

KING COUNTY DEPARTMENT OF TRANSPORTATION

OPERATOR'S GUIDE DIESEL/ELECTRIC 60FT. LOW FLOOR TRANSIT BUS



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

SR953

/ehicle Identification Number	Unit Number
5FYH2UW064U026466	2600
5FYH2UW094U026493	2601
5FYH2UW004U026494	2602
5FYH2UW024U026495	2603
5FYH2UW044U026496	2604
5FYH2UW064U026497	2605
5FYH2UW084U026498	2606
5FYH2UW0X4U026499	2607
5FYH2UW024U026500	2608
5FYH2UW044U026501	2609
5FYH2UW064U026502	2610
5FYH2UW084U026503	2611
5FYH2UW0X4U026504	2612
5FYH2UW014U026505	2613



SR953 continued

Vehicle Identification Number	Unit Number
5FYH2UW034U026506	2614
5FYH2UW054U026507	2615
5FYH2UW074U026508	2616
5FYH2UW094U026509	2617
5FYH2UW054U026510	2618
5FYH2UW074U026511	2619
5FYH2UW094U026512	2620
5FYH2UW004U026513	2621
5FYH2UW024U026514	2622
5FYH2UW044U026515	2623
5FYH2UW064U026516	2624
5FYH2UW084U026517	2625
5FYH2UW0X4U026518	2626
5FYH2UW014U026519	2627
5FYH2UW084U026520	2628
5FYH2UW0X4U026521	2629
5FYH2UW014U026522	2630
5FYH2UW034U026523	2631

SR980

Unit Number
2632
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2643



Vehicle Identification Number	Unit Number	
5FYH2UW004U026625	2644	
5FYH2UW024U026626	2645	
5FYH2UW044U026627	2646	
5FYH2UW064U026628	2647	
5FYH2UW084U026629	2648	
5FYH2UW044U026630	2649	
5FYH2UW064U026631	2650	
5FYH2UW084U026632	2651	
5FYH2UW0X4U026633	2652	
5FYH2UW014U026634	2653	
5FYH2UW034U026635	2654	
5FYH2UW054U026636	2655	
5FYH2UW074U026637	2656	
5FYH2UW094U026638 2657		
5FYH2UW004U026639 2658		
5FYH2UW074U026640 2659		
5FYH2UW094U026641 2660		
5FYH2UW004U026642 2661		
5FYH2UW024U026643	YH2UW024U026643 2662	
5FYH2UW044U026644	2663	
5FYH2UW064U026645	2664	
5FYH2UW084U026646	2665	
5FYH2UW0X4U026647	2666	
5FYH2UW014U026648	2667	
5FYH2UW034U026649	2668	
5FYH2UW0X4U026650 2669		
5FYH2UW014U026651 2670		
5FYH2UW034U026652 2671		
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5FYH2UW074U026654	2673	
5FYH2UW094U026655	2674	
5FYH2UW004U026656	2675	
5FYH2UW024U026657	2676	
5FYH2UW044U026658	2677	



Vehicle Identification Number	Unit Number	
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5FYH2UW044U026661	2680	
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5FYH2UW084U026663	2682	
5FYH2UW0X4U026664	2683	
5FYH2UW014U026665	2684	
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5FYH2UW054U026667	2686	
5FYH2UW074U026668	2687	
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Vehicle Identification Number	Unit Number	
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5FYH2UW064U026712	W064U026712 2731	
5FYH2UW084U026713	3 2732	
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5FYH2UW044U026725	2744	
5FYH2UW064U026726	2745	



Vehicle Identification Number	Unit Number
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5FYH2UW014U026729	2748
5FYH2UW084U026730	2749
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5FYH2UW014U026732	2751
5FYH2UW034U026733	2752
5FYH2UW054U026734	2753
5FYH2UW074U026735	2754
5FYH2UW094U026736	2755
5FYH2UW004U026737	2756
5FYH2UW024U026738	2757
5FYH2UW044U026739	2758
5FYH2UW004U026740	2759
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5FYH2UW044U026742	2761
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5FYH2UW084U026758	2777
5FYH2UW0X4U026759	2778
5FYH2UW064U026760	2779



Vehicle Identification Number	Unit Number
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5FYH2UW0X4U026793	2812

NOTE: Differences between SR953 & SR980 will be indicated on the applicable pages.





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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 Ltd. 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 Ltd. 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 Limited.

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 Limited.

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



Table of Contents

INTRODUCTION	1
Hybrid Operating Principles	
Vehicle Specifications	3
Vehicle Identification	
Warnings & Cautions	7
Contacting New Flyer	
SAFETY INFORMATION	
Safety Procedures	
Safety Equipment	
Escape Exits	
Exit Door Sensitive Edges	
Interlock System	
TO ENTER THE VEHICLE	
DRIVER'S CHECK LIST	
Exterior	
Interior	
DRIVER'S AREA	
Farebox Pedestal Mount	
Driver's Window	
Mirrors	
Roller Blinds	
Electronic Equipment Enclosure	
Driver's Locker	
Fire Suppression System	
Driver's Seat	
Steering Wheel & Horn	
Public Address System	31
Automatic Passenger Counting (APC) System	
(Units 2600 - 2631 only)	
Destination/Route Signs	
INSTRUMENTATION & CONTROLS	
Instrument Panel	
Driver's Climate Controls	
Side Console Switch Panel	
Foot Operated Controls	
Miscellaneous Controls	
FIRE SUPPRESSION SYSTEM	
Description	
Operation	63



VEHICLE OPERATION	65
Pre-Start Checks & Adjustments	65
E ^V Drive™ Unit Operation	
Hush Mode	
Auxiliary Braking System	68
Anti-Lock Braking System	69
Automatic Traction Control	69
Starting the Engine	70
Operational Checks	71
Day-Time Operation	74
Night-Time Operation	74
Pre-Trip Brake Test	
Moving the Vehicle	76
Parking the Vehicle	77
Operating the Vehicle in Reverse	78
Jump Start Connection	78
Engine Protection System	79
Kneeling	
Passenger Signal System	
WHEELCHAIR SYSTEM	82
Wheelchair Ramp	
Wheelchair Restraint System	
BIKE-RACK SYSTEM	88
Loading Operation	
Unloading Operation	88
NOTES	89



1. INTRODUCTION

This manual describes the operating features and safety equipment of the New Flyer DE60LF Transit Vehicle. All personnel involved in the operation of the vehicle should be acquainted with this manual and should familiarize themselves with the DE60LF before providing any public service. Knowing the contents of this manual and following its recommendations will help to assure safe and trouble-free operation.

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

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

NOTE:

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

Caterpillar C9 Urban Transit Bus Engine Operation & Maintenance Manual

MOTE:

For information concerning the E^V DriveTM unit, contact Allison Electric Drive Field Engineering at 317-915-2748.



Hybrid Operating Principles

This vehicle is powered by the E^P System[™], a parallel hybrid that blends both mechanical and electrical power paths to drive the vehicle. The system consists of a diesel engine, E^V Drive[™] Unit, Energy Storage System (ESS), Dual Power Inverter Module (DPIM), and electronic controls.

The diesel engine is conventionally mounted and coupled to the E^V Drive™ unit. The drive unit is an arrangement of three planetary gearsets, two clutches, and two motor/ generators that work together with an electronic control unit to provide two continuously variable operating ranges.

The vehicle is driven by torque from the diesel engine which is blended with inputs from the electric motors. The motors supply the initial propulsion force required to accelerate the vehicle from a standstill; the diesel engine primarily propels the vehicle at cruising speeds.

The energy storage system consists of roof-mounted storage batteries and the DPIM unit. The AC energy provided by the motor/generators is converted to DC energy by the DPIM unit and stored in the batteries. The DPIM unit also converts the stored DC energy back to AC in order to drive the motor/generators when required.

During vehicle deceleration, the electric motors in the drive unit can be driven by the weight of the vehicle, through the driveline, to create electrical energy. This process, known as "regenerative braking", also slows the vehicle by imposing a drag on the driveline.



VEHICLE SPECIFICATIONS

VEHICLE TYPE		
Model	New Flyer DE60LF transit bus	
Customer	King County Department of Transportation - SR953/980	
Build Year	2004	
ENG	INE & FUEL	
Engine	Caterpillar C9	
Horsepower	330 HP - 1150 ft-lb.	
Fuel	Ultra low sulfur diesel	
Usable Fuel Capacity	112 U.S. gallons (424 liters)	
HYBRID PROPULSION SYSTEM (ALLISON E ^P 50)		
Drive Unit	Allison E ^V Drive™	
	Maximum output speed 3300 RPM	
	Maximum output torque during propulsion 4000 ft-lb.	
	Maximum regenerative torque during braking 2200 ft-lb.	
Energy Storage System (ESS)	Allison nickel-metal hydride battery pack (roof-mounted)	
Dual Power Inverter Module (DPIM)	Allison hybrid inverter (roof-mounted)	
DIMENSIONS		
Length (over bumpers)	60.7 ft. (18.5 m)	
Width	8.5 ft. (2.6 m)	
Height	11.0 ft. (3.35 m)	
Wheelbase (front)	19.0 ft. (5.8 m)	
Wheelbase (rear)	25.5 ft. (7.8 m)	
Turning Radius	42.5 ft. (12.9 m)	
Pivot Angle	50°	
Vehicle Weight (approx.)	44,820 lbs. (20,330 kg)	



AYLES	& SUSPENSION	
Front Axle	M.A.N. V8 65L-02	
Front Load-Carrying Capacity	14,329 lbs. (6,500 kg)	
Center Axle	M.A.N. HONG-1100	
Center Load-Carrying Capacity	24,250 lbs. (11,000 kg)	
Rear Axle	M.A.N. HP - 1352-B (5.33:1)	
Rear Load-Carrying Capacity	28,660 lbs. (13,000 kg)	
Suspension	Air springs & shock absorbers	
WHEELS & TIRES		
Tires	Bridgestone 305/70R22.5	
Rim Mounting	10 bolt hub piloted	
Maximum Load	Single Tires - 7,390 lbs. @ 120 psi Dual Tires - 6,940 lbs. @ 120 psi	
ARTICULATED JOINT		
Hydraulically Controlled Mechanism	Hübner HNGK 6.2 RW	
DESTINATION & ROUTE SIGNS		
Front Destination	Luminator Horizon electronic	
Side Destination	Luminator Horizon electronic	
Side Route	Luminator Horizon electronic	
Rear Route	Luminator Horizon electronic	
LIGHTING		
Interior	Transmatic fluorescent 24 volt top lit	



