



NEW FLYER OF AMERICA

SR2333 continued

Vehicle Identification Number	Unit Number
5FYC8FB19KF071518	19144
5FYC8FB10KF071519	19145
5FYC8FB17KF071520	19146
5FYC8FB19KF071521	19147
5FYC8FB10KF071522	19148
5FYC8FB12KF071523	19149
5FYC8FB14KF071524	19150
5FYC8FB16KF071525	19151
5FYC8FB18KF071526	19152
5FYC8FB1XKF071527	19153
5FYC8FB11KF071528	19154
5FYC8FB13KF071529	19155
5FYC8FB1XKF071530	19156
5FYC8FB11KF071531	19157
5FYC8FB13KF071532	19158
5FYC8FB15KF071533	19159
5FYC8FB17KF071534	19160
5FYC8FB19KF071535	19161
5FYC8FB10KF071536	19162
5FYC8FB12KF071537	19163
5FYC8FB14KF071538	19164
5FYC8FB16KF071539	19165
5FYC8FB12KF071540	19166
5FYC8FB14KF071541	19167
5FYC8FB16KF071542	19168
5FYC8FB18KF071543	19169
5FYC8FB1XKF071544	19170
5FYC8FB11KF071545	19171
5FYC8FB13KF071546	19172
5FYC8FB15KF071547	19173
5FYC8FB17KF071548	19174
5FYC8FB19KF071549	19175
5FYC8FB15KF071550	19176
5FYC8FB17KF071551	19177
5FYC8FB19KF071552	19178



NEW FLYER OF AMERICA

SR2333 continued

Vehicle Identification Number	Unit Number
5FYC8FB10KF071553	19179
5FYC8FB12KF071554	19180
5FYC8FB14KF071555	19181
5FYC8FB16KF071556	19182
5FYC8FB18KF071557	19183
5FYC8FB1XKF071558	19184
5FYC8FB11KF071559	19185
5FYC8FB18KF071560	19186
5FYC8FB1XKF071561	19187
5FYC8FB11KF071562	19188
5FYC8FB13KF071563	19189
5FYC8FB15KF071564	19190
5FYC8FB17KF071565	19191
5FYC8FB19KF071566	19192
5FYC8FB10KF071567	19193
5FYC8FB12KF071568	19194
5FYC8FB14KF071569	19195
5FYC8FB10KF071570	19196
5FYC8FB12KF071571	19197
5FYC8FB14KF071572	19198
5FYC8FB16KF071573	19199
5FYC8FB18KF071574	19200
5FYC8FB1XKF071575	19201
5FYC8FB11KF071576	19202
5FYC8FB13KF071577	19203
5FYC8FB15KF071578	19204
5FYC8FB17KF071579	19205
5FYC8FB13KF071580	19206
5FYC8FB15KF071581	19207
5FYC8FB17KF071582	19208
5FYC8FB19KF071583	19209
5FYC8FB10KF071584	19210
5FYC8FB12KF071585	19211
5FYC8FB14KF071586	19212
5FYC8FB16KF071587	19213



SR2333 continued

Vehicle Identification Number	Unit Number
5FYC8FB18KF071588	19214
5FYC8FB1XKF071589	19215
5FYC8FB16KF071590	19216
5FYC8FB18KF071591	19217
5FYC8FB1XKF071592	19218
5FYC8FB11KF071593	19219
5FYC8FB13KF071594	19220
5FYC8FB15KF071595	19221
5FYC8FB17KF071596	19222
5FYC8FB19KF071597	19223
5FYC8FB10KF071598	19224
5FYC8FB12KF071599	19225
5FYC8FB15KF071600	19226
5FYC8FB17KF071601	19227
5FYC8FB19KF071602	19228
5FYC8FB10KF071603	19229
5FYC8FB12KF071604	19230
5FYC8FB14KF071605	19231



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“New Flyer” is a tradename of “New Flyer Industries Canada ULC”

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 Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153); go to <http://www.safercar.gov> and download the SaferCar mobile application or write to: Administrator, NHTSA, 1200 New Jersey Ave. SE, Washington, DC 20590. Other information about motor vehicle safety can be obtained from <http://www.safercar.gov>.



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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 any manuals which are readily available from their respective manufacturer.

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.



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 XN40 transit bus
Customer	Miami Dade Transit - SR2333
Build Year	2019
ENGINE	
Engine	<i>Cummins</i> L9N (EPA 2019)
Horsepower	280 HP
Torque	900 ft-lb.
FUEL	
Fuel	Compressed Natural Gas (CNG)
Usable Fuel Capacity	19,800 std. cu. ft. @ 3,600 psi (24,821 kPa)
TRANSMISSION	
Transmission	<i>Allison</i> B400R
Transmission Controls	5th Generation with Fuelsense 2.0
Self-Contained Retarder	3 stage - 33% accelerator, 66% rear brake, 100% front brake activated
DIMENSIONS	
Length (over bumpers)	41 ft. (12.5 m)
Width	8.5 ft. (2.6 m)
Height	11.1 ft. (3.4 m)
Wheelbase	23.6 ft. (7.2 m)
Turning Radius	43 ft. (13.1 m)
Approach/Departure Angle	9°
Vehicle Weight (approx.)	30,600 lbs. (13,880 kg)
Gross Vehicle Weight Rating (GVWR)	44,004 lbs. (19,960 kg)

INTRODUCTION

AXLES & SUSPENSION	
Front Axle	<i>MAN VOK-07-F</i>
Front Gross Axle Weight Rating (GAWR)	15,520 lbs. (7,040 kg)
Front Axle Ride Height	4" (102 mm)
Suspension Air Springs	<i>Firestone</i>
Suspension Shock Absorbers	<i>Koni</i>
Rear Axle	<i>MAN HY-1350-F (4.56:1)</i>
Rear Gross Axle Weight Rating	28,484 lbs. (12,920 kg)
Rear Axle Ride Height	3.8" (97 mm)
Suspension Air Springs	<i>Firestone</i>
Suspension Shock Absorbers	<i>Koni</i>
Driveshaft	<i>Prop Shaft Supply 1710 with crosstooth flange & half-round connections</i>
STEERING	
Steering Gear	<i>R.H. Sheppard M110 with remote miter box</i>
Oil Flow	3.6 gal/min
Pressure Relief	1,850 psi
Steering Column	<i>Douglas Autotec 9204 Series</i>
Power Steering Reservoir	<i>Cummins reservoir</i>
Power Steering Pump	<i>Ixetic</i>
WHEELS & TIRES	
Tires	<i>Michelin</i>
Tire Size	305/70R22.5
Inflation Pressure	125 psi
Rim Mounting	10 Bolt hub piloted
Wheels	Aluminum
Maximum Load (single tire)	7,760 lbs. (3,520 Kg) @ 125 psi



Maximum Load (dual tires)	7,121 lbs. (3,230 Kg) @ 125 psi
BRAKE SYSTEM	
Brakes, Mechanical (front)	<i>Knorr-Bremse</i> SN7000 air-actuated sliding caliper disc brakes
Brakes, Mechanical (rear)	<i>Knorr-Bremse</i> SN7000 air-actuated sliding caliper disc brakes
Wear Sensor (front)	End of life wear sensors in brake pads
Wear Sensor (front)	Continuous wear sensor in calipers
Wear Sensor (rear)	End of life wear sensors in brake pads
Wear Sensor (rear)	Continuous wear sensor in calipers
Service Brake Chamber (front)	<i>MGM</i> with e-Stroke
Service Brake Chamber (rear)	<i>MGM</i> with e-Stroke
Antilock Braking System (ABS)	<i>Meritor Wabco</i> ABS on all wheels
Automatic Traction Control (ATC)	<i>Meritor Wabco</i> 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
Emergency Brake Application	Spring brake chamber applied with loss of reservoir pressure, modulated with brake treadle application
Emergency Brake Release	Released with push/pull control valve located on side console
Brake Monitoring System	<i>MGM</i> e-Stroke display module located inside the electronic equipment enclosure. e-Stroke brake sensor on all brake chambers & a brake alert message on the instrument panel.
HVAC SYSTEM	
HVAC Unit	<i>Thermo King</i> T15-M9 rear unit
Defroster	<i>Grayson Electric</i> Model HP-3601
Driver's Booster Fan	<i>Grayson Electric</i> Ducted Blower
Compressor	<i>Thermo King</i> S391
Refrigerant	R407c

INTRODUCTION

COOLING SYSTEM

Engine Radiator	<i>Engineered Machined Products (EMP) MH4 Radiator/CAC assembly with Fil-15 pusher-type fans</i>
Radiator Diagnostics	<i>EMP Dual Link CP10</i>
Transmission Oil Cooler	<i>Rocore oil to water heat exchanger located in the engine compartment</i>

AIR SYSTEM

Compressor	<i>Wabco twin compressor, 30.4 CFM, 11 tooth</i>
Governor	<i>Bendix D2 narrow band (117 to 131 psi)</i>
Air Dryer	<i>Graham White QBA-15 air dryer</i>

STARTING SYSTEM

Starter	<i>Delco Remy 42MT, 24 Volt</i>
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CHARGING SYSTEM

Alternator	<i>Niehoff C803D</i>
Alternator Voltage	28 Volt
Alternator Current	500 Amp
Alternator Cooling	Air
Voltage Regulator	<i>Niehoff A2-377</i>
Voltage Equalizer	<i>Vanner Power Group 12/24 Volt, 100 Amp</i>
Batteries (4)	<i>Interstate</i>
Battery Type	Maintenance-free
Battery Type	High Cycle
Battery Group Size	31
Battery Charge Voltage	28.0 ± 0.2 Volts
Battery Cranking Capacity	950 CCA

EXTERIOR LIGHTING

Headlights	Integrated unit with 12 Volt LED low beam, high beam & amber 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	<i>TCB</i> 24 Volt LED lights with dimmable Gen 3 clever boards
INSTRUMENTATION	
Instrument Panel	<i>Parker-Vansco</i> 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
	Fan control switch
	Fire Suppression Display Panel
MULTIPLEXING SYSTEM	
Multiplexing Module (VMM) System with J1939 Network Communication	<i>Parker-Vansco</i> VMM 1615 modules
Instrument Panel	<i>Parker-Vansco</i> electronic
AVA/AVL SYSTEM	
AVA/AVL System	<i>Clever Devices</i> IVN4 control unit
PASSENGER COUNTING SYSTEM	
Automatic Passenger Counter (APC)	<i>UTA Hella</i> RS485 system with sensors on door baseplates
ELECTRONIC EQUIPMENT	
Infotainment System	Integrated with AVA/AVL system, front & rear monitors, ethernet switch and GPS antenna.
DESTINATION & ROUTE SIGNS	
Sign Control	<i>Twin Vision</i> Multi Control Unit (MCU)
Front Destination	<i>Luminator Technology Group</i> Spectrum series Titan

INTRODUCTION

Side Destination	<i>TwinVision</i> Smart Series III
Rear Route	<i>TwinVision</i> Smart Series III
DOORS	
Entrance Door	<i>Vapor</i> Electric slide glide
Entrance Door Opening Size	Medium
Limit Switches	Inductive proximity switches
Exit Door	<i>Vapor</i> Electric
Exit Door Opening Size	Medium
Limit Switches	Inductive proximity switches
Driver's Door Control	5-position door controller located on the side console
Passenger Door Control	Contactless Acoustic Sensors (CLASS)
WINDOWS	
General	<i>Arow Global</i> , fixed
Mounting	Flush
Frame	Black anodized aluminum
Glazing	Tempered glass
Tinting	Grey, 13% light transmittance
Driver's Window	Two piece slider with interior & exterior handles
Glazing	Tempered glass
Tinting	Blue Spruce, 70% light transmittance
Emergency Escape	4 curbside & 4 streetside identified with labels
SEATING	
Driver's	<i>USSC 9110 ALX3</i>
Passenger	<i>4ONE Aries</i>
Passenger Seating Quantity	40
Wheelchair Stations	2 (seats fold up & lock)

**FLOOR & SUBFLOOR**

Subfloor	Plywood
Flooring	<i>Tarabus Helios 8806</i>
Sealant	<i>Tarabus Slate Gray</i>

SAFETY FEATURES

Emergency Escape Exits	4 curbside windows identified with labels
	4 streetside windows identified with labels
	2 roof hatches
Fire Extinguisher	5 lb ABC rating
Fire Extinguisher Location	Driver's barrier
Safety Triangles Location	Driver's barrier
Accelerator & Brake Interlocks	<i>New Flyer</i> safety system that automatically applies the brakes and disables the accelerator based on vehicle operating conditions.
Sensitive Edges	Exit door panels
Obstruction Detection System	Contactless Acoustic Sensors (CLASS) at exit door
Fire Suppression & Gas Detection System	<i>Fogmaker</i>
Silent Alarm	Located on vertical face of side console
Backup Alarm	Located in the curbside of the engine compartment
Camera System	<i>UTC Fire & Security Mobileview 7000</i> system with 13 cameras

ACCESSIBILITY FEATURES

Wheelchair Ramp	<i>New Flyer</i> hydraulic unit with patented hydraulic cylinder/chain drive mechanism
Wheelchair Ramp Width	Flip-out aluminum 32"
Wheelchair Ramp Slope Ratio	1:7
Wheelchair Ramp Max. Load Capacity	600 lbs. (272 kg.)
Kneeling	Front suspension, rapid recovery
Bike Rack	<i>Byk-Rak</i> 3 position



NEW FLYER OF AMERICA

INTRODUCTION



2. EMERGENCY INFORMATION

Vehicle Evacuation & Shutdown

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

1. Move the vehicle to a safe location.
2. Apply the parking brake.
3. Open the front and rear passenger doors.
4. Place the shift selector into NEUTRAL position.
5. Shutdown the vehicle by setting the Master Run switch to the STOP-ENGINE position.
6. Direct all passengers to a safe area, away from the vehicle.
7. Alert the transit authority of the emergency.
8. Retrieve the Emergency Responder Guide and exit the vehicle.



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

9. Approach the rear curbside area of the vehicle and open the Battery Disconnect access door.

EMERGENCY INFORMATION

10. Shut down the 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.
11. Wait for emergency response personnel to arrive and assist them by providing details of the emergency and handing over the Emergency Responder Guide.

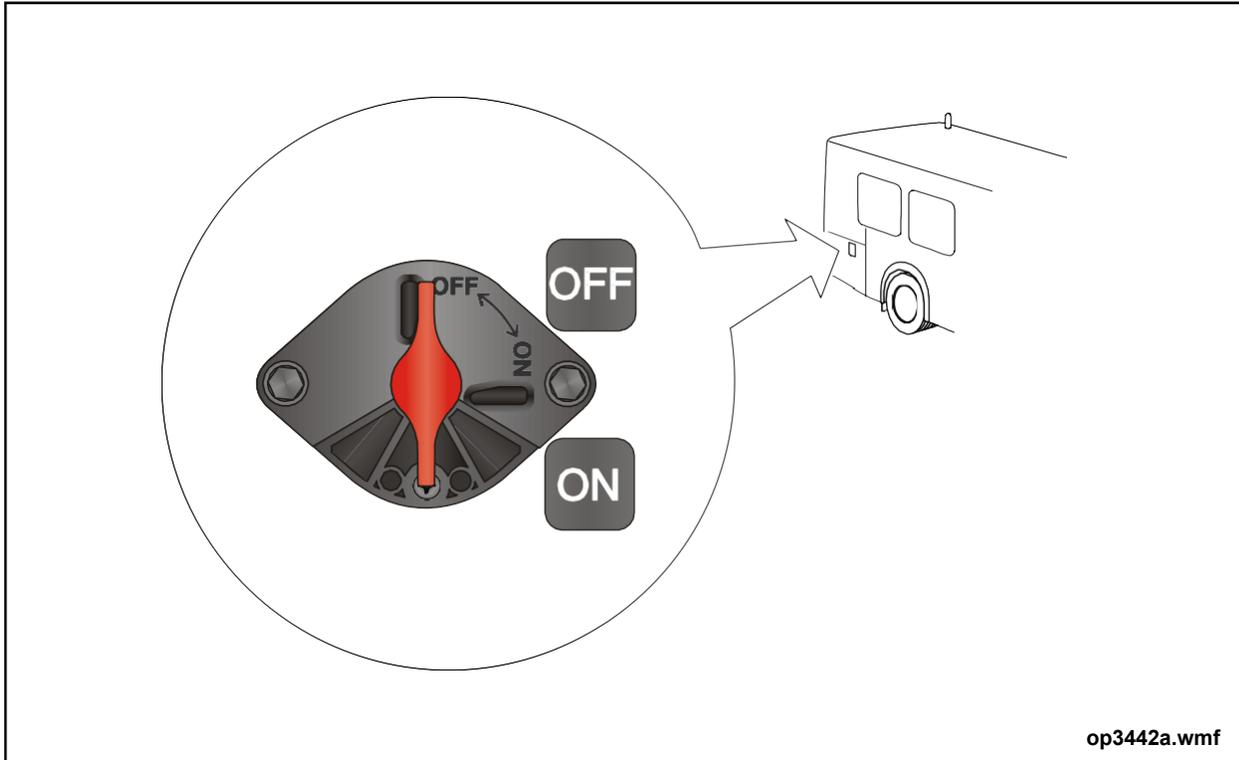


Figure 1: Battery Disconnect Switch



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.

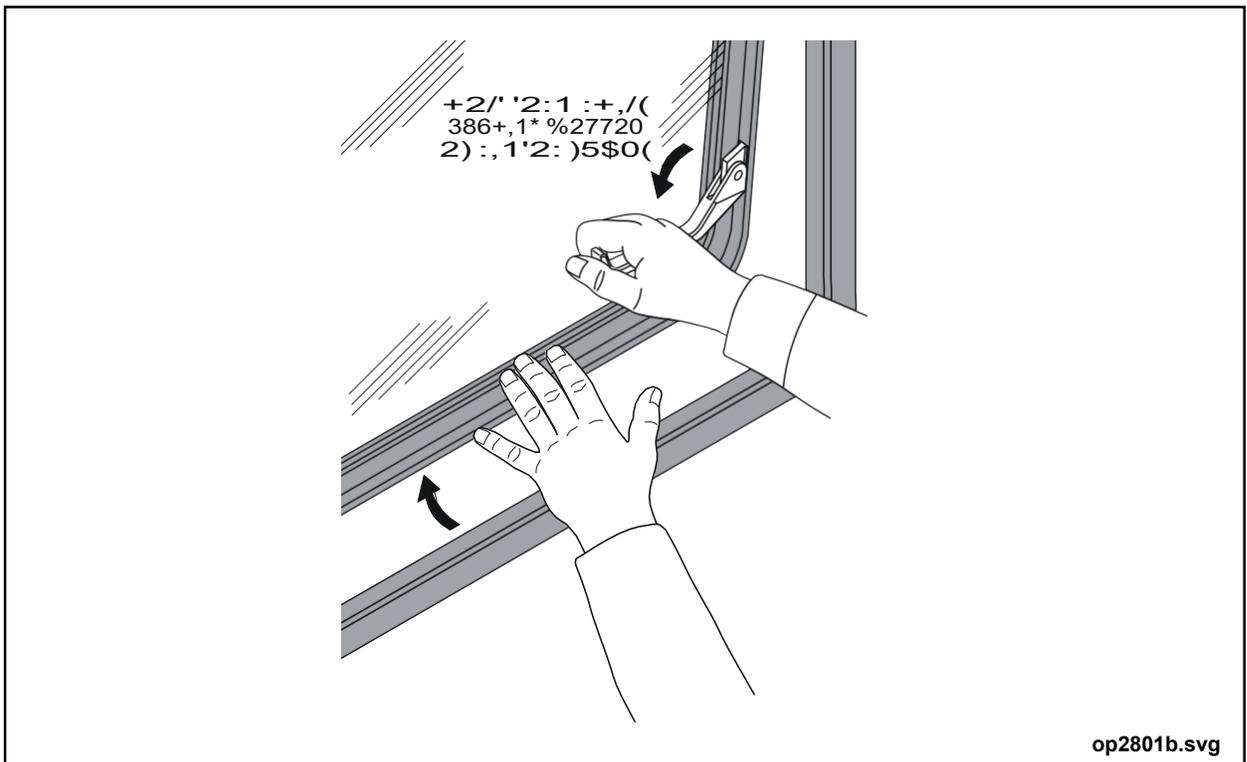


Figure 2: Window Emergency Handle

EMERGENCY INFORMATION

Roof Hatches

The 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.

Opening

1. Rotate the red knob 90° in either direction.
2. Push the red knob into the lid.
3. Continue to push the lid to the fully OPEN position.

Closing

1. Ensure the release hinge is in the UPWARD position.
2. Lower the lid into position.
3. Guide the release hinge into the handle base on the lid.
4. Pull down on the top of the lid to force the release hinge and the lid together until you hear the spring loaded handle set in place.
5. Grasp both sides of the lid and pull down to fully close the hatch.
6. Rotate the red knob back into the LATCHED position.

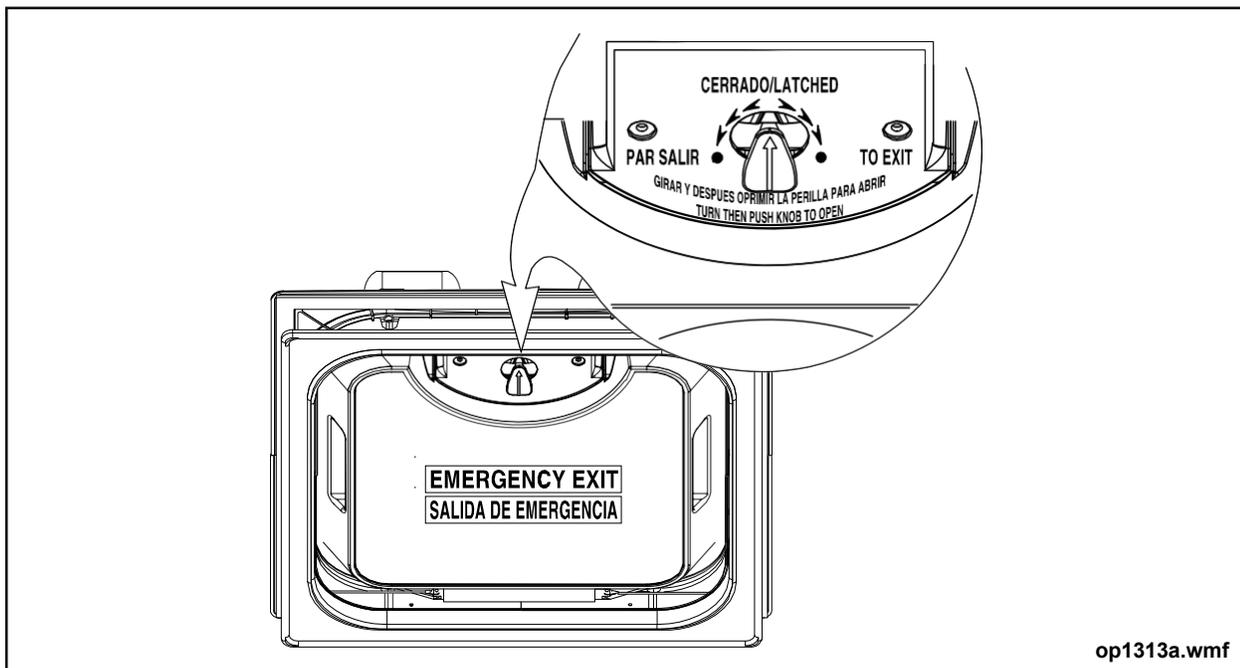


Figure 3: Roof Hatch Emergency Exit



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 glass to access the control valve knob. Rotate the knob 90° counter-clockwise to release air pressure from the Emergency release cylinder, then 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.

