO NOT OPERATE THE VEHICLE.

Press the brake treadle before releasing the parking brake. Release the parking brake by pushing down on the control knob. The parking brake indicator extinguishes.

Stop Lights

The stop lights indicator illuminates when the rear stop lights are on. If the indicator is not illuminated, check for rear stop light failure.

Low Air

The Low Air indicator illuminates to warn of an unsafe air system pressure level. A warning buzzer sounds when the Low Air indicator is activated. DO NOT OPERATE THE VEHICLE until the alarm system is canceled.

The air pressure gauge indicates the air system pressure levels of the air brake system. The air system will maintain pressure levels above the low operating limit of 117 psi (807 kPa) during normal vehicle operation.

Check Engine

The Check Engine indicator on the instrument panel illuminates momentarily before starting. The Check Engine indicator extinguishes before the engine starts. If the Check Engine indicator remains illuminated, DO NOT OPERATE THE VEHICLE.

Shift Selector Display

At engine start-up the shift selector's display shows [NN] to indicate that the transmission is in neutral. This should occur automatically at each engine start-up.

No Gen

When illuminated, the No Gen indicator signals that the alternator is NOT charging. The indicator remains illuminated until the engine starts. If the indicator fails to remain illuminated until the engine starts, DO NOT OPERATE THE VEHICLE.

Operator Display Keyboard (ODK) Messages

Check that the destination sign control unit correctly programs electronic destination sign messages.

Rear Door Open Indicator (Red)

The Rear Door Open indicator illuminates when the Rear Door Control switch is activated and the exit door opens.

☞NOTE:

Exit doors will open and the interlocks will be engaged.

Turning the door controller handle to position #1 closes the entrance and exit doors and extinguishes the Rear Door Open indicator. Check that the exit doors are closed. If the exit doors are not closed and the Rear Door Open indicator is still illuminated, DO NOT OPERATE THE VEHICLE.

Day-Time Operation

When the engine is operating, check the following:

- The air system pressure is within normal operating range and the suspension is at full height.
- The No Gen indicator is off when the engine is operating.
- Shift selector neutral [NN] indicator remains illuminated.
- Parking brake and stop light indicator remain illuminated as long as the parking brake is applied.
- Daytime running lights operation.
- Front, side and rear destination/route sign lights.
- Door controller operation.
- The Door Master switch, when placed in the OFF position, disables the exit door and inhibits the brake interlocks.
- Aisle lights operation.
- Return the Door Master switch to the ON position.
- Wiper and washer controls operation.
- Defroster/heater control (on dash) operation.

Night-Time Operation

For night-time operations, ensure the Master Run switch is placed in the NIGHT-RUN position. Check the following in addition to the day-time checks:

- Instrument panel illumination lights.
- Headlight operation (high and low beam).
- Front and rear identification and marker lights.
- Tail lights.
- License plate light.
- Panel lights dimmer changes the brightness of instrumentation backlights and panel text.
- Interior aisle lights can be turned on using the Aisle Lights switch.

Pre-Trip Brake Test

Before driving the vehicle conduct the following test sequence. If the test reveals a fault, advise service personnel and DO NOT OPERATE THE VEHICLE.

Conduct the following test sequence to ensure that the air brake system is functioning properly.

1. Apply the parking brake.
2. Start the engine, set the Idle Speed switch to FAST and check the following:
   a. The low pressure warning devices switch off as the air pressure builds.
   b. If the air pressure gauge reading was below 90 psi (620 kPa), the reading increases back to 90 psi (620 kPa) in less than three minutes.
   c. The air pressure gauge reading levels off at the upper operating range.
3. Release the parking brake.
4. Make multiple light brake treadle applications and check the following:
   a. The air pressure gauge reading stabilizes at the lower operating range as the air compressor begins its pumping cycle.
   b. After continued multiple light brake treadle applications the low pressure warning devices activate as the air pressure gauge reading falls to 75 psi (517 kPa).