	HVAC SYSTEM
HVAC Unit	Thermo King R5 rooftop unit
	Thermo King T11 rear mount unit
Auxiliary Heaters	1 Mobile Climate Control defroster unit
	2 Mobile Climate Control floor heaters
	2 Whisper floor heaters
	Front entrance deflected heat
	Proheat M80 auxiliary coolant heater
	SEATING
Driver's	USSC Q91
Passenger	American Seating Metropolitan & KC548
Seating Capacity	58
Wheelchair Stations	2 (seats fold up & lock)
	BRAKE SYSTEM
Mechanical Components	Internal expanded S-cam type
	Automatic slack adjusters
Service Brake	Full air operated
	Meritor Wabco ABS controlled
Parking Brake	Spring applied, air released
Emergency Brake	Spring brake applied
	Brake treadle modulated to control
	WINDOWS
General	Stormtite black anodized frame (top tip-in, bottom fixed)
	44% grey laminated glass
Emergency Escape	9 lower section windows
Driver's Window	2 piece full sliding interior & exterior handle



DOORS		
Entrance	Vapor slide glide - 32.32" between door handles	
Exit	Vapor slide glide - 42.07" between door handles	
	Driver controlled operation	
Controls	Front & rear door control push buttons	
	Door manual control valve	
COMPUTER CONTROL NETWORK		
Vansco Multiplex System VMM J1939 Network	Multiplex modules - VMM 2820 VMM 1210 Pocket Gateway Module	
SAF	ETY FEATURES	
Emergency Escape Exits	9 lower section windows	
	All roof hatches	
Fire Suppression System	Amerex	
Fire Extinguisher	5 lb. ABC rating	
Safety Triangles	On curbside luggage rack	
Entrance & Exit Doors	Emergency air release control valve	
Exit Doors	Accelerator & brake interlocks	
	Sensitive edges	

Vehicle Identification

The New Flyer vehicle identification plate is located on the street side of the interior destination sign panel. The plate lists the Gross Vehicle Weight Ratings (GVWR), the Vehicle Identification Number (VIN) and the Gross Axle Weight Ratings (GAWR) for all axles.



Warnings & Cautions

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



NARNING:



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



CAUTION:



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

Contacting New Flyer

If additional information is required, contact the Customer Service Department of:

New Flyer Industries Limited 25 DeBaets Street Winnipeg, Manitoba Canada **R2J 4G5**

> tel: (204) 934-4874 fax: (204) 224-0248



2. SAFETY INFORMATION

Safety Procedures

Do not drive the vehicle if:

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



Safety Equipment

The vehicle is equipped with a Fire Suppression System. The system protects the passengers and vehicle against fire. If a fire is detected in the engine compartment area a dry chemical extinguishing agent is discharged to suppress the fire. A push button switch to the left of the driver's seat allows a manual discharge of agent.

NOTE:

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

A hand-held fire extinguisher is located on the right-hand luggage rack. 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 are located on the curbside luggage rack. Position these triangles at the front and rear of the vehicle to warn other drivers during emergency situations.

™ NOTE:

Consult your transit authority for specific instances during which these triangles should be used.

Escape Exits

Side Windows

Nine windows in the lower section of the vehicle function as emergency exits and are identified by decals on the window panels.

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.

9



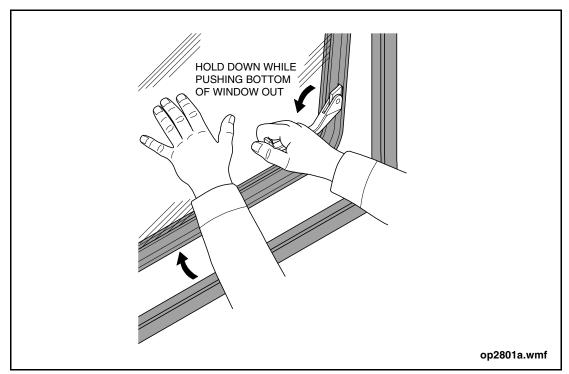


Figure 1: Window Emergency Handle

Roof Hatches

The three roof hatches are usable for ventilation and/or as emergency exits.

For Ventilation

Open the hatch to the desired position by holding the handles and exerting outward pressure toward the end being opened. To close the vent, grasp the handles and pull the hatch downward.

The most effective hatch positions for ventilation are:

- Front hatch forward end open.
- Center hatch forward end open.
- Rear hatch rear end open or fully open.

This allows fresh air to enter the front vehicle hatches while warmed, stale air escapes through the rear vehicle hatch.



For Emergency Exit

- 1. Push the hatch up to the full OPEN venting position.
- 2. Push back the release tab towards the hinge to unlock.
- 3. Push the handle outward so the hatch swings open on the fixed hinge.
- 4. To close, return the hatch to its full open position. Line up and push the separated hinge halves together.
- 5. Push up on the hatch to ensure proper engagement. Pull the hatch downwards to close.

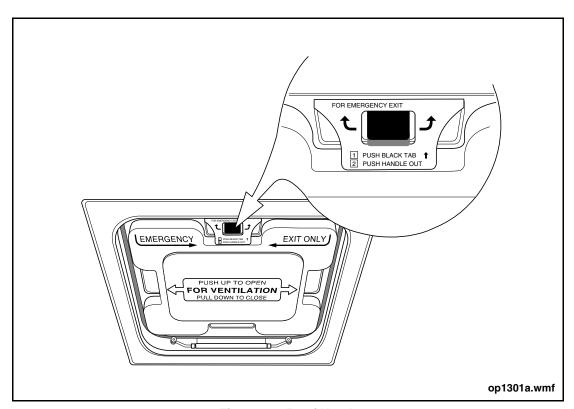


Figure 2: Roof Hatch



Entrance Door, Emergency Release Control Valve

The door emergency exit control valve is located behind a breakable window in the door mechanism access cover. In an emergency, break the window to access the control valve knob. Rotate the knob 90° and push the doors open. As the doors open they activate the header, stepwell and curb lights.

Exit Door, Emergency Release Control Valve

The exit door has an emergency exit control valve. It is located to the left of the exit door header, behind a breakable window. In an emergency, break the window to access the control valve knob. Rotate the control valve knob 90° and push the doors open. As the doors open they activate the header, stepwell and curb lights, the interlocks and the Rear Door Open indicator.

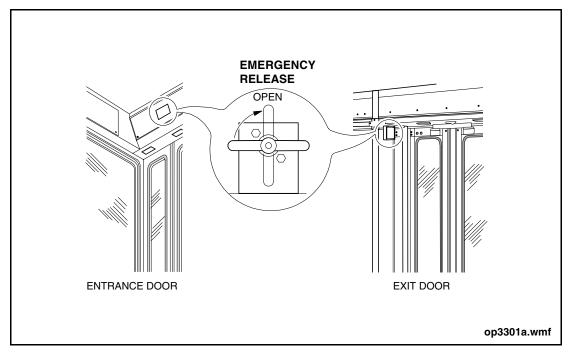


Figure 3: Passenger Door Emergency Release



Exit Door Sensitive Edges

Mounted to the leading edges of the exit door panels are rubber seals that are sensitive to pressure. If, while closing the doors, they strike an object or passenger, a signal from the sensitive edges sounds an alarm and prompts the doors to fully reopen. Once they fully open the doors will again close.

MOTE:

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

Interlock System

This system applies the brakes and disables the accelerator treadle when any of the following occur:

- Opening the exit door.
- Kneeling the vehicle.
- Operating the wheelchair ramp.
- Exceeding the articulating joint critical angle.

The Interlock System is intended to protect passengers from an inadvertent vehicle movement and to protect the articulating joint from component damage. Located behind the front destination sign access door are the Door Master and Joint Override toggle switches. Use these switches to disable the system for maintenance purposes or in an emergency.



3. TO ENTER THE VEHICLE

- 1. Locate the front door open switch compartment.
- 2. Open the access door and move the switch to open the door.

If the entrance door does not open, exhaust air from the entrance door cylinder as follows:

- 1. Slide the front portion of the driver's window back to gain access to the door manual control valve.
- 2. Reach over the side console to the valve handle and turn it to the OPEN position.
- 3. Open the door manually by pushing on the door panels outside edges.

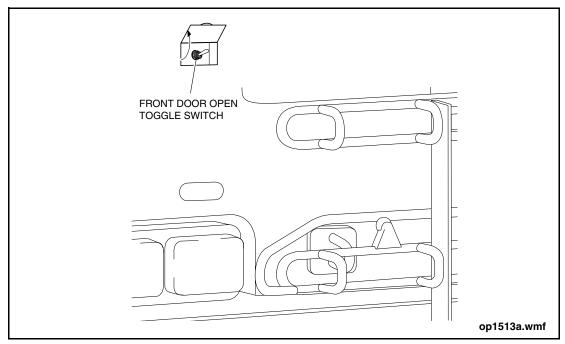


Figure 4: Entering the Vehicle



4. DRIVER'S CHECK LIST

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

Exterior

General

- Battery Disconnect switch is in the ON position.
- Engine Run switch in engine compartment is in the FRONT position.
- Check for any fluid puddles under the vehicle.
- Check for exterior panels with cracks, tears or other damages. No missing rivets.
- No obstructions to the exhaust pipe and air intake vent.
- No damaged or loose bumpers.
- Articulating joint bellows are not torn or cut.

Access Doors

- Are closed and securely latched (where applicable).
- Door panels are not bent, torn or otherwise damaged.
- No missing door bumpers.

Windows

- Closed and securely retained in their frames.
- Exterior seals are in place and not torn.
- Clean.
- Not broken or scratched.

Mirrors

- Not broken or scratched.
- Securely held in position.
- Clean.
- Clear of obstructions.