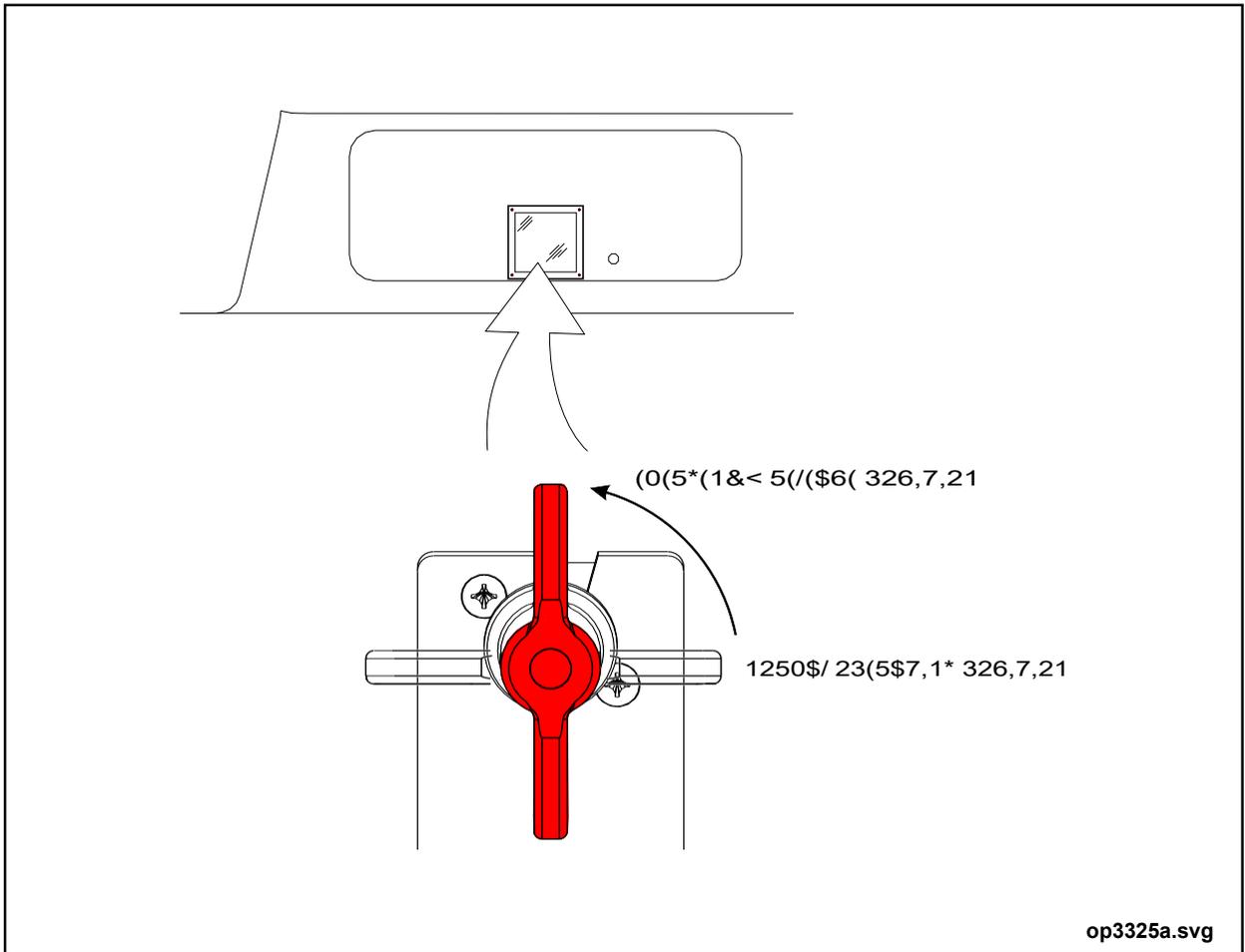


Figure 4: Entrance Door Emergency Release Control Valve

Emergency Release Control Valve - Exit Door

The exit door emergency release control is located to the left of the exit door header, behind a breakable window. In an emergency, break the glass to access the control knob. Rotate the knob 90° counter-clockwise to release air pressure from Emergency 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.

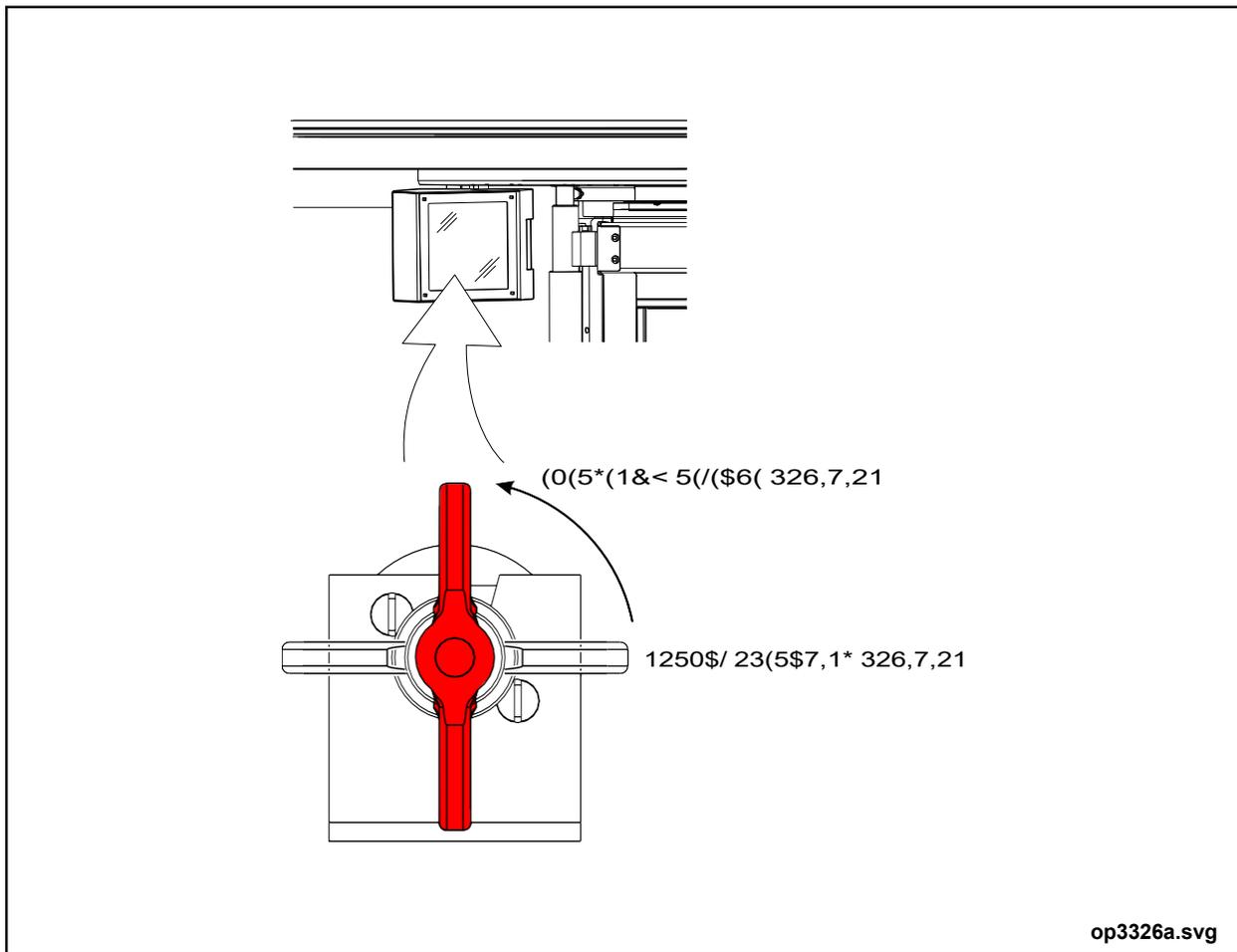


Figure 5: Exit Door Emergency Release Control Valve



3. SAFETY INFORMATION

CNG Safety

Natural gas is a flammable, colorless, tasteless, and non-toxic light gas weighing approximately one third less than air. It rises and rapidly diffuses when released to the atmosphere.

Asphyxiation can occur if natural gas displaces the normal 21% oxygen air content in a confined area lacking adequate ventilation. For safety, natural gas is odorized to be detected at a concentration of 0.5%, which is well below the level of causing drowsiness or supporting combustion.

Although natural gas has a higher ignition temperature point than gasoline or diesel fuel, it is still absolutely necessary to exercise extreme caution when working near or with a CNG fuel system.

Follow the same safety procedures applicable to other hydrocarbon vapor-producing fuels such as gasoline or diesel fuel. Any potential source of ignition such as smoking, lighting matches, a cigarette lighter, or any excessive heat producing process must be kept clear of the vehicle fuel system and the CNG storage and handling area.

Natural gas is stored in special high-pressure storage cylinders at a compressed pressure of 3,600 psi (24,821 kPa). Ensure service personnel who install, repair, remove, or service any component of a CNG fuel system meet the local accreditation requirements. This would include the main storage and fueling facility of the vehicle fuel system.

A manually activated fire extinguisher should be on board the vehicle in a visible and easily accessible location. It must be of a class and type capable of extinguishing a natural gas fueled fire such as an ABC or CO₂ charged extinguisher.

- Do not smoke, ignite matches, cigarette lighters, or any other device that will produce a flame or spark within 10 feet (3 m) of the fueling station.
- Follow the same rule regarding smoking or spark/flame producing equipment when opening the fuel filling compartment access door on the vehicle or if the operator is near any part of the CNG fuel system.



SAFETY INFORMATION

WARNING

Natural gas storage and delivery are high pressure systems. Procedures for maintenance and service of the system must comply with the local government regulations. Therefore, only personnel deemed as qualified to work on high pressure natural gas systems and components may repair, service or install any part of the vehicle CNG system.

CAUTION

Vehicle operating personnel are not to attempt any type of adjustment, maintenance, or troubleshooting on the CNG fuel storage or delivery systems. If a leak occurs, the gas detectors will shut off the fuel supply solenoid valves, stopping the vehicle. **DO NOT** attempt to search for a gas leak. Certified maintenance personnel will do this.

WARNING

Natural gas is an asphyxiant; that is, it can interfere with the flow of oxygen to the lungs. Therefore, heavy concentrations can cause drowsiness and eventually suffocation. Natural gas is odorized to make leak detection easy.

- While the CNG vehicle is in the shop, set the quarter-turn shut-off valve to OFF unless CNG fuel is required for running or checking.
- All maintenance tasks on the natural gas system must be performed by certified and qualified personnel.
- A vehicle involved in an accident which damages any part of the natural gas fuel system must be retested after repair by certified personnel.



If a minor leak occurs, take the following precautions:

- Shut off the ignition and all electrical devices.
- Open the fuel filler door and service access door.
- Turn the quarter-turn shut-off valve to OFF.
- Allow the gas to disperse into a ventilated area.
- Have the leak repaired by qualified and certified maintenance personnel.



If a major fuel leak occurs, take the following precautions:

- Evacuate the area.
- DO NOT operate any electrical overhead doors or electrical switches.
- Open all manual outside doors.
- Go to a safe distance of at least 300 feet (92 m) and wait until the gas is dispersed.
- If a fire erupts, call the fire department and the local gas company.

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: See "Figure 6: Safety Equipment" on page 23.

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.

Safety Triangles

Position the triangles at the front and rear of the vehicle to warn other drivers during emergency situations.

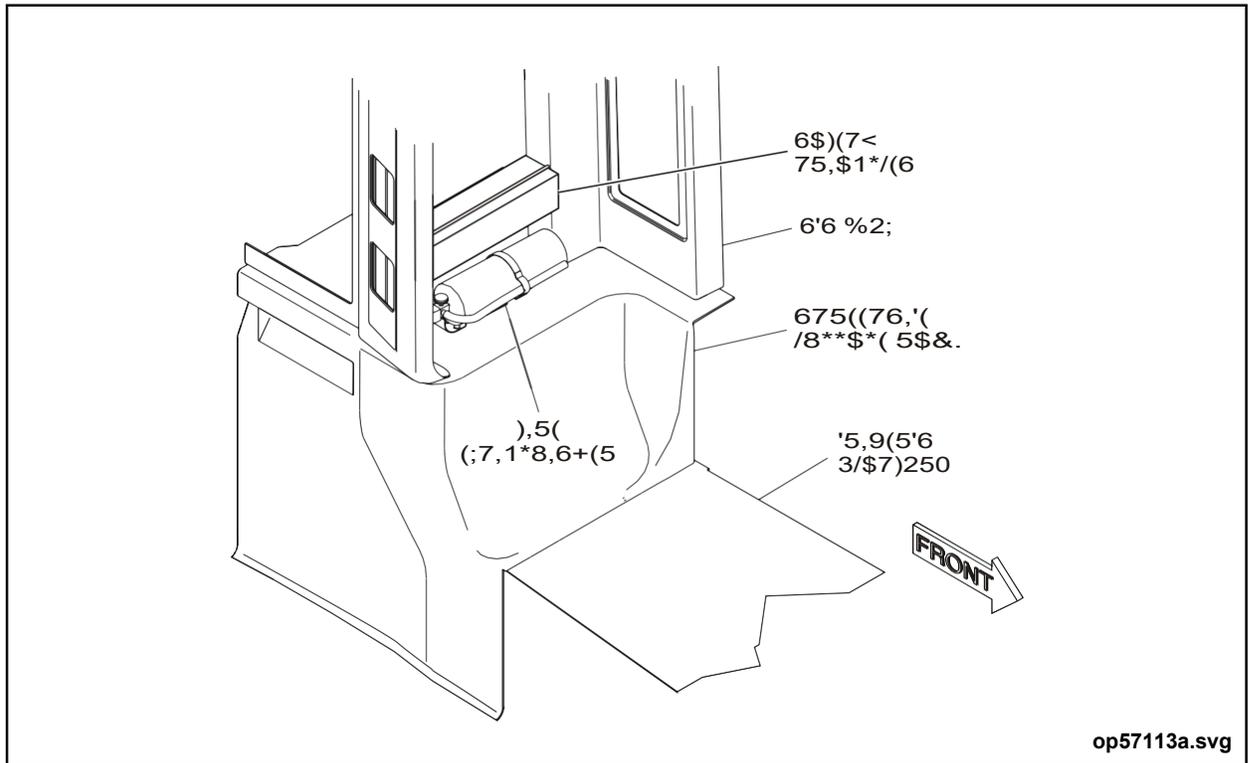


Figure 6: Safety Equipment

Fire Suppression & Gas Detection System

The vehicle is equipped with a Fire Suppression & Gas Detection System. The system protects the passengers and vehicle against fire and gas leak. If a fire is detected in the engine compartment an extinguishing agent is discharged to suppress the fire. If a gas leak is detected an audible alarm will sound.

The Fire Suppression & Gas Detection System components that are located in the driver's area include the Manual Actuator switch and alarm panel. Refer to "10.FIRE SUPPRESSION & GAS DETECTION SYSTEM" on page 92 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.

Video Surveillance System

A Video Surveillance System records events as they occur on the vehicle. The system consists of a digital video recorder, 13 cameras with microphones on all interior cameras and an event marker switch.

The video recorder is located in the electronic equipment enclosure. The cameras are located in the interior and exterior of the vehicle. The Event Marker switch is located beneath the side console. Pressing the Event Marker switch marks and saves incidents for storage and retrieval on the DVR hard drive. Power is provided to the DVR when the Master Run switch is set to either the DAY-RUN or NIGHT-RUN position.

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 Interlock Override switch is set to the OFF position, the vehicle speed is below 2 mph (except where noted), and any of the following conditions occur:

- Entrance or exit doors are open.
- Exit door emergency valve is actuated (regardless of vehicle speed).
- Vehicle is kneeling.
- Wheelchair ramp is not stowed.
- Parking brake is applied.
- Loss of air pressure at exit door.
- Shift selector is in neutral position.
- Brake drag alert is activated.

The Interlock System is intended to protect passengers from inadvertent vehicle movement. The Interlock Override switch can be used to disable the system for maintenance purposes or in an emergency. [Refer to “Interlock Override Switch” on page 90](#) 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.

 **NOTE:**

Interlock activation from front and rear door opening can be disabled by switching the Front Door Master Switch or Rear Door Master Switch to the OFF position.



4. TO ENTER THE VEHICLE

1. Slide the front portion of the driver's window back to gain access to the door controller handle on the side console. See "Figure 7: To Enter the Vehicle" on page 27.
2. Turn the door controller handle to the FRONT, FRONT REAR or REAR FRONT positions to open the entrance door.
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.

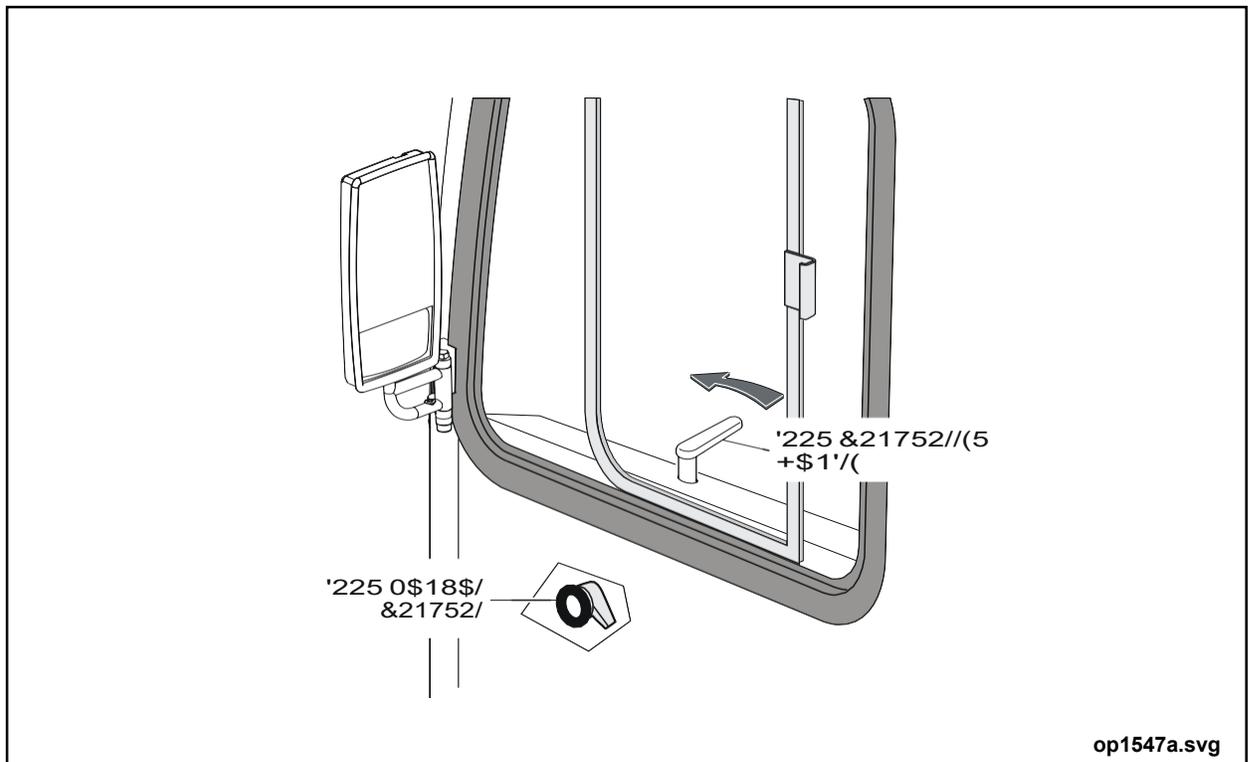


Figure 7: To Enter the Vehicle

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

CNG Operation Checks

- Perform a visual check of the CNG fuel system before starting the vehicle.
- Check for the odor of any leaking gas.

NOTE:

Gas can be smelled at a very low concentration of only 0.5%, which is not enough to activate the gas sensors. If you smell gas, DO NOT OPERATE THE VEHICLE. Notify dispatch immediately.

- Open the filler receptacle door and make sure the quarter-turn gas shut-off valve is ON. The handle should be parallel to the fuel line.
- Check the pressure gauge reading. The pressure gauge should show a minimum of 500 psi (3,447 kPa). If no pressure shows or if the reading is well below the minimum pressure, call dispatch immediately. DO NOT OPERATE THE VEHICLE.
- Make sure the dust cover is on the filler receptacle.
- Make sure the access door is fully closed after the walk-around inspection.

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.
- Bike rack is securely mounted and functions properly.



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.

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

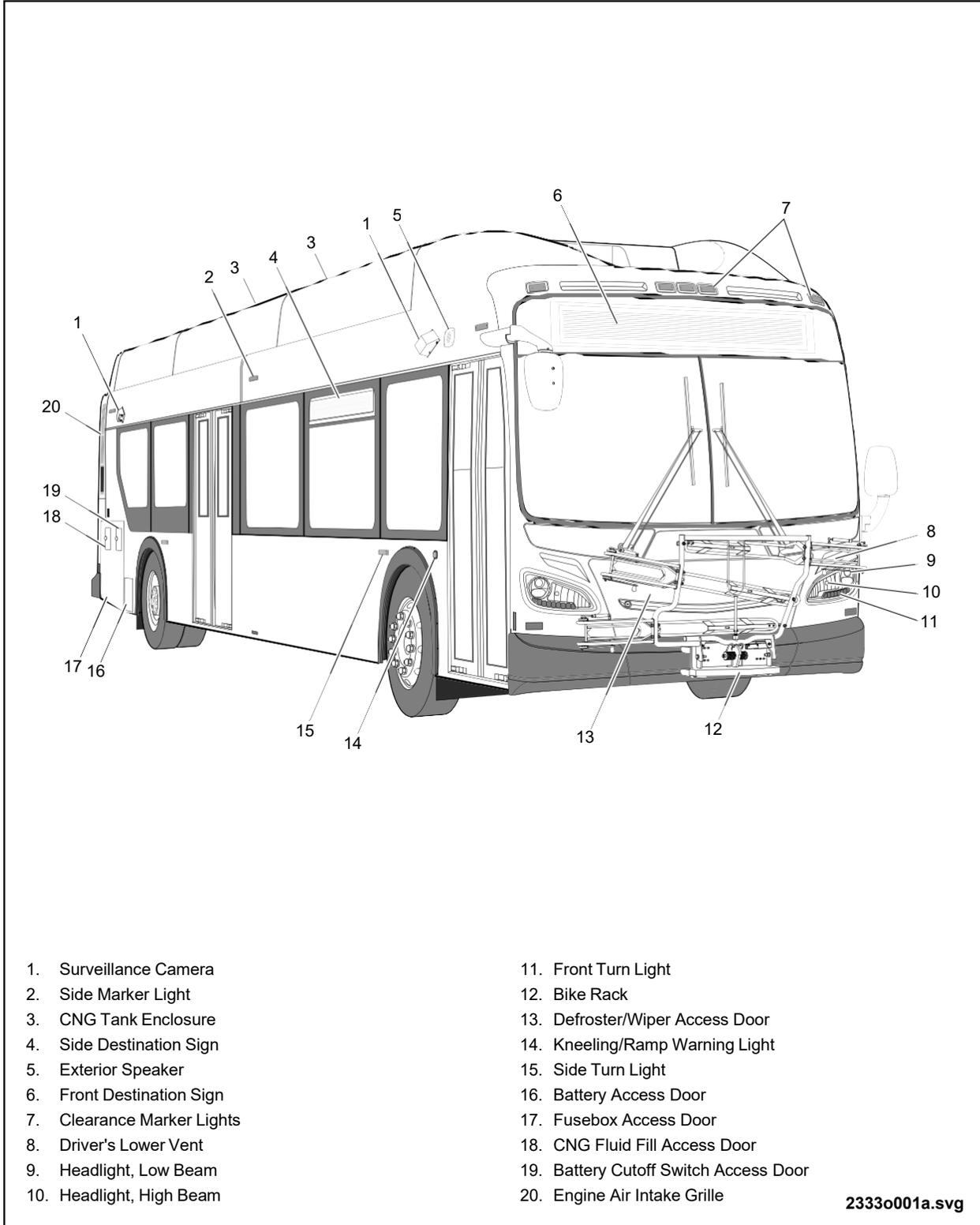
- Check tire air pressure and ensure it is within the manufacturer's recommended range.
- Inspect tire tread for abnormal wear, cuts, separation, missing tread, or any other visible defects.
- Inspect tire sidewalls for bulges, cuts, gouges, abrasions, or any other visible defects.

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.

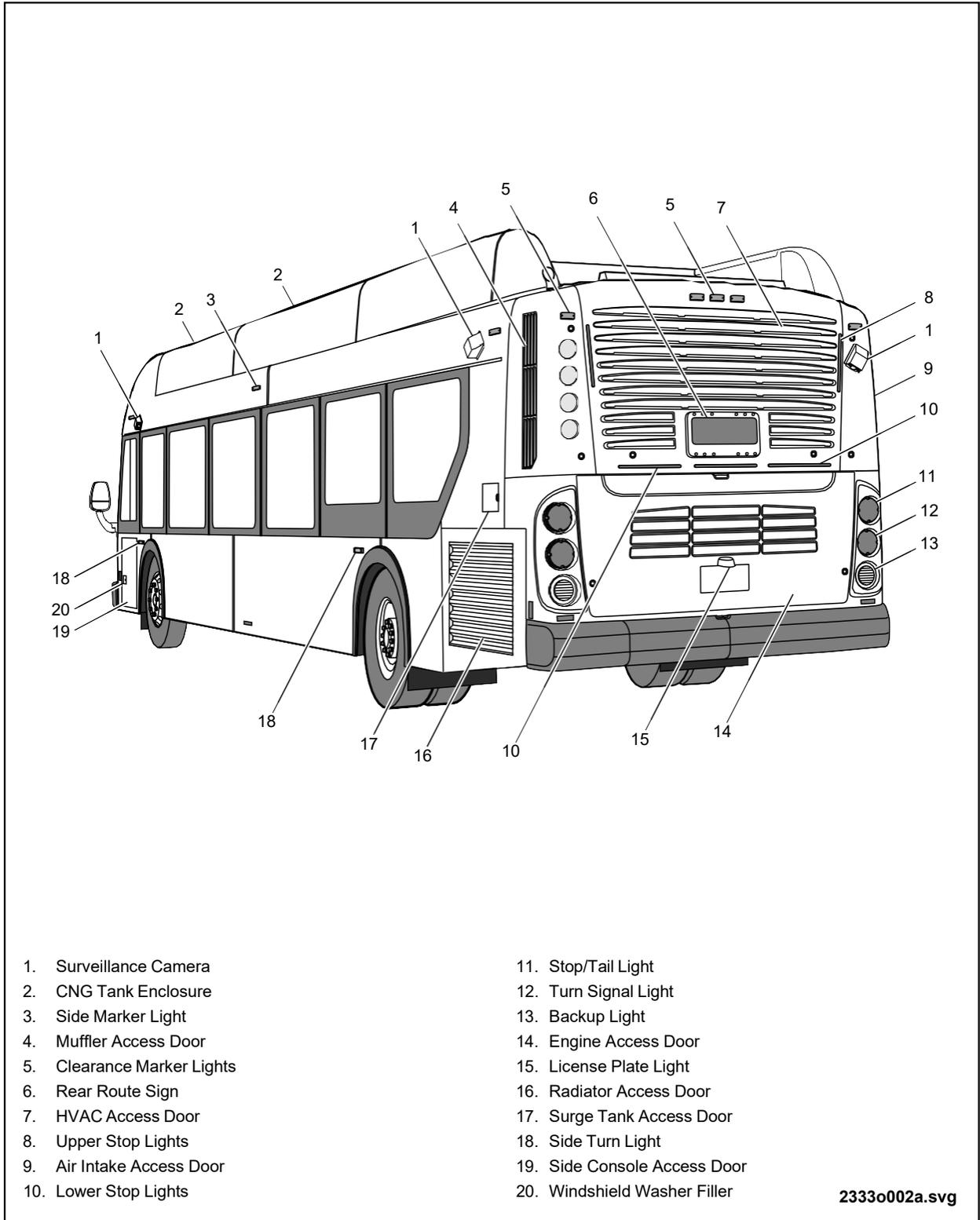


DRIVER'S CHECK LIST



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Figure 8: Front Exterior View



- | | |
|----------------------------|------------------------------|
| 1. Surveillance Camera | 11. Stop/Tail Light |
| 2. CNG Tank Enclosure | 12. Turn Signal Light |
| 3. Side Marker Light | 13. Backup Light |
| 4. Muffler Access Door | 14. Engine Access Door |
| 5. Clearance Marker Lights | 15. License Plate Light |
| 6. Rear Route Sign | 16. Radiator Access Door |
| 7. HVAC Access Door | 17. Surge Tank Access Door |
| 8. Upper Stop Lights | 18. Side Turn Light |
| 9. Air Intake Access Door | 19. Side Console Access Door |
| 10. Lower Stop Lights | 20. Windshield Washer Filler |

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Figure 9: Rear Exterior View



DRIVER'S CHECK LIST

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.
- Sunvisors and/or 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 stop request system and verify operation.
- Ensure door controller moves freely through all operating positions and doors open/close accordingly.
- Both 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 & Gas Detection System

- Ensure the safety pin on the Manual Actuator switch is securely installed.
- Ensure all indicators on the fire suppression & gas detection 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.