5. Release the brake treadle and reapply the parking brake.
6. Allow the air system to fully recharge.
7. Stop the engine and proceed as follows.
   a. Release the parking brake.
   b. Apply the brake treadle fully, hold and check the following:
      - Upon treadle application the air pressure gauge reading does not drop more than 18 psi (124 kPa).
      - The air pressure does not drop more than 3 psi (20 kPa) per minute.
      - There are no audible air leaks.
   c. Release the brake treadle and apply the parking brake.
8. Restart the engine.
   a. Set the Fast Idle switch to FAST to recharge the air system.
   b. When the reading levels off at the upper operating range, switch off the fast idle.
   c. Release the parking brake.
9. Move the vehicle slowly and test brake response. Refer to “ Moving the Vehicle” on page 105 in this manual before operating the vehicle.

Moving the Vehicle

1. Fasten driver's seat-belt.
2. Close the doors by turning the door controller handle to position #1. The Rear Door Open indicator should be off.
3. Apply the brake treadle and release the parking brake. The parking brake indicator extinguishes.
4. Shift the Transmission Selector into the desired gear.

☞NOTE:

The neutral [NN] indicator extinguishes and the appropriate range letter appears in the display.

5. Release the brake treadle and lightly apply the accelerator treadle to slowly move vehicle from the parking area. The stop lights indicator extinguishes.
6. Check the steering wheel for vibrations, looseness or binding while the vehicle is in motion. If any abnormalities are present, DO NOT OPERATE THE VEHICLE.

Parking the Vehicle

WARNING

The parking brake must be applied when parking the vehicle. When parking downhill, be sure the front wheels are turned into the curb; when parking uphill, be sure the front wheels are turned away from the curb. See "Figure 32: Parking on an Incline" on page 106.

1. Bring the vehicle to a complete stop using the brake treadle. The stop lights indicator illuminates. Shift the transmission selector into neutral [N].
2. Apply the parking brake and release the brake treadle. The parking brake indicator illuminates.
3. Open the entrance door by placing the controller in position #2.
4. Turn the Master Run switch to the STOP-ENGINE position.
5. Exit the vehicle.
6. Manually close the doors.