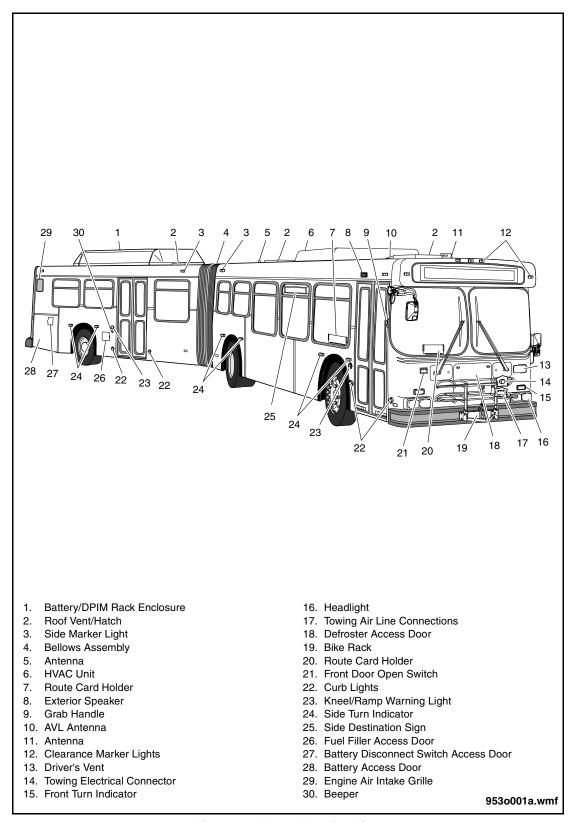


Figure 5: Front Exterior View



Lights

- Clean and clear of obstructions.
- Lens are intact.
- No missing lenses or lights.

Tires

- Tire air pressure matches the manufacturer's recommended range.
- No uneven or unusual tread wear.
- No tread separations indicated by bulges or large bubbles.
- No large cuts in the tire shoulder and tread area. No pieces of tread broken away from the tire casing.
- No side wall cracks, cuts or abrasions.

Wheels

- No missing or loose wheel nuts.
- No cracked or warped wheel rims.
- No existing corrosion.
- No broken or missing wheel nut studs.

Interior

General

- Farebox is secure and operates correctly.
- Interior panel condition.
- Front route sign operates and is secure.
- Roller blinds operation.
- Roof hatches open and close easily.
- Passenger signals condition and operation.
- Door control switches operate smoothly.
- Door Master switch is in the ON position.
- Driver's seat adjusters operate correctly and maintain positioning.
- Seat-belt components function properly.
- Steering wheel turns without restriction or hesitation (engine running).

17



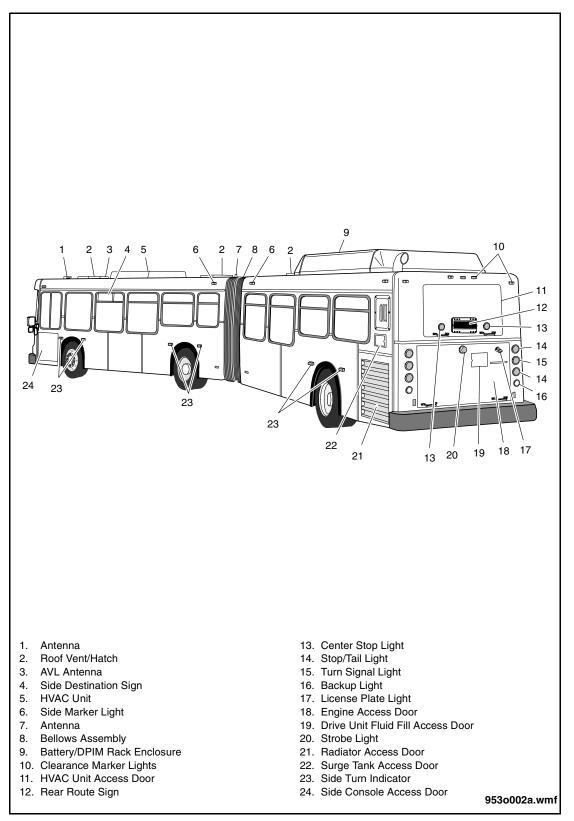


Figure 6: Rear Exterior View



- Tilt/Telescope lever functions properly.
- Wheelchair ramp alarm functions when stowing or deploying the wheelchair ramp.

Fire Suppression System

- The safety pin of the manual actuator is securely installed.
- The System OK indicator of the circuit monitor is illuminated.

Access Doors

- Closed and securely latched.
- Door panels are not bent, torn or otherwise damaged.

Seats

- Clean.
- Not torn or cut.
- No missing parts.
- Securely fastened to the floor and structure attaching points.

Floor

- Clean, no debris.
- Not loose or lifting.
- Not worn or damaged.
- Ramp fully stowed, no tripping hazards.

Windows

- Windows operate as designed.
- Driver's window slides without restriction.
- Seals are present and undamaged.

Mirrors

- Not broken or scratched.
- Securely fastened to mounting brackets.
- Clean and clear of obstructions.



Passenger Doors

- Clean and unobstructed glass.
- No bent or broken door panels.
- Door seals not torn or dislodged.

Modesty Panels/Barriers

- Clean.
- Secure in retainers.
- Not cracked or broken.
- No sharp edges.

Stanchions & Grab Rails

- No missing parts.
- Secure in retainers.
- Not cracked or broken.
- No sharp edges.
- No missing hardware.

Lights

- Lenses are not broken or missing.
- No missing lights.
- Clean.

Indicator Lights

NOTE:

From this point on, items on the driver's check list require activating the vehicle's electronic control system and starting the engine. Turning the Master Run switch on the side console to DAY-RUN or NIGHT-RUN activates the electronic control system after a six-second "wake-up" interval. Wait for the system to activate before starting the engine. For details on engine starting, refer to Section 8: Vehicle Operation.

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



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

Electrical Control Systems

- The Master Run switch controls the electrical circuits as listed in Section 6: Instrumentation & Controls, Side Console Switch Panel.
- Service compartment light switches activate service lights in the electronic equipment enclosure, the rear panel, the engine compartment and the engine compartment fuse box.
- Turn signals and hazard circuits function with the Master Run switch in any position.
- Horn sounds when 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 signal and chime circuits function.
- Accelerator treadle accelerates the engine.
- E^V Drive[™]Unit Selector switch functions.
- Back-up lights and the speedometer function.
- HVAC System functions when the engine is running.



5. 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.

Farebox Pedestal Mount

The farebox pedestal mount can be used as a step to enter the driver's 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

There are six mirrors located throughout the vehicle interior: an aisle mirror, an upper right mirror, a front stepwell mirror, an overhead convex mirror, a rear step area mirror and a bike rack mirror.

Aisle Mirror

This rectangular mirror located above the windshield is used for viewing the vehicle's interior.

Upper Right Mirror

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

Stepwell Mirror

The stepwell mirror is mounted on the ceiling above the entrance door and provides a view of the entrance area.

Overhead Convex Mirror

This mirror is located on the entrance door access panel. Adjust this mirror to provide a view of the entrance and the curb outside. This will provide the operator with a view to check for any obstructions when kneeling a vehicle or when closing the door.

Rear Step Area Mirror

Located at the exit door, the rear step area mirror provides a view of the step area.

Bike Rack Mirror

This mirror is located to the left of the aisle mirror. Adjust this mirror to provide a view of the bike rack.



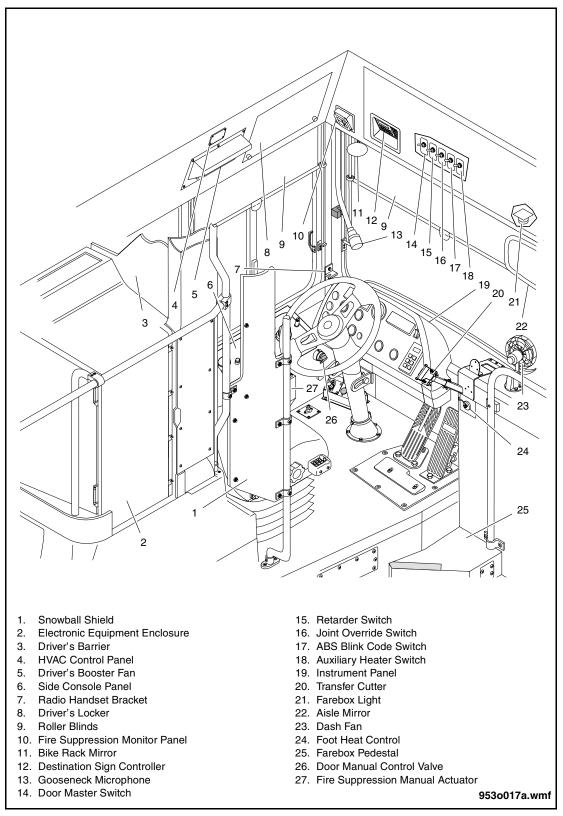


Figure 7: Driver's Area



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. To extend a blind, pull on its leading edge and to retract, pull on the release cord.

Electronic Equipment Enclosure

The electronic equipment enclosure, mounted on the streetside wheel housing, contains the vehicle's communications equipment. A lockable latch can prevent unauthorized access and keep the contents secure.

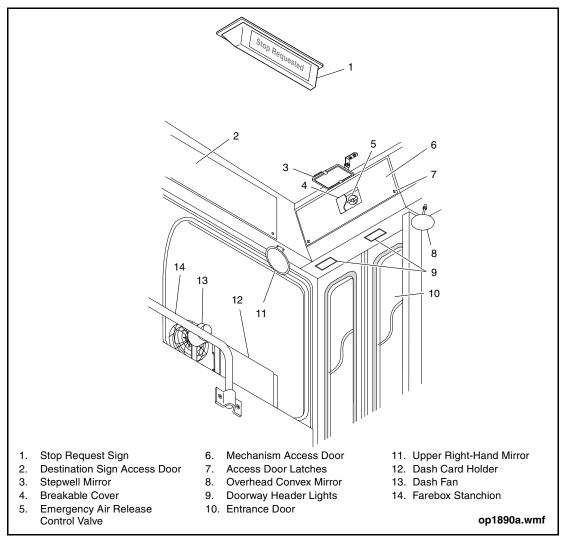


Figure 8: Front Entrance View



Driver's Locker

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

Fire Suppression System

The Fire Suppression System protects the passengers and vehicle against fire. A dry chemical extinguishing agent discharges through four fixed nozzles to suppress a fire. Driver's area components include the Manual Actuator switch and the Fire Suppression Control Panel. Refer to Section 7: Fire Suppression System for system description and operation.



