



**Blue Bird**  
**VISION**

0109842 Revision A

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The Blue Bird Vision complies with all applicable federal and state regulations. These include, but are not be limited to, Federal ADA as well as state accessibility, safety and security requirements.

The Blue Bird Vision meets all applicable Federal Motor Vehicle Safety Standards (FMVSS) rules and regulations.

In the event of any conflict between the requirements of this publication and any applicable legal requirement, the legal requirement prevails. Technical requirements that exceed the legal requirements are not considered to conflict.

Many of the components of Blue Bird buses are obtained from outside suppliers. Where maintenance and/or service information conflicts with the component manufacturer's documentation, the manufacturer's documentation prevails.

Blue Bird Corporation continually endeavors to improve its products and reserves the right to change without notice. Text, illustrations, and specifications in this manual are based on information available at the time of printing.

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## Introduction

Thank you for selecting the Blue Bird Vision as your bus of choice. The Vision is the first conventional school bus built from the ground up for the purpose of transporting children to and from school and special events. The Vision is the result of ongoing research and school bus manufacturing experience over the past 77 years. Since 1927, Blue Bird has been committed to providing its customers with quality buses at an exceptional value and with safety in mind.

This manual has been prepared for the purpose of helping acquaint the operator with the look and function of the features of the Blue Bird Vision. While the focus of this manual is on safe and efficient operation of this Blue Bird product, it will also address general maintenance routines and minor service information. For detailed maintenance and service information, please consult the Blue Bird Vision Service Manual. The Blue Bird Vision Service Manual is available from the Technical Publications Department at Blue Bird Body Company.

You should note that the equipment and controls on your particular bus might differ in detail from that described in this manual. The optional equipment chosen at the time of manufacture will determine whether a particular unit has certain components. You should also note that legally required equipment varies from state to state. For this reason, you may have a component on your bus not covered by this operator's manual. Contact your Blue Bird Body distributor if you have questions concerning certain components on your bus that are not covered herein.

The text, illustrations and specifications used in this manual are based on information available at the time of manual publication. Blue Bird Body Company and its vendors continually strive to improve their products. As such, Blue Bird reserves the right to make changes without notification or without incurring liability.

The Blue Bird Vision Operator's Manual is intended to provide the operator general information regarding the safe operation and maintenance of the Blue Bird Vision bus. Please note that not all possible situations that may arise while operating the bus will be addressed. Therefore, the exercise of caution, common sense and good driving practices, coupled with experience, are required for continued safe operation.

If questions come up that are not specifically covered in this manual, please contact your Blue Bird distributor. Your distributor will either answer your questions or will be able to advise you on how to obtain the needed information. To report a problem with your bus, contact your Blue Bird distributor, or if you deal directly with Blue Bird, contact your Service Representative. If you are unsure of the identity of your Blue Bird Service Representative, call the Blue Bird switchboard at 478.825.2021 and ask the receptionist for the Blue Bird Service Department.

The complete line of Blue Bird parts and accessories is available through your Blue Bird distributor. You are encouraged to consult with your distributor before adding accessories to your bus in order to determine the safety of such changes.

Proper operation, service and maintenance will affect the safety and reliability of any vehicle. It is important that anyone operating this bus be thoroughly familiar with the controls and the handling of the vehicle before attempting to transport passengers.

**WARNING** *No one should attempt to transport passengers without thorough knowledge of the controls and safety equipment.*

Examples of this safety equipment include stop arms, crossing guards, warning lights, first aid kits, fire extinguishers, reflectors, park lights and directional turn indicator lights. There are, of course, many more safety features of this nature.

## Summary of Contents

The service and maintenance procedures and intervals in this manual are for the operator's reference only. More comprehensive service information is located in the Blue Bird Vision Service Manual.

All procedures in this Operator's Manual are to be considered the minimum care necessary for the reasonable service life of the vehicle. Each owner has the responsibility to determine if more frequent service or maintenance procedures would be beneficial.

This manual should be read and understood by the bus operator prior to transporting passengers. The operator is responsible to ensure all legal requirements are adhered to.

