

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:

SR826

Vehicle Identification Number 5FYH2UU1X2U024129

Unit Number 2599





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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:

Effective with this publication, 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.



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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.

Cummins ISL Engine Operation & Maintenance Manual 3666399-00

™ NOTE:

For information concerning the E^V Drive™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

DE60 Foot Low Floor Transit Vehicle

ENGINE & ELIE		
ENGINE & FUEL		
Engine		
Horsepower		
FuelUltra low sulfur diesel		
Fuel Capacity (usable)		
DRIVE UNIT		
Drive Unit		
Maximum output speed 3300 RPM		
Maximum output torque during propulsion 4000 ft-lb.		
DIMENSIONS		
Length (over bumpers)60.7 ft. (18.5 m)		
Width8.5 ft. (2.57 m)		
Height (top of battery enclosure)10.9 ft. (3.3 m)		
Wheelbase (front)19.0 ft. (5.8 m)		
Wheelbase (rear)25.5 ft. (7.8 m)		
Turning Radius42.5 ft. (12.9 m)		
Pivot Angle50°		
Vehicle Weight (approx.)		
AXLES & SUSPENSION		
Front Axle		
Front Load-Carrying Capacity14,629 lbs. (6,622 kg)		
Center Axle		
Center Load-Carrying Capacity26,000 lbs. (11,793 kg)		
Rear Axle		
Rear Load-Carrying Capacity26,000 lbs. (11,793 kg)		
Suspension Air springs & shock absorbers		
ARTICULATED JOINT		
Hydraulically Controlled Mechanism		



DE60 Foot Low Floor Transit Vehicle

DESTINATION	N & ROUTE SIGNS		
Front Destination	TwinVision electronic		
Side Destination			
Front Route			
Streetside Route	TwinVision electronic		
Rear Route			
LIGHTING			
Interior	Transmatic fluorescent 24 volt		
HVAC SYSTEM			
HVAC Unit	Thermo King R-5 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		
SEATING			
Driver's	<i>USSC</i> Q91		
	USSC Q91American Seating 6468		
Passenger (turntable area)			
Passenger (turntable area)	American Seating 6468		
Passenger (turntable area) Seating Capacity	American Seating 6468 American Seating KC548		
Passenger (turntable area) Seating Capacity Wheelchair Stations	American Seating 6468 American Seating KC548 58		
Passenger (turntable area) Seating Capacity Wheelchair Stations BRAK			
Passenger (turntable area) Seating Capacity Wheelchair Stations BRAK Mechanical Components			
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Passenger (turntable area) Seating Capacity Wheelchair Stations BRAK Mechanical Components Service Brake	American Seating 6468 American Seating KC548 58 2 (seats fold up & lock) E SYSTEM Internal expanded S-cam type Automatic slack adjusters		
Passenger (turntable area) Seating Capacity Wheelchair Stations BRAK Mechanical Components Service Brake	American Seating 6468 American Seating KC548 58 2 (seats fold up & lock) E SYSTEM Internal expanded S-cam type Automatic slack adjusters Full air operated		
Passenger (turntable area) Seating Capacity Wheelchair Stations BRAK Mechanical Components Service Brake Parking Brake	American Seating 6468 American Seating KC548 58 2 (seats fold up & lock) CE SYSTEM Internal expanded S-cam type Automatic slack adjusters Full air operated ATC/ABS controlled		
Passenger (turntable area) Seating Capacity Wheelchair Stations BRAK Mechanical Components Service Brake Parking Brake Emergency Brake	American Seating 6468 American Seating KC548 58 2 (seats fold up & lock) CE SYSTEM Internal expanded S-cam type Automatic slack adjusters Full air operated ATC/ABS controlled Spring applied, air released		



DE60 Foot Low Floor Transit Vehicle

WINDOWS		
General	Black anodized aluminum frame	
	(top single tip-in, bottom fixed)	
	44% grey laminated glass	
Emergency Escape	8 lower section windows	
Driver's Window	2 piece sliding interior & exterior handle	
DOORS		
Entrance	Vapor slide glide - 31.57" between handles	
Exit	Vapor slide glide - 42.07" between handles	
	Driver controlled operation	
Controls	5 position opening/closing control	
	Door manual control valve	
SAFETY FEATURES		
Emergency Escape Exits	8 lower section windows	
	All roof hatches	
Fire Suppression System	Amerex	
Fire Extinguisher	5 lb. ABC rating	
Entrance & Exit Doors	Emergency air release control valve	
Exit Door	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.



WARNING:



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
711 Kernaghan Avenue
Winnipeg, Manitoba
Canada
R2C 3T4

tel: (204) 224-1251 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

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.



Escape Exits

Side Windows

Eight 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.

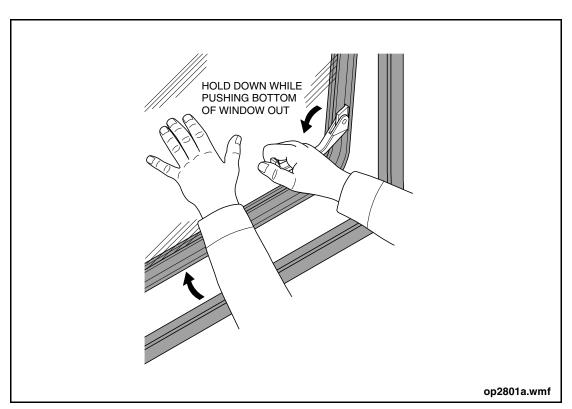


Figure 1: Window Emergency Handle



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.