DRIVER'S CHECK LIST

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 "12.VEHICLE OPERATION" on page 103 in this manual for details on engine starting.

- The No Gen and Stop Engine indicators illuminate momentarily, then extinguish.
- 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 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 60 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 36. See "Figure 11: Driver's Side Area" on page 37.

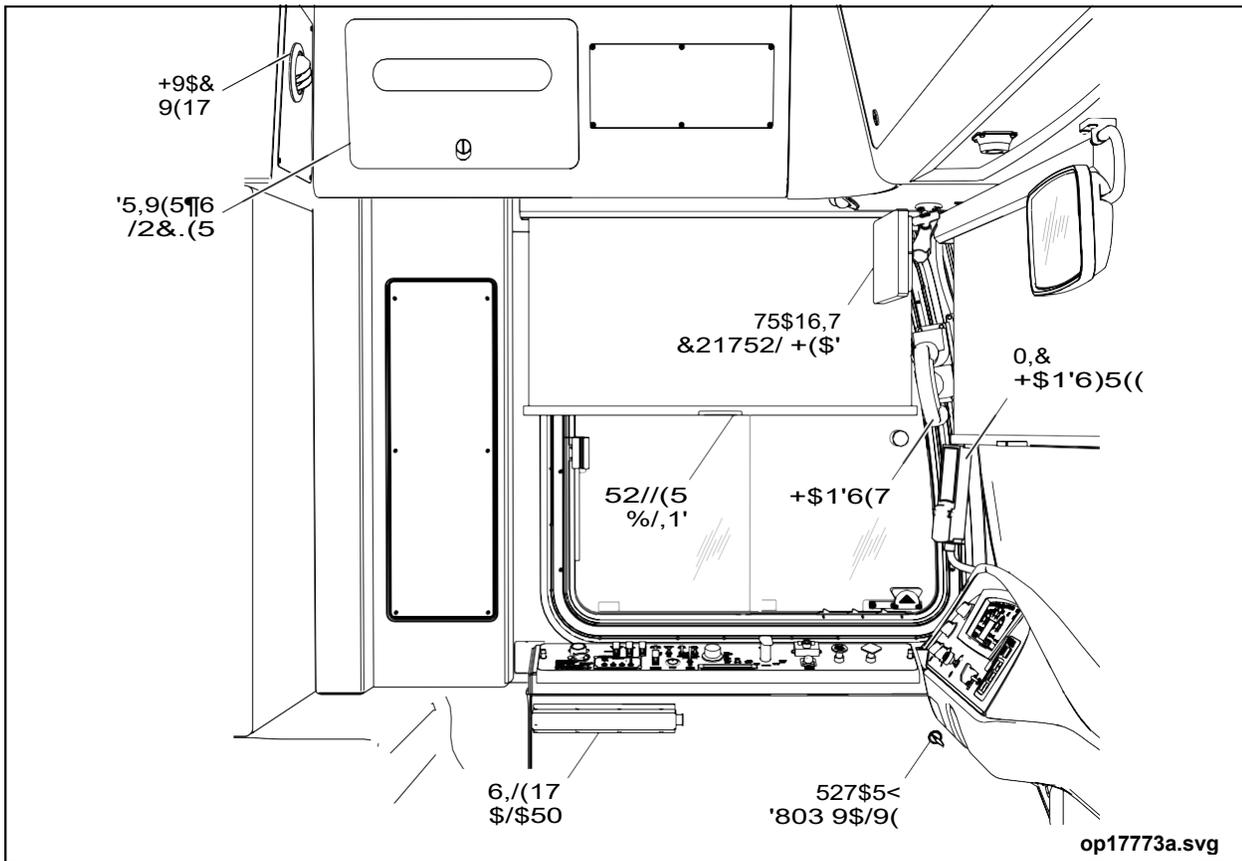


Figure 10: Driver's Front Area

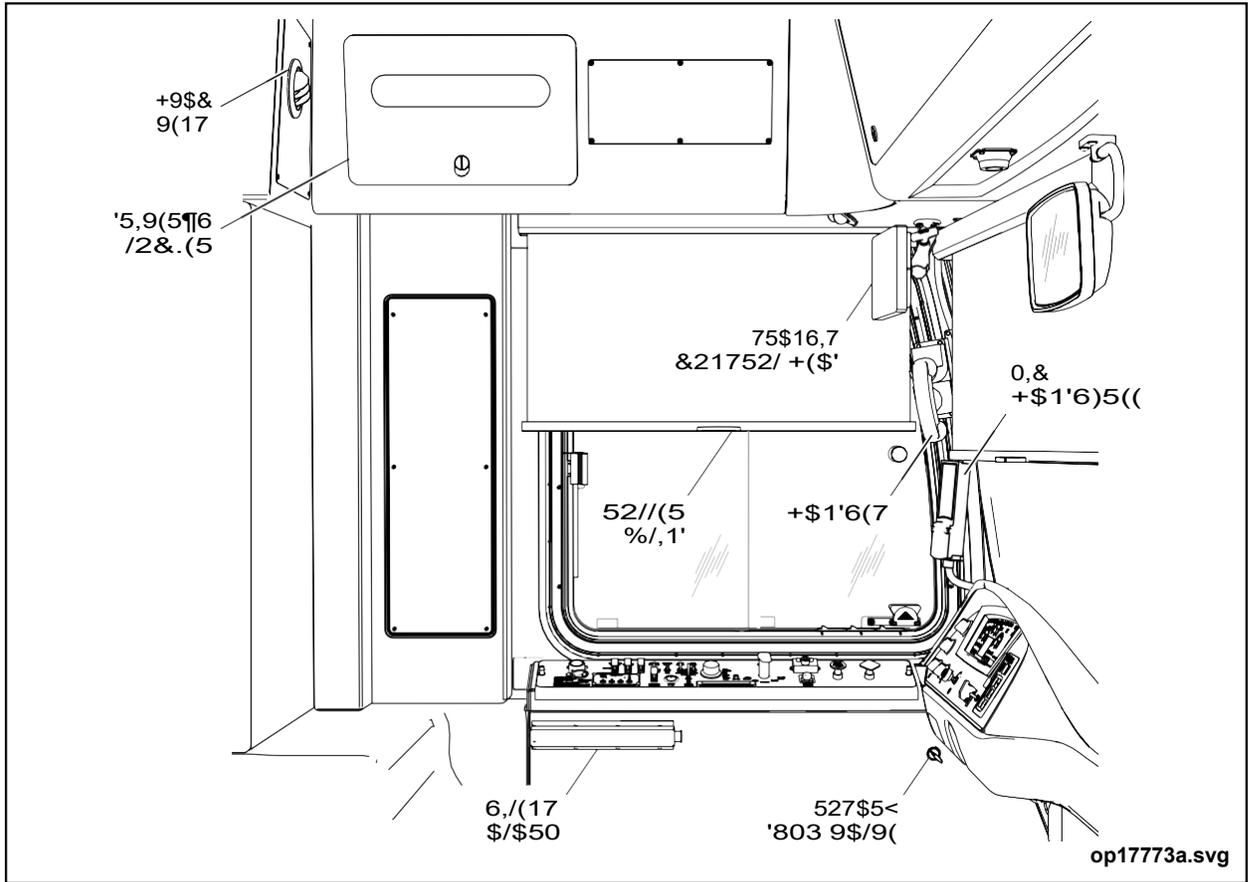


Figure 11: Driver's Side Area

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 exit door area 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.



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 following components: [See "Figure 12: Driver's Overhead Panel" on page 40.](#)

- Destination sign controller - [Refer to "Destination/Route Signs" on page 48](#) in this manual for information on the operation of the destination sign controller.
- Fire suppression & Gas detection display panel - [Refer to "10.FIRE SUPPRESSION & GAS DETECTION SYSTEM" on page 92](#) in this manual for a description of the fire suppression components and the system operation.
- Fuel Management System monitor - This vehicle is equipped with an electronic Fuel Management System. The display module is located in the driver's overhead panel. Consult your transit authority for more information on this system.
- Driver's Booster Fan switch. [Refer to "Driver's Climate Controls" on page 75](#) in this manual for more information on the driver's booster fan control.

DRIVER'S AREA

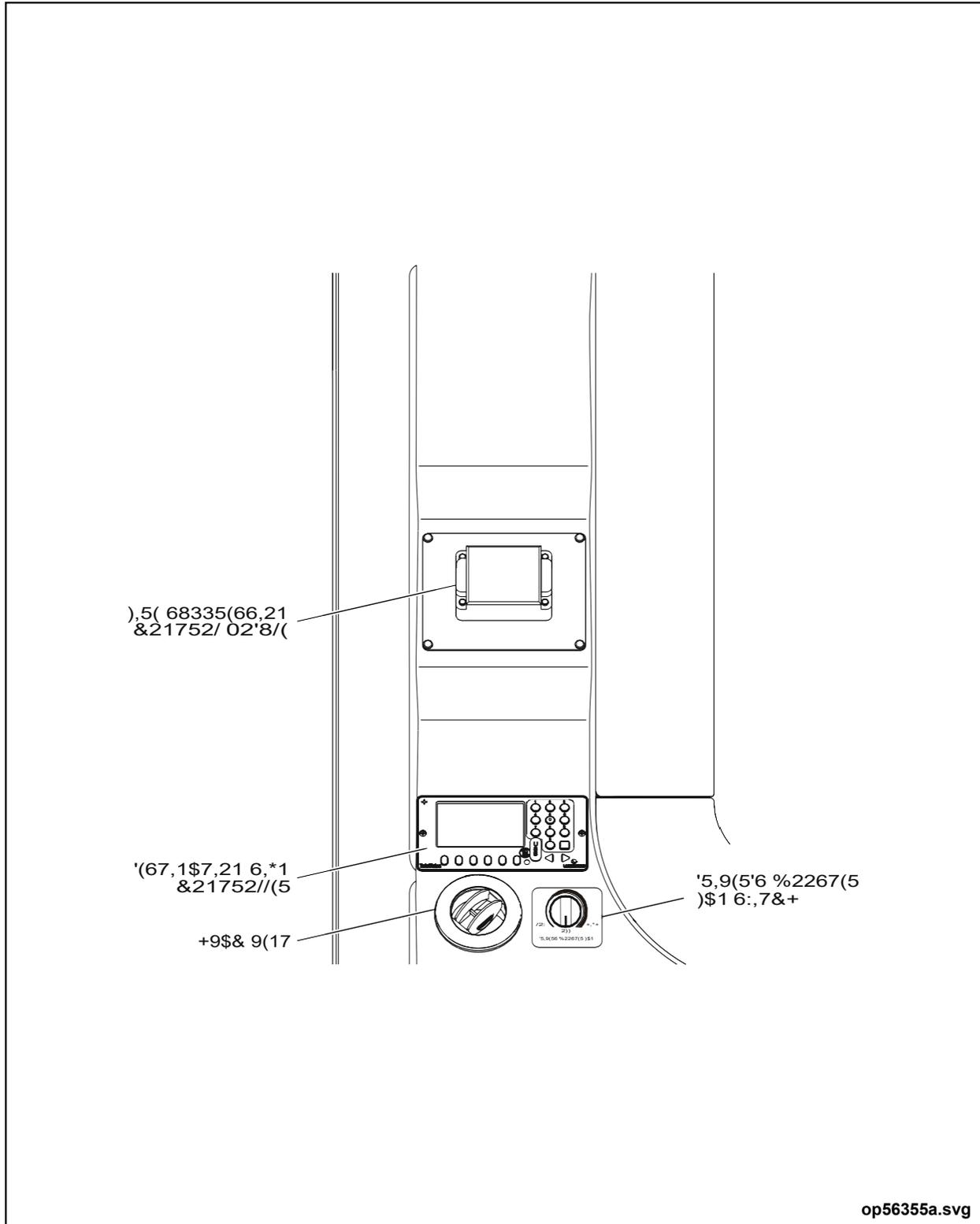


Figure 12: Driver's Overhead Panel



Driver's Seat

The USSC 9110ALX3 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 41.

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.

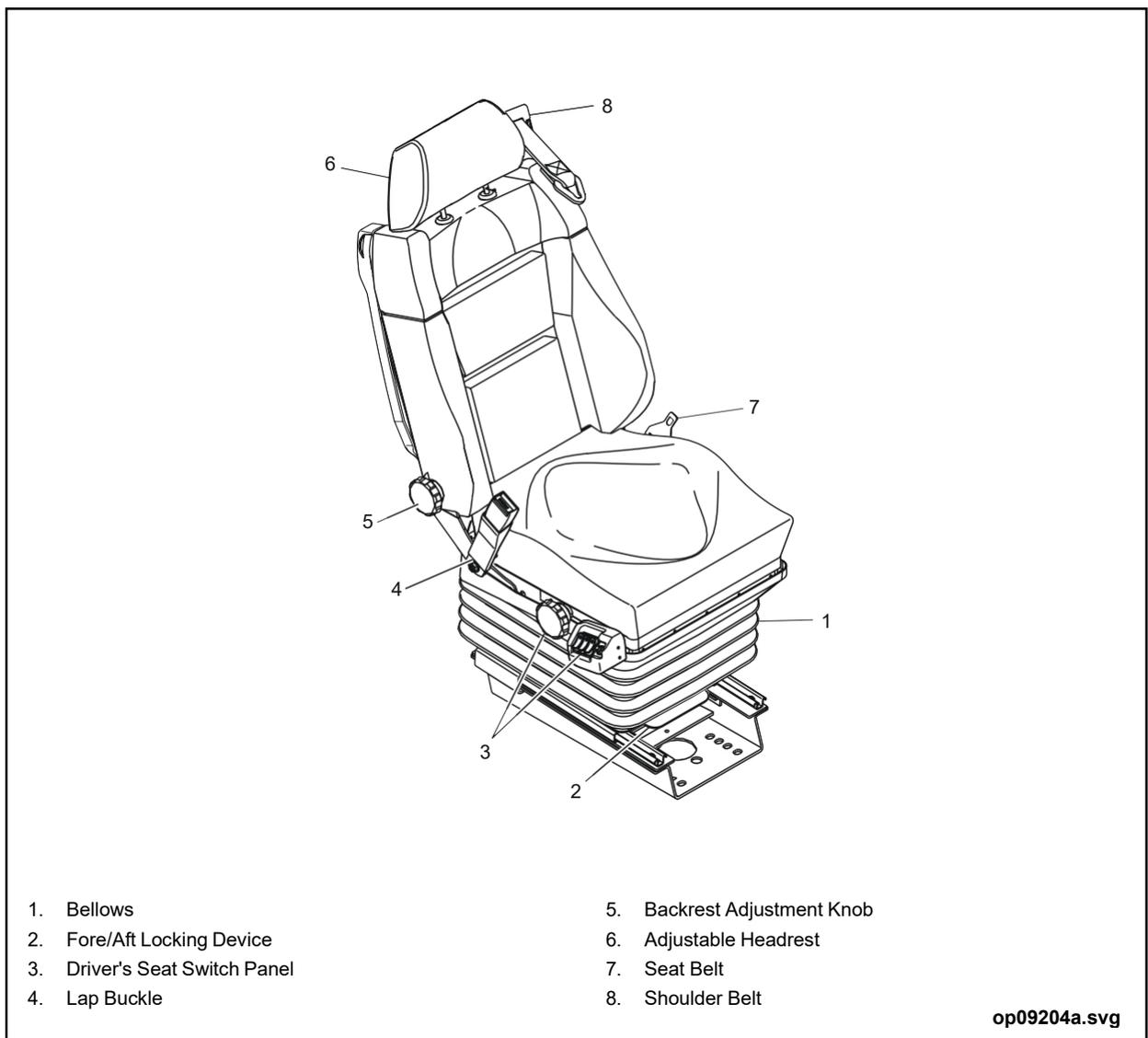


Figure 13: Driver's Seat

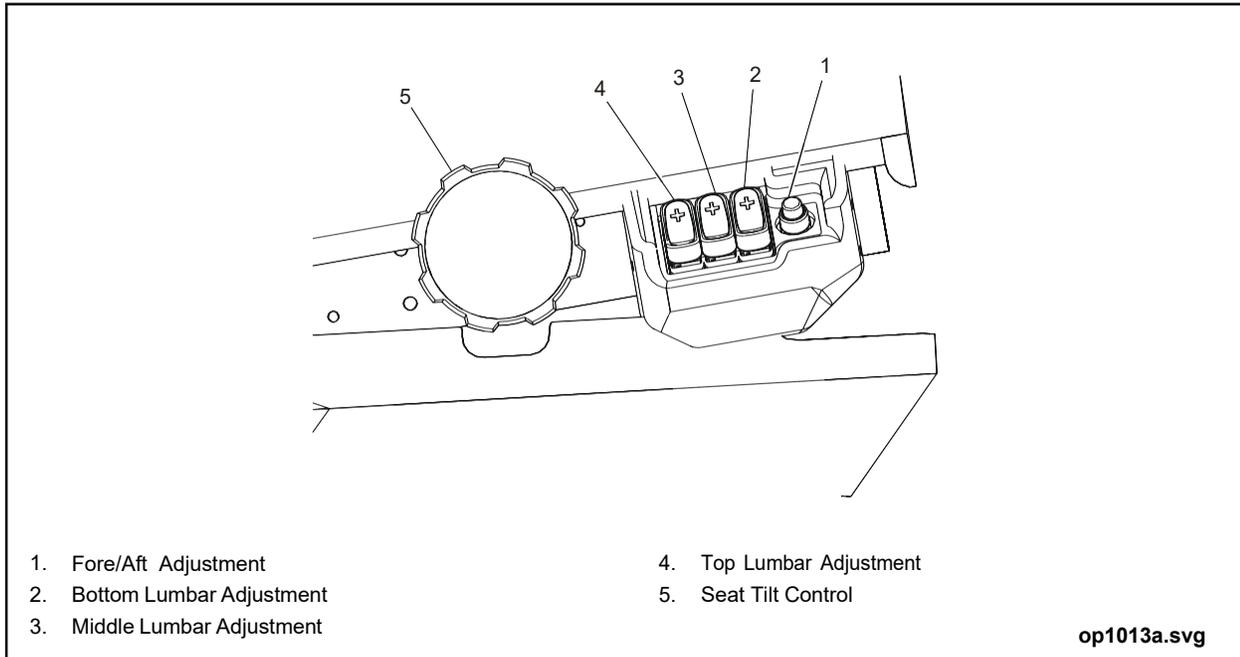


Figure 14: Driver's Seat Switch Panel

Height Adjustment

Seat height can be adjusted by 5" (12.7 cm). Adjustment is performed using the height adjustment knob which is located on the front left edge of the seat cushion. Pushing the knob in increases the amount of air in the air bag. Pulling the knob out decreases the amount of air in the air bag.

Seat Tilt

The seat cushion angle can be adjusted by 8° by turning the seat tilt knobs located in the middle of the sides of the seat cushion. Seat tilt is independent of height adjustment.

Lumbar Support

The air lumbar switches are located on the switchbox on the right front edge of the seat. Pushing the switches increases or decreases the amount of lumbar support.



Fore/Aft Slide

Slide tracks allow the entire seat to be adjusted on its mount front to back. Raising the slide handle located at the seat front below the seat cushion releases the lock and allows the seat to be moved forwards or backwards. Optionally, the Air Slide Release button located on the switchbox can be used. Pressing and holding the red button will release the slides and allow the seat to be moved to the desired location. The button is then released and the slides automatically lock in place.

Seatbelt Instructions

1. Pull the buckle from the retractor assembly. Place the tongue in the receptor to lock.
2. To release the belt, press the red button and allow the retractor assembly to draw back into its original place.

NOTE:

For optional 3 point belts with removable shoulder straps, hook the buckle of the shoulder strap to the stud on the lap buckle.

Steering Wheel & Horn

Steering Wheel



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



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



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 15: Steering Wheel Adjustment”](#) on page 45.

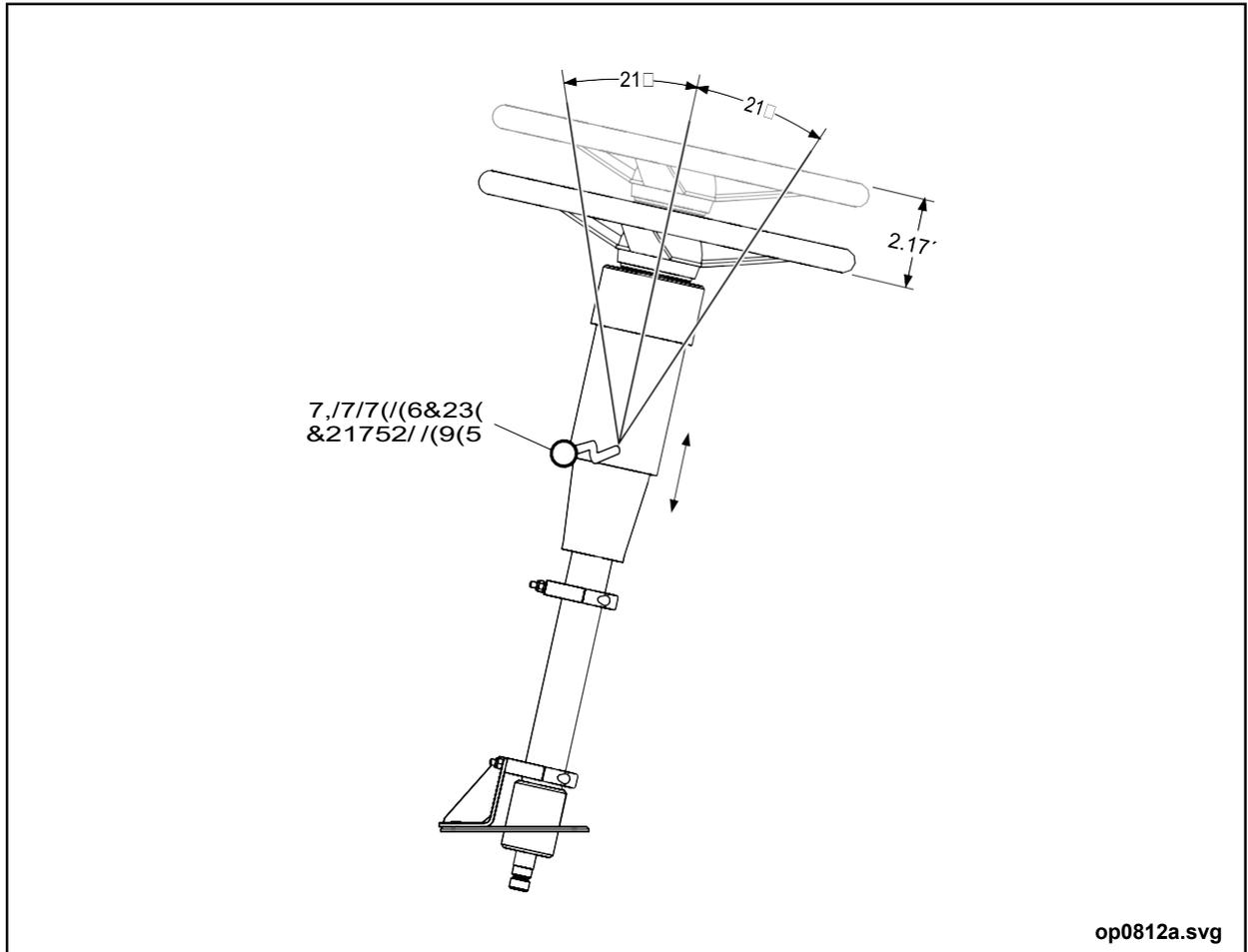


Figure 15: Steering Wheel Adjustment

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 16: P.A. System Layout" on page 46.