Driver's Seat

The USSC Q91 driver's seat is an adjustable air suspension seat consisting of a steel frame base and back panel and molded foam cushions. The seat-belt retracts to holders beside the seat cushion.

Nine controls adjust the positioning of the seat, seat cushions, and shoulder belt loop guide to suit the needs of the individual. Make position adjustments to provide for the best driving visibility and control.

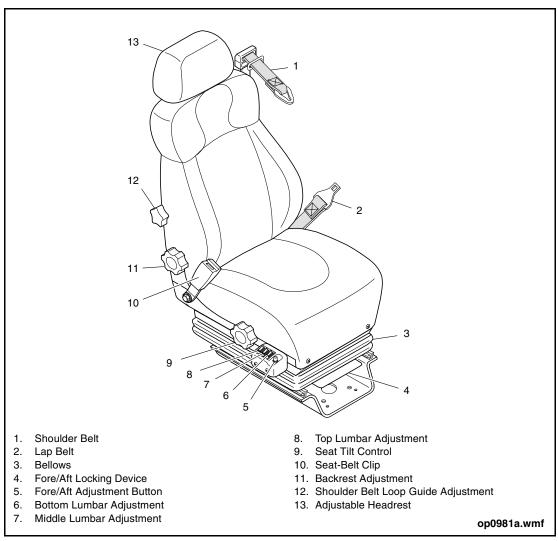


Figure 9: Driver's Seat

27



Lumbar Adjustment

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

Height Adjustment

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

Tilt Adjustment

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

Fore & Aft Track Adjustment

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

Back Recline Adjustment

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

Shoulder Belt Loop Guide

The upper adjustment knob on the right side of the backrest is used to adjust the belt loop guide. Turn the knob clockwise to raise the guide or counter-clockwise to lower it.



Suspension Lockout/Limiter Control

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

Steering Wheel & Horn

Steering Wheel



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.

A lever at the steering column to instrument panel attachment point allows additional tilt adjustment of the steering column. To adjust, operate the lever to loosen the pinch bolt and move the steering column to the desired position. Lock column in position with adjusting lever.

Horn

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

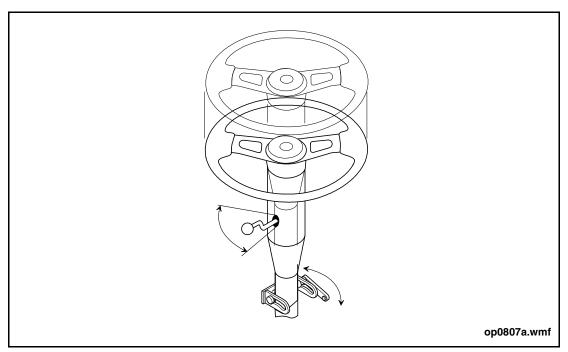


Figure 10: Steering Wheel Adjustment



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:

- A gooseneck microphone located on the left front window pillar.
- Eight interior speakers located above the side windows.
- An exterior speaker located above the entrance door.
- A driver's speaker located above the driver.
- A Speaker Select toggle switch on the side console.
- A foot-operated Emergency Alarm switch located above the left turn signal switch.

™ NOTE:

Consult your Transit Authority for operation of this system.

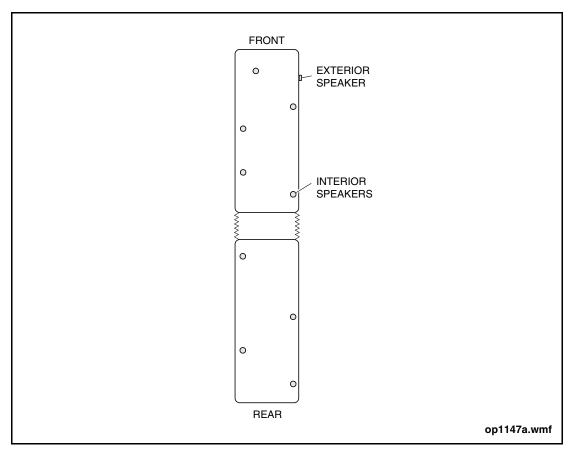


Figure 11: P.A. System Layout



Automatic Passenger Counting (APC) System (Units 2600 - 2631 only)

An Automatic Passenger Counting system is installed on this vehicle and includes the following components:

- A main processing unit installed in the electronic equipment enclosure.
- APC sensor and receiver modules installed at the entrance and exit doors.

™ NOTE:

Refer to your Vendor supplied manuals for system operation.

Destination/Route Signs

™ NOTE:

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

System Description

The vehicle's destination/route signs are controlled by an operator's display keyboard (ODK) located in the panel of the front destination sign access door. The ODK functions to control and verify the destination/route sign message display.

Destination sign message codes are entered into the system data processor using the keypad switches on the front panel of the ODK. The codes translate into message writing data pre-programmed into the system's memory. The message writing data then controls the signs to display the selected information.

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



Operating the ODK

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

ODK Keypad Switches

The ODK contains 28 keypad switches. Certain keypad switches, or groups, may not function if they are not needed for coded entry procedures. Switches that are not enabled either have no effect when pressed, or indicate that particular function is not available. Keypad switch functions are as follows:

- P/R —press to enable public relations message code entry.
- ROUTE —press to enable route number entry. Route number entry may be either coded or be the actual route number for display.
- DEST A, DEST B —press the appropriate key (A or B) to enable destination message code entry and/or message display change.
- 0-9 Group —key switches are for sequential entering of message codes. These keys function only after a destination (DEST A, DEST B) or enabled public relations
 - (P/R) switch is pressed.
- A-F Group —key switches are for sequential entering of message codes that contain letters and numbers. Normally these keys will only enable if they are part of an existing message code.
- ENTER —press to activate the selected message during code entry and during operation.
- MENU —press to access advanced programming options. Consult your transit authority before use.
- SELECT —press to select additional characters G-Z when entering message code(s).
- MESSAGE TEXT –key switch is not currently in use.

™ NOTE:

Code entry sequences must be followed to set-up destination sign messages. A "beep" sounds and a visual read-out appears on the ODK display when pressing any enabled keypad switch.



Code Entry

When powering-up the sign system it will display the messages entered previously. If continuing on the same route, re-entering new codes may not be required.

To enter a new set of message codes:

- 1. Consult the transit authority code list for the code that corresponds to your route.
- 2. Press the switch DEST A, DEST B, P/R, or ROUTE for the message code you are about to enter.
- 3. For each code press the corresponding switches in the 0 though 9 and/or A through F groupings one at a time and in proper sequence.

₩ NOTE:

If the message code contains letter(s) G-Z, press the SELECT key for access.

- 4. Press the ENTER key switch and allow the ODK to display the actual message.
- 5. Repeat steps 1 to 4 for each code required for the route.

To change from one preset message to another for a turn-around or while in route press the appropriate DEST A or DEST B switch.

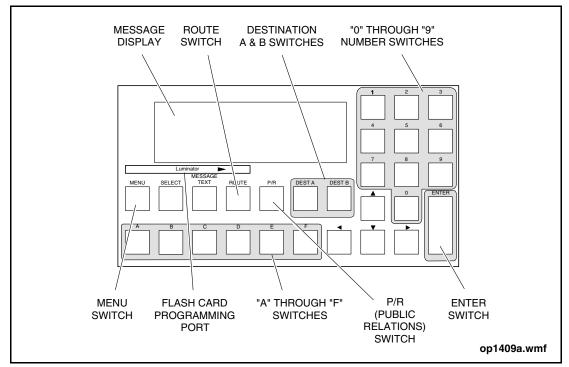


Figure 12: Operator's Display Keyboard (ODK)



6. INSTRUMENTATION & CONTROLS

Instrument Panel

Turn Indicators (Green)



WARNING:



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.

No Gen Indicator (Red)



P CAUTION:



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

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



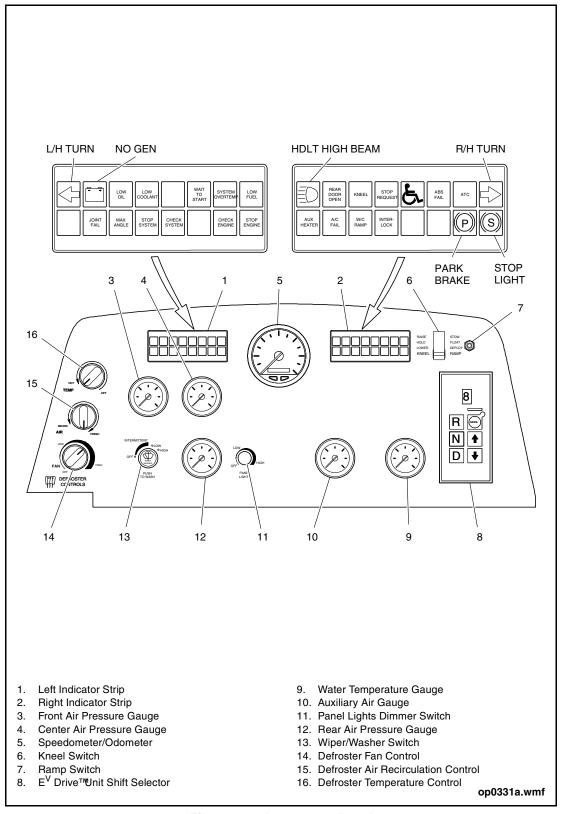


Figure 13: Instrument Panel



Low Oil Indicator (Red)



CAUTION:



If the low oil alarm continues and the indicator 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.

Low Coolant Indicator (Amber)

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

NOTE:

The surge tank of this vehicle is equipped with two coolant level snsors. If the coolant level drops sufficiently to activate the second, or lower, sensor, the Engine Protection System engages to initiate an automatic engine shutdown sequence.

Wait to Start Indicator (Amber)

The Wait to Start indicator illuminates before engine start-up with the Master Run switch in the DAY-RUN or NIGHT-RUN position. The indicator will remain illuminated for up to 30 seconds while the intake air heater system operates and the E^V Drive System[™] precharges.

MOTE:

The intake air heater system will only operate when the sum of the coolant and air inlet temperature is less than 77°F (25°C).