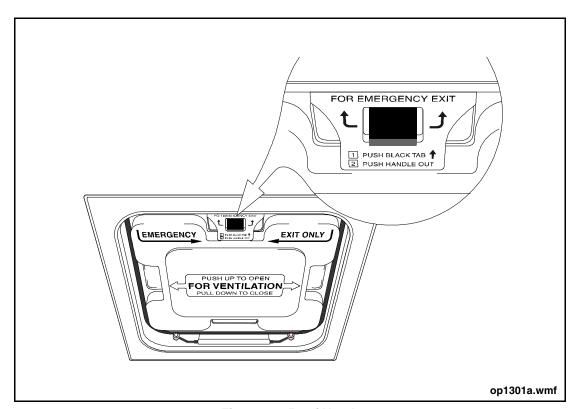


Figure 2: Roof Hatch



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.

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.

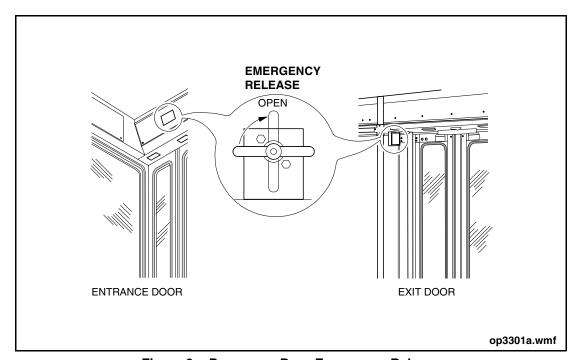


Figure 3: Passenger Door Emergency Release



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.

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.

™ NOTE:

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 toggle switches. Use these switches to disable the system for maintenance purposes or in an emergency.



3. TO ENTER THE VEHICLE

- 1. Slide the front portion of the driver's window back to gain access to the door controller handle on the side console.
- 2. Turn the door controller handle to position #2, #3 or #5 to open the entrance door.
- 3. If the entrance door does not open, exhaust air by turning the door manual control valve on the side console handle to the OFF position. Open the door manually by pulling out the door halves at the seal.

™ NOTE:

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

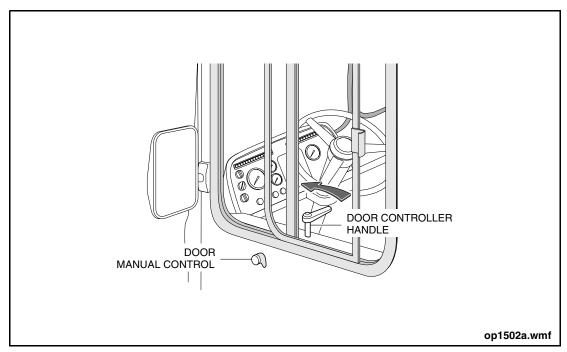


Figure 4: Entering the Vehicle



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.



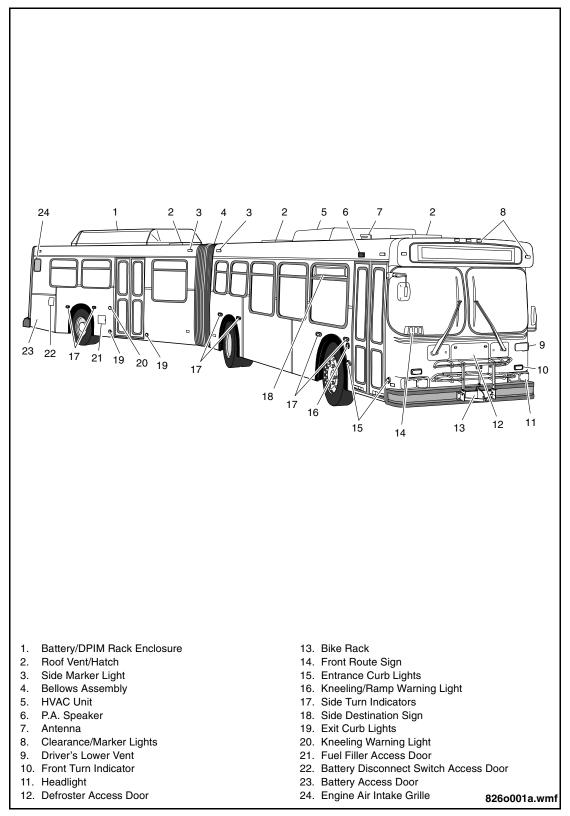


Figure 5: Front Exterior View



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 controller moves freely through all 5 positions.
- 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).

15



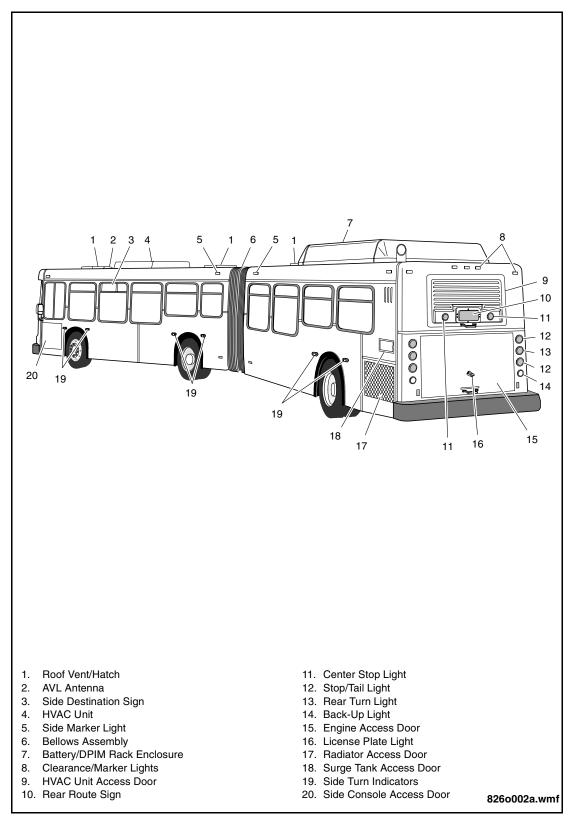


Figure 6: Rear Exterior View



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

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.
- Windows unlatch and slide without restriction.
- Seals are present and not damaged.