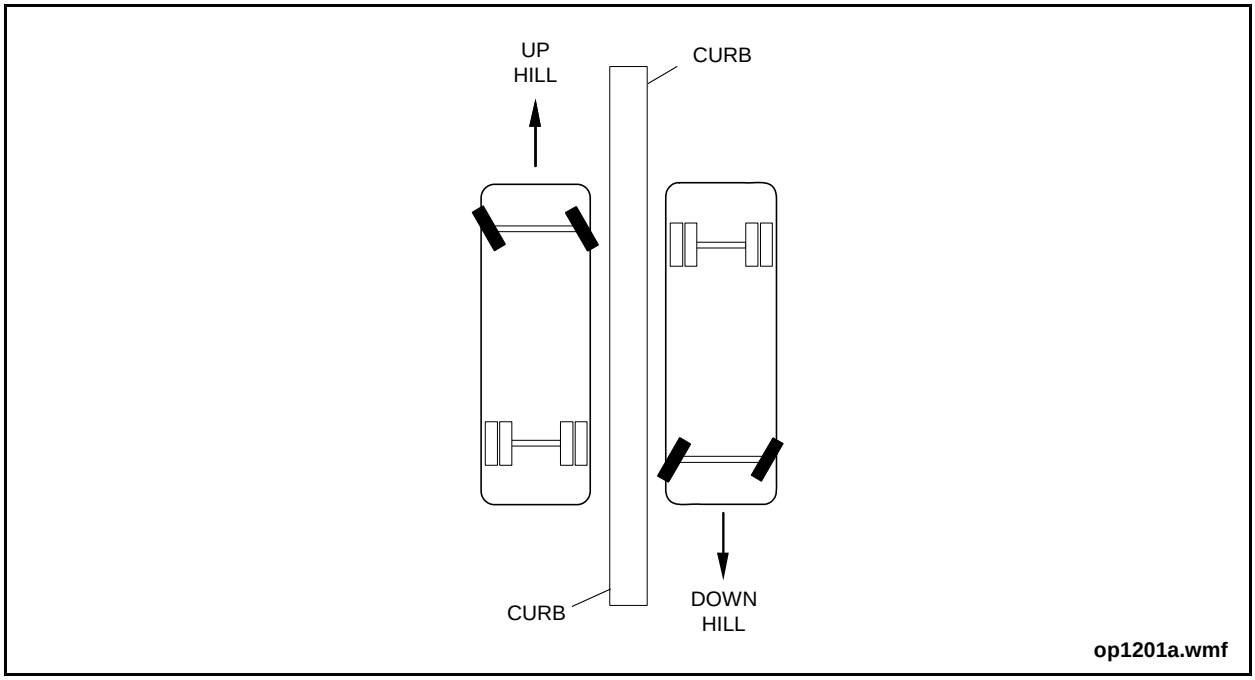


Figure 32: Parking on an Incline

Roof Hatch Ventilation

The roof hatches may be used for ventilating the interior when the vehicle is in motion. The front roof hatch is remote controlled using the switches on the side console. The rear roof hatch is manually operated. The rear roof hatch is spring loaded to keep it in the closed or open position. Open the front roof hatch so that it draws air into the vehicle and open the rear hatch so that it draws air out of the vehicle. See “Figure 33: Roof Hatch Ventilation” on page 107.

⚠CAUTION

Close the roof hatches when passing under low overhead restrictions.

☞NOTE:

Close the roof hatches when the HVAC system is operating or to keep precipitation out.

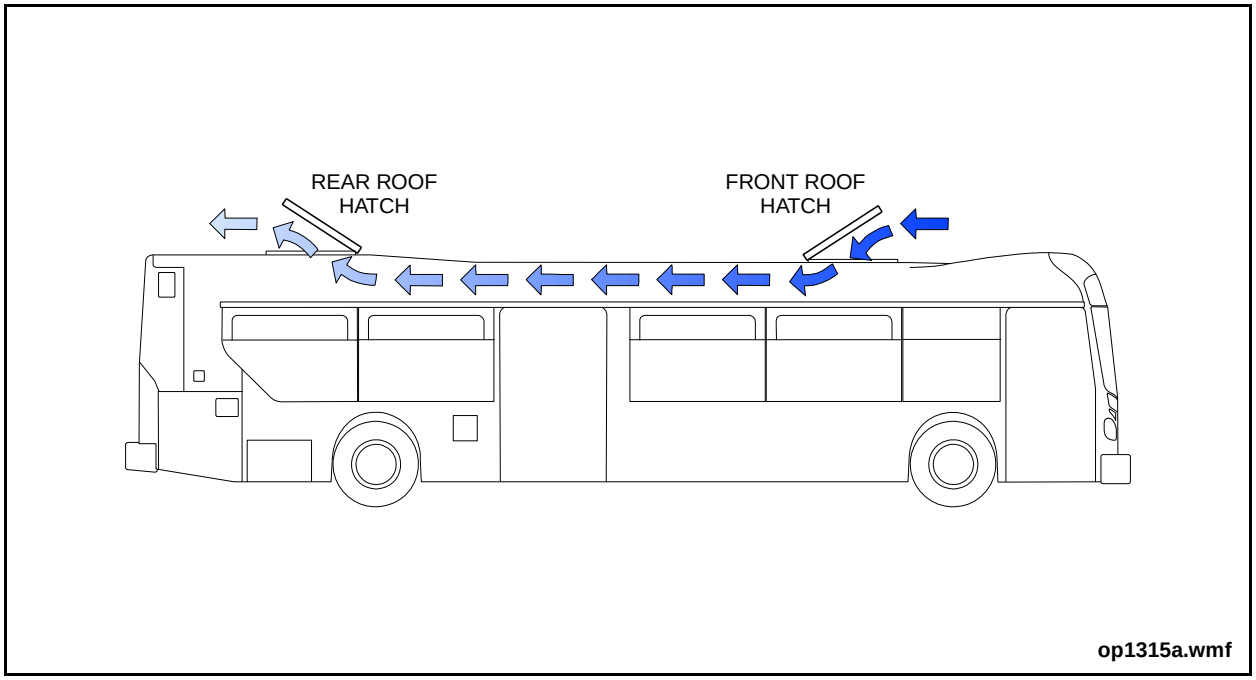


Figure 33: Roof Hatch Ventilation

Jump Start Connection

The jump start connector is a quick connect assembly on the face of the fuse box. The connector ensures a safe and correct electrical connection of an auxiliary power supply to the vehicle battery poles. Connect an external power supply to supplement or assist the on-board batteries if they have become depleted.