System Overtemp Indicator (Red)

The System Overtemp Indicator illuminates if the oil in the E^V Drive™ unit or Dual Power Inverter Module (DPIM) exceeds the maximum rated operating temperature. Immediately move the vehicle to a safe area and shut down the system.

Low Fuel Indicator (Amber)

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

Joint Fail Indicator (Red)

The Joint Fail indicator illuminates and flashes if the articulating joint electronic controller detects a system fault.

Max Angle Indicator (Red)

The Maximum Angle indicator illuminates if the articulation joint reaches its maximum left or right turning angle during forward or reverse operation. An alarm accompanies indicator activation.

™ NOTE:

In reverse the interlocks apply to stop the vehicle if motion continues beyond the maximum angle. Driving forward will release the interlocks.

Stop System Indicator (Red)

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



Check System Indicator (Amber)



CAUTION:



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

The Check System indicator illuminates if a non-critical fault is detected in the Allison electric drive E^P System[™].

Check Engine Indicator (Amber)



CAUTION:



Advise service personnel if the Check Engine indicator remains illuminated after engine start-up. 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 electronic control system which monitors engine sensor output. The electronic control system will illuminate the indicator if sensor output signals fall outside of a predetermined range.

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 electronic control system which monitors engine sensor output. If the electronic control 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.



High Beam Indicator (Blue)

The high beam indicator, symbolized by a 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.

Rear Door Open Indicator (Red)

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

Kneel Indicator (Amber)

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

Stop Request Indicator (Red)

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

W/C Stop Request Indicator (Amber)

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

ABS Fail Indicator (Amber)

The ABS Fail indicator illuminates if the ABS System requires service. The indicator illuminates momentarily at engine start-up as part of a system check. It also displays blink codes during system diagnostics. For more information refer to Section 8: Vehicle Operation.

ATC Indicator (Amber)

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



Aux Heater Indicator (Amber)

The Auxiliary Heater indicator illuminates when the engine coolant heater functions. It starts automatically in cold conditions to heat the engine coolant to operating temperature.

™ NOTE:

The engine coolant heater operates only when the Master Run switch is in either the DAY-RUN or NIGHT-RUN position.

A/C Fail Indicator (Red)

The A/C Fail indicator illuminates if the HVAC unit malfunctions.

W/C Ramp Indicator (Red)

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

Interlock Indicator (Red)

The Interlock indicator illuminates when the interlocks apply. This is a safety system that disengages the accelerator and applies the rear brakes during operation of the exit doors, the kneeling system or the wheelchair ramp.

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.

Stop Lights Indicator (Red)



WARNING:



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

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



Air Pressure Gauges

Individual analog air pressure gauges are used to monitor the vehicle's front, center, 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 70 psi (483 kPa). If air pressure exceeds the normal operating range, the LED indicator will flash. Normal operating pressure range is 105 to 125 psi (724 to 862 kPa).

Speedometer/Odometer

This gauge indicates the vehicle's forward speed and displays the distance travelled.

The digital display can be used as a standard odometer or as a trip odometer with trip-1 and trip-2 functions. It can also be set to display operating hours. The mode and set buttons below the display are used to select the desired function.

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 all gauges will sweep to zero points, the speedometer display panel will display all alphanumeric segments, and all indicators on the left-hand and right-hand indicator strip will illuminate momentarily.

Kneel Switch



CAUTION:



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

This three-position momentary switch is used to operate the vehicle's kneeling system. The kneeling system lowers the front and curbside rear of the vehicle approximately 3 to 4 inches by exhausting air from both front suspension and the curbside center and rear 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 lights. 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 lights. The Kneel indicator and the interlocks remain activated.

Ramp Switch



CAUTION:



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

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

DEPLOY

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

FLOAT

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



STOW

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

Refer to Section 9: Wheelchair System, for operating procedures.

NOTE:

Notify service personnel if the gauge consistently registers pressure levels outside of the normal range.

E^V Drive™Unit Shift Selector



CAUTION:



In temperatures below -20°F (-29°C) set the Idle Speed switch on the side console to FAST to warm the E^V Drive™unit. 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.

The E^V Drive™unit shift selector is located on the right hand side of the instrument panel. The shift selector module has five push-button switches and a red LED display. Three switches control the reverse [R], neutral [N] and drive [D] E^V Drive™unit selections. The other switches are MODE. UP arrow and DOWN arrow. Their functions are as follows:

- The UP and DOWN arrows initiate the E^V Drive[™]unit diagnostics system when pressed simultaneously. Press them once for diagnostics and twice for oil level readings.
- The MODE button controls Hush mode. Refer to Section 8: Vehicle Operation, for further information.

NOTE:

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



Water Temperature Gauge

The water temperature gauge indicates engine coolant temperature. The hot engine indicators in the gauge and on the instrument panel indicator will illuminate if the engine overheats. An alarm will sound and the engine protection system will initiate an automatic shutdown sequence

Auxiliary Air Gauge

The auxiliary air gauge indicates air pressure of the front accessories tank.

Panel Lights Dimmer Switch

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

Wiper/Washer Control

The wiper control switch operates the left-hand and right-hand wiper motors. The intermittent position allows turning of the control knob to vary the delay of the wiper sweep in times of light rain. 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 near the streetside headlight.



Driver's Climate Controls

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 infinitely variable fan speeds settings.

Defroster Air Recirculation Control

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

Defroster Temperature Control

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

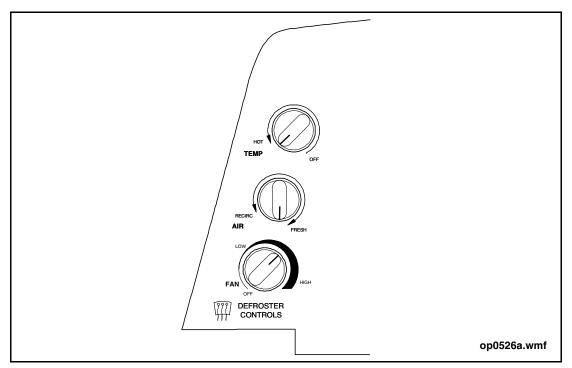


Figure 14: Driver's Area Climate Controls



Driver's Vent

Located at the left front of the vehicle, the vent allows outside air in during forward motion. It is a hand operated vent that is controlled by a lever located left of the steering column. To open the vent, push the knob down and forward. Pull the knob back to close the vent.

Driver's Foot Heat

This control lever is located on the front panel to the right of the instrument panel. It regulates air from the defroster to the foot control area. Moving the lever from its highest position down, gradually increases air flow.

™ NOTE:

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

Driver's Booster Fan

Located above the side window, the driver's booster fan draws air from the vehicle's streetside air duct. A knob on the assembly provides variable fan speed control and a movable flap directs the air flow.

Side Console Switch Panel

Fan Speed Switch

The Fan Speed toggle switch controls the main heater blower fan speed. Position switch to either HIGH or LOW for desired speed.

Dash Fan Switches

The RH and LH Dash Fan toggle switches control the dash fans. To run a fan, reposition a switch from OFF to either HIGH or LOW for a desired speed.



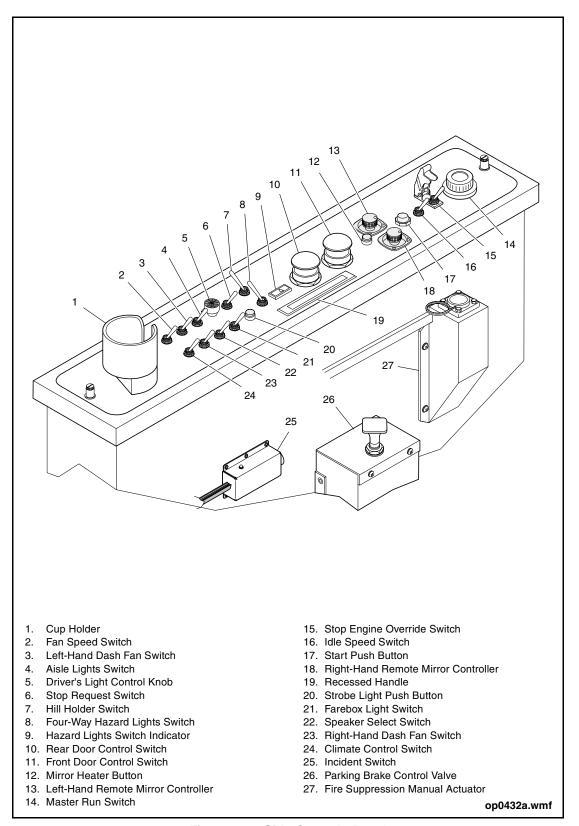


Figure 15: Side Console Panel



Aisle Lights Switch

The Aisle Lights toggle switch is a three-position switch controlling the lights above the passenger seats. While operating the vehicle, positioning this switch to NORMAL illuminates the left side aisle lights. Use the ON position to illuminate both right and left side lights. The OFF position deactivates the lights.

MOTE:

The front two light panels illuminate only when the entrance doors are open.

Driver's Light Control Knob

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

Stop Request Switch

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

Hill Holder Switch

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

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 turn signal lights flash.

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

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



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.

Rear Door Control

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

Front Door Control

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

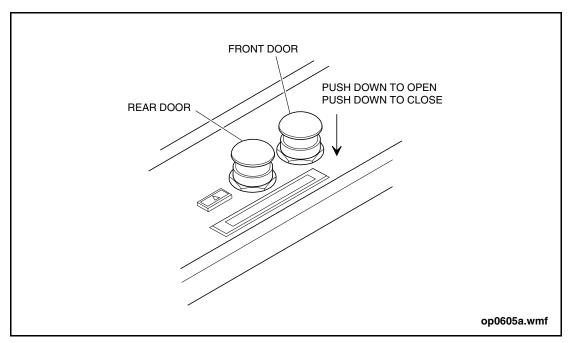


Figure 16: Door Controllers



Mirror Heater Button

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

Remote Mirror Controllers

The remote mirror controllers control the left and right remote mirror assemblies. Use the four directional tilt function of the dial to move the mirror into the desired position.