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 7: 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 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.



Air Control Systems

- Normal vehicle operation pressure ranges from 105 to 125 psi (724 to 862 kPa).
- Low Air indicator illuminates and an alarm sounds if the air system pressure drops below 65 psi (448 kPa).
- Entrance and exit doors open and close smoothly.
- Washers spray washer fluid onto windshield.
- Wipers operate (on wet windshield) without streaks, scraping or noisy operation.
- Brake treadle stops the vehicle (when vehicle is moving).
- Parking brake valve (when applied) holds the vehicle stationary when level or on a 20% maximum incline grade when on dry concrete.
- Door manual control valve in the side console shuts off the air pressure supply to the entrance door mechanism. When in the OFF position, the doors can be pushed open.
- Splash guards clear the ground (vehicle on level surface) with the air system pressure at or above 105 psi (724 kPa).
- Compressor cuts in when the air system pressure drops to approximately 105 psi (724 kPa) and shuts off at approximately 120 to 125 psi (827 to 862 kPa).



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.



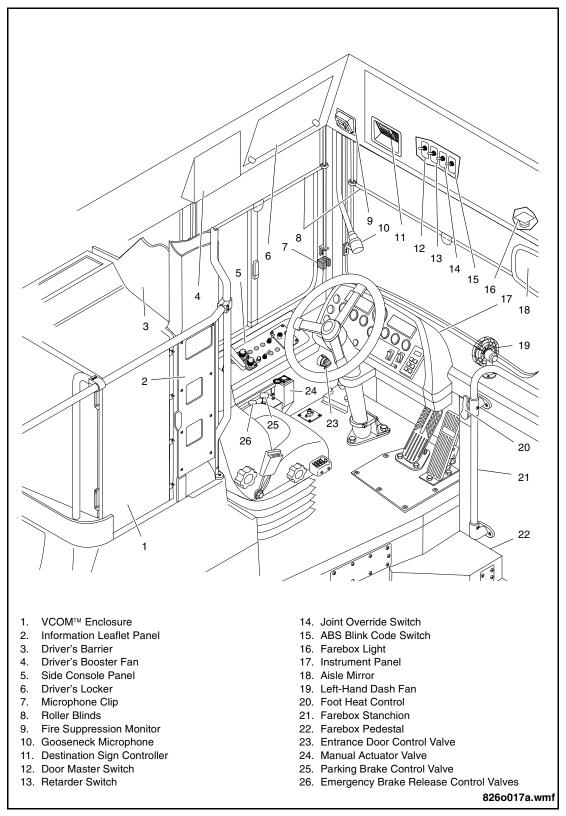


Figure 7: Driver's Area



Mirrors

There are four mirrors located throughout the vehicle interior: an aisle mirror, an upper right mirror, an overhead convex mirror and a rear step area 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 either of the two rear step area mirrors.

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.

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.



VCOM™ Enclosure

The VCOM™ enclosure is mounted on the streetside wheelhousing and consists of a rack structure with latching door, information leaflet panel, and driver's barrier. The enclosure contains the vehicle's communication equipment and provides a diagnostic interface with the vehicle's electronic network.

Driver's Locker

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

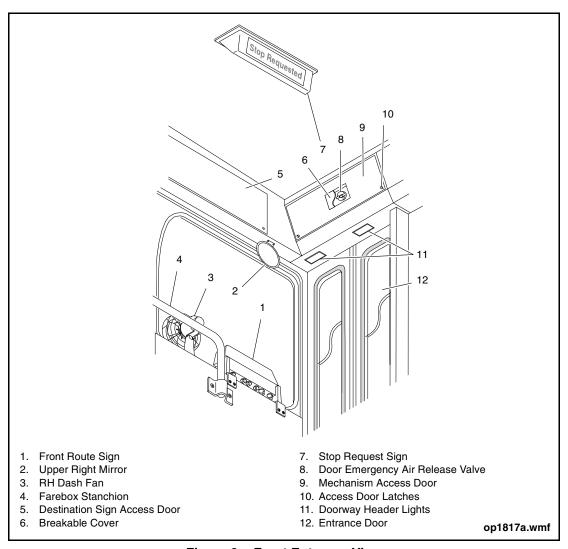


Figure 8: Front Entrance View



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:

Manual Actuator Valve

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

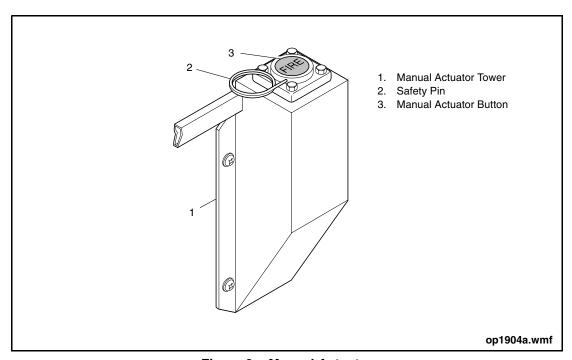


Figure 9: Manual Actuator



Fire Suppression System Circuit Monitor

The Fire Suppression System Circuit Monitor provides supervision of the system. In the event of a fire or component failure, the circuit monitor provides warning via LED system status indicators and audible alarm. Check that the "System OK" green LED is illuminated before operating the vehicle.