☞NOTE:

Advise service personnel if starting difficulties occur.

Engine Protection System

⚠CAUTION

If engine shutdown occurs, DO NOT attempt an engine restart unless absolutely necessary. Continuing engine operation without fault correction may result in engine damage.

The New Flyer vehicle is equipped with an automatic shut down system to prevent engine damage. If the Stop Engine indicator illuminates, the Engine Protection System initiates a power reduction cycle that lasts 30 seconds. After that time the engine will shut down.

☞NOTE:

Use the 30 seconds to remove the vehicle from traffic. Contact service personnel for further instructions.

Fire Suppression System

If a fire activates the Fire Suppression System, it will immediately shut down the engine. Bring the vehicle to a stop, shut down any electrical systems, set the parking brake and evacuate all passengers from the vehicle. Call transit dispatch for assistance. The engine cannot be restarted until the applicable fault is cleared and the system is reset by service personnel.

☞NOTE:

An alarm sounds when the Fire Suppression System activates.

Kneeling

The vehicle's kneeling operations are controlled by the Kneel switch on the instrument panel. This switch is used to raise, hold, or lower the vehicle.

☞NOTE:

The Kneeling sensors must be calibrated at each vehicle start up. To calibrate sensors, fully kneel vehicle once.

Kneeling Procedure

1. Bring the vehicle to a complete stop, put shift selector in neutral, apply the parking brake and set the door controller to Position #2 to open the entrance door. Kneeling will not be enabled if the door is closed.

☞NOTE:

Brake and accelerator interlocks engage when the entrance door is open and kneeling is in process.

Prior to kneeling the vehicle, ensure that boarding passengers stand clear of the vehicle and no obstructions exist.

2. Lift the switch guard and hold the Kneel switch in the LOWER position until the vehicle is completely kneeled. Boarding passengers must stand clear and wait until the vehicle has lowered, before entering the vehicle.
3. Set the Kneel switch to the RAISE position and close the switch guard once passengers have safely boarded. The vehicle will raise automatically to its full ride height.

Kneeling Signal

An amber lamp located beside the entrance door indicates when the kneeling system is in operation. A warning beep also sounds.

Passenger Signal System

This passenger signal system is activated by the following devices:

- Stop request cord.
- Exit door stanchion push buttons.
- Wheelchair area touch pad.

Activating the signal system causes the following to occur:

- Stop request sign illuminates. The sign extinguishes when the system is reset.
- Stop Request indicator on instrument panel remains illuminated until the system is reset.
- A chime sounds once when the passenger signal system is activated. A different tone sounds if the wheelchair passenger signal system is activated.

The system is cancelled (reset) and the lights are extinguished by:

- Opening the entrance door with the door controller.
- Opening the exit door, once enabled with the door controller.
- Pushing the Stop Request switch to CANCEL and releasing.

The stop request sign extinguishes when the entrance or exit doors are fully open.

Stop Request Cord

Stop request cords are located on either side of the vehicle interior. Pulling a cord activates the system.

Stop Request Button

Two stop request buttons are located on the exit door stanchions. Pressing a button activates the system.

Wheelchair Stop Request Touch Pads

Stop request touch pads are located under each longitudinal hinged seat in the wheelchair stations. Pressing the pad activates the passenger signal system. A chime sounds a different tone to alert of a wheelchair passenger stop request.

Entrance & Exit Door Lights

The entrance and exit doorways are lit by header lights (above the door), step lights and curb lights. Moving the door controller to open a door activates these lights. The lights extinguish as the doors close.