Master Run Switch

This side console switch is marked with the following four (4) operating positions:

- STOP-ENGINE
- DAY-RUN
- NIGHT-RUN
- NIGHT-PARK

The following table provides a list of circuits energized by the various Master Run switch positions:

MASTER RUN SWITCH OPERATION						
CIRCUIT OR SYSTEM	STOP- ENGINE	DAY-RUN	NIGHT- RUN	NIGHT- PARK		
Daytime running lights		х				
Headlights (high & low beam)			х			
Four-way hazard lights	х	х	х	х		
Turn lights	х	х	х	х		
Stop lights		х	х	х		
Clearance/marker lights			х	х		
Tail lights			х	х		
License plate light			х	х		
Back-up lights & alarm		х	х			
Aisle lights (normal)	х	х	х	х		



MASTER RUN SWITCH OPERATION						
CIRCUIT OR SYSTEM	STOP- ENGINE	DAY-RUN	NIGHT- RUN	NIGHT- PARK		
Aisle lights (on)	Х	х	Х	х		
Instrument panel illumination			Х	х		
Instrument panel dimmer			х	х		
Driver's lamp	х	х	Х	х		
Service compartment lights	х	х	Х	х		
Entrance & exit door lights with door open **		х	Х	х		
Instrument panel warning indicators		х	Х			
E ^V Drive™unit shift selector		х	х			
Brake & accelerator interlocks		х	х			
Destination sign operation		х	Х			
Door controls		х	Х	х		
Horns	х	х	Х	х		
Regenerative/auxiliary braking *		х	Х			
Driver's alarm		х	х			
Fire suppression & alarm	х	х	х	х		
Parking brake alarm	х			х		
Kneeling operation & alarm		х	Х			
Wheelchair ramp & alarm		х	Х	х		
Passenger signal system		х	Х			
HVAC system *		х	Х			
Auxiliary coolant heater		х	х			
Intermittent wiper control		х	х	х		
Remote mirrors		х	х	х		
Heated mirrors		х	Х	х		
* Fnaine must be running	I.	1		1		

^{*} Engine must be running

^{**} DAY-RUN also requires W/C ramp deployed



Stop Engine Override Switch



WARNING:



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.

The Stop Engine Override toggle switch is used to override the engine shutdown system in an emergency. When shutdwn override is activated the Check Engine indicator on the instrument panel will flash. Refer to Section 8: Vehicle Operation.

Idle Speed Switch



CAUTION:



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

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

™ NOTE:

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



Start Push Button



WARNING:



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

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

MOTE:

The electronic control system limits engine cranking time to 14 seconds; the starting circuit is then locked out for 60 seconds before engine cranking is allowed to resume.

Strobe Light Push Button

The strobe light push button is a momentary switch used to activate the strobe light on the rear of the vehicle.

™ NOTE:

Consult your transit authority for strobe light operating protocol.

Farebox Light Switch

The Farebox Light switch is a two-position switch controlling the light above the farebox. In the NORMAL position the light is only on when the entrance door is open. Use the ON position to illuminate the light when the door is closed.

Speaker Select Switch

The Speaker Select switch controls operation of the exterior speaker. In the INTERIOR position only the speakers inside the vehicle are activated. Use the BOTH position to activate the exterior speaker also.

Climate Control Switch

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



Incident Switch

The Incident switch, mounted on the vertical face of the side console, is provided for connection to the video surveillance system.

™ NOTE:

Consult your transit authority for video surveillance system operation.

Parking Brake Control Valve



WARNING:



If the air pressure is below 45 psi (310 kPa), the parking brake valve will return to the applied position.

This 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.

Foot Operated Controls

Brake Treadle

The brake treadle, located to the left of accelerator treadle, controls the application and release of the service brakes. Brake application is proportional to the amount of treadle movement applied. Pressing the brake treadle illuminates the stop lights and the stop light indicator.

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.



Headlight Dimmer Switch

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

Turn Signal Switches

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

Emergency Alarm Switch

An Emergency Alarm switch is mounted above the left turn signal. It is used as an interface to the vehicle's radio equipment. Consult your transit authority for information on the use of this switch.

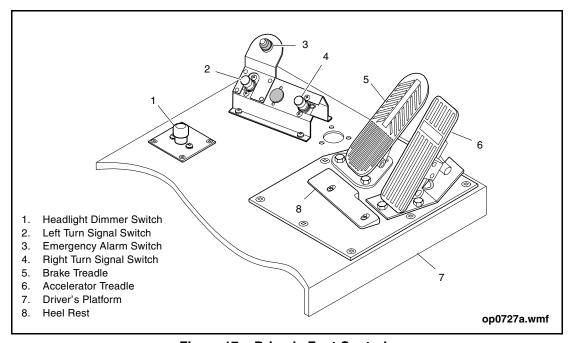


Figure 17: Driver's Foot Controls



Miscellaneous Controls

Retarder Switch

The Retarder toggle switch is located behind the destination sign access door, and controls power to the auxiliary braking system. Positioning the switch to ON enables the system. The OFF position disables the system 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.

ABS Switch

The ABS switch, located in the destination sign compartment, 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.

HVAC Control Panel

An HVAC unit control panel is installed above the driver's window. The unit is equipped with four keys and an LED display. The keys allow the operator to raise or lower the vehicle temperature set points for up to three separate climate-controlled zones on the vehicle. An RS-232 diagnostic access port allows service technicians to load software upgrades or perform vehicle diagnostics with the use of a personal computer.



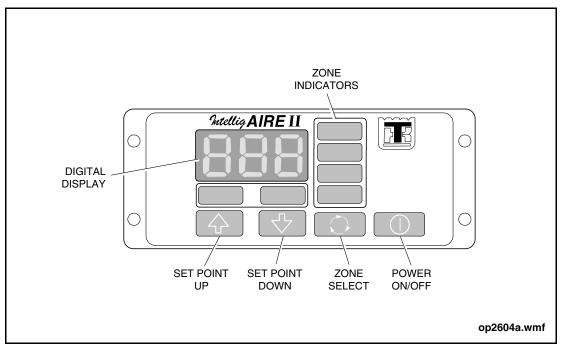


Figure 18: HVAC Control Panel

Door Master Switch



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

- Vehicle can be moved with exit door open (brake interlocks disabled).
- E^V Drive™nit can be shifted without foot on brake treadle.
- E^V Drive[™]thnit can be shifted and vehicle moved with wheelchair ramp deployed.
- Exit doors can be opened at any speed by using the emergency release control valve.

INSTRUMENTATION & CONTROLS

The Door Master toggle switch, located in the destination sign compartment, controls power to the brake interlocks and exit door. When the switch is in the ON position, the entrance and exit doors are fully functional. In this mode, opening the exit door, kneeling the vehicle or operating the wheelchair ramp engages the interlocks. Engaging the interlocks applies the rear brakes and deactivates the accelerator.

When the switch is In the OFF position, the brake interlocks are released (interlocks will not engage). The entrance door remains fully functional and the exit door does not function. A warning buzzer sounds and the Rear Door Open indicator illuminates on the instrument panel. In this mode, the exit door only opens if the emergency release control valve is activated.

The control valve is located behind the breakable window to the left of the exit door.

Door Manual Control Valve

This air control valve is located above the foot-operated controls and on the side of the side console panel. 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.

Auxiliary Heater Switch

The Auxiliary Heater switch controls operation of the auxiliary engine coolant heater. Positioning the switch to ENABLE allows the heater to function in response to heat requirements from either the Defroster Temperature Control switch or the Climate Control switch. Positioning the switch to DISABLE will inhibit operation of the auxiliary engine coolant heater.

Joint Override Switch

The Joint Override toggle switch is located behind the destination sign access door. It is a three position momentary switch that controls the articulated joint electrical system circuits. Pushing the switch up temporarily overrides the interlocks that apply at maximum angle. Pulling the switch down prompts the articulated joint electrical system to flash diagnostic codes on the instrument panel Joint Fail indicator.



7. FIRE SUPPRESSION SYSTEM

Description

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

Manual Actuator Switch

The manual actuator switch is located to the left of the driver's seat and is used to manually initiate the discharge of the extinguishing agent. Pulling the safety pin out and pressing down on the switch initiates the discharge. Check that the safety pin is installed before operating the vehicle.

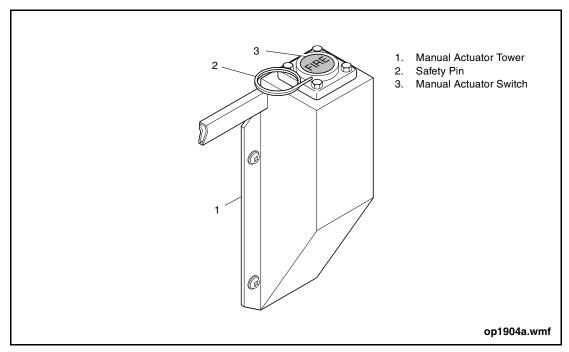


Figure 19: Manual Actuator



Fire Suppression Control Panel

The fire suppression control panel provides supervision of the system. In the event of a fire or component failure, the control panel provides warning via LED system status indicators and audible alarm. Check that the "System OK" green LED is illuminated before operating the vehicle.

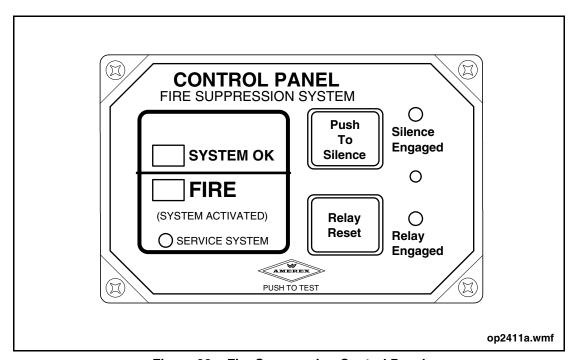


Figure 20: Fire Suppression Control Panel

Push To Test Button

A Push To Test Button is located at the bottom of the control panel. Holding this button down simulates a closed thermostat and a fired actuator. The red FIRE and SERVICE SYSTEM lights illuminate, the audible alarm sounds, the green SYSTEM OK LED turns off and the timed relay countdown begins. Holding the button down until the engine shutdown timer reaches zero will cause the engine to shut down. Release of the button will return the control panel to normal operation.

™ NOTE

Pushing the test button will not cause discharge of the fire extinguisher



Operation

If no fire is detected, all circuits are intact and a green LED indicating "System OK" is illuminated on the fire suppression control panel. The control panel located to the left of the destination sign compartment is a connection point for all fire suppression system electrical circuits and serves as a vital source of information. System status LED indicators and an audible alarm provide warning of fire or component failure.