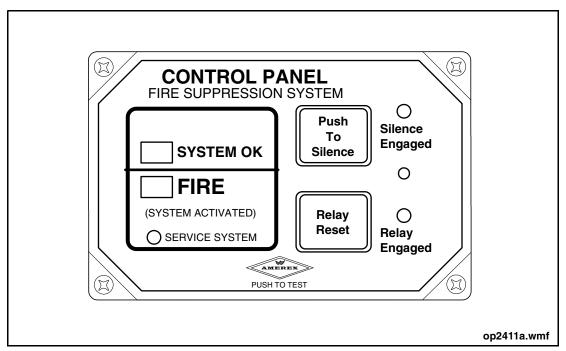


Figure 10: Fire Suppression Control Panel



Driver's Seat

The USSC Q91 driver's seat is a fully 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.

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

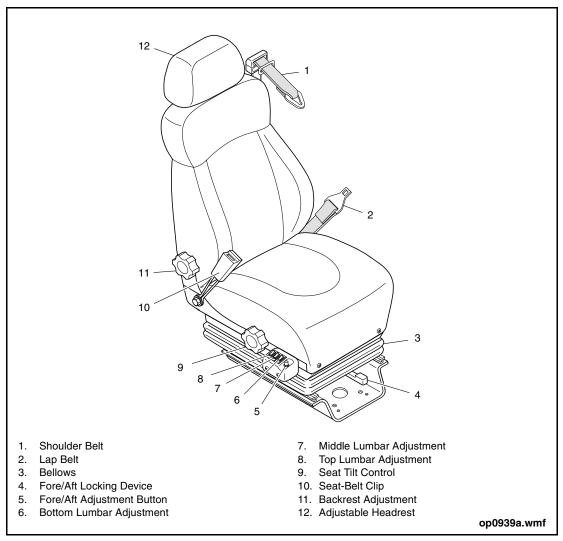


Figure 11: Driver's Seat



Lumbar Adjustment

Three rocker switches on the right side of the seat adjust the bottom lumbar, middle lumbar and top 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 knob on the side of the seat. Turn the knob clockwise to tilt forward and counter-clockwise to tilt rearward.

Fore & Aft Track Adjustment

The fore and aft track adjustment has nine position settings. Push the button located in the right front corner of the seat to unlock and slide the seat to the desired position. Release the button and move slightly fore or aft to set lock.

Back Recline Adjustment

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

Suspension Lockout/Limiter Control

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

Horn

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

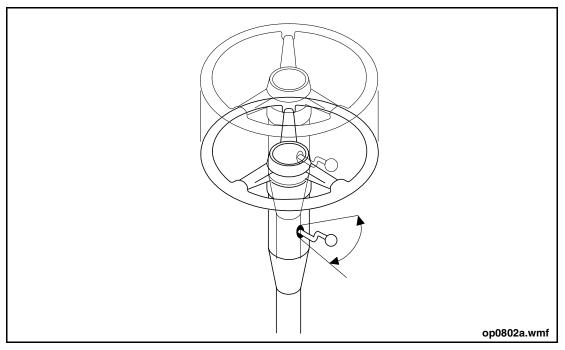


Figure 12: Steering Wheel Adjustment



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.

To use the system first position the Speaker Select toggle switch on the side console to operate the desired speakers. Then speak into the gooseneck microphone.

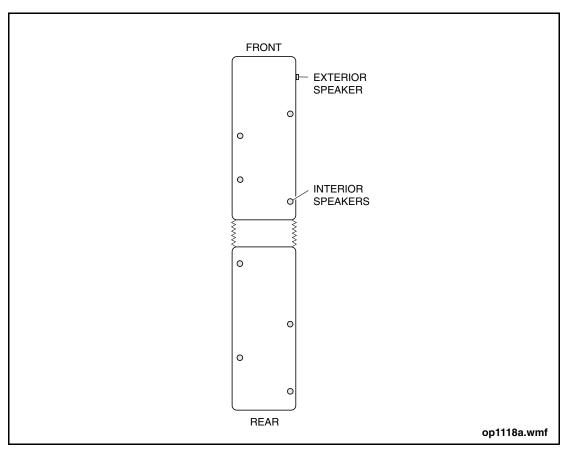


Figure 13: P.A. System Layout



Destination/Route Signs

MOTE:

The following information provides basic introductory information on the destination sign operation. Your transit authority management establishes policies about system operation and should be consulted before its use. Manuals are available for the TwinVision Destination Sign System which provide more detailed operating information. Discuss any further information needs with your Supervisory/Management group.

Operator Control Unit

The vehicle's destination/route signs are controlled by an operator control unit located above the instrument panel. The control unit 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 control unit. 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 control unit to display when powering-up the system. Turning the Master Run switch from STOP-ENGINE to DAY-RUN or NIGHT-RUN will power-up the system. Powering-down occurs when the Master Run switch is turned to STOP-ENGINE.

Operating the Sign System

Basic operation of the Sign System involves presetting transit authority message codes into the sign system using the controller unit keypad switches. 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.



Keypad Switches

The control unit 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 or mode test codes.
- A-F group key switches are for sequential entering of message codes that contain letters and numbers.
- ENTER press to activate the selected message during code entry and during operation.
- MENU press to advance to the next display screen.

™ NOTE:

Code entry sequences must be followed to set-up destination sign messages. A "beep" sounds and a visual read-out appears on the display when pressing any enabled key 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.
- 4. Press the ENTER key switch and allow the controller unit to display the actual message.
- 5. Repeat steps 1-4 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

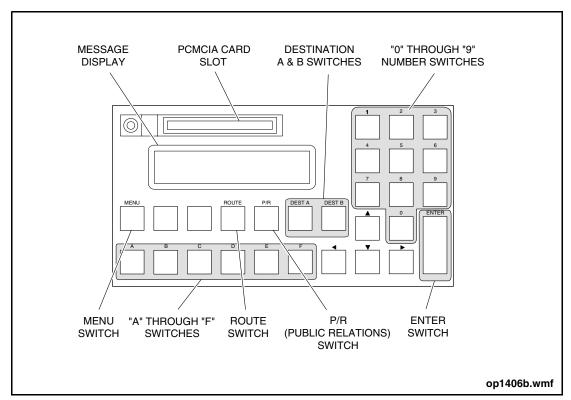


Figure 14: Destination Sign System Controller



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.