This manual is prepared to provide you with current information important to the operation of the Blue Bird Vision bus. Your comments and suggestions regarding this manual are welcome. Blue Bird encourages you to contact its Technical Publications Department with any comments you have. Send your comments to:

*Blue Bird Body Company  
Attn: Technical Publications Dept  
P.O. Box 937  
Fort Valley, Georgia 31030*

## Safety Precautions

Throughout this manual are precautions labeled Warnings and Cautions, and set in the style shown here:

**WARNING** *The Warning designation is generally used for precautions which, if not properly observed while performing the related procedures or handling materials, could result in serious personal injury or death.*



**CAUTION** *The Caution designation is generally used for precautions which, if not properly observed while performing the related procedures or handling materials, could result in damage to the bus or its equipment. Blue Bird Body Company offers many accessory items. These components are designed to meet or exceed federal, state and local requirements. Properly selected equipment and accessories can help ensure the safe and reliable transportation of passengers.*

## Reporting Safety Defects

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Blue Bird.

If NHTSA receives similar complaints, it may open an investigation and, if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Blue Bird Corporation.

To contact NHTSA, you may call the Vehicle Safety Hotline toll-free at:

**1-888-327-4236 (TTY: 1-800-424-9153)**

or go to:

**<http://www.safercar.gov>**

or write to:

**Administrator, NHTSA,  
400 Seventh**

**Street, SW., Washington, DC 20590**

You can also obtain other information about motor vehicle safety from:

**<http://www.safercar.gov>.**

## Optimum Service Life

It is important that you use the right parts when replacement of parts is necessary. The right replacement parts help keep your bus performing at its optimum level and help extend the life of your investment.

*For replacement parts...*

*Contact your Blue Bird distributor or Parts Sales at  
Blue Bird Body Company.*

### **Before Placing the Bus in Service**

It is the responsibility of the bus Owner/Operator to ensure compliance with all federal, state, and local regulations for school bus operation and equipment. As part of a daily pre-trip inspection, the Driver should consider it his/her responsibility to verify that the vehicle is in satisfactory working order and that all emergency equipment is in place, fully stocked (First Aid Kit), up-to-date (Fire Extinguisher), and in proper working condition.

Inspection guidelines from individual state inspection manuals (such as Commercial Driver's License pre-trip inspection procedures) take precedence over those found in this manual. Guidelines found herein are in addition to those in your state's inspection requirements.

The Driver is responsible for determining that the loading area is clear before stopping to load passengers. The Driver must ensure that all unloaded passengers are clear before moving the bus.

- Check the suspension U-bolt torque.
- Check the service brake adjustment.
- Check the park brake adjustment on units equipped with hydraulic brake systems.
- Check the torque on all the body "tie-down" bolts.
- Check the engine oil level.
- Check the transmission fluid level.
- Check the engine coolant level.
- Check the air pressure in all the tires.
- Check the torque on the driveline universal joint straps.



## Daily Inspections

To maintain the highest possible safety, reliability and economy of operation standards, perform the following inspections:

1. Check the fuel level.
2. Drain all air reservoir tanks, if so equipped.
3. Check the engine oil level.
4. Check the power steering fluid level (Dexron III).
5. Check the engine coolant level. (See Caterpillar publication SEBU7011-11.
6. Check the transmission fluid level (Transynd™ or equivalent). See the Allison Transmission manual, publication number OM3063EN, as amended, for the proper method to use.
  - Start the engine and allow it to idle for about a minute.
  - With the service brakes applied, shift to Reverse ("R") for a few seconds, back to Neutral ("N") for a few seconds, to Drive ("D") for a few seconds, and then back to Neutral ("N").
  - Allow the engine to idle at about 500-800 RPM and slowly release the service brakes.
  - With the engine running, remove the dipstick and wipe it clean.
  - Insert the dipstick into the tube and remove it. Check the fluid level indicated on the dipstick. Repeat at least twice for accuracy.
  - If the fluid level is still within the cold check band, the transmission may be operated until the fluid is up to operating temperature.
  - If the fluid level is not within the cold check band, you must drain or add fluid until it is before operating long enough to reach normal temperature.
  - Perform the hot check at the first opportunity after the transmission has been operated for about an hour and has reached the normal operating temperature of 160° - 200° F (71° - 93° C).
7. Check the brake fluid level. Maintain the fluid level between the "Max" and "Min" lines on the reservoir. Use only DOT-3 brake fluid.
8. Check the windshield for cracks; clean as necessary. (There are "fold down" steps located at each side to assist in cleaning the outside of the windshield.)
9. Check all the mirrors for proper setting; clean as necessary.
10. Check the strobe light, if so equipped.