- Hands free microphone (Speakeasy control head) and driver's handset located on the left windshield pillar.
- Six interior speakers located above the side windows.
- An exterior speaker located above the entrance door.
- Floor-mounted P.A. switch.

NOTE:

The Public Address System is integrated with the AVA/AVL System. Consult your transit authority for complete information on the operation of these systems.

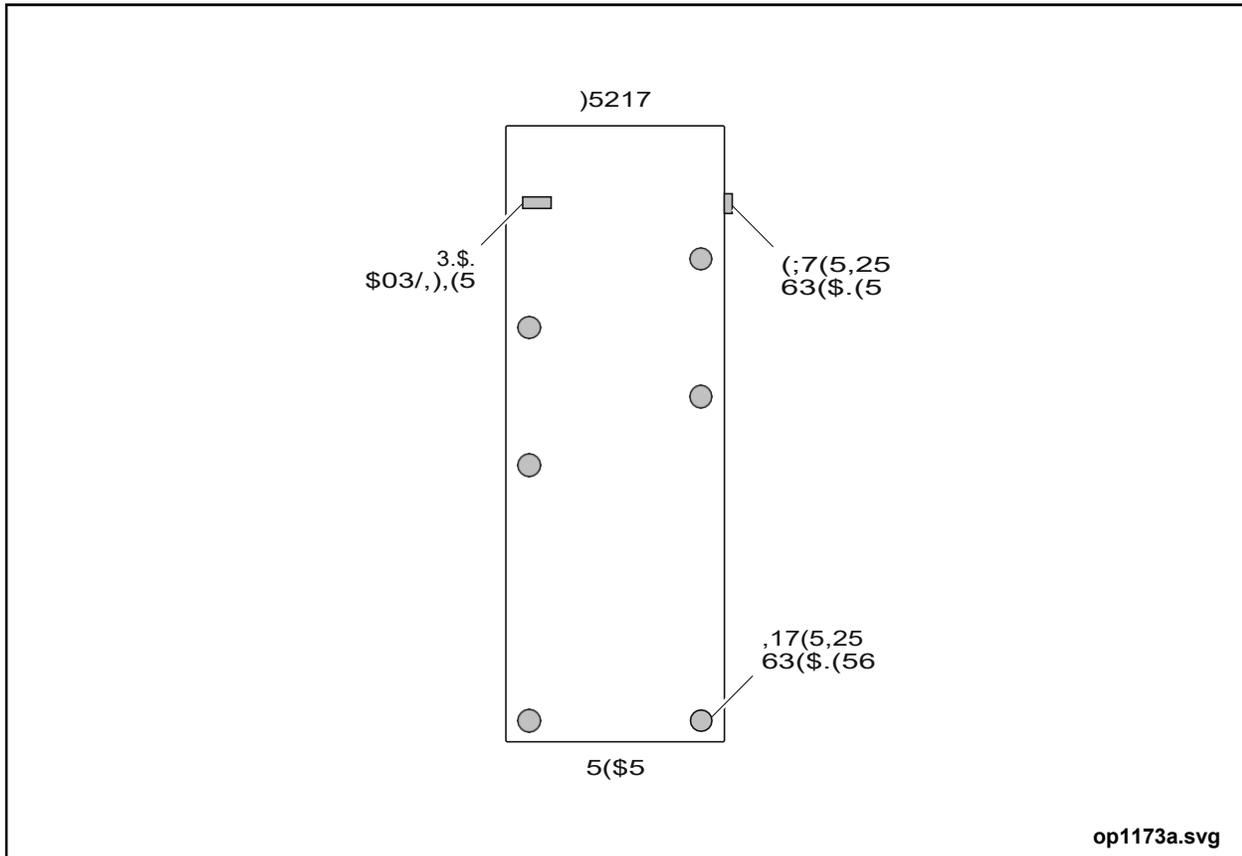


Figure 16: P.A. System Layout



Speakeasy Control Head

The control head is a hands free digital microphone and recorder with integral P.A. amplifier. The control panel has switches with LED indicators for speaker selection (INSIDE, OUTSIDE, or BOTH), mute and record functions. The panel also has volume control buttons. See “Figure 17: Control Head” on page 47.

Public address mode operation is used to make standard announcements through the inside speakers, outside speakers, or both. Initially the driver presses the INSIDE, OUTSIDE, or BOTH speaker switch to select to which speakers the communication will be directed. The corresponding LED indicator light will illuminate to indicate the selected speakers. The driver then records the message by depressing and holding the P.A. foot switch while speaking into the microphone. When the switch is released, the message will be played over the selected speakers.

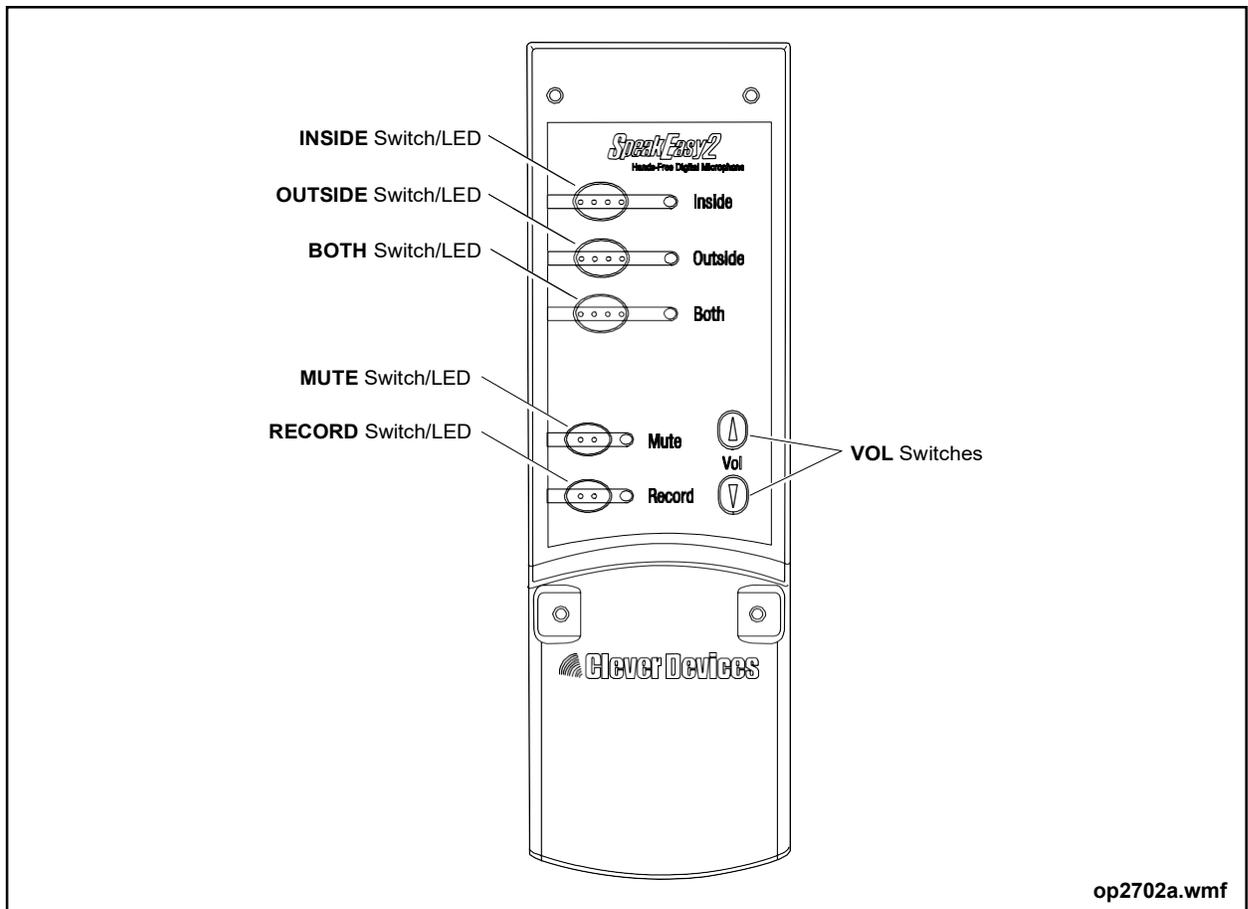


Figure 17: Control Head

Automated outside messages are used to convey route information to waiting passengers at bus stops. The driver records a message by pressing and holding the RECORD switch on the control panel while speaking into the microphone. The corresponding LED indicator will remain illuminated as long as the switch is held. After releasing the RECORD switch, the message is automatically played back on the outside speaker at each bus stop as the entrance door is opened. The message will remain in memory until the Master Run switch is set in the OFF position or a new message is recorded. A message can be erased by quickly pressing and releasing the RECORD switch.

Destination/Route Signs

NOTE:

The following information provides basic introductory information on the Multi Control Unit (MCU) 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 MCU and the Luminator Destination Sign System.

Operation Using the Multi Control Unit (MCU)



DO NOT use the MCU to charge USB devices. Equipment damage will occur.

Basic operation of the Sign System involves presetting transit authority message codes into the sign system using the MCU. 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.

MCU Operating Keys

Six soft keys are located on the bottom of the LCD display screen. The function of these soft keys is identical to the corresponding hard keys located directly below the display screen. The soft keys and hard keys can be used interchangeably. See "Figure 18: Multi Control Unit (MCU)" on page 49. 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 and viewed from the MCU.

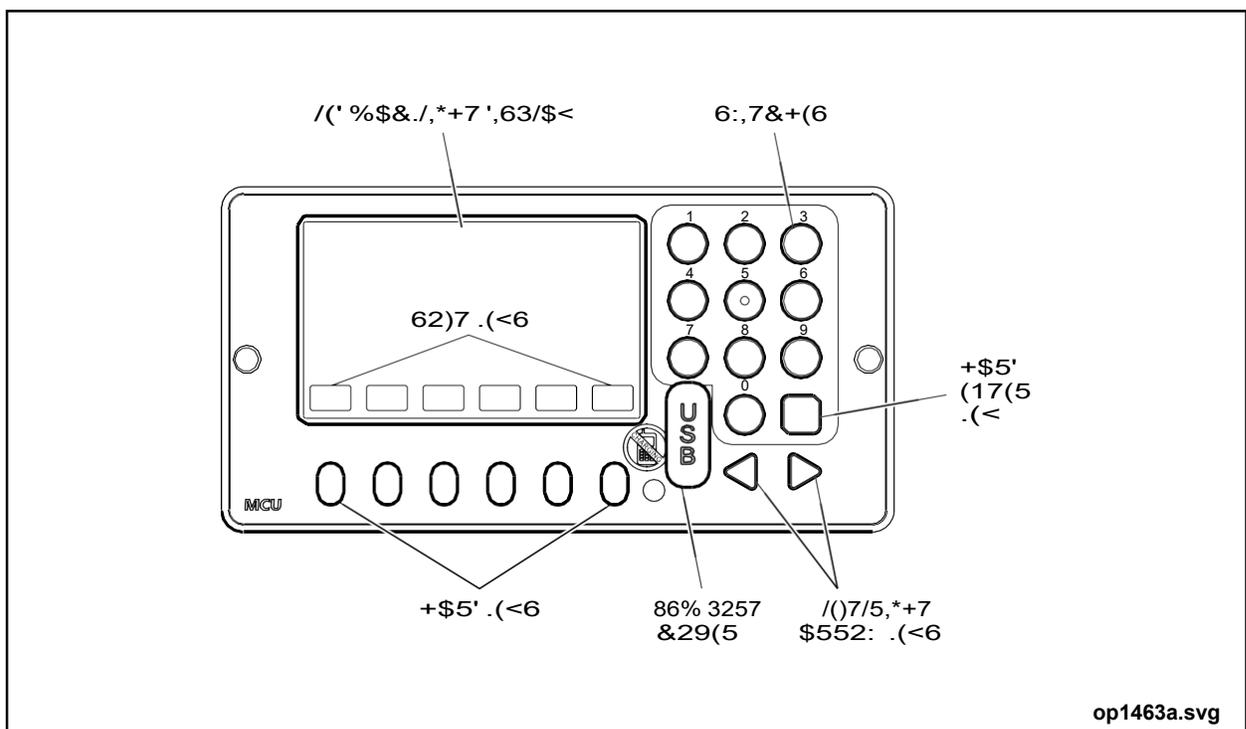


Figure 18: Multi Control Unit (MCU)

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 MCU 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 MCU 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 MCU 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, press the desired number keys. Current content is cleared to accept new data.

Set Public Relations (P/R) message - press the P/R key on the default screen. Enter the P/R message code number via the MCU number pad and press ENTER. The P/R code number will display on the MCU 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 MCU 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 factory 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.

Automatic Passenger Counter (APC) System

This vehicle is equipped with an APC System that uses overhead infrared sensors at the entrance and exit doorways to collect ridership information.

The following components of the APC System are installed:

- An APC analyzer- located in the electronic equipment enclosure.
- An APC sensors mounted on the entrance door baseplate.
- APC sensors mounted on the rear exit door baseplates.

Automatic Vehicle Announcement/Automatic Vehicle Locator (AVA/AVL) System

An AVA/AVL System is installed on this vehicle. This system is integrated with the public address system and destination sign system. The system includes the following components:

- IVN4 Controller - located in the electronic equipment enclosure.
- Transit Control Head - mounted to the upper left ceiling of driver.
- Driver's Handset - mounted on the street side pillar.
- Automatic Volume Control (AVC) microphone - mounted on the sixth bay light panel.
- Wireless Router - located in the electronic equipment enclosure.
- Harris M7300 Radio - located in the electronic equipment enclosure.
- Universal Radiologic Controller Module - located in the electronic equipment enclosure.
- 6-in1 antenna - roof-mounted.
- Five-Band antenna - roof-mounted.
- Wi-Fi antenna - mounted below HVAC closeout.

 **NOTE:**

Consult your transit authority for details on the operation of the AVA/AVL System.

Operation Using IVN Transit Control Head

The destination/route sign system is integrated with the Intelligent Vehicle Network (IVN) and can be operated with either the Transit Control Head (TCH) or the Multi Control Unit (MCU) as the operating interface.

Startup & Login

- Start the vehicle and close all doors. The Operator Login screen will be displayed. See [“Figure 19: Operator Login Screen” on page 53.](#)
- Press the <Logon> softkey. The ID Entry screen will appear. See [“Figure 20: Operator ID Entry Screen” on page 54.](#)
- Use the numbered softkeys to enter the Operator ID and login to the system. The <Delete> softkey will remove the last number entered.
- Press the <Enter> softkey when the Operator ID is correctly entered. The Run Entry screen will appear. See [“Figure 21: Run Entry Screen” on page 54.](#)
- Use the number keys to enter a run number and then press the <Enter> softkey. The Main Menu screen will appear. See [“Figure 22: Main Menu Screen” on page 55.](#)

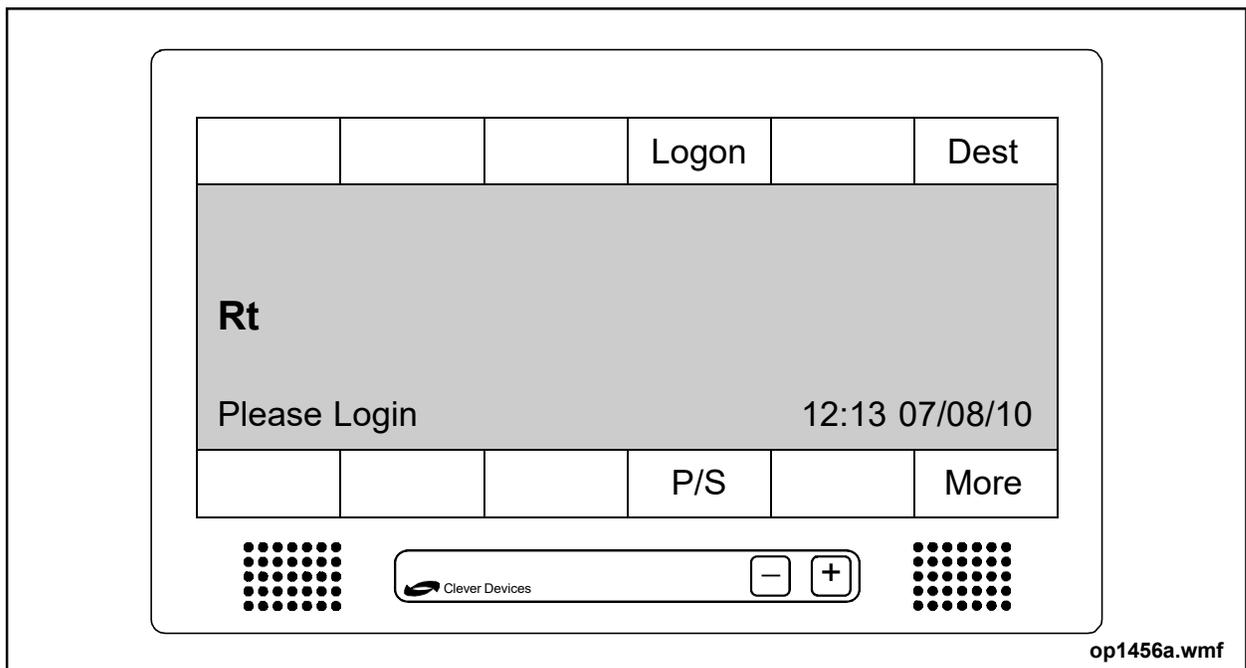


Figure 19: Operator Login Screen

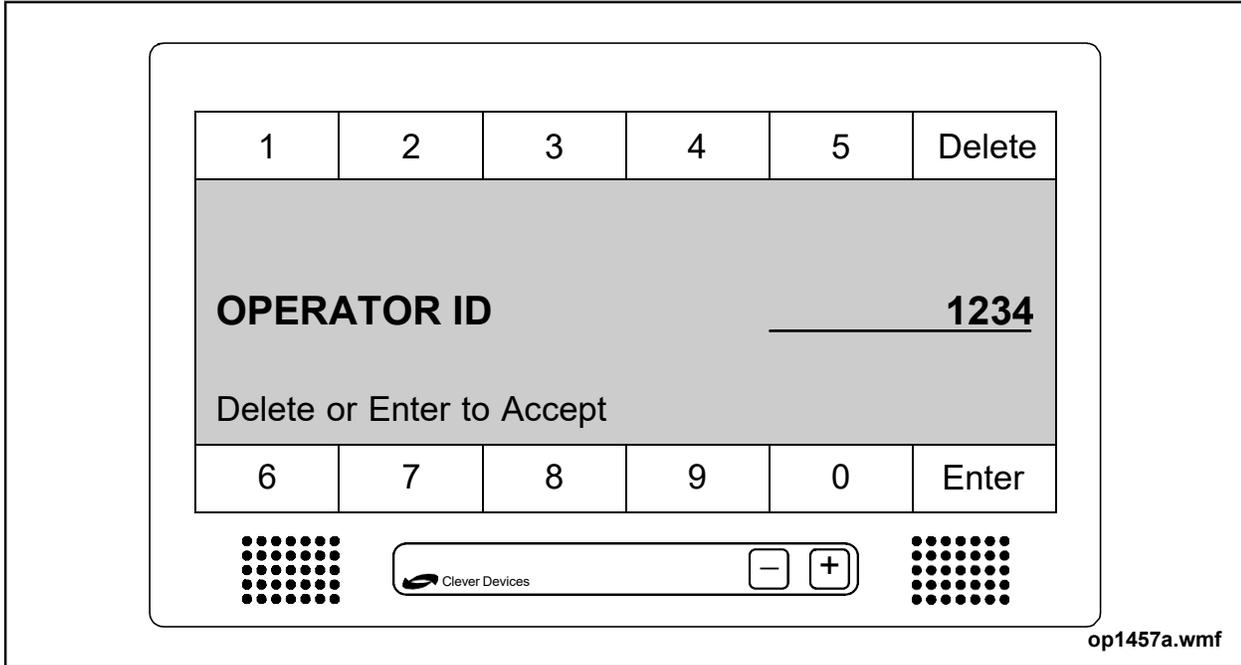


Figure 20: Operator ID Entry Screen

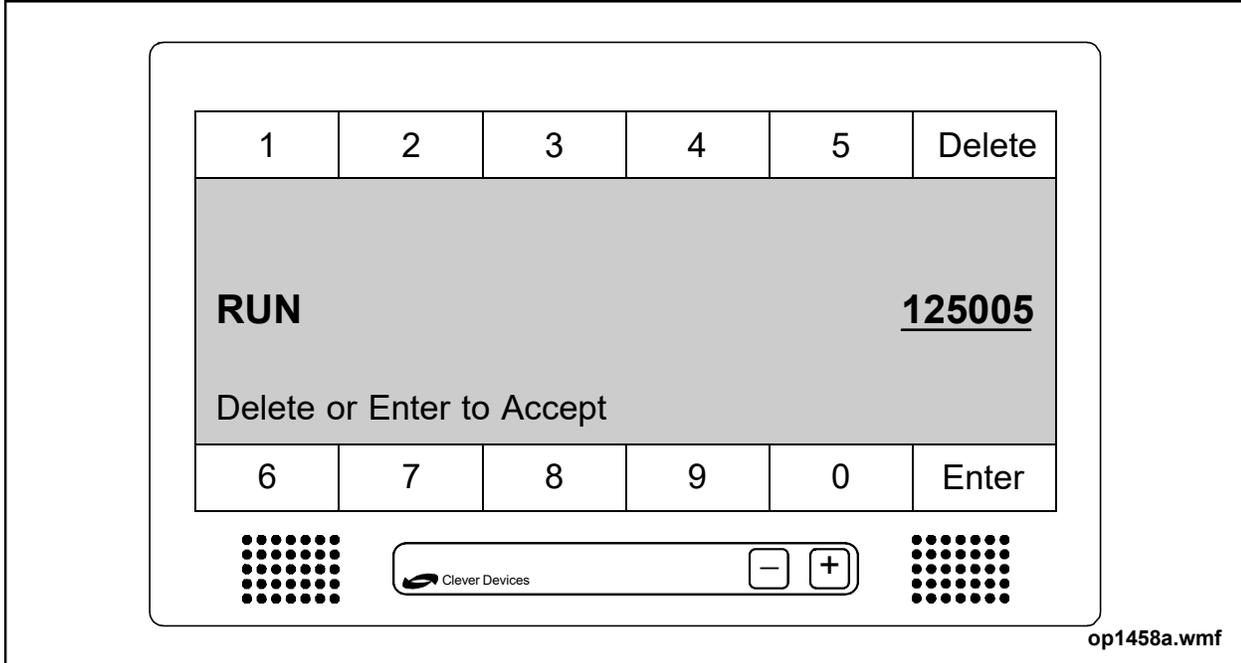


Figure 21: Run Entry Screen



Main Menu

Access to all screens and functions begins at the Main Screen. The Main Screen presents all of the necessary information for the operator to properly use the system.

- <Logon/Logoff> This key opens the Operator Login Screen.
- <Dest> This key opens the Destination Sign Information screen.
- <P/S> This key opens the Public Service Announcement Screen.
- <Audio> This key is used to manually play the current stop announcement.
- <More> This key opens an Auxiliary Control screen containing contrast and backlight controls.

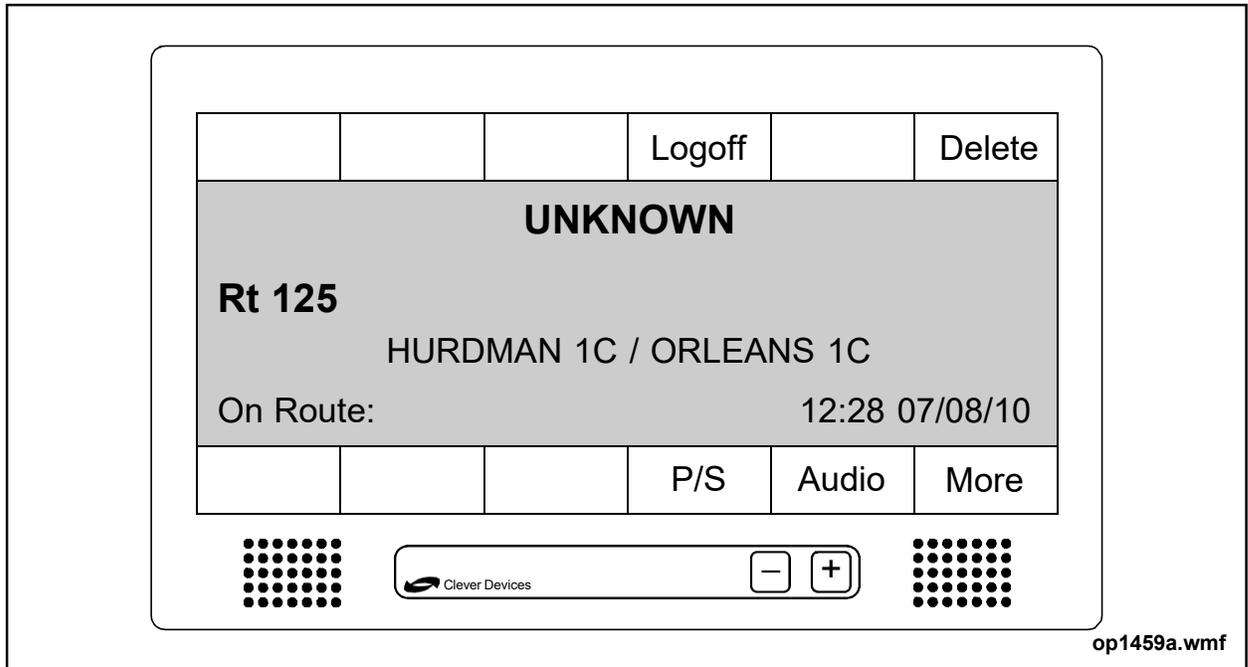


Figure 22: Main Menu Screen

7. ENTRANCE DOOR AREA

The entrance door area includes the following components: See [“Figure 23: Entrance Door Area”](#) on page 57.