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.



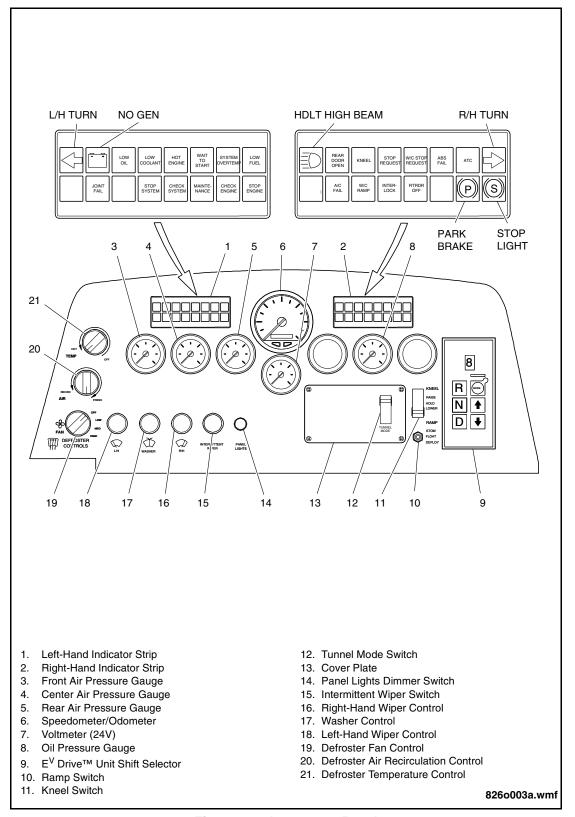


Figure 15: Instrument Panel

INSTRUMENTATION & CONTROLS

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:

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

Hot Engine Indicator (Red)

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

MOTE:

If this indicator remains illuminated, the Engine Protection System engages, initiating 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 45 seconds while the intake air heater system operates and the Allison E^V System™ electric drive pre-charges.

™ NOTE:

The intake air heater system will only operate at temperatures below 66°F (19°C).



System Overtemp Indicator (Red)

The System Overtemp Indicator illuminates if the oil in the E^V Drive System™ 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 if the articulating joint damping module malfunctions. A pulsating alarm accompanies indicator activation.

MOTE:

Pushing the Damping Monitor switch up may reset the articulating joint damping module and extinguish the indicator.

Stop System Indicator (Red)

The Stop System Indicator illuminates if a major fault or unsafe operating condition is detected in the Allison electric drive E^P SystemTM. 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 SystemTM.



Maintenance Indicator (Amber)



CAUTION:



If the Maintenance indicator illuminates, advise service personnel to schedule the vehicle for regular maintenance before its next operating cycle.

The Maintenance indicator illuminates at engine start-up if a regular engine maintenance interval is overdue. The indicator will flash for 12 seconds upon positioning the Master Run switch to DAY-RUN or NIGHT-RUN for engine start-up.

Check Engine Indicator (Amber)



CAUTION:



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

The Check Engine indicator illuminates if the engine requires service. The indicator is controlled by the vehicle's 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 door controller is turned to position #3, #4 or #5 and the exit door opens.

Kneel Indicator (Amber)

The Kneel indicator illuminates when the front 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 by pulling a chime cord.

W/C Stop Request Indicator (Amber)

The Wheelchair Stop Request indicator illuminates when the wheelchair passenger signal system has been activated by pressing a touch tape strip.

ABS Fail Indicator (Amber)

The ABS Fail indicator illuminates if the ABS System requires service. Engine start-up illuminates the indicator momentarily as part of a System check. It is also used during diagnostics to display the blink code. For more information refer to Section 7: 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.



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 rear doors, the kneeling system or the wheelchair ramp.

Retarder Off Indicator (Red)

The Retarder Off indicator illuminates to indicate that the control switch in the destination sign compartment is in the OFF position disconnecting power from the E^V Drive™ unit retarder.

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.

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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 121 psi (724 to 834 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, diagnostic test status, and engine and E^V Drive™ unit fault codes. 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.

MOTE:

The analog-driven gauges will indicate current values and the warning LED indicators in the data gauges will flash if the Master Run switch remains in the DAY-RUN or NIGHT-RUN position without the vehicle being started.

Voltmeter (24V)

The voltmeter indicates the voltage levels in the vehicle's 24 volt electrical system. The normal operating range is between 23 and 28 volts. An LED indicator at the bottom of the gauge will illuminate if voltage drops below 23 volts.

NOTE:

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

Oil Pressure Gauge

The oil pressure gauge indicates the engine oil pressure level in pounds per square inch (psi). The normal engine oil pressure ranges between 12 and 50 psi (82 and 344 kPa) depending on engine speed. An LED indicator at the bottom of the gauge will illuminate if the oil pressure falls below the normal operating 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 is inoperable.

NOTE:

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

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 8: Wheelchair System, for operating procedures.

™ NOTE:

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

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 simultaneously. The kneeling system lowers the front and rear of the vehicle approximately 3 to 4 inches by exhausting air from both front suspension air springs. Boarding the vehicle becomes easier, particularly for small children and the handicapped.

LOWER

This position lowers the vehicle, activating the interlocks, the audible alarm and the exterior warning 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.

Tunnel Mode Switch

The Tunnel Mode switch is a guarded toggle switch that controls the vehicle operation mode when entering a tunnel. The control system automatically switches to an electric mode as the vehicle enters each station.