☞NOTE:

The exit door curb lights extinguish after a five second delay.

12.WHEELCHAIR SYSTEM

The wheelchair system consists of a wheelchair ramp and wheelchair restraint system.

Wheelchair Ramp

The New Flyer vehicle is equipped with a wheelchair ramp system to assist passengers in boarding and exiting the vehicle.

⚠ WARNING

Ensure the following conditions are met prior to operating the wheelchair ramp:

- **Ensure passenger safety during the wheelchair ramp operations. Monitor the passenger's position during the operation cycle.**
- **Loading or unloading the passengers must be performed in a flat, open area. DO NOT deploy the ramp where trees, telephone poles, fire hydrants, or similar obstacles may jeopardize passenger safety or damage the ramp.**
- **Be familiar with ramp functions and operation before operating the equipment.**
- **DO NOT conduct the "STOW" operation with a passenger on the lift.**
- **Passengers are to board the ramp only when it's at ground level, and the "DEPLOY" cycle is complete.**

⚠ CAUTION

Release the switch after the ramp has passed the 90° position. This prevents the oil and pump from overheating.

The switch to control this feature is located on the instrument panel. The three positions of the switch enable the wheelchair ramp mechanism to perform the following operations: See "Figure 34: Wheelchair Ramp Operation" on page 113.

☞NOTE:

When the ramp is in STOW or DEPLOY, the brake interlocks are activated. The vehicle will not move until the ramp is fully stowed and the switch is in the FLOAT position.

DEPLOY

This position activates the ramp from the closed position to the open position.

FLOAT

This position shuts off power to the pump, allowing the ramp to free-fall to either the open or the closed position. Upon cycle completion, this becomes an off position.

STOW

This position is used to move the ramp from the open to the closed position.

☞NOTE:

When the wheelchair ramp is in motion, an audible alarm sounds, and the exterior lift warning light illuminates and flashes.