- A slide glide style door that is electrically operated.
- An entrance door emergency release valve.
- An entrance door header light.
- Automatic Passenger Counter (APC) System.

Placing the door controller in the FRONT, FRONT REAR, or REAR FRONT positions 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.

The APC sensor monitors passenger movement through the entrance door.

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.

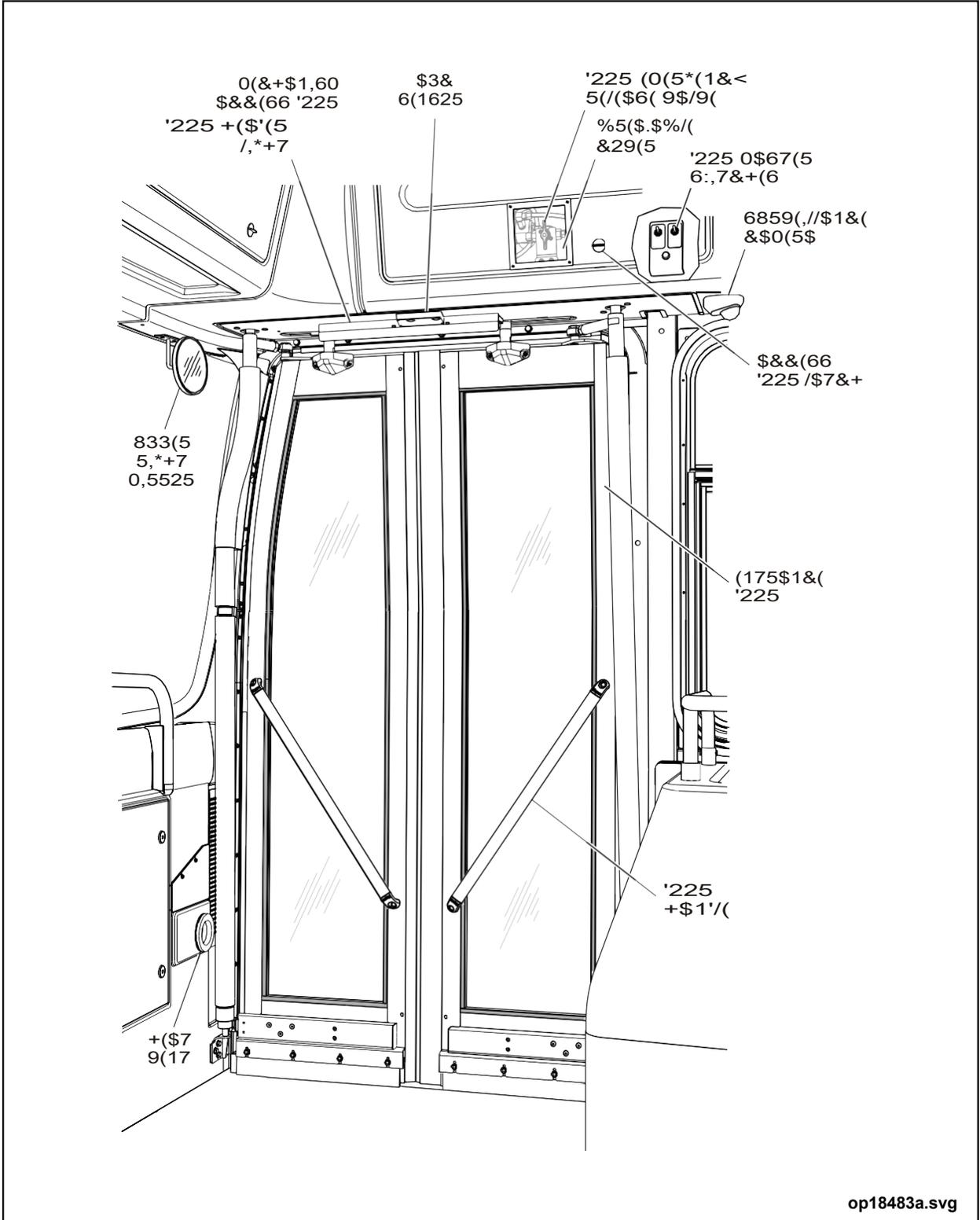


Figure 23: Entrance Door Area



8. EXIT DOOR AREA

The exit door area includes the following components: See [“Figure 24: Exit Door Area”](#) on [page 59](#).

- A slide glide style door that is electrically operated.
- An exit door emergency release.
- A green LED exit door enabled light.
- Stop request buttons on the exit door stanchions.
- An acoustical sensor door operating system.
- Automatic Passenger Counter (APC) sensors.

Placing the door controller in the FRONT REAR, REAR, or REAR FRONT positions will enable/open the exit door. The green overhead light will illuminate when the exit door is enabled/opened. The door header lights will illuminate as soon as the exit door is enabled/opened and will remain illuminated for five seconds after the door closes.

The disembarking passenger is required to touch the door-mounted decals, breaking the sensor beam which will cause the door to open.

The APC sensors monitor passenger movement through the exit door.

In the event of an emergency situation with an inoperable door, the emergency release 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.

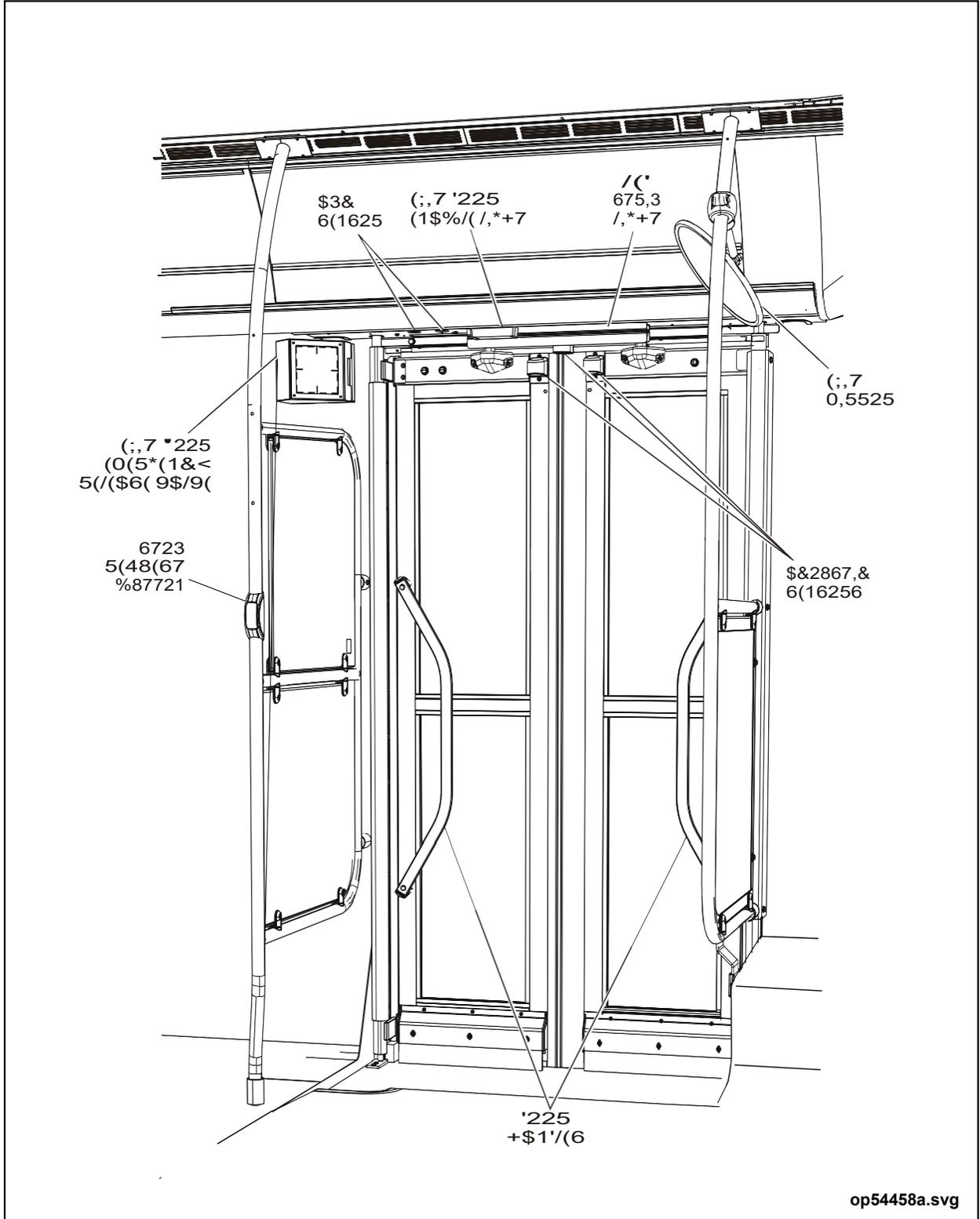
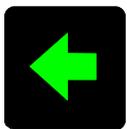


Figure 24: Exit Door Area

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 25: Instrument Panel” on page 61.



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.



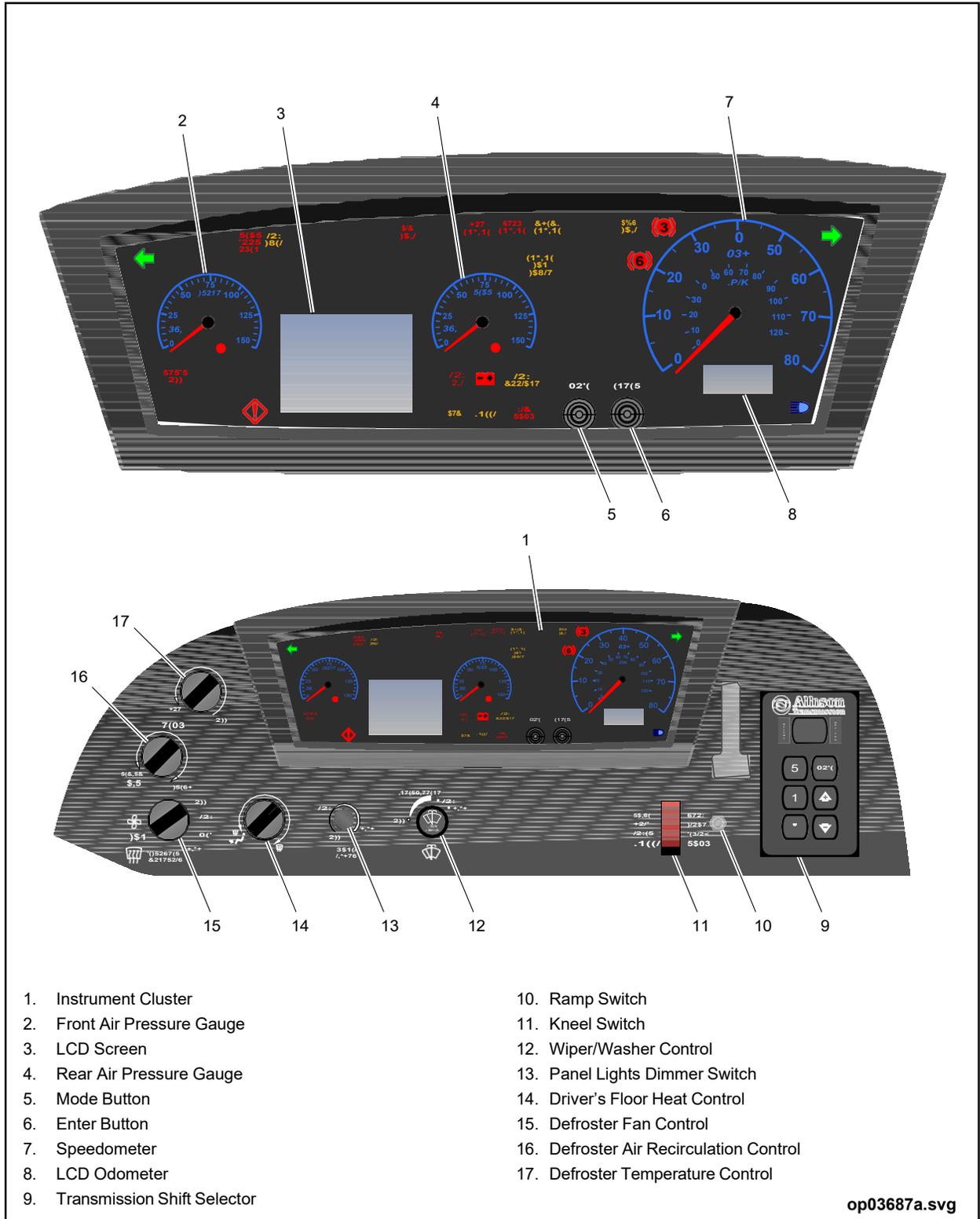
Rear Door Open Indicator (Red)

The Rear Door Open indicator illuminates when the door controller is turned to FRONT REAR, REAR or REAR FRONT position and the exit door opens.



Low Fuel Indicator (Amber)

The Low Fuel indicator illuminates when the natural gas pressure in the tanks drops to 500 psi and is no longer sufficient for continued reliable vehicle operation.



- | | |
|--------------------------------|---|
| 1. Instrument Cluster | 10. Ramp Switch |
| 2. Front Air Pressure Gauge | 11. Kneel Switch |
| 3. LCD Screen | 12. Wiper/Washer Control |
| 4. Rear Air Pressure Gauge | 13. Panel Lights Dimmer Switch |
| 5. Mode Button | 14. Driver's Floor Heat Control |
| 6. Enter Button | 15. Defroster Fan Control |
| 7. Speedometer | 16. Defroster Air Recirculation Control |
| 8. LCD Odometer | 17. Defroster Temperature Control |
| 9. Transmission Shift Selector | |

op03687a.svg

Figure 25: Instrument Panel

A/C
FAIL

A/C Fail Indicator (Red)

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

HOT
ENGINE

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

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

Check Engine Indicator (Amber)



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 "12.VEHICLE OPERATION" on page 103 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.



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)



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.



Retarder Off Indicator (Red)

The Retarder Off indicator illuminates to indicate that the Retarder switch is in the OFF position disconnecting power from the transmission retarder.



Low Oil Indicator (Red)



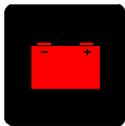
If the Low Oil alarm continues and the indicator lamp remains illuminated, DO NOT OPERATE THE VEHICLE.

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)



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.

**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.

**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.



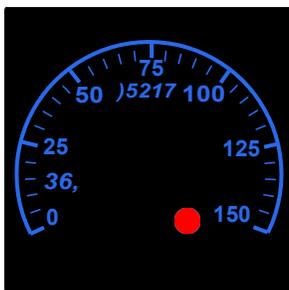
Mode Button

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 67 and Refer to “Odometer/Hourmeter Display Screen” on page 72 in this manual for information on the operation of this button.



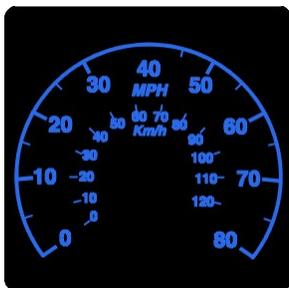
Enter Button

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 67 and Refer to “Odometer/Hourmeter Display Screen” on page 72 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 72 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.

INSTRUMENTATION & CONTROLS

Function Readout Displays

- Voltmeter (12V) - the voltmeter indicates the voltage levels in the vehicle's 12 volt electrical system. The normal operating range is between 11 and 14 volts.

 **NOTE:**

Notify service personnel if the readings fall outside of this range.

- Voltmeter (24V) - the voltmeter indicates the voltage levels in the vehicle's 24 volt electrical system. The normal operating range is between 24 and 28.5 volts.

 **NOTE:**

Notify service personnel if the readings fall outside of this range.

- Fuel Level - the fuel gauge indicates the quantity of fuel, as a percentage, remaining in the CNG tanks.

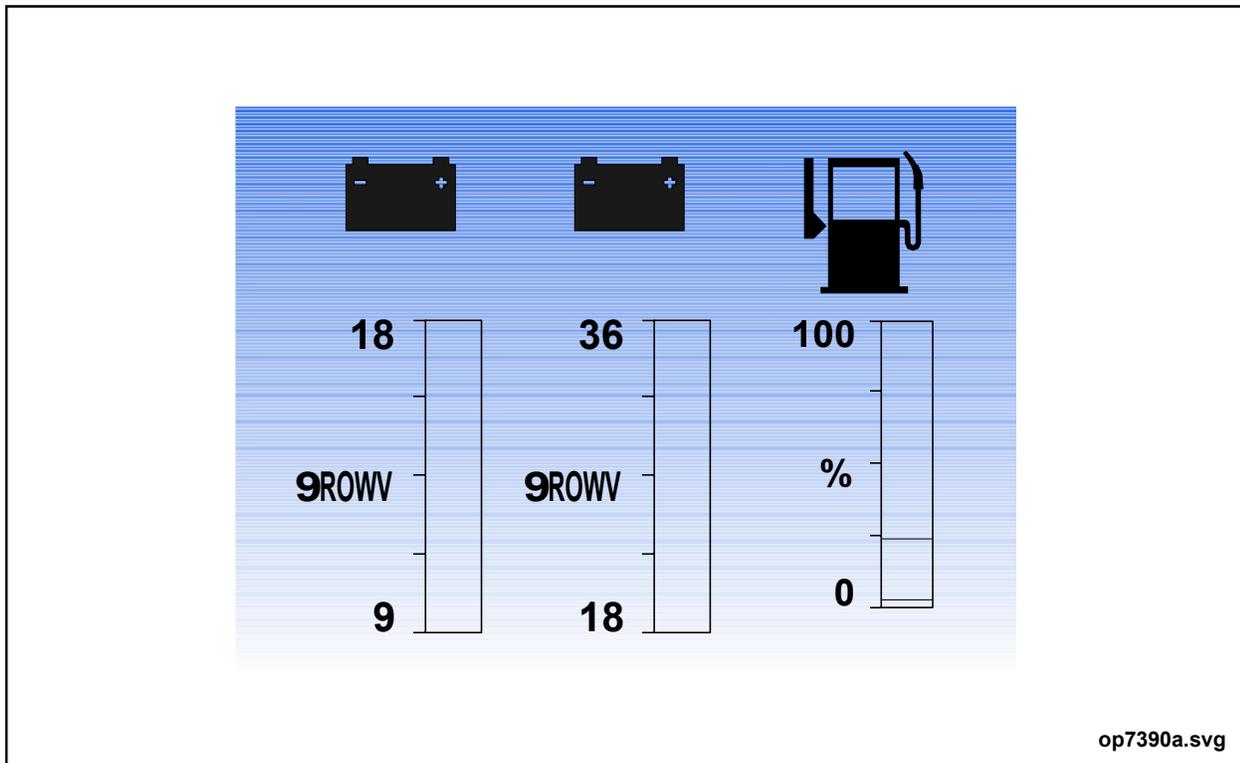


Figure 26: Function Readout

**Text Messages**

- **BATT SAVER SHTDW (Red)** - The Battery Saver Shutdown message will appear on the LCD screen to indicate that the disconnect relays have been switched off due to low battery voltage.
- **BIKE RACK (Amber)** - The Bike Rack message will appear on the LCD screen to indicate the bike rack is not securely latched.
- **BRAKE ALERT (Amber)** - The Brake Alert message appears if an abnormal braking event occurs on any brake, such as failure to activate, excessive brake stroke, failure to release brakes, or over-heated brake linings.
- **CHECK TRANS (Amber)** - The Check Trans message will appear if the transmission electronics has detected a potentially serious problem in the transmission. If this message appears, **DO NOT OPERATE THE VEHICLE.**
- **CLNT FILL MODE (Red)** - This message will appear on the LCD screen to indicate that the coolant fill mode is active.
- **CNG DOOR OPEN (Amber)** - The CNG Door Open message will appear on the LCD screen to indicate the fuel tank enclosure doors, located on the roof, are open.

 NOTE:

Engine starting will be prohibited while this message is active.

- **CNG VALVE FAULT (Amber)** - The CNG Valve Fault message will appear if a fault is detected in the electrical circuit of the CNG fuel tank solenoid valve. Notify service personnel if this indicator remains illuminated.
- **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.
- **FIRE (Red)** - The Fire message appears and an alarm sounds if there is a fire in the engine compartment.
- **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. Notify service personnel if this message appears on the screen.
- **FUEL DOOR OPEN (Amber)** - This message will appear if the fuel door proximity switch does not sense that the fuel filler door is closed.
- **LOW TRANS Oil (Red)** - The Low Trans Oil message advises that the oil level in the transmission is low.
- **INTER LOCK (Red)** - The Interlock message appears when the interlock system applies the brake interlocks. The message disappears when the interlock system releases.
- **INTER LOCK FAULT (Red)** - The Interlock Fault message will appear on the LCD screen to indicate a fault has been detected with the Interlock System.



INSTRUMENTATION & CONTROLS

- INTER LOCK OFF (Red) - This message will appear on the LCD screen to indicate the brake interlocks have been disabled with the Interlock Override, Rear Door Master or Front Door Master switches.
- KNEEL SNSR FAULT (Amber) - This message will appear if the kneeling sensors malfunction during the kneeling process.

NOTE:

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

- LH HDLP FLT (Amber) - The LH Headlight Fault message will appear on the LCD screen to indicate a fault with the low beam headlight. Notify service personnel if this message appears on the screen.
- LH TRN FLT (Amber) - The LH Turn Fault message will appear on the LCD screen to indicate a fault with the left-hand turn light. Notify service personnel if this message appears on the screen.



DO NOT operate the vehicle if the Low Power Steering Fluid message appears. Operating with a Low Power Steering Fluid level risks power steering systems failure.

- LOPWR STRG FLUID (Red) - The Low Power Steering Fluid message appears if the level of hydraulic oil in the vehicle's reservoir is below a safe operating level.
- LOW FUEL PRESS (Red) - The Low Fuel Pressure message will appear when the fuel pressure has dropped to a level below that of the engine manufacturers recommended range.
- NETWORK FAIL (Red) - This message warns the driver of a multiplexing system failure.
- 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. Notify service personnel if this message appears on the screen.
- REAR DOOR AJAR (Red) - The Rear Door Ajar message appears when the exit door sensitive edge has been activated.
- RH HDLP FLT (Amber) - The RH Headlight Fault message will appear on the LCD screen to indicate a fault with a low beam headlight. Notify service personnel if this message appears on the screen.
- RH TRN FLT (Amber) - The RH Turn Fault message will appear on the LCD screen to indicate a fault with the right-hand turn light. Notify service personnel if this message appears on the screen.



- RTRDR ON (Amber) - The Retarder On message appears to indicate operation of the transmission retarder.
- 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.
- STOP REQ (Red) - The Stop Request message will appear when the passenger signal system has been activated.
- STRTR LOCK OUT (Amber) - This message will appear if an attempt is made to re-engage the starter within four seconds of a previous starter engagement. Allow four seconds to elapse before attempting to re-engage the starter.
- 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.
- WC STOP REQ (Amber) - The W/C Stop Request message will appear when the wheelchair signal system has been activated.

Continuous Brake Wear Indicator

The Continuous Brake Wear Monitoring System informs the driver about the current wear within the brake lining on each wheel. Each brake is equipped with a sensor housed in the caliper assembly. This sensor measures the travel of the caliper as the brake pads and rotor wear. The sensor information is processed by the multiplexing system and if any of the wear sensors detect a brake issue, the large LCD screen will instruct the driver to press ENTER to access the brake wear information screen. There is a separate screen for each brake.

Fault Condition Messages

- Brake Wearing OK (Green) - no warning text will be displayed.
- Wear Indicator Not Functioning (Amber) - displayed if sensor in question is operating outside normal range.
- Service Brakes Soon (Amber) - displayed if sensor in question is below 77mm.
- Service Brakes Now (Amber) - displayed if sensor in question is below 70mm.
- Brakes Worn Out (Red) - displayed if sensor in question is below 65mm.
- Uneven Brake Wear (Amber) - displayed if the measured difference between the streetside and curbside of a given axle is greater than 3mm.
- Pad at Wear Limit (Red) - displayed if the in-pad end of life (EOL) sensor detects pad is at wear limit, regardless of what continuous wear sensor is showing.

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 27: Odometer/Hourmeter Display Screen Options” on page 72.