MOTE:

Consult your local transit authority for conditions under which the Tunnel Mode switch should be used.

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.

Intermittent Wiper Switch

The Intermittent Wiper switch allows setting a delay of the wiper sweep in times of light rain. For best results set the wiper control valves at high speed when using intermittent wipers.

Wiper Controls

Two wiper control valves (on left side of instrument panel) operate the left hand and right hand wiper motors by turning the respective control knob.



Washer Control

The washer control valve operates the windshield washer/spray system. Pushing down on the knob causes the fluid to spray onto the windshield.

NOTE:

The windshield washer bottle filler is located near the left 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 three fan speed settings: LOW, MEDIUM and HIGH.

Defroster Air Recirculation Control

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

Defroster Temperature Control

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

Driver's Vent

Located at the left front of the vehicle, the vent allows outside air in during forward motion. It is a foot operated vent that is controlled by a bar located forward and left of the steering column. To open the vent, push with the left foot and pull to close.



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.

MOTE:

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.

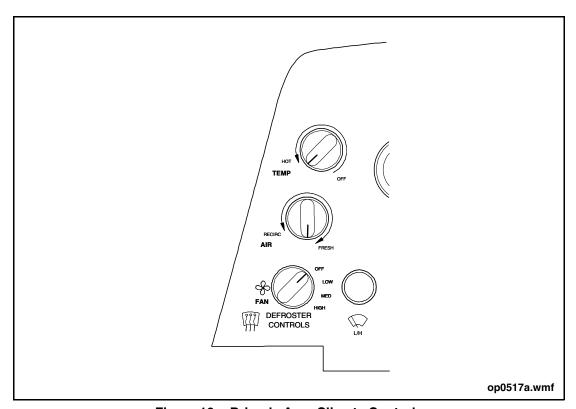


Figure 16: Driver's Area Climate Controls



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.

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™ unit system torque can move the vehicle in the desired direction. Use the switch to prevent unexpected motion when starting on a hill.

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. Repeat the switch cycle to activate a repeat override sequence, if necessary.

The Stop Engine Override toggle switch is used to override the engine shutdown system in an emergency. The switch also prompts the engine diagnostics system to flash codes on the Check Engine indicator located on the instrument panel. Refer to Section 7: Vehicle Operation.

Hazard Lights Switch Indicator

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



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		
Aisle lights (on)		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 controller		х	Х	х		



MASTER RUN SWITCH OPERATION						
STOP- ENGINE	DAY-RUN	NIGHT- RUN	NIGHT- PARK			
Х	Х	Х	х			
	х	Х				
	х	Х				
х	х	Х	х			
х			х			
х	х	Х	х			
	х	Х				
	х	Х	х			
	х	Х				
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	Х	Х	Х			
	х	Х	х			
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		x x x x x x x x x x x x x x x x x x x	X X X X X X X X X X X X X X X X X X X X X			

^{*} Engine must be running

Door Controller



WARNING:



Positioning the Door Master switch to OFF disables the brake interlocks and the exit door controller.

The door controller opens and closes the entrance and exit doors. The five positions of the controller and the related door functions are as follows:

- Position #1: Entrance door closed, exit doors disabled.
- Position #2: Entrance door open, exit doors disabled.
- Position #3: Entrance door open, exit doors enabled.
- Position #4: Entrance door closed, exit doors enabled.
- Position #5: Entrance door open, exit doors enabled.

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



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

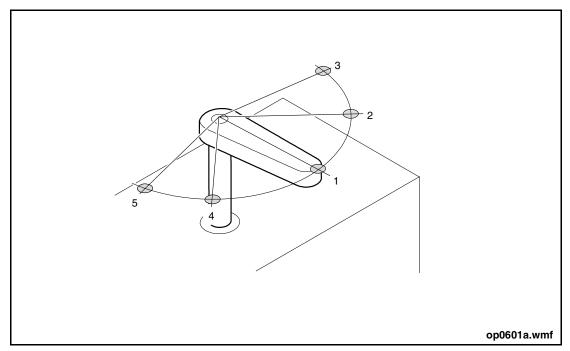


Figure 17: Door Controller

Remote Mirror Controllers

The remote mirror controllers control the upper and lower mirrors of the left and right remote mirror assemblies. Position a controller dial to the mirror requiring adjustment (UPPER or LOWER). Then use the four directional tilt function of the dial to move the mirror into the desired position.

Speaker Select Switch

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

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.



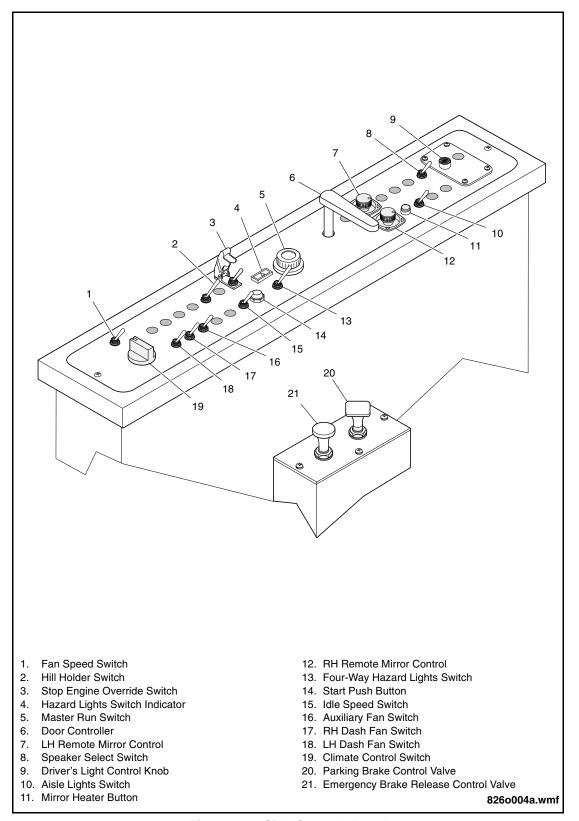


Figure 18: Side Console Panel

INSTRUMENTATION & CONTROLS

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.