If a fire is detected, heat will cause contacts in heat detectors to close and automatically actuate the fire suppression system. Manual system activation is possible by pulling the pin on the manual actuator and pushing the button down. This action electronically operates a solenoid on the extinguishing agent cylinder valve. The valve opens, allowing pressurized dry chemical to flow out lines leading to the discharge nozzles in the engine compartment. Upon system actuation the control panel green "System OK" LED extinguishes, a red "FIRE" LED illuminates and an audible alarm sounds. The audible alarm will continue to operate until the system is reset or the alarm silence button (PUSH TO SILENCE) is pushed. When pushed, as "Silence Engaged" LED is illuminated. The "FIRE" LED will remain illuminated.

™ NOTE:

The silence feature cannot be operated in advance of a fire or fault.

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

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

NOTE:

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

When the fire is extinguished and the heat detector contacts reopen, the green "System OK" LED will again illuminate. Both red and green LED's remain illuminated until the system is serviced.



System Fault Indicators

If a fault condition occurs, indicator lights on the fire suppression control panel will react in one of three ways:

- 1. Both the red "System Activated" and the green "System OK" LED's illuminate.
- 2. No lights appear on the panel.
- 3. The Service System indicator LED is lit.

These represent different conditions in the system that service personnel will recognize. Inform the transit authority if a fault condition occurs.



8. VEHICLE OPERATION

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 electronic control system by turning the Master Run switch to the DAY-RUN or NIGHT-RUN position.
- Adjust the driver's seat for individual comfort.
- · Adjust the tilt/telescopic steering column to suit.
- Adjust all mirrors for unobstructed views.
- Check that the Door Master switch is in the ON position.
- Check horn operation.

E^V Drive[™]Unit Operation



CAUTION:



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



CAUTION:



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



Selection of the automatic E^V DriveTMunit operating ranges is by the shift selector module on the instrument panel. There are three operating range selection buttons for reverse, neutral and drive [labeled R, N, D]. The red LED display will show reverse, neutral and drive selections as [R] and [N] and [D]. Operate the E^V DriveTMunit using the following procedure:

- 1. Before starting the engine
 - a. Check that the E^V Drive™unit 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.

MOTE:

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

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.



WARNING:



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

Hush Mode

Description

Hush mode is a unique operating mode which reduces engine exhaust gases and noise while the vehicle is running through a tunnel. During Hush mode operation, the vehicle relies mostly on electrical power from the energy storage system to propel the vehicle through the tunnel. At passenger stations, the engine automatically shuts down when the passenger doors are opened.



Operation

Pre-Charging

M NOTE:

This operation can be performed while the vehicle is traveling at speeds under 25 mph.

Hush mode is controlled by the mode button on the drive unit PBSS (push button shift selector). Press the Mode button on the shift selector once at a predetermined distance from the tunnel. The MODE light on the shift selector will begin to flash, indicating that the system is in precharge mode. The MODE light will be solidly illuminated when tunnel precharge is complete.

Dynamic Pre-Charging

№ NOTE:

Dynamic pre-charging must be used when the vehicle has to immediately make a return trip through the tunnel. This mode may also be used if the vehicle reaches the tunnel entrance without a fully charged energy storage system. Proceed as follows:

- 1. Drive the vehicle to a staging area before initiating dynamic pre-charging.
- 2. Select neutral [N] and press the MODE button once on the shift selector. The mode lamp will flash indicating the system is in pre-charge mode.
- 3. When the lamp is solidly illuminated, press the "D" button on the shift selector. An "F" will be displayed.
- 4. Drive to the tunnel entrance.

Entering Hush Mode

At the entrance to the tunnel press the MODE button on the shift selector a second time. An "H" will appear in the display window of the shift selector, indicating the E^P System is now in HUSH mode. This operation can be performed while the vehicle is traveling at speeds under 25 mph.

№ NOTE:

During HUSH mode operation, vehicle speed will be limited to 30 mph, and the engine will be operated at a minimum power level. When vehicle speed drops to 17 mph or less, depending on the power level of the energy storage system, the engine will be commanded to zero fuel.



Passenger Loading & Unloading

The engine will automatically shut off when the passenger doors are opened. An "H" will flash on the shift selector display. The system will automatically engage forward HUSH operation if the passenger doors are closed while the brake pedal is depressed.

If the passenger doors are closed without the service brakes being applied, the "H" will continue to flash on the shift selector, but Forward range will not engage. Apply the service brake and press the "D" button on the shift selector to engage Forward range if the passenger doors are already closed.

Exiting Hush Mode

The system will automatically exit HUSH mode operation and return to normal hybrid operation at a pre-determined distance from the point hush mode was selected. An "F" will display on the shift selector and the MODE Lamp on the shift selector will deactivate.

Pressing MODE on the shift selector at any time during HUSH mode operation will cause the vehicle to exit HUSH mode and return to normal operation.

The shift selector display changes from H (for HUSH) to F (for Forward) to tell the operator that the HUSH mode operation has been exited and that the normal operation is now active.

Auxiliary Braking System

Auxiliary braking is provided by the diesel engine system and the E^V Drive™ unit system. During vehicle deceleration the engine and drive units are being driven, through the driveline, by the weight of the vehicle. Under this condition the motor/generators in the drive unit create electrical energy and slow the vehicle by imposing a load on the driveline. This process is referred to as "regenerative braking".

When the energy storage units are charged to their capacity, regenerative braking ceases and the vehicle is slowed using the engine exhaust brake.

The auxiliary braking system can be disabled by using the Retarder switch located in the front destination sign compartment.

™ NOTE:

Consult your local transit authority for specific operating conditions under which the Retarder switch should be used to disable the auxiliary braking system.

67



Anti-Lock Braking System



WARNING:



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

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.

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

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

™ NOTE:

After ABS System service the ABS Fail indicator will remain illuminated at engine start-up. Driving the vehicle above 4 mph should extinguish the indicator. If the indicator remains illuminated, contact service personnel.

Automatic Traction Control

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

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



Starting the Engine

WARNING:



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

To operate the vehicle the Battery Disconnect switches must be in the ON position. Check the switches by opening the battery disconnect access door at the rear of the vehicle. These connect the engine starter and vehicle electrical circuits to the battery power.

B NOTE:

Refer to Section 4: Driver's Check List before operating the vehicle.

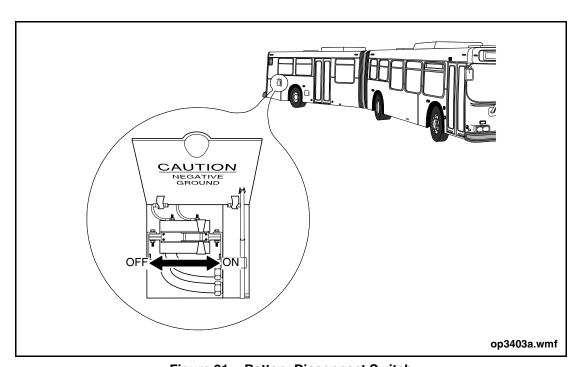


Figure 21: Battery Disconnect Switch



Master Run Switch

Turn the Master Run switch (on side console) to DAY-RUN or NIGHT-RUN position. This activates the vehicle's Electronic Control System, after a six-second interval. Illuminated indicator lights and sounding alarms signify an active System.

NOTE:

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

Start Push Button



WARNING:



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

With the vehicle's Electronic Control System active, push the Start push button until the engine starts.

When the engine starts, release the push button.

If the starter fails to operate, check the following:

- The Master Run switch is in the DAY-RUN or NIGHT-RUN position.
- The E^V Drive[™]Unit Selector switch indicator shows neutral [N].
- The engine compartment Engine Run switch is in the FRONT position.
- The parking brake is applied.

Operational Checks

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

- The air system pressure is between 105 and 125 psi (724 and 862 kPa) and the suspension is at full height. The Air System requires a working pressure of 105 to 120 psi (724 to 827 kPa).
- The no gen indicator is off when the engine is operating.
- E^V Drive™unit selector neutral [N] indicator remains illuminated.



- Parking brake and stop light indicator remain illuminated as long as the parking brake is applied.
- Door controls are operational.
- Position the Door Master switch to the OFF position and attempt to open the exit door by using the exit door control. The exit door should not be operational; the entrance door should remain operational.
- Return the Door Master switch to the ON position.
- Wiper and washer controls are operational.
- Defroster/heater controls (on instrument panel) 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 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.

™ NOTE:

Reapply parking brake.

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, located on the face of the air pressure gauge, 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 105 psi (724 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 red display shows [N] to indicate that the E^V DriveTMunit 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 stay on until the engine starts, DO NOT OPERATE THE VEHICLE.

Operator Display Keyboard (ODK) Messages

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

Rear Door Open Indicator

Activate the rear door control to check that the Rear Door Open indicator illuminates when the doors open.

™ NOTE:

Exit doors will open and the interlocks will be engaged.

Press on the control again to close the exit doors and extinguish the Rear Door Open indicator. Check that the exit doors are closed. If the exit doors are not closed or the Rear Door Open indicator is still illuminated, DO NOT OPERATE THE VEHICLE.



Day-Time Operation

When the engine is operating, check the following:

- The air system pressure is between 105 and 125 psi (724 and 862 kPa) and the suspension is at full height. The air system requires a working pressure of 105 to 120 psi (724 to 827 kPa).
- The no gen indicator is off when the engine is operating.
- E^V Drive™unit shift selector neutral [N] indicator remains illuminated.
- Parking brake and stop light indicator remain illuminated as long as the parking brake is applied.
- Daytime running lights operation.
- Door controller operation.
- The Door Master switch, when placed in the OFF position, disables the exit door and inhibits the brake interlocks.
- Aisle lights operation.
- Return the Door Master switch to the ON position.
- Wiper and washer controls operation.
- Defroster/heater control (on dash) operation.
- Destination and route sign 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.