 **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.

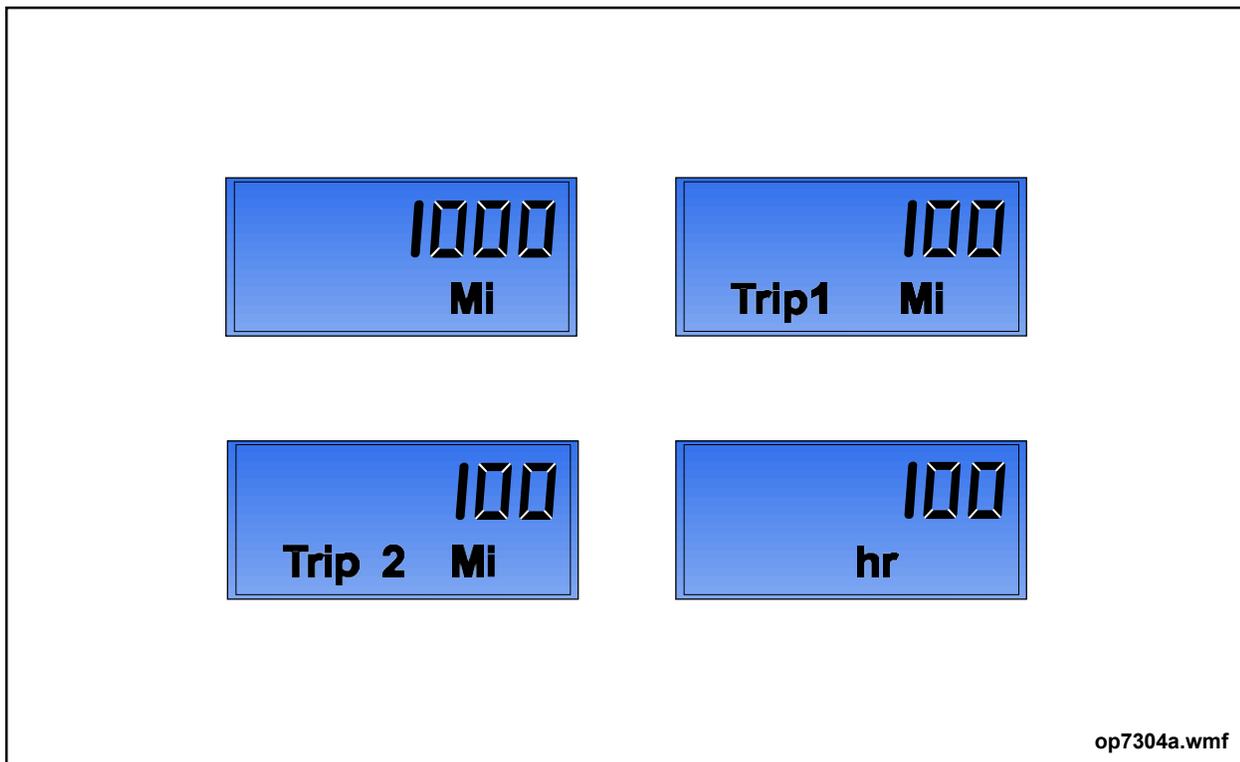


Figure 27: Odometer/Hourmeter Display Screen Options



Shift Selector



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. There are six operating range selection buttons for reverse, neutral and drive [labeled R, N, D, 3, 2, 1].

NOTE:

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

Ramp Switch



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 “13.WHEELCHAIR SYSTEM” on page 123 in this manual for operating procedures.



INSTRUMENTATION & CONTROLS

Kneel Switch



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 28: Driver's Area Climate Controls”](#) on page 76.

Driver's Floor Heat

The Driver's Floor Heat 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.

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.

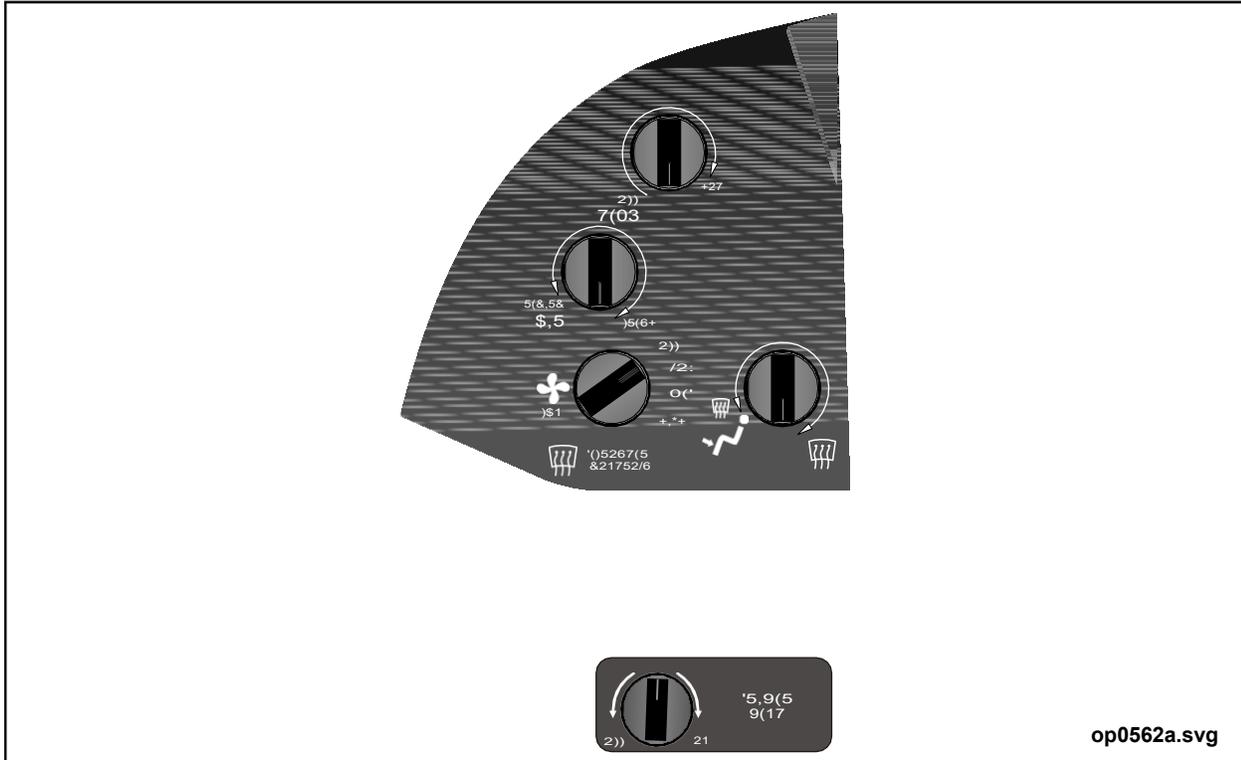


Figure 28: Driver’s Area Climate Controls

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 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 Booster Fan Control

The Driver’s Booster Fan speed is controlled by a rotary switch on the overhead panel. Rotating the switch clockwise provides a variably increasing fan speed.



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.

Side Console Switch Panel

See ["Figure 29: Side Console Panel"](#) on page 78.

Fire Suppression Manual Actuator Switch

Refer to ["Fire Suppression & Gas Detection System"](#) on page 119 in this manual for information on the fire suppression system.

Rear Door Control Switch

This guarded, two-position toggle switch is used to change the rear door control mode between passenger controlled and driver controlled. Set the switch to the DRIVER position to open and close the rear door using the door controller on the driver's side console. Return the switch to the PASSENGER position to set the door controller functionality to enable/disable passenger control of the door using the CLASS system.

Climate Control Switch

The Climate Control switch is a three position toggle switch. Set the switch to the HEAT position to enable the cabin heating system. Set the switch to the A/C position to enable the cabin air conditioning system. Return the switch to the OFF position to disable the cabin heating system and the air conditioning system.

Driver's Light Switch

The Driver's Light toggle switch is a two-position switch that controls the light above the driver.

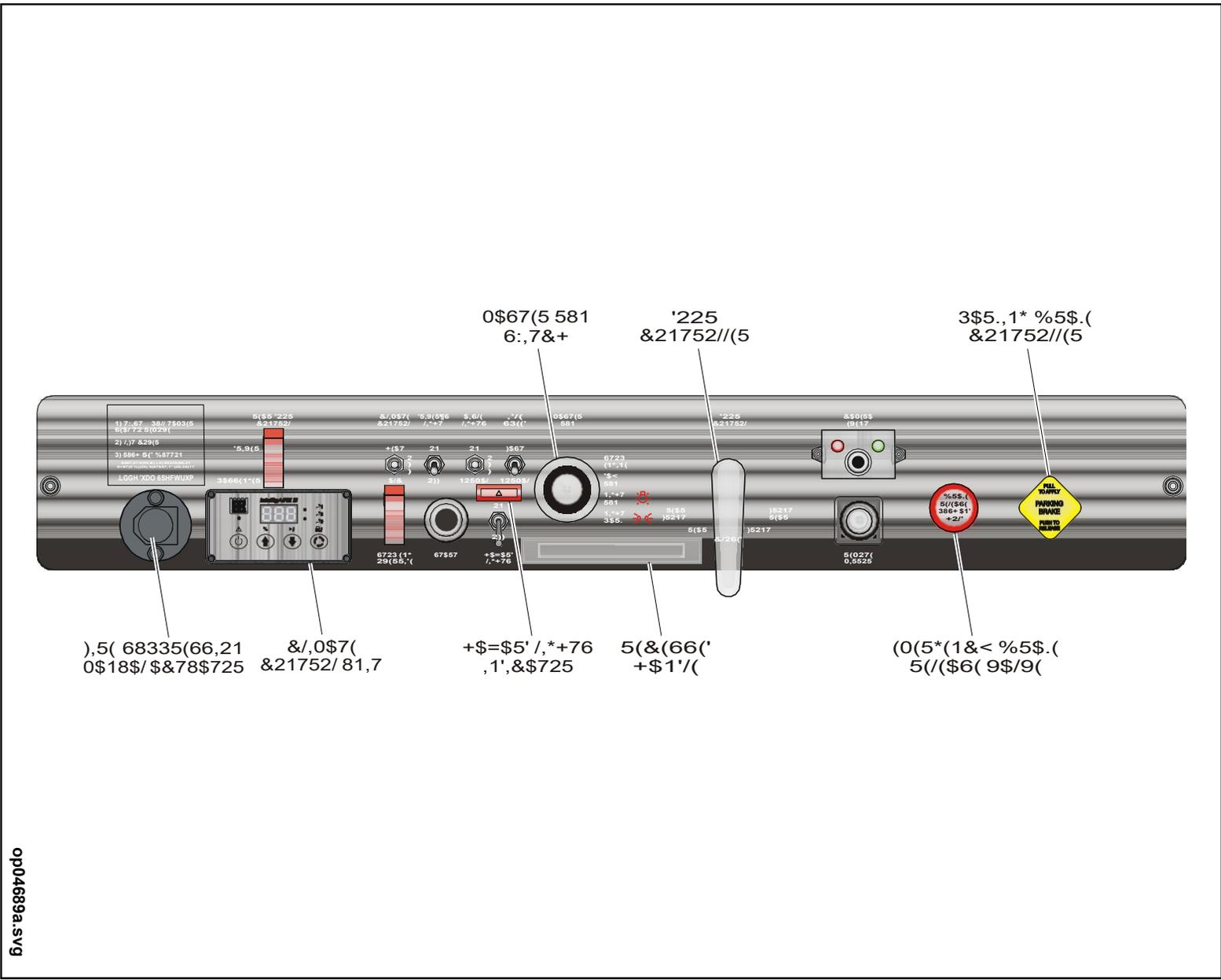


Figure 29: Side Console Panel



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 30: Aisle Lights” on page 80.

 **NOTE:**

Lights dim when aisle lights switch is set to NORMAL, Master Run switch is set to NIGHT-PARK and the entrance door is closed.

AISLE LIGHTS SWITCH OPERATION		
AISLE LIGHTS SWITCH POSITION	MASTER RUN SWITCH POSITION	ILLUMINATED LIGHTS
ON	DAY-RUN	Streetside (1,2,3,4) Curbside (1,2,3,4)
ON	NIGHT-RUN	Streetside (1,2,3,4) Curbside (1,2,3,4)
ON	NIGHT-PARK ¹	Streetside (1,2,3,4) Curbside (1,2,3,4)
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)
1	Multiplexing System must be active	

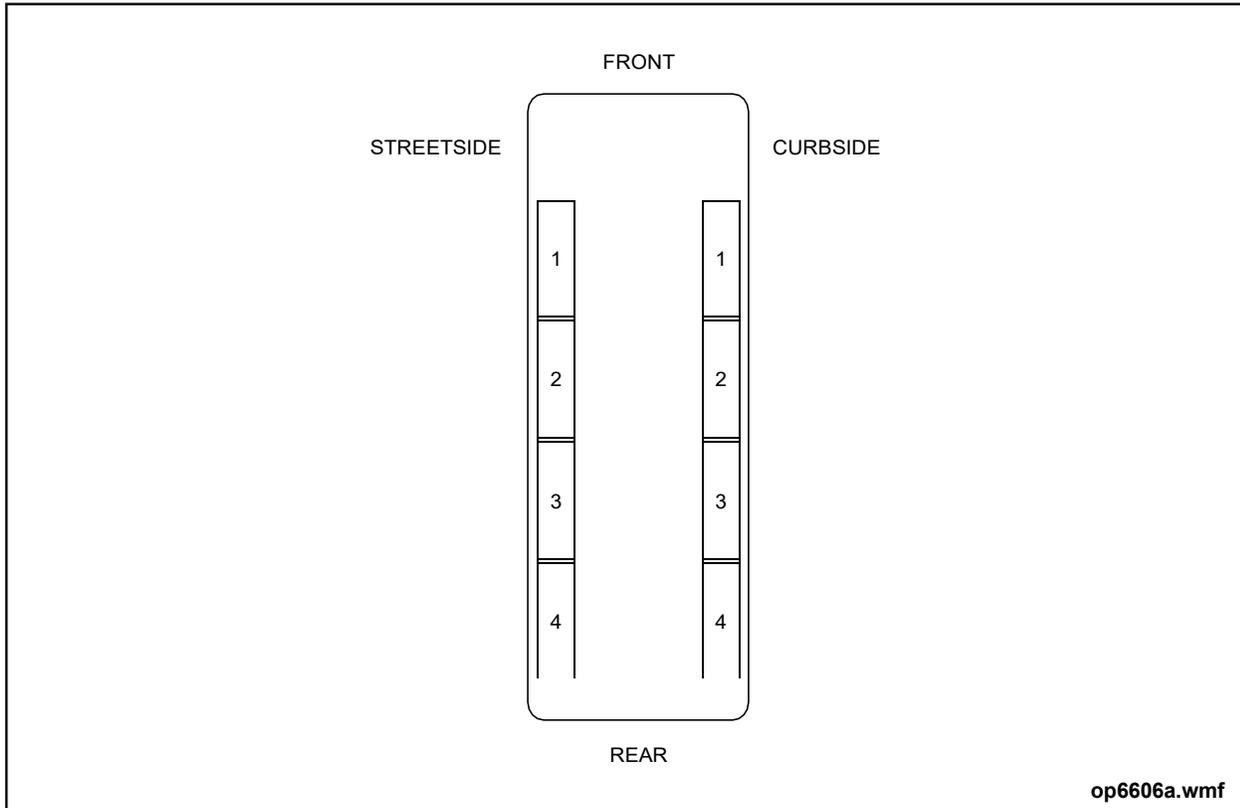


Figure 30: Aisle Lights

Idle Speed Switch



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 shift selector is in the neutral [N] position and the parking brake is applied.



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 60 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, low beam		x	x	
Headlights, high beam			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		x	x	
Aisle lights, normal (Note 3)	x	x	x	x
Aisle lights, on (Note 3)	x	x	x	x
Instrument panel illumination			x	x
Instrument panel dimmer			x	x
Driver's lamp (Note 3)	x	x	x	x



INSTRUMENTATION & CONTROLS

MASTER RUN SWITCH OPERATION				
CIRCUIT OR SYSTEM	STOP-ENGINE	DAY-RUN	NIGHT-RUN	NIGHT-PARK
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
Retarder		X	X	
Driver's alarm		X	X	
Fire suppression & alarm	X	X	X	X
Parking brake alarm (Note 3)	X			X
Silent alarm	X	X	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 control		X	X	
AVA/AVL system		X	X	
Video Surveillance system		X	X	X
Destination signs		X	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				

Door Controller



Positioning the Front or Rear Door Master switch to the OFF position disables the door logic from the accelerator and brake interlock, which allows the vehicle to move with the applicable doors open.

The door controller opens and closes the entrance and exit doors. See [“Figure 31: Door Controller” on page 83](#). The five positions of the controller and the related door functions are as follows:

NOTE:

Depending on the position of the Rear Door Control switch on the side controller, the rear door positions of the door controller can either open (Driver Mode) or Enable (Passenger mode) the rear door.

- Position #1 (CLOSED): Entrance door closed, exit door disabled.
- Position #2 (FRONT): Entrance door open, exit door disabled.
- Position #3 (FRONT REAR): Entrance door open, exit door enabled.
- Position #4 (REAR): Entrance door closed, exit door enabled.
- Position #5 (REAR FRONT): Entrance door open, exit door enabled.

When the exit door is open, the brake and accelerator interlocks apply automatically and the stop lights indicator illuminates.

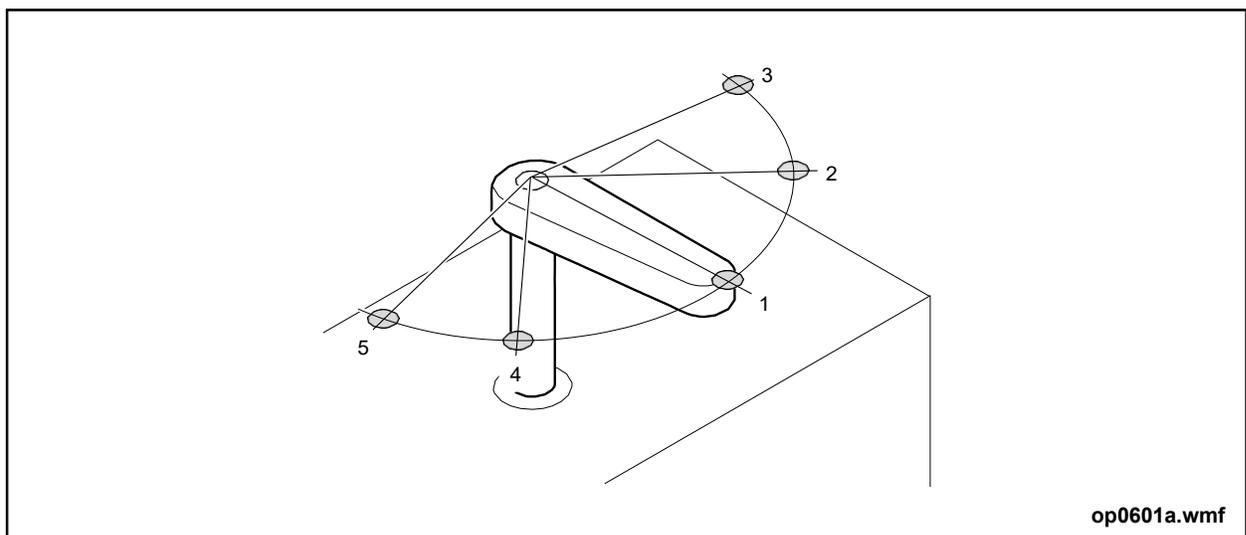


Figure 31: Door Controller

Camera Event Switch

Press this button to mark an incident on the video surveillance system DVR for easy retrieval and playback.

Parking Brake Control Valve



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.

Emergency Brake Release Control Valve

This valve supplies the air pressure to release the rear brakes if the air system pressure drops below 40 psi (276 kPa) and the rear brakes apply automatically. Pushing down and holding the valve allows the air pressure to release the rear brakes. Releasing the valve knob shuts off the air pressure supply, allowing the rear brakes to re-engage.

NOTE:

The emergency brake release is for emergency use only. It allows the operator to move the vehicle away from a potentially dangerous location when the air system has failed. The rear brakes remain released as long as the valve is pressed. The brakes will drag at about 65 psi (448 kPa) even though the parking brake is in the released position.

Remote Mirror Control Switch

The Remote Mirror Control switch allows the operator to adjust the curbside mirror from the driver's seat.



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 vehicle is stopped or parked 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.

Start Push Button



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 starter operation to 14 seconds; the starter circuit is then disconnected for 60 seconds to allow the starter to cool down.

Stop Engine Override Switch



Apply the Stop Engine 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 as necessary.

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

Climate Control Unit

A climate control unit is installed on the side console panel. The unit is equipped with four switches and an LED display. The switches allow the operator to raise or lower the vehicle temperature set points for up to three separate climate-controlled zones on the vehicle. See [“Figure 32: Climate Control Unit” on page 86](#).

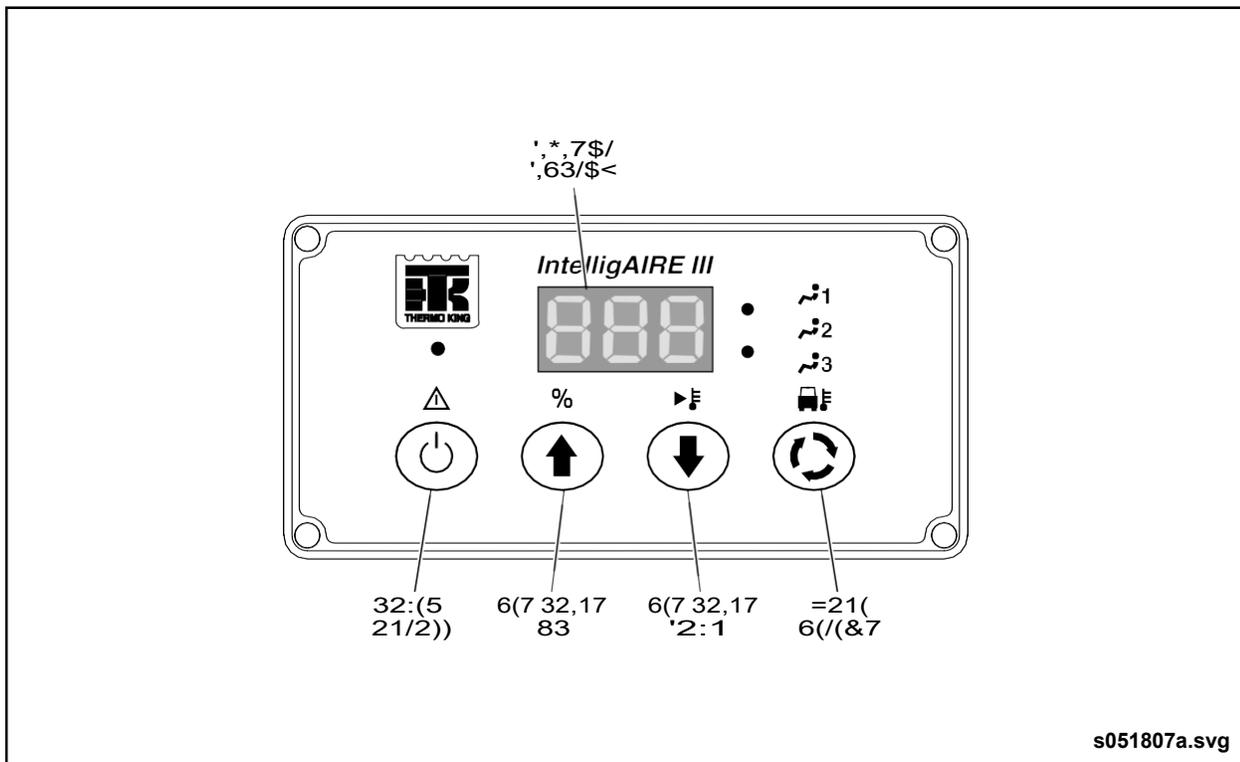


Figure 32: Climate Control Unit



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 time-out 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 read-out 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.

Foot Operated Controls

See “Figure 33: Driver’s Foot Controls” on page 89.

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.

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.

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.

Headlight Dimmer Switch

The Headlight Dimmer switch is a foot-activated click-in switch. Pressing the switch toggles the headlight operating mode between either high beam or low beam. The blue high beam indicator on the instrument panel indicates when the headlights are in the high beam mode.



P.A. System Switch

The P.A. System switch is located between the turn signal switches and is for activating the P.A. System. Push and hold this switch while speaking into the Speakeasy System microphone.

Hazard Light Switch

The Hazard Light switch is a momentary foot-operated switch. Press and hold this foot switch down to activate the hazard lights. When the switch is released, the hazard lights turn off.