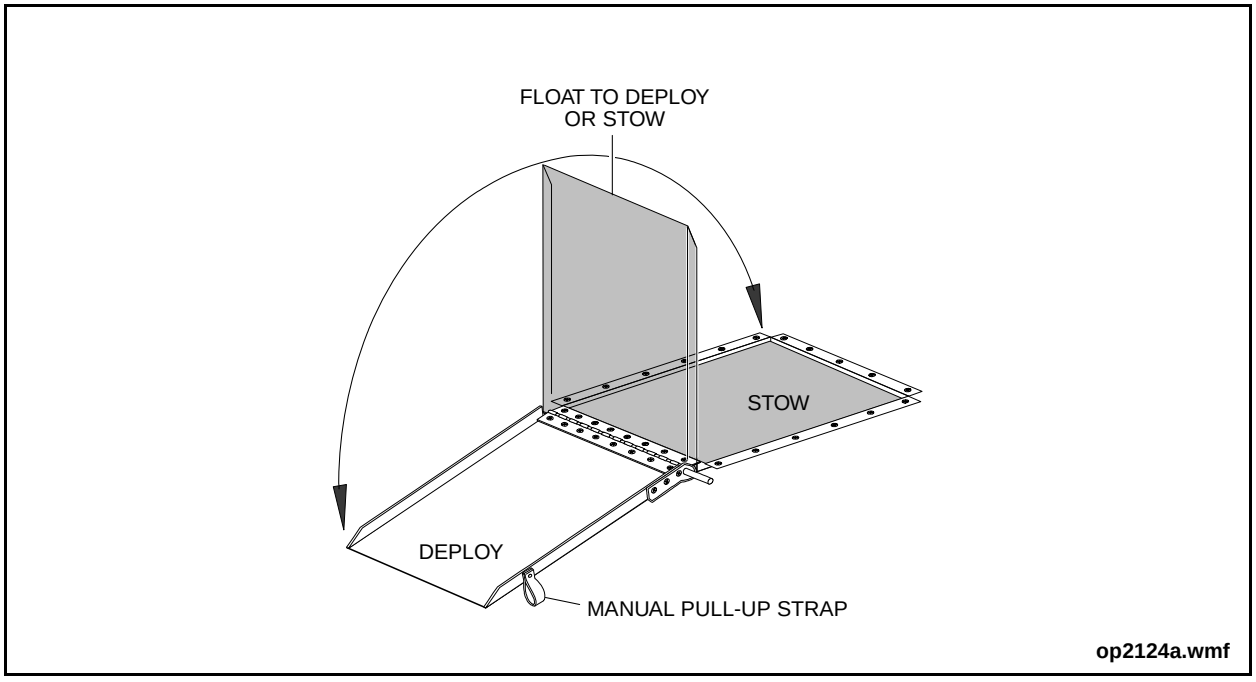


Figure 34: Wheelchair Ramp Operation

Deploying the Ramp

1. Bring the vehicle to a complete stop in a flat, unobstructed area, one to three feet from the curb. Check for obstructions and be certain that there is adequate clearance to deploy the ramp.
2. Apply the parking brake.
3. Place the shift selector in neutral [N].
4. Kneel vehicle if required.

☞NOTE:

Parking brake and stop light indicators on the instrument panel will illuminate.

5. Move the door controller to the door open position.

⚠CAUTION

Make sure the area in which the ramp will DEPLOY is clear of people and any obstructions.

6. Move the Ramp toggle switch to DEPLOY.
7. After the ramp has passed the vertical 90° position, release the switch. The ramp continues to lower until it reaches the ground.

Raising the Ramp

WARNING

Check for obstructions and be sure that all passengers are at a safe distance. Keep objects and passengers off the lift platform during the STOW operation.

1. Once the passenger has boarded the vehicle safely and is clear of the ramp, move the toggle switch to the STOW position.

☞NOTE:

An audible alarm sounds when the ramp is moving.

2. Raise the vehicle from the kneeling position.
3. Close the entrance door.
4. Disengage the parking brake and proceed to the next stop.

Ramp Emergency Procedures

In case the wheelchair ramp power unit fails, the unit may be hand-operated by using a pull-up strap located on the ramp's corner.

Wheelchair Restraint System

The forward seat positions are equipped with a "Q-Pod" Wheelchair Restraint System for security of handicapped passengers. For optimum passenger safety be sure to follow the operating procedures to complete all the necessary restraint system connections. See “Figure 35: Wheelchair Restraint System” on page 117.

☞NOTE:

This restraint system includes an automatic belt retraction system. When the retractor release handle is actuated, the operator has 15 seconds to affix the hooks to the wheelchair frame. The belts will tighten automatically when the 15 second interval has elapsed. A light will illuminate and an alarm will also sound for the duration of the 15 second interval.