NOTE:

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

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.

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.

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.

INSTRUMENTATION & CONTROLS



MOTE:

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

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.

MOTE:

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

Auxiliary Fan Switch

The Auxiliary Fan Speed toggle switch controls the fan located next to the side destination sign window. To operate the fan, reposition the switch from OFF and select 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.



Climate Control Switch

The Climate Control toggle switch is a five-position toggle switch that controls the HVAC System. In the AUTO position, the system will maintain a preset temperature. The COOL position commands the air conditioning system to cool the vehicle interior to a preset temperature. In the VENT position, the system draws fresh air into the vehicle. The HEAT position commands the heating system to warm the vehicle interior to a preset temperature. The OFF position disables the system.

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.

Emergency Brake Release Control Valve

This valve supplies the air pressure to release the rear brakes if the air system pressure drops below 45 psi (310 kPa) and the rear brakes apply automatically. Pushing down and holding the valve allows the air pressure to release the rear brakes. Releasing the valve knob shuts off the air pressure supply, allowing the rear brakes to re-engage.

NOTE:

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



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 right and left turn signal lights when held depressed. Left or right turn signal indicators on the instrument panel illuminate when respective floor switch is activated.

Silent Alarm Button

The Silent Alarm Button is located on the floor between the turn signal switches.

™ NOTE:

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



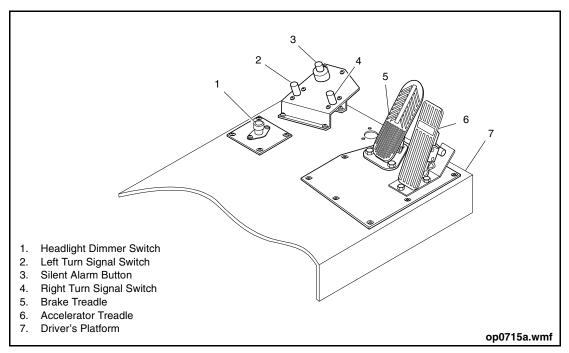


Figure 19: Driver's Foot Controls

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.



Door Master Switch



WARNING:



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 entrance and/or exit door open (brake interlocks disabled).
- E^V Drive[™] unit can be shifted without foot on brake treadle.
- E^V Drive[™] unit 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.
- E^V Drive[™] unit can be shifted and vehicle moved with the fuel door open.

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.

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.

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 artic joint electrical system circuits. Pushing the switch up temporarily overrides the interlocks that apply at maximum angle. Pulling the switch down prompts the artic joint electrical system to flash diagnostic codes on the instrument panel Joint Fail indicator.



7. FIRE SUPPRESSION SYSTEM

The following outlines basic operator component functions and their place in the system. A good understanding of this is required to effectively operate and monitor the system.

Normal Operation

In a normal situation all circuits are intact and a green LED indicating "System OK" is illuminated on the Fire Suppression System Control Panel. The Fire Suppression System Circuit Monitor 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.

Fire Suppression Operation

In a fire situation, heat will cause contacts in heat detectors to close, providing an electrical connection to 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 electrically 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 circuit monitor green "System OK" LED goes out, 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 a "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.



MOTE:

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 System 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 DriveTM unit 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 drivel selections as [R] and [N] and [D]. Operate the E^V DriveTM unit 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.

™ NOTE:

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.

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 generation which slows 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 that the retarder switch should be used to disable the auxiliary braking system.



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.

MOTE:

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.

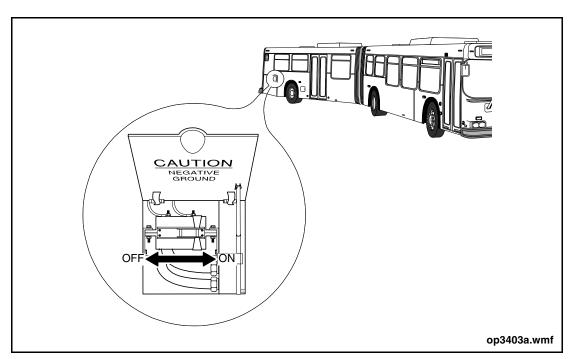


Figure 20: Battery Disconnect Switch



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 starter engages and starts the engine.

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 controller is operational.
- Position the Door Master switch to the OFF position and attempt to open the exit door by using the side console door controller. The exit door should not be operational; the entrance door should remain operational.
- Return the Door Master switch to the ON position.
- Wiper and washer controls are operational.
- Defroster/heater controls (on dash) are operational.
- Exterior lights operate during exterior light test. To conduct test, ensure engine is running and parking brake is applied, then press both turn switches simultaneously. All exterior lights will illuminate for two minutes.
- The 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.

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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 Drive[™] unit 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

Move the door controller to position #3, #4 or #5 and check that the Rear Door Open indicator illuminates when the doors open.

™ NOTE:

Exit doors will open and the interlocks will be engaged.

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



Day-Time Operation

When the engine is operating, check the following:

- The air system pressure is 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:
 - i. 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 turning the door controller handle to position #1. The Rear Door Open indicator should be off.
- 3. Apply the brake treadle and release the parking brake. The parking brake indicator extinguishes.
- 4. Shift the E^V Drive[™] Unit Selector switch into the desired gear.

™ NOTE:

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.