11. Check the headlights; clean as necessary.
12. Check the taillights; clean as necessary.
13. Check the directional indicator lights; clean as necessary.
14. Check the hazard lights for operation.
15. Check the brake lights; clean as necessary.
16. Check that the tail pipe is clear of obstruction.
17. Check that the rear "Emergency" door is operational:
  - It opens properly and easily
  - The warning buzzer operates
  - The door closes and latches properly
18. Check the tires:
  - Are there objects lodged between the dual wheels?
  - Are there any obvious punctures?
  - Are all the lug nuts in place?
19. Check the general exterior appearance. Is it clean for school bus identification?
20. Check the general housekeeping. Are the seats, floor, aisles and stepwell clean and clear of obstruction?
21. Check that the emergency exits are clear and operate properly.
22. Check the emergency equipment and supplies:
  - Is all the equipment in the proper place?
  - Is the supply list complete?
23. Check the fire extinguisher:
  - Is the service date okay?
  - Is the charge okay?
24. Check the First Aid Kit:
  - Is it in the proper place?
  - Is the supply list complete?
25. Do all available warning devices indicate when a door is ajar?
26. Start the engine.
27. Listen for obvious, unusual noises.



28. Check that the mirrors do not vibrate excessively.
29. Check interior lights.
30. Check the stepwell lights.
31. Check the horn.
32. Check the heater and defroster blower operation.
33. Check the windshield:
  - Is it clean?
  - Is the wiper operational?
  - What is the condition of the blades?
34. Check the brakes:
  - Does the pedal feel right?
  - Is it at the normal height?
35. Check the stepwell for debris and foreign objects that could present a hazard to passengers while loading or unloading.
36. Is your seat belt fastened?
37. Do the brakes stop and hold the bus?
38. Does the steering feel normal?
39. Does the steering make unusual noise when you turn the wheel?

Any malfunction should be corrected before making your trip. Report the necessary services to the responsible maintenance personnel.

## **Weekly Inspections**

1. Drain all air pressure reservoirs or tanks.
2. Check the tires:
  - Is the tread okay?
  - Are there obvious signs of wear?
  - Are there signs of deterioration?
  - Are there foreign objects between the duals?
  - Is the air pressure correct?

If the air pressure is consistently low in a particular tire, it should be treated as a flat. Remove it and repair the problem.

3. Check all the passenger seat cushions:
  - Are they clean?
  - Are they properly attached to the frame?
  - Are the seat belts okay? Are the buckles operable and easy to release?
  - Is the seat frame-mounting hardware securely attached?
  - Check the stepwell trim fasteners to ensure none are loose. Tighten if necessary.



## Product Identification Information

### Vehicle Certification Plate

This plate certifies that the vehicle complies with all applicable Federal Motor Vehicle Safety Standards (FMVSS) in effect on the date of manufacture. Do not remove, deface or cover this decal.