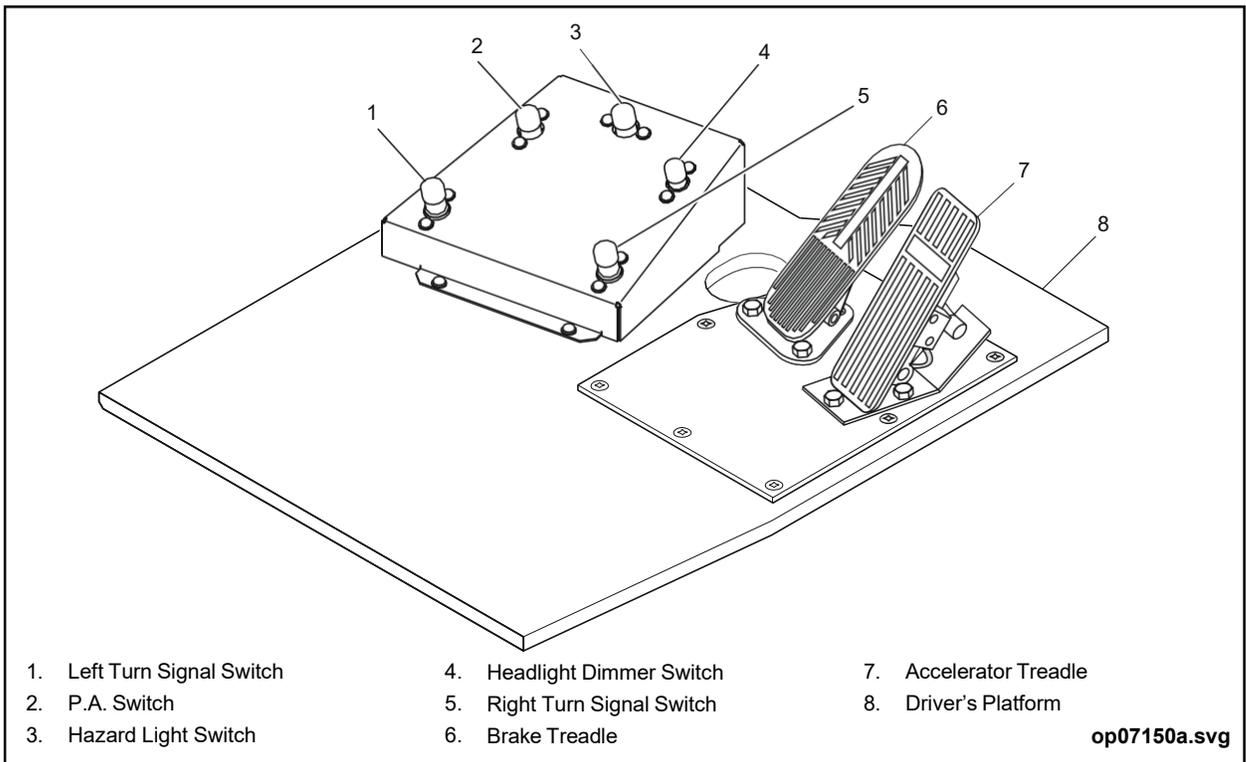


Figure 33: Driver's Foot Controls

Miscellaneous Controls

See “Figure 34: Miscellaneous Switches” on page 90.

Retarder Switch

The Retarder toggle switch controls power to the transmission retarder. Positioning the switch to ON enables the retarder. The OFF position disables the retarder and illuminates the Retarder Off indicator on the instrument panel.

 **NOTE:**

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

Interlock Override Switch

Set the switch to the ON position to disable the brake and accelerator interlock. Set the switch to the OFF position to enable the brake and accelerator interlock.



Operating the vehicle with the Interlock Override switch in the ON position disables the brake and accelerator interlocks. Consult your local transit authority for operating policy.

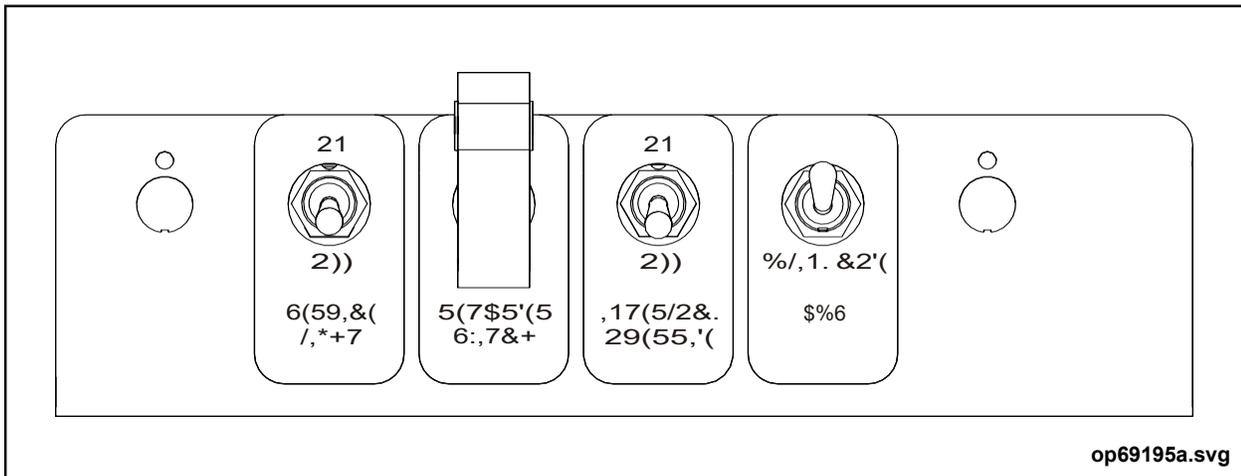


Figure 34: Miscellaneous Switches



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.

Front Door Master Switch



Operating the vehicle with the Front Door Master switch in the OFF position disables the brake and accelerator interlocks. Consult your local transit authority for operating policy.

This switch is located behind the entrance mechanism access door. Set the switch to the OFF position to disable operation of the entrance door and the portion of accelerator and brake interlocks associated with the entrance door. Return the switch to the ON position to enable normal operation.

Rear Door Master Switch



Operating the vehicle with the Rear Door Master switch in the OFF position disables the brake and accelerator interlocks. Consult your local transit authority for operating policy.

This switch is located behind the exit mechanism access door. Set the switch to the OFF position to disable operation of the exit door and the portion of accelerator and brake interlocks associated with the exit door. Return the switch to the ON position to enable normal operation.

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.

10. FIRE SUPPRESSION & GAS DETECTION 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

The Fogmaker Fire Suppression System disperses water and foaming agent under high pressure to extinguish fires in the engine compartment. The system contains the following components:

- Alarm Panel
- Manual Actuator Switch located on driver's side console panel.
- Extinguishing Agent Cylinder
- Detection Cylinder
- Pneumatic Detector Tube
- Gas sensors

Description

The Fogmaker Fire Suppression & Gas Detection system disperses water and foaming agent under high pressure to extinguish fires in the engine compartment. Driver's area components include:



Alarm Panel

The alarm panel is located in the driver's overhead panel. The alarm panel contains the following Fire Suppression System indicators and controls: See "Figure 35: Fire Suppression & Gas Detection Control Panel" on page 94.

- SYSTEM OK lamp - illuminates to indicate system is properly powered up and system pressure is correct.
- FIRE Lamp - illuminates when system is operating to extinguish a fire in the engine compartment.
- SERVICE REQUIRED lamp - illuminates when system error occurs, such as system pressure being too low, or when the Mode switch is set to the Test position.
- Alarm Buzzer - Operates when the system is operating to extinguish a fire or the Mode switch is in the TEST position.
- Silence/Reset Alarm Button - To test the operation of the control panels indicator lights and audible alarm. If the button is pressed and held down for approximately four seconds (whether an alarm indication is or is not activated) it will test the control panel by lighting all of the indicator lights and by activating the audible alarm. When the button is released, the indicator lights will return to the condition they were in before the button was pressed. The audible alarm (if it was active) will be turned off for 30 seconds.

The alarm panel also contains the following Gas Detection System indicators and controls:

- SYSTEM OK - Green when there is no service required and no gas detected.
- SERVICE REQUIRED - Orange when sensor is disconnected or malfunction detected.
- TRACE GAS - Orange when methane is detected between 20% and 50% LEL.
- SIGNIFICANT GAS - Red when methane is detected over 50% LEL.
- Alarm Buzzer - Operates when the system is operating to extinguish a fire, detecting gas or the mode switch is in the TEST position.
- Silence/Reset Button - To test the operation of the control panels indicator lights and audible alarm. If the button is pressed and held down for approximately four seconds (when alarm is not activated) it will test the control panel by lighting all of the indicator lights and by activating the audible alarm. When the button is released, the indicator lights will return to the condition they were in before the button was pressed. The audible alarm (if it was active) will be turned off for 15 seconds.

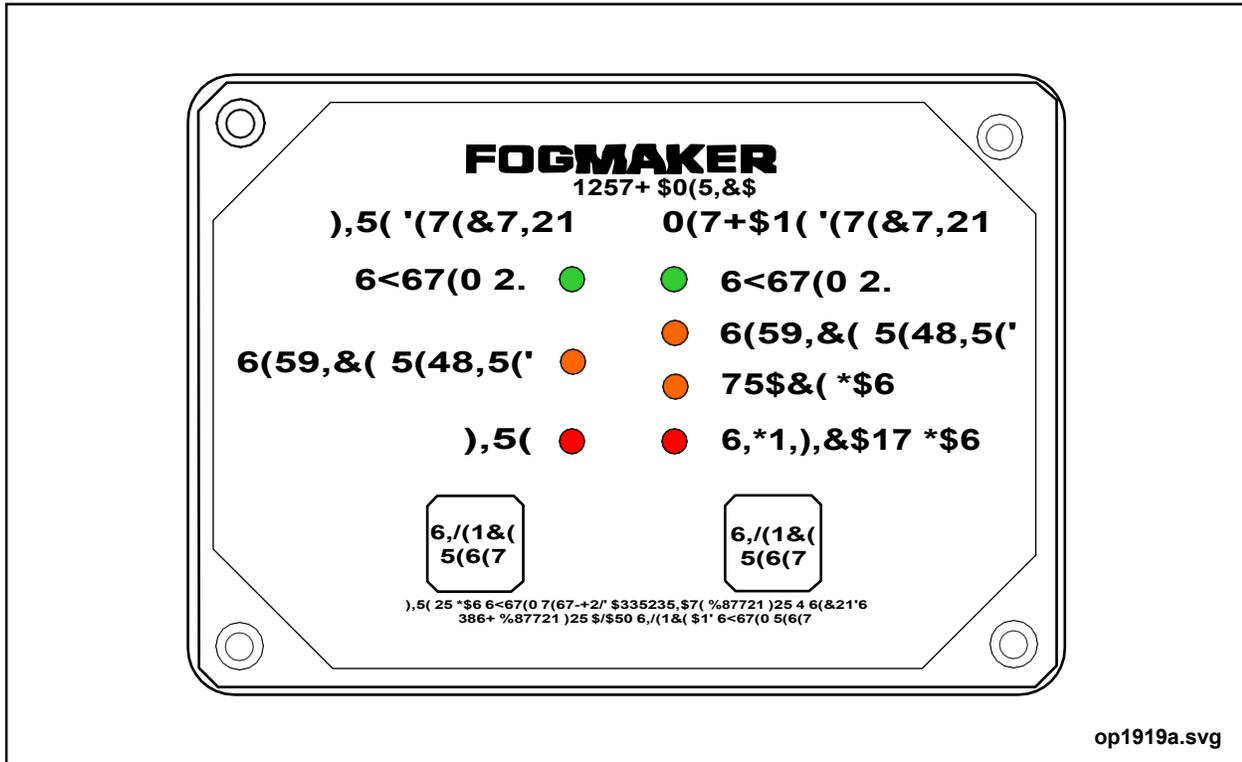


Figure 35: Fire Suppression & Gas Detection Control Panel

Manual Actuator Switch

The Manual Actuator switch is located on the side console 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. See ["Figure 36: Manual Actuator Switch"](#) on page 95.

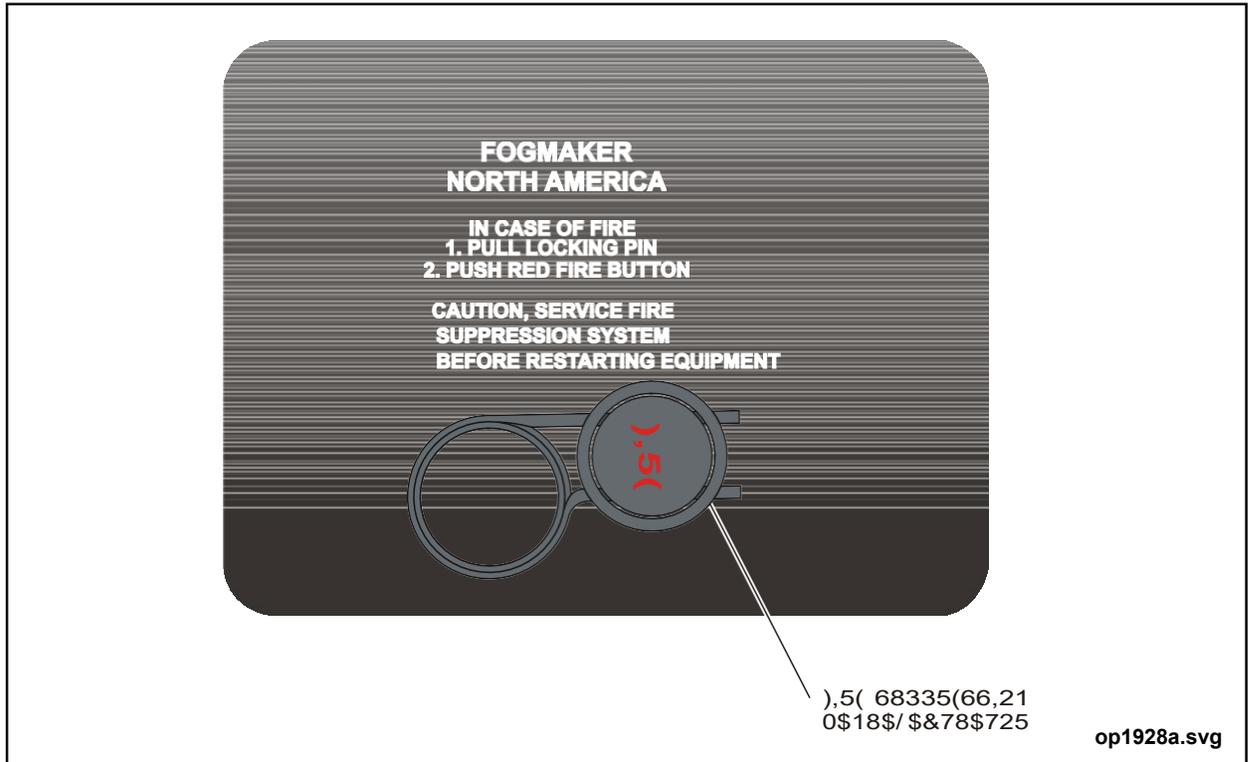


Figure 36: Manual Actuator Switch

Extinguisher Cylinder

The extinguisher cylinder is filled to approximately 1524 psi (105 bar) with extinguishing agent and nitrogen gas propellant. The cylinder pressure can be monitored via the tank-mounted manometer and should always be within the green section of the gauge scale.

The safety screw, provided tethered to the tank, must always be inserted before servicing, installing, dismantling or transporting the extinguisher when it is pressurized. Properly installed, the screw will prevent unintentional activation of the extinguisher.



DO NOT perform any service or maintenance on a pressurized extinguisher cylinder. The cylinder contents are highly pressurized and, if released, can cause serious personal injury. Only authorized service personnel may service the extinguisher cylinder when it is pressurized.



Detector Cylinder

The detector cylinder is filled to approximately 290 to 348 psi (20 to 24 bar) with nitrogen gas detector fluid. Cylinder pressure is displayed on a tank mounted manometer and should always be in the green section of the gauge scale. If the pressure falls below 203 psi (14 bar) the pressure switch sends a signal to the alarm panel to sound the alarm.

Pneumatic Detector Tube

The detector tube is a polymer tube connected between the detection cylinder and the extinguisher cylinder. It is filled with nitrogen from the detector cylinder.

Operation

When a fire occurs in the engine compartment, the pressurized detector tube bursts. This creates a pressure drop which activates the valve on the extinguishing agent cylinder to extinguish the fire. The detection cylinder contains a separate pressure switch and supplies system information to the alarm panel in the driver's area. The driver can use the Manual Actuation switch to manually operate the system if required.

In the Event of a Fire

In the event of a fire, the engine fire indicator will illuminate and the alarm siren will intermittently sound. Move the vehicle to a safe location and:

- Stop the engine.
- Vacate the vehicle.
- Switch the battery disconnect off.
- Keep the engine compartment closed for at least 5 minutes.
- Use the fire extinguisher to protect persons and property.
- Contact service personnel.

NOTE:

Contact service personnel if no fire has occurred, the system has not been triggered, but it indicates low pressure in the extinguisher cylinder or the detector cylinder.



11.COMPRESSED NATURAL GAS SYSTEM

CNG as a Fuel

Natural gas is a simple hydrocarbon and is commonly called Methane. This is the largest component of natural gas, accounting for about 95% of the total volume. Natural gas (Methane) is similar in composition to gasoline and diesel fuels, but is richer in hydrogen. Natural gas is extremely energy-efficient.

Lighter than air, natural gas rises and dissipates to the atmosphere when escaping containment. This characteristic alone makes it safer than other fuels.

Natural gas contains no toxic compounds. In its pure state, natural gas is odorless and colorless. For safety reasons, an odorant called Ethyl Mercaptan is added so that any gas leaks can be easily detected by its very distinctive and disagreeable odor. Gas concentrations as small as 0.5% (too small to ignite) are identified by this unpleasant odor.

Occasional handling or breathing of this fuel is not hazardous to your health. However, heavy concentrations displacing over 22% oxygen can cause drowsiness and eventual asphyxiation by displacing oxygen in the lungs.

General Safety

Natural gas has a proven record as being a safe vehicle fuel.

A recent U.S. survey found that there has never been a fire involving the natural gas system in natural gas-powered fleet vehicles involved in 1,700 collisions since 1970.

In more than 180 rear-end collisions involving vehicles with storage cylinders in the trunk, the safety record was perfect. The survey covered more than 2,400 vehicles driven nearly 169 million miles.

Natural gas has a higher ignition temperature than gasoline making it safer to use. A heat source of 495°F (257°C) can ignite gasoline. Natural gas requires a heat source of 1200°F (649°C) for ignition.

Vehicle Evacuation & Shut Down



Breathing heavy concentrations of natural gas can cause drowsiness and eventual suffocation. The odor of natural gas is detectable at a concentration of 0.5%; well below the level causing drowsiness or supporting combustion.

Minor Leak

1. Shut down all operating systems.
2. Immediately evacuate all passengers from the vehicle through both exits.
3. Leave the doors open so that any leaked gas will disperse to the atmosphere. Remember, natural gas is lighter than air and will rise.
4. Make sure everyone moves a reasonable distance from the vehicle.
5. If it is safe to do so, open the fuel filler door and shut off the one quarter turn shut-off valve. The handle is vertical when the valve is open. Push the handle fully to the right, one quarter turn to close.
6. Keep all people away from the vehicle.
7. Do not smoke or allow anyone else to smoke or operate any devices that may create a spark within 10 feet (3m) of the vehicle.
8. Contact your transit authority immediately and have qualified personnel troubleshoot the system.

Major Leak

If gas is leaking or venting from the fuel tanks:

1. Do not operate any of the electrical switches on the side panel or dash.
2. Immediately evacuate all passengers from the vehicle through both exits.
3. Leave the doors open so that any leaked gas disperses to the atmosphere. Remember, natural gas is lighter than air and rises.
4. Make sure everyone moves at least 300 feet (92m) from the vehicle.
5. If it is safe to do so, open the fuel filler door and shut off the quarter-turn shut-off valve. The handle is vertical when the valve is open.
6. Keep all people away from the vehicle.



7. Do not smoke, allow anyone else to smoke, or operate ANY devices that may create a spark within 300 feet (92m) of the vehicle.
8. Do not attempt to climb onto the vehicle to turn off the fuel cylinder shut-off valves.
9. Contact your transit authority immediately and have qualified personnel troubleshoot the system.

Gas-Fueled Fire

The Fire Suppression System will have activated, shutting off the fuel solenoid valves and the gas supply, stopping the vehicle. In most cases, the gas-fueled fire is extinguished by the Fire Suppression System.

Depending on the location and intensity of the initial fire flare-up, heat may have melted the pressure relief device (PRD) on one or several of the fuel cylinder lines. This is intended to happen in case of fire to vent the gas to the atmosphere allowing dissipation. The valve continues to vent until the tank is emptied. This prevents pressure build-up in the tank which could cause an explosion.

1. If a fire is detected, stop the vehicle immediately and evacuate all passengers through both exits.
2. Do not operate any of the electrical switches on the side panel or dash.
3. Leave the doors open so that any leaked gas will disperse to the atmosphere.
4. Make sure everyone moves at least 300 feet (92m) from the vehicle.
5. If it is safe to do so, open the fuel filler door and shut off the quarter-turn shut-off valve. This will cut off any fuel flow downstream of the shut-off valve.
6. A secondary fire can be put out with the vehicle fire extinguisher. Use common sense and good judgment to avoid dangerous situations.
7. If the fire cannot be safely contained and extinguished in this way, call the fire department and police. Evacuate the area.
8. Contact your transit authority immediately and have qualified personnel troubleshoot the system.



Fuel System Component Description & Operation

The fuel system delivers natural gas from the roof mounted tanks to the engine's gas mixer (air-fuel mixer). During the delivery process, compressed natural gas (CNG) at 3,600 psi (24,821 kPa) is decompressed and regulated before entering the gas mixer.

The CNG Fuel System consists of the following main components:

- Six fuel cylinder assemblies.
- Solenoid shut-off valves on each tank.
- Main quarter-turn shut-off valve.
- Primary and secondary filter.
- A *Sherex* filler receptacle and a 0 to 5,000 psi (0 to 34,474 kPa) pressure gauge.
- High-pressure and zero pressure regulators.
- Remote pressure relief devices.

The basic sequence of events to the fuel delivery process is as follows:

1. During normal operation, the solenoid valve of each fuel cylinder assembly is open. Compressed natural gas (CNG) at high pressure is allowed to flow out each cylinder and merges to a main fuel supply line.
2. Through the main fuel supply line, CNG travels to the rear right of the vehicle and to a quarter-turn shut-off valve.
3. From the shut-off valve, CNG flows to a fuel filler block containing a high pressure gauge and a refueling receptacle.
4. From the filler block, natural gas is directed into a primary filter before entering the pressure regulator that reduces line pressure from 3,600 psi (24,821 kPa) to approximately 125 psi (862 kPa).
5. The pressure-reduced gas passes through a secondary filter before entering the engine controlled solenoid shut-off valve and the zero pressure regulator.
6. Metered amounts of gas are mixed with air at the intake manifold gas mixer for eventual combustion.



Safety Systems

In addition to normal engine system signals the fuel tank solenoid valves are also controlled by the Fire Suppression and Gas Detection System. During engine operation the solenoid valves are open (energized) allowing fuel flow only if detection and suppression systems are: activated (on) and the sensor contact switches are open (not sending a signal).

For extreme pressure conditions, temperature-activated Pressure Relief Devices (PRD), installed on and around the tanks, maintain safe tank pressure levels. These are safety valves that consist of a fusible plug backed with a membrane. The fusible plug is heat sensitive and melts at 217°F (103°C). This exposes the membrane that bursts under gas pressure to vent the gas.



Pressure relief devices are sensitive to temperature. DO NOT steam clean the pressure relief devices.

Gas Regulators

The vehicle's CNG system uses a high pressure regulator and a zero pressure regulator to control line pressure of the natural gas.

The first regulator, the high pressure regulator, reduces line pressure from 3,600 psi to 125 psi (24,821 to 862 kPa). As this regulator functions its temperature drops due to the CNG expansion inside. A flow of engine coolant through the regulator prevents the formation of ice which would restrict or stop the flow of gas.

The second regulator reduces line pressure to 0 psi for delivery to the engine's venturi gas mixer unit.

The fill box contains a proximity switch to prevent the engine from running during refueling. When the filler door is open, the contact of the switch is open and the engine shuts down.

COMPRESSED NATURAL GAS SYSTEM

Quarter-Turn Shut-Off Valve

In the fill box and above the fuel filler block is a quarter-turn shut-off valve allowing manual control of the flow of fuel to the engine. See “Figure 37: Curbside CNG Fill Box” on page 102. Normal vehicle operation places the handle of the valve in the vertical (open) position. In emergency situations, turning the handle to the horizontal position closes the valve, stopping the supply of fuel.

Closing the fuel shut-off valve will not change system pressure levels unless a leak exists. The fuel tanks and the components of the fuel delivery system will remain under full pressure.