- 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. Open the entrance door by placing the controller in position #2.
- 5. Exit the vehicle.
- 6. Slide the front portion of the driver's window back to gain access to the door controller from outside the vehicle.
- 7. From outside, turn the door controller to position #1. The entrance door closes.
- 8. Close the driver's window (from outside) by sliding the front portion forward.

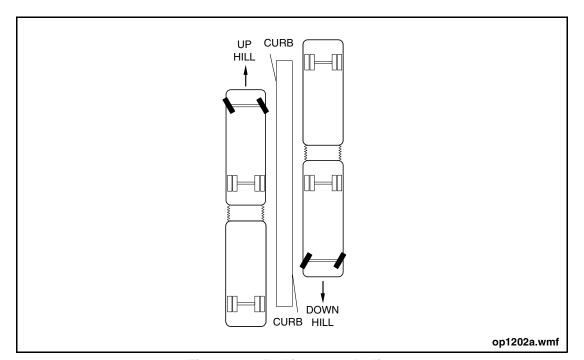


Figure 21: Parking on an Incline



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.

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.

ESF 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 set the door controller to Position #2 to open the entrance door. Kneeling will not be enabled if the door is closed.

M 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.

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

Kneeling Exterior Signal

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

Passenger Signal System

The passenger signal system is activated by touch tape. Activating the signal system causes the following to occur:

- Stop request sign (in front destination sign door) illuminates. The sign extinguishes when the system is reset.
- Stop Request indicator illuminates and remains illuminated until the system is reset.



 A chime sounds once when the stop request touch tape 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 door with the door controller in position #2, #3 or #5.
- Opening the rear exit doors, once enabled with the door controller in position #3, #4 or #5.

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

Stop Request Touch Tape

Stop request touch tape strips are located on either side of the vehicle interior. Pressing a touch tape 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.

™ NOTE:

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. Move the door controller to the door open position, (#2, #3 or #5).



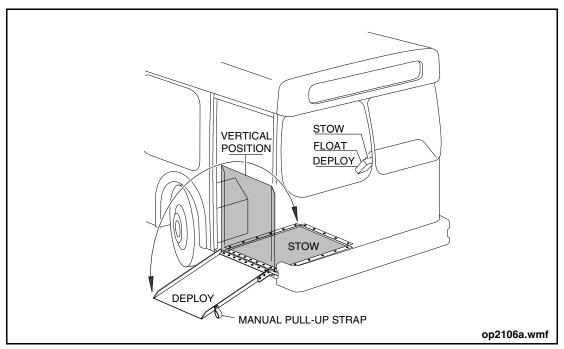


Figure 22: Wheelchair Ramp Operation



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 continues to lower until it reaches the ground.

Raising the Ramp



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

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



™ NOTE:

An audible alarm sounds when the ramp is moving.

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

Ramp Emergency Procedures

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

Wheelchair Restraint System

The forward seat positions are equipped with a 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. Move the flip-up seat cushions up to the lock position.
- 2. Back the wheelchair into the restraint area, in front of the double flip-up seat, facing forward (facing driver's area).
- 3. Attach the wheelchair restraint belts under the double flip-up seat to solid rear frame members of the wheelchair.
- 4. Attach the front tie-down belt on the window side as follows:
 - a. Press the retractor release button and pull the belt to extend.
 - b. Wrap the belt around a solid front frame member of the wheelchair and secure the belt clip into the belt buckle.
 - c. Take up the belt slack by pressing the release button again.
 - d. Turn the belt retractor knob until tight.



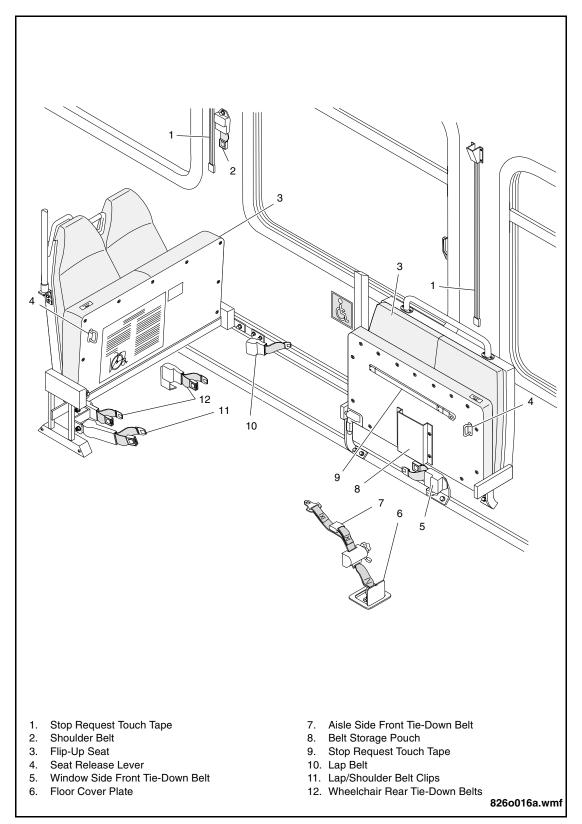


Figure 23: Wheelchair Restraint System



- 5. Attach the front tie-down belt on the aisle side as follows:
 - a. Remove the aisle tie-down belt from storage.
 - b. Attach the stud end into the floor anchor, making sure it is secure.
 - c. Press the retractor release button and pull the belt to extend.
 - d. Wrap the belt around a solid front frame member of the wheelchair and secure the belt clip into the belt buckle.
 - e. Take up the belt slack by pressing the release button again.
 - f. Turn the belt retractor knob until tight.
- 6. Secure the passenger by extending the window side shoulder belt across to an aisle side belt clip and fasten. Extend the lap belt to the other aisle side belt clip and fasten. The aisle side clips are attached to the seat frame of the double flip-up seat. Do not place belt over armrest.



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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