Pre-Trip Brake Test



WARNING:



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

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

- 1. Apply the parking brake.
- 2. Start the engine, set the Idle Speed switch to FAST and check the following:
 - a. The low pressure warning devices switch off as the air pressure builds.
 - b. If the air pressure gauges were reading below 90 psi (620 kPa), the readings increase back to 90 psi (620 kPa) in less than three minutes.
 - c. The readings of the three air pressure gauges level off at 120 to 125 psi (827 to 862 kPa).
- 3. Release the parking brake.
 - a. Make multiple light brake treadle applications and check the following:
 - The air pressure gauge readings stabilize at 105 psi (724 kPa) as the air compressor begins its pumping cycle.
 - ii. After continued multiple light brake treadle applications the low pressure warning devices activate as the air pressure gauge reading falls to 65 psi (448 kPa).
 - b. Release the brake treadle and reapply the parking brake.
- 4. Allow the air system to fully recharge.
- 5. Stop the engine and proceed as follows.
 - a. Release the parking brake.
 - b. Apply the brake treadle fully, hold and check the following:
 - i. Upon treadle application the air pressure gauge reading does not drop more than 18 psi (124 kPa).

™ NOTE:

Tap the gauges to be sure their needles are not stuck.

ii. The air pressure on each of the three gauges does not drop more than 3 psi (20 kPa) per minute.



- iii. There are no audible air leaks.
- c. Release the brake treadle and apply the parking brake.
- 6. Restart the engine.
 - a. Set the Fast Idle switch to FAST to recharge the air system.
 - b. When the reading levels off at 120 to 125 psi (827 to 862 kPa), switch off the fast idle.
 - c. Release the parking brake.
- 7. Move the vehicle slowly and test brake response.

Moving the Vehicle

- 1. Fasten driver's seat-belt (as required by law).
- 2. Close the doors by pressing on the door controller switch. 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 switch into the desired gear.

MOTE:

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

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



Parking the Vehicle



WARNING:



The parking brake must be applied when parking the vehicle. When parking downhill, be sure the front wheels are turned into the curb; when parking uphill, be sure the front wheels are turned away from the curb.

- 1. Bring the vehicle to a complete stop using the brake treadle. The stop lights indicator illuminates. Shift the E^V Drive™unit selector into neutral [N].
- 2. Apply the parking brake and release the brake treadle. The parking brake indicator illuminates.
- 3. Turn the Master Run switch to the STOP-ENGINE position.
- 4. Operate the front door control switch to open the entrance door.
- 5. Exit the vehicle.
- 6. Open the front door open switch access door, on the front exterior of the vehicle and activate the switch to close the door.

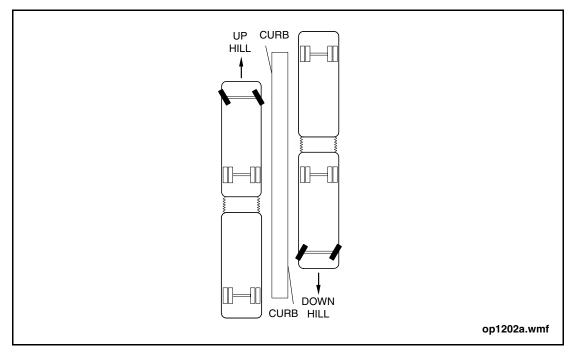


Figure 22: Parking on an Incline



Operating the Vehicle in Reverse



CAUTION:



Continuing in reverse after disengaging the interlocks, risks damage to the articulating joint.

Reverse operation of the vehicle requires paying special attention to the articulating joint angle. Just as a trailer can reach a "jackknife" position the articulating joint can reach a potentially damaging maximum angle position. To reduce this risk vehicle safety systems limit reverse speed to 3 mph and an alarm warns of articulating joint maximum angle.

Three types of alarms sound as the articulating joint moves closer to its maximum angle. An interrupted alarm sounds as the angle is near the maximum. The interrupted alarm frequency increases upon reaching the maximum angle. If the stops of the articulating joint contact each other, the alarm sound becomes constant.

The interlocks apply upon reaching the articulating joint maximum angle to stop further reverse movement. To release the interlocks and allow movement for correction, use the Joint Override toggle switch behind the destination sign access door. Switch activates provides 20 seconds to correct the maximum angle condition before reapplying the interlocks.

Jump Start Connection

Behind the engine access door is a jump start connector to supply power to the batteries when normal engine starting is not possible. It uses a quick connect assembly to ensure a safe and correct electrical connection to the battery poles.

B NOTE:

Advise service personnel if starting difficulties occur.



Engine Protection System



CAUTION: /!



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

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

B NOTE:

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

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.

Kneeling Procedure

1. Bring the vehicle to a complete stop, put shift selector in neutral, apply the parking brake and press the front door control switch to open the entrance door. Kneeling will not be enabled if the door is closed.

B NOTE:

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



WARNING: /



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



- 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 Exterior Signal

Amber lamps located beside the entrance and rear exit doors indicate when the kneeling system is in operation. A warning beeper also sounds.

Passenger Signal System

The passenger signal system is activated by stop request cord, exit stanchion push button and wheelchair area touch tape. Activating the signal system causes the following to occur:

- Stop request sign illuminates.
- Stop Request indicator illuminates.
- Stop request sign and Stop Request indicator remain illuminated until the system is reset.
- A chime sounds once when the stop request cord or exit stanchion push button is used. A different tone sounds if the wheelchair touch tape is used.

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

Opening the entrance or exit doors using the front or rear door control switch.

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

NOTE:

Placing the Stop Request switch (on the side console) to the OFF position will disable the passenger signal system.

Stop Request Cord

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



Stop Request Button

A stop request button is located on the exit door stanchion. Pressing the button activates the system.

Wheelchair Stop Request Touch Tape

Stop request touch tape is located under each longitudinal hinged seat in the wheelchair stations. Pushing the tape 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 exterior door lights. Moving the door controller to open a door activates these lights. The lights extinguish as the doors close.

MOTE:

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



9. WHEELCHAIR SYSTEM

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

Wheelchair Ramp

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



WARNING:



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.

Before this system can be energized, the following conditions must exist:

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



CAUTION:



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



The switch to control this feature is located on the instrument panel. The three positions of the switch enable the wheelchair ramp mechanism to perform the following operations:

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.

MOTE:

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

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 E^V Drive™unit shift selector in neutral [N].
- 4. Kneel vehicle if required.

™ NOTE:

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

5. Press the door control switch to open the entrance door.



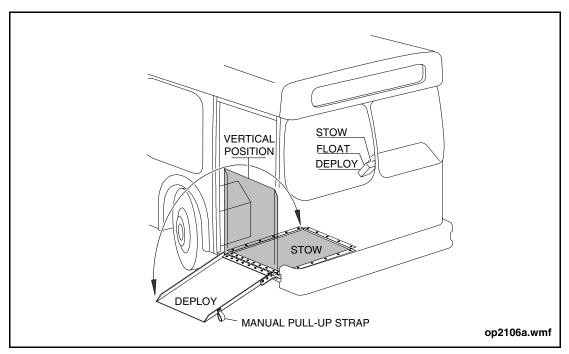


Figure 23: Wheelchair Ramp Operation



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 will continue 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 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.

Operating Procedures

- 1. Operate the release lever and flip up the seat cushions to the locked position.
- 2. Back the wheelchair against the transverse flip up seat so that the occupant is facing forward.
- 3. Extend the rear wheelchair restraint belts (red) and attach to solid frame members on each side of the wheelchair.
- 4. Set the restraint belt locking mechanism by moving the wheelchair rearward against the flip up seat, then move forward until belts lock. Set the wheelchair brake.
- 5. Attach the window-side front wheelchair restraint belt as follows:
 - a. Press and hold the release button on the retractor while extending the belt.
 - b. Attach the belt to a solid frame member near the front of the wheelchair. Ensure the belt clip and buckle are securely engaged.
 - c. Press the release button again to take up slack. Turn the knob on the belt retractor to tighten belt.
- 6. Attach the aisle-side front wheelchair restraint belt as follows:
 - a. Remove the restraint belt from storage and attach the stud end of the belt into floor anchor receptacle.
 - b. Press and hold the release button on the retractor while extending the belt.



- c. Attach the belt to a solid frame member near the front of the wheelchair. Ensure that the belt clip and buckle are securely engaged
- d. Press the release button again to take up slack. Turn the knob on the belt retractor to tighten belt.
- 7. Secure the wheelchair occupant as follows:
 - a. Extend both ends of the black lap belt and connect together at the occupant's hip area on the aisle side.
 - b. Extend the window-side shoulder belt (black) and connect the belt buckle to the available belt clip on the lap belt (black). Ensure that the belt clip and buckle are securely engaged.
 - c. Adjust the height of the shoulder belt, if necessary, by pressing the release lever on the shoulder belt retractor and extending the dropdown belt to the desired postion.



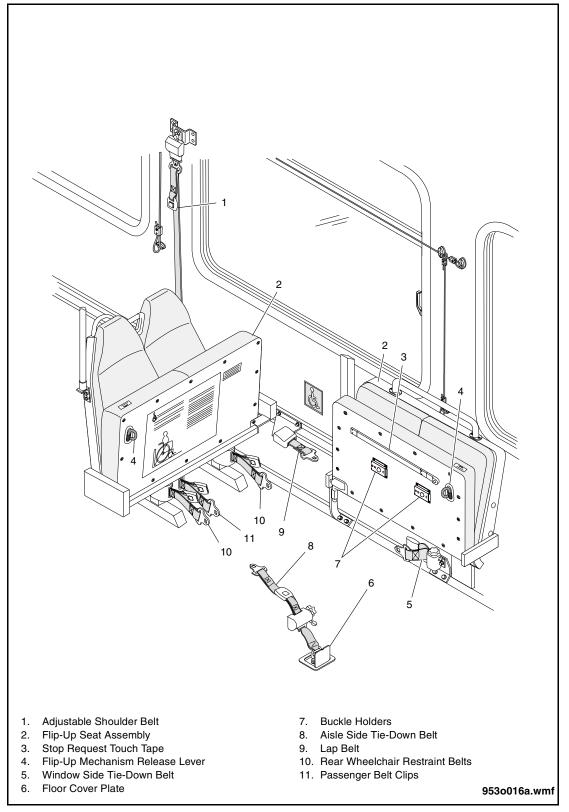


Figure 24: Wheelchair Restraint System



10.BIKE-RACK SYSTEM



WARNING:



Loading or unloading bike from the streetside endangers the passenger. LOAD OR UNLOAD THE BIKE FROM THE CURB-SIDE 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

- 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.



11.NOTES





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