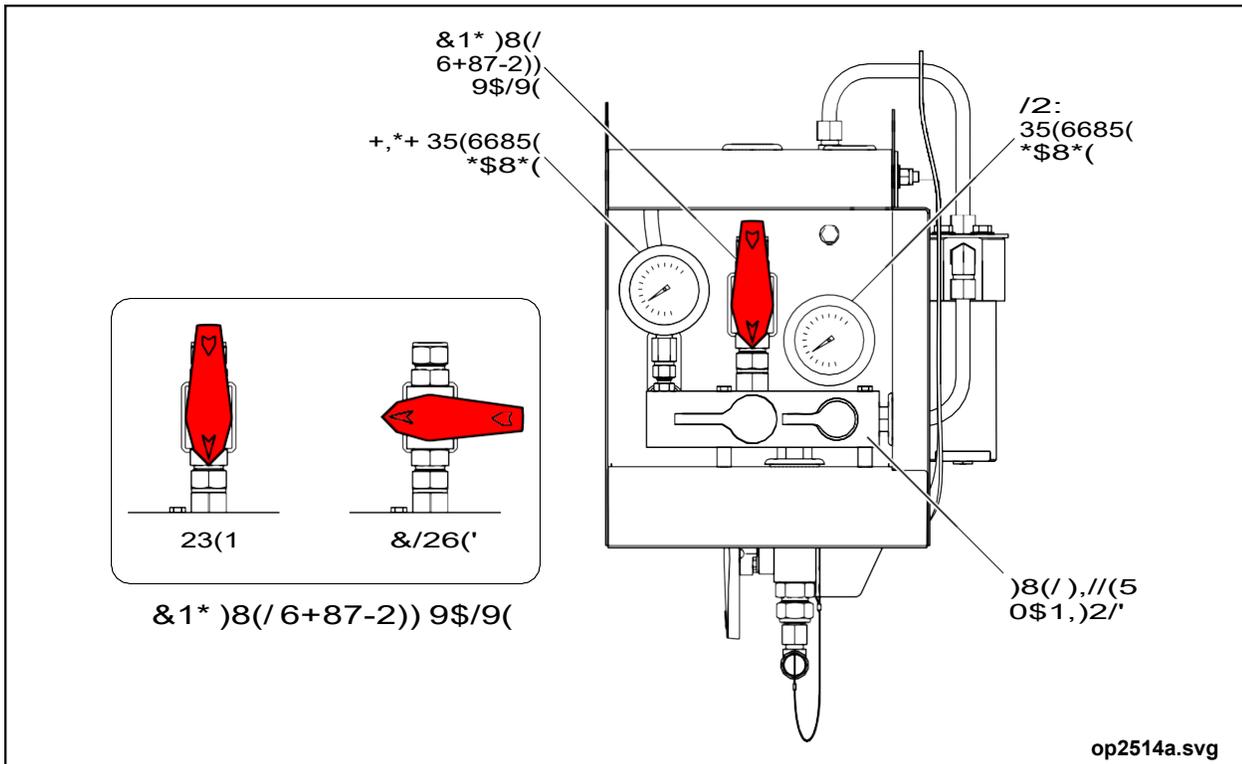


Figure 37: Curbside CNG Fill Box



12. VEHICLE OPERATION



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 Interlock Override switch is in the OFF position and both Door Master switches are in the ON position.
- Check horn operation.
- Fully kneel the vehicle. Refer to "Kneeling" on page 120 in this manual for kneeling procedure.



Transmission Operation



In temperatures below -20°F (-29°C), set the Idle Speed switch on the side console to FAST to warm the transmission. Reset the switch to NORMAL before shifting from neutral [N], to reverse [R] or drive [D].



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



NEVER leave the driver's seat while the transmission is in gear.

The push button shift selector is used to select the transmission operating ranges, display transmission oil level, and display diagnostic codes. The LED display panel uses two green alpha-numeric characters to display these functions. The operating range buttons include:

- [R] Reverse - press this button to select reverse. The LED display panel will show [RR].
- [N] Neutral - press this button to select neutral. The LED display panel will show [NN].
- [D] Drive - press this button to select drive. The LED display panel will show [DD].

NOTE:

When the vehicle is operating in drive, the display panel will indicate the highest available range and the current operating range. Example: "52" would indicate 5 available forward speeds and operation is currently in the 2nd range.

- (Up) Arrow - press this button when in drive [D] to request the next higher range. Continuously pressing the button will select the highest range available.
- (Down) Arrow - press this button when in drive [D] to request the next lower range. Continuously pressing the button will select the lowest range available.
- Mode - the mode button is used to view and toggle through diagnostic code information when the Diagnostic Code Display mode has been entered. The performance or economy mode feature is not available on this unit.



Operate the transmission using the following procedure:

1. Before starting the engine
 - a. Check that the transmission is in neutral [N].
 - b. Check that the parking brake is on.
 - c. Apply the brake treadle.
2. With the engine running and idling at normal speed, apply firm pressure on the brake treadle and make the desired range selection.
3. Release parking brake and the brake treadle to proceed.
4. To change direction, bring the vehicle to a full stop, apply firm pressure on the brake treadle and make the desired range selection.

 **NOTE:**

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

5. When parking or shutting down the vehicle come to a full stop, apply the parking brake, select neutral [N] and release the brake treadle.
6. To upshift or downshift the transmission, use the up or down arrow buttons respectively while in drive [D]. Pressing a button once changes the range by one. The second numeric character on the LED display will show the current operating range.

Auto-Neutral Operation

The transmission incorporates an auto-neutral feature which automatically selects neutral when either of the following conditions are present:

- Parking brake is applied.
- Brake interlocks have been applied for five minutes.

The shift selector neutral [NN] gear indicator light will then begin flashing to indicate that the auto-neutral feature is active. Re-engage the transmission as follows:

- Apply the brake treadle.
- Release the parking brake.
- First, select neutral [N], then select drive [D].

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.



Retarder Operation

The retarder is used to slow the vehicle and works in conjunction with the service (air) brakes. The retarder, located inside the transmission, is a fluid brake that creates drive-line deceleration. When activated, its housing fills with transmission fluid which impedes rotor and output shaft rotation slowing the vehicle. Retarders improve vehicle economy by extending the service life of the brake linings.

The retarder is supplemental to the operation of the service brakes. Overall braking efficiency (service brakes plus retarder) is affected by vehicle speed, road conditions and condition of the vehicle brakes, tires and mechanical systems. Retarder operation decreases in effectiveness as the vehicle slows down. It is the responsibility of the driver to drive the vehicle in a safe and controlled manner at all times.

The retarder operates in three stages and is only effective at speeds above 5 mph (8 km/h). Releasing the accelerator engages the first stage of retarder operation. Lightly pressing on the brake treadle (the first 5° to 10° of movement) engages the second stage of retarder operation. Further brake application engages the third stage leading to full retarder operation. Releasing the brake treadle and applying the throttle will disengage the retarder. The retarder can be disabled using the Retarder switch on the destination sign closeout panel.

Hitting a bump or pothole may activate the ABS system. The retarder will automatically be turned off if the ABS system is in active operation (ABS event). When the ABS event deactivates, retarder operation will resume in approximately 6 seconds.

Retarder operation is attenuated and high gear is locked out if the transmission fluid becomes overheated. The retarder function is fully restored once the transmission fluid has cooled sufficiently or if the output shaft speed sensor detects a substantial increase in speed with the accelerator fully released (runaway vehicle).

NOTE:

ALWAYS be prepared to use the service brakes to stop the vehicle.



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.



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.

NOTE:

Under certain operating conditions, the ABS system will override the transmission retarder. Refer to “Retarder Operation” on page 107 in this manual for specific operating conditions which apply.

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.



Starting the Engine



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 38: Battery Disconnect Switch](#)” on page 109.

NOTE:

Refer to “[5.DRIVER’S CHECK LIST](#)” on page 28 in this manual before operating the vehicle.

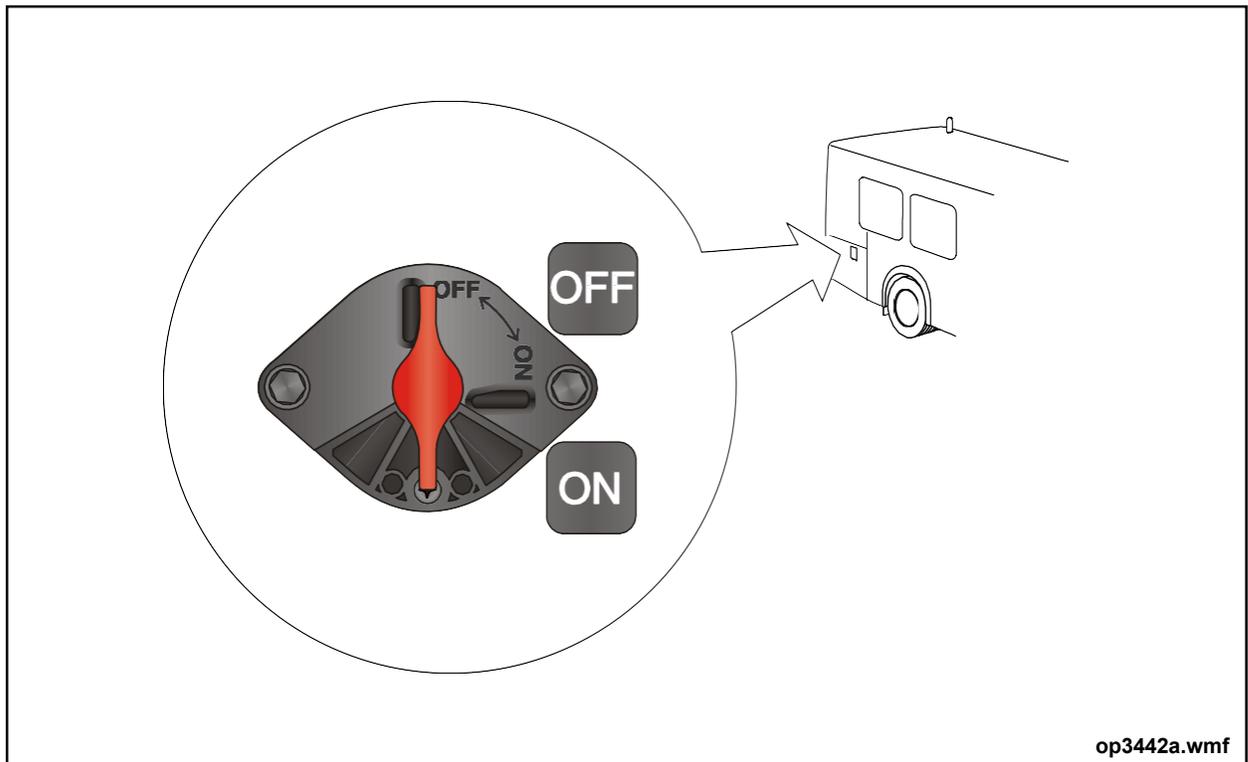


Figure 38: Battery Disconnect Switch

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



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 Interlock Override switch to the ON 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 Interlock Override switch to the OFF 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**.

Multi Control Unit (MCU) Messages

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



Rear Door Open Indicator

Move the door controller to FRONT REAR, REAR or REAR FRONT position to check that the Rear Door Open indicator illuminates when the doors open.

 **NOTE:**

Exit doors will open and the interlocks will be engaged.

Turning the door controller handle to the CLOSED position 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 open or the Rear Door Open indicator is not 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 Interlock Override switch, when placed in the ON position, disables the exit door and inhibits the brake interlocks.

 **NOTE:**

Return the Interlock Override switch to the OFF position.

- Both Door Master switches are in the ON position.
- Aisle lights operation.
- 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.
3. 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.
4. Release the parking brake.

NOTE:

If parking brake is released and no pressure is applied to the brake treadle, the vehicle may move.

5. 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).
6. Release the brake treadle.
7. Reapply the parking brake.
8. Allow the air system to fully recharge.
9. 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).



VEHICLE OPERATION

- 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.
 - d. Reapply the parking brake.
10. Restart the engine.
 11. Set the Idle Speed switch to FAST to recharge the air system.
 12. When the reading levels off at the upper operating range, switch off the fast idle.
 13. Release the parking brake.
 14. Move the vehicle slowly and test brake response. Refer to “Moving the Vehicle” on page 116 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 CLOSED position. 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



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 39: Parking on an Incline” on page 117.

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 FRONT position.
4. Turn the Master Run switch to the STOP-ENGINE position.
5. Exit the vehicle.
6. Manually close the doors.

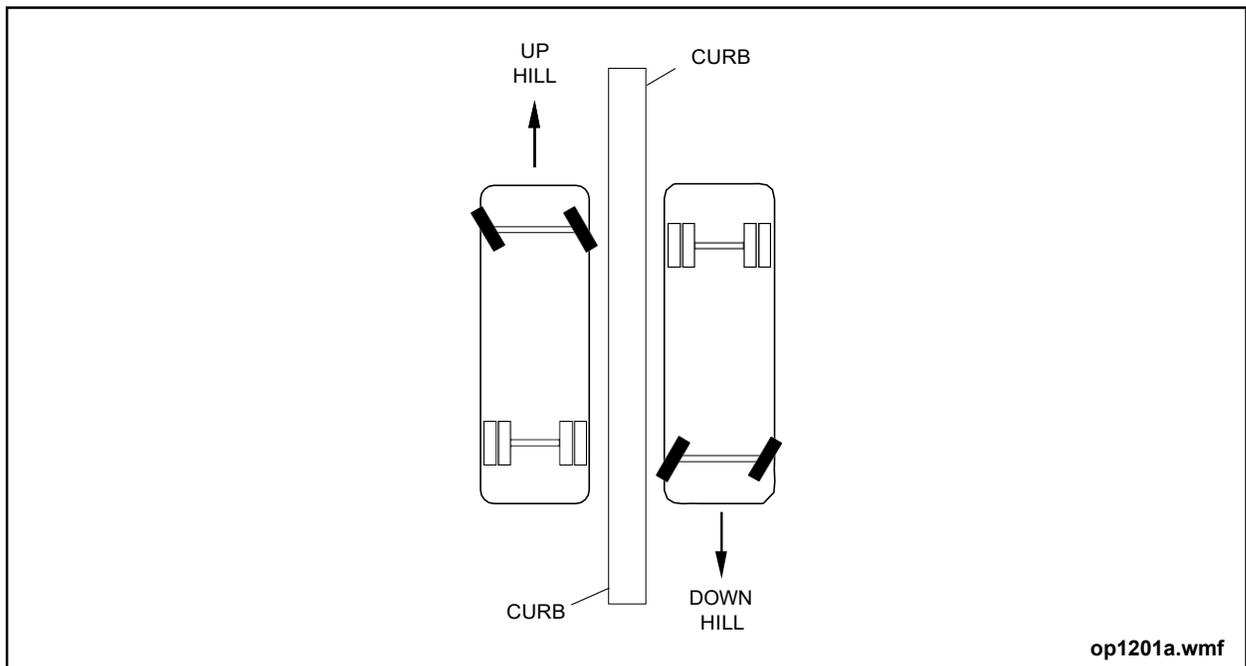


Figure 39: Parking on an Incline

Roof Hatch Ventilation

The roof hatches may be used for ventilating the interior when the vehicle is in motion. 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. Push firmly on the front or rear hatch handle to tilt the roof hatch to the desired position. See “Figure 40: Roof Hatch Ventilation” on page 118.



Close the roof hatches when passing under low overhead restrictions.

 **NOTE:**

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

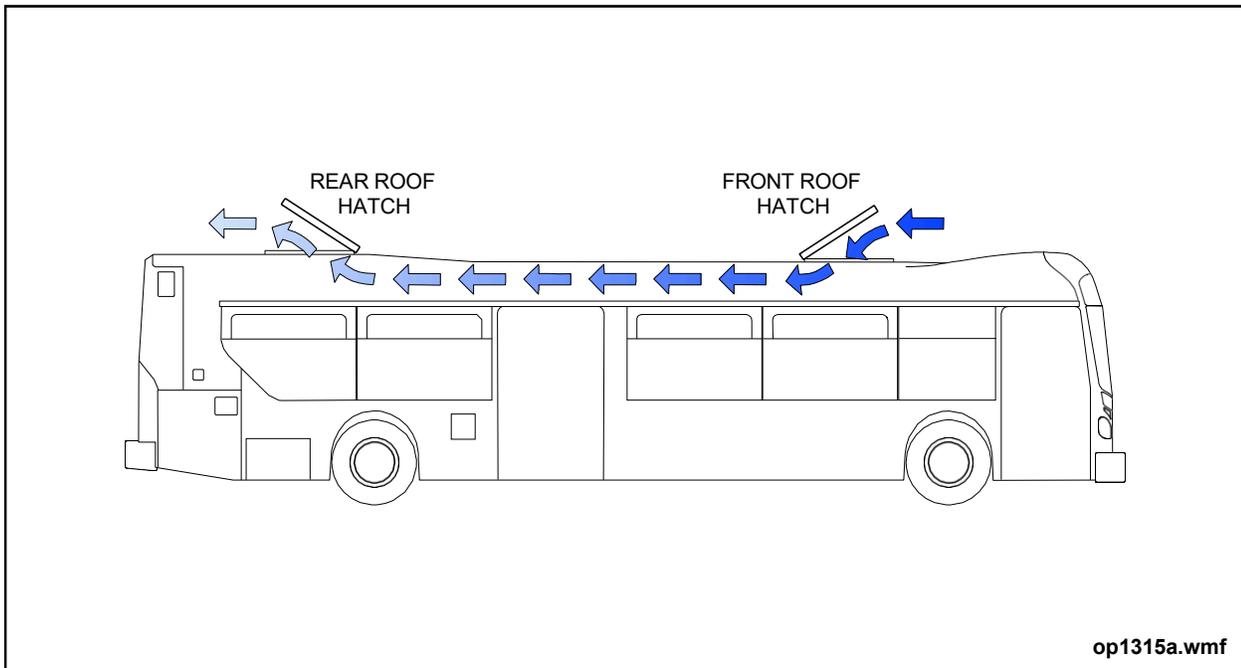


Figure 40: Roof Hatch Ventilation



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



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 & Gas Detection System

If a fire activates the Fire Suppression & Gas Detection 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 & Gas Detection 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 FRONT position 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.



13. 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.



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 ramp.
- Passengers are to board the ramp only when it's at ground level, and the "DEPLOY" cycle is complete.



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 41: Wheelchair Ramp Operation" on page 124.](#)

WHEELCHAIR SYSTEM

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.

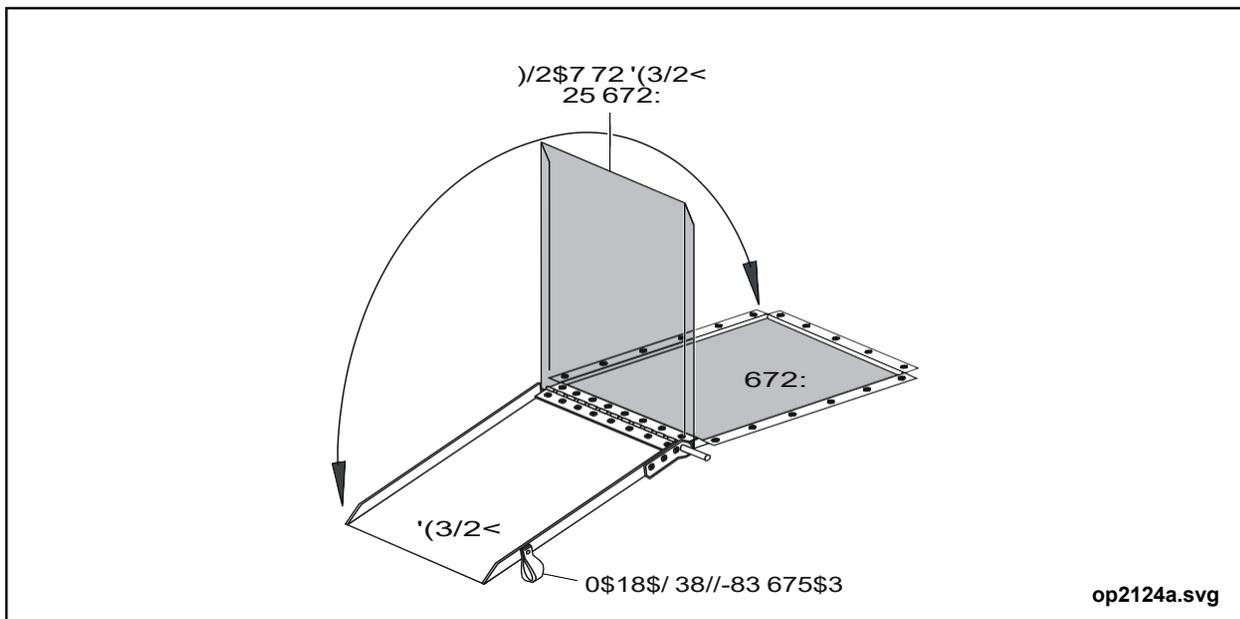


Figure 41: Wheelchair Ramp Operation



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.



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



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 42: Wheelchair Restraint System" on page 128.

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 temporarily attach it to the belt hook on the flip-up seat.

NOTE:

Attaching the lap belt to the belt hook will allow easier access to the lap belt once the wheelchair has been moved into position.

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 rear belt release handle and pull the rear wheelchair restraint belts to extend.
2. Attach the belt hooks around a solid rear frame member of the wheelchair.
3. Wait for the 20 second delay, belts will retract and tighten automatically.

WHEELCHAIR SYSTEM

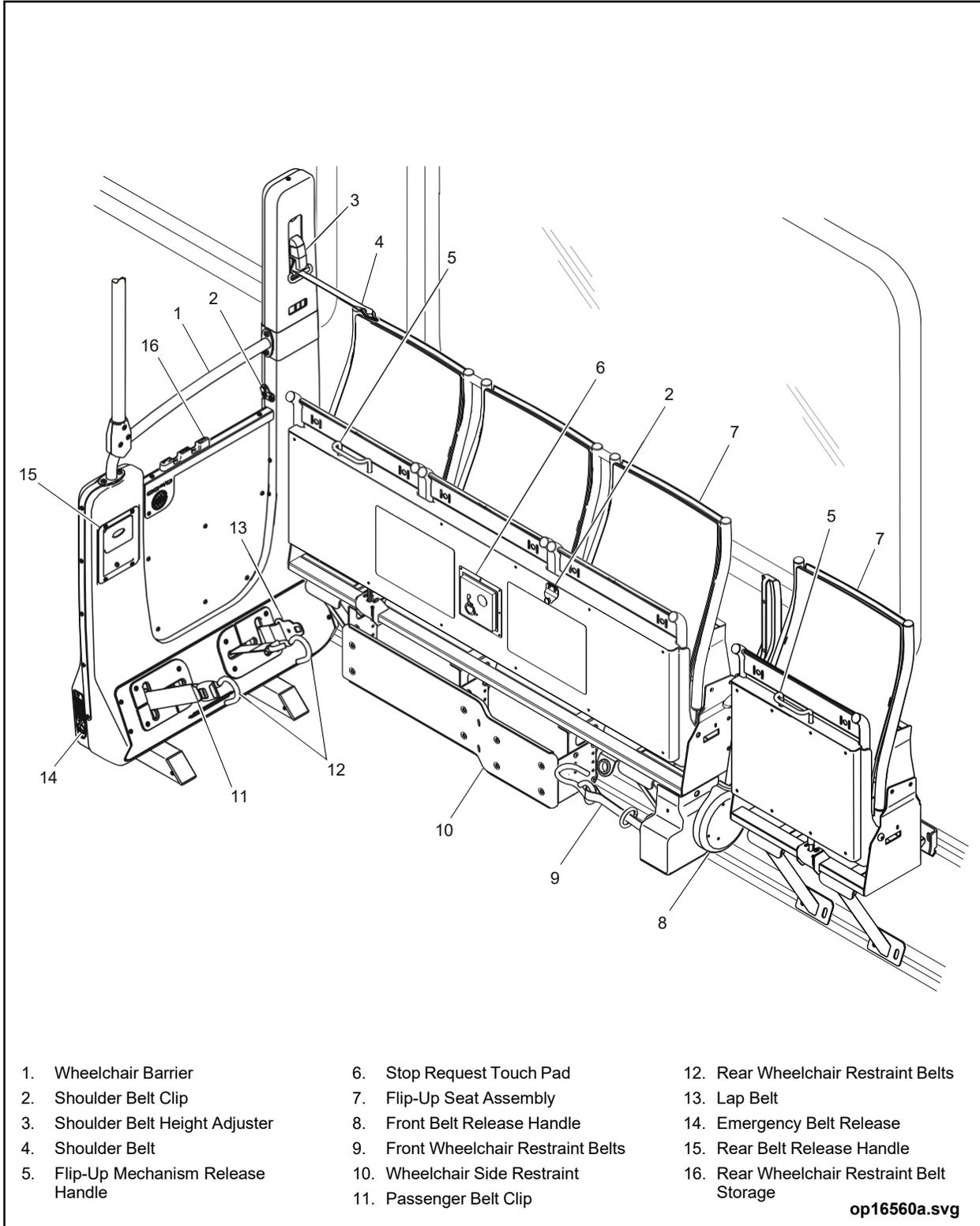


Figure 42: Wheelchair Restraint System



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 front wheelchair restraint belt and attach the hooked end around a solid frame member of the wheelchair.
3. Pull downward on the front belt release 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. Extend window-side shoulder belt and connect to stud on lap belt.
3. Ensure that belt clips and buckle are securely engaged.

14. BIKE RACK SYSTEM



Loading or unloading bike from the streetside endangers the passenger. LOAD OR UNLOAD THE BIKE FROM THE CURBSIDE ONLY.

The bike rack system allows the passenger to load and unload a bike without driver assistance. In the case of children under ten, however, have an adult assist in loading and unloading the bike.

Be sure to load and unload the bike from either the front of the rack or from the curbside.

Loading Operation



To ensure safe vehicle operation, NEVER load a bike onto the bike rack which will in any way obstruct the headlamps. ALWAYS verify that the headlamps are unobstructed whenever a bike has been loaded onto the bike rack.

1. Remove water bottles, pumps or other loose items from bike prior to loading.
2. Squeeze bike rack handle UP to release latch.
3. Fold down bike rack.
4. Lift bike onto rack, fitting wheels into proper wheel slots.
5. Raise the support arm over the front tire so that the hook rests at the highest point on the front wheel. Bike is now held firmly in place.

Unloading Operation

1. Unload from curb or from in front of vehicle.
2. Raise support arm off the tire.
3. Lift bike out of wheel slots and set down.
4. If there are no other bikes on the rack, lift it until the rack swings into the lock position against the vehicle.



15.NOTES

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