Operation

Positioning the Wheelchair

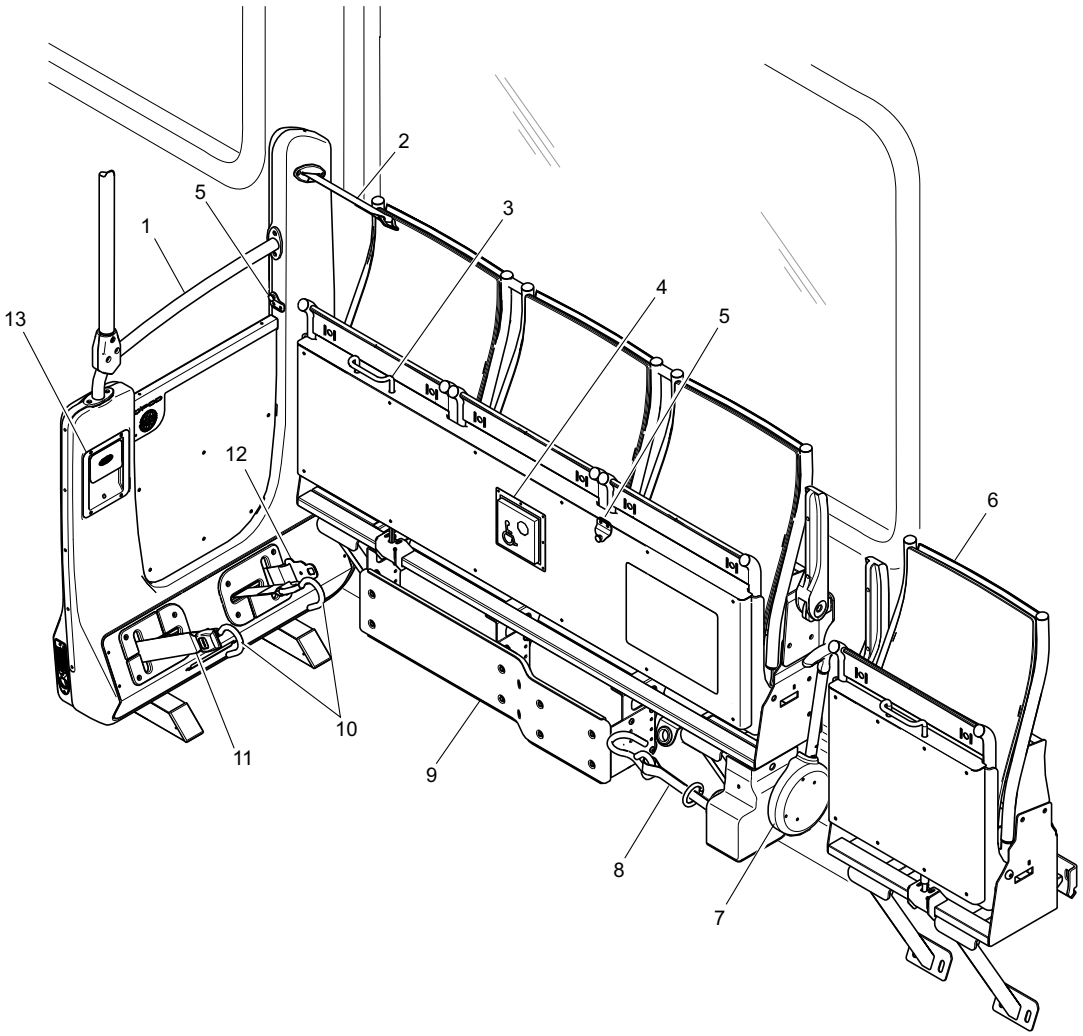
Position the wheelchair in the restraint area as follows:

1. Move the flip-up seat cushions up to the lock position.
2. Extend the lap belt and attach it to the belt hook on the flip-up seat assembly. This will provide access to the belt once the wheelchair has been positioned.
3. Back the wheelchair into the restraint area, facing forward (facing driver's seat).
4. Set the wheelchair brakes.

Rear Wheelchair Restraints

Attach the rear wheelchair restraint belts as follows:

1. Pull the retractor release handle and pull the belt to extend.
2. Attach the belt hook around a solid rear frame member of the wheelchair.
3. Wait for the 15 second delay, belts will retract and tighten automatically.



1. Wheelchair Barrier
2. Shoulder Belt
3. Flip-Up Mechanism Release Handle
4. Stop Request Touch Pad
5. Belt Hook
6. Flip-Up Seat Assembly
7. Front Belt Release Handle
8. Front Wheelchair Restraint Belt
9. Wheelchair Side Restraint
10. Rear Wheelchair Restraint Belts
11. Passenger Belt Clip
12. Lap Belt
13. Rear Belt Release Handle

op16451a.svg

Figure 35: Wheelchair Restraint System

Front Wheelchair Restraints

Attach the front wheelchair restraint belts as follows:

1. Ensure the wheelchair is positioned directly against the side restraint.
2. Extend the belt and attach the hooked end around a solid frame member of the wheelchair.
3. Pull downward on the belt tightening handle until the wheelchair is firmly snugged up against the side restraint.

Passenger Securement

Restraints should not be held away from body by wheelchair components.

Secure wheelchair occupant as follows:

1. Extend both ends of lap belt and connect together at occupant's hip area on aisle side. Do not place belt over armrest.
2. Ensure that belt clips and buckle are securely engaged.

13.NOTES

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