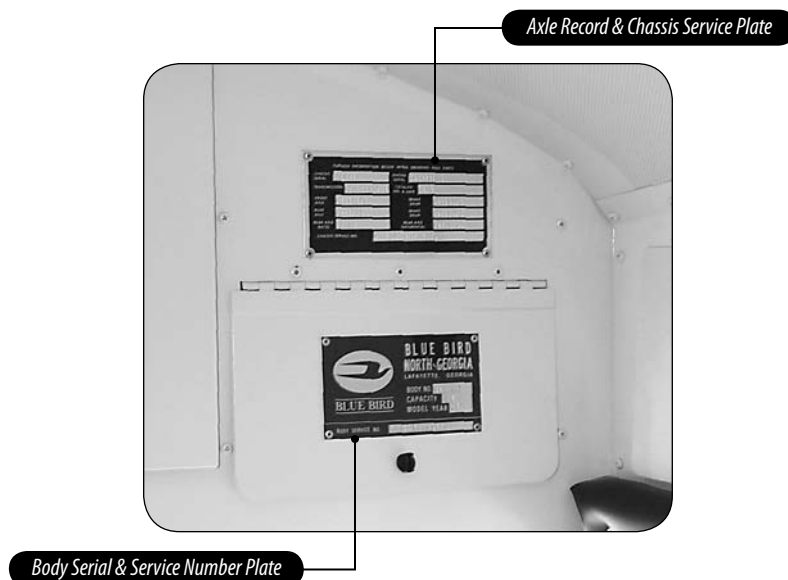
### Body Serial Number and Service Number Plate

This plate is located inside the bus above the windshield on the front upper panel. You must refer to this placard for registration information and to order replacement parts for the bus.

MANUFACTURED BY	
<b>BLUE BIRD BODY COMPANY</b>	
DATE OF MFR. 01/04	
INC. VEH. MFG. BY	DATE 03/02
SUITABLE TIRE - RIM CHOICE	
GVWR : 13503 KG (29760 LB )	
GAWR : FRONT 4537 KG (10000 LB ) WITH	10R22.5 TIRES
22.5X7.50 RIMS. AT 758 KPA (110 PSI) COLD SINGLE	
GAWR : REAR 8966 KG (19760 LB ) WITH	10R22.5 TIRES
22.5X7.50 RIMS. AT 723 KPA (105 PSI) COLD DUAL	
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL	
MOTOR VEHICLE SAFETY STANDARDS IN EFFECT IN 03/02	
V.I.N.	TYPE CLASSIFICATION SCHOOL BUS

### Axle Record and Chassis Service Number Plate

This plate is located inside the bus above the windshield on the front upper panel.



## Adding Aftermarket Accessories

### Electrical System Modification

From time to time, you may need to add electrical equipment, or remove and repair electrical components to the Vision. There are certain guidelines that must be followed to avoid the possibility of equipment damage or explosion. Arcing or “sparks” that can occur when electrical connections are made and/or broken causes this danger.

1. The batteries must be disconnected.

**WARNING** *Always disconnect the NEG (-) cable from the battery first. Always disconnect the negative cable at the battery post and wrap it, to prevent accidental contact with the battery post.*

**CAUTION** *Never connect any auxiliary or add-on component to posts or terminals that are labeled “Engine” or “ECU”. Any noise or spurious (unwanted) signal at these points will adversely affect engine performance. The Service Department at Blue Bird does not approve installing wiring that will produce more than 0.5 volt, voltage drop over the length of the installation.*

2. Disconnect the NEG (-) battery cable from the battery post and insulate it to prevent accidental contact.
3. If necessary, remove the POS (+) battery cable. This is normally necessary only if you intend to remove the battery.
4. When adding electrical components, first ensure that the batteries and charging system are capable of the extra load.

**CAUTION** *If the extra load causes the design parameters of the charging system to be exceeded, you must upgrade the system to accommodate the equipment. Overloading the electrical system, as manufactured, will affect the warranty. Modifying the charging system to accommodate the added load may affect the warranty. Always obtain prior approval, in writing from Blue Bird, when modifying the electrical system. If distributors, dealers or customers have any vehicle modifications or equipment installations performed without the written approval of Blue Bird, to the extent the modifications adversely affect other vehicle components or performance, Blue Bird shall not accept any product liability or claims under the terms of the limited warranty. These claims become the sole responsibility of the company or entity performing the modifications and/or installations.*

5. Always use wiring of the proper gauge, protected by a high temperature insulation material. 150° C, chemically cross-linked polyethylene insulation, conforming to SAE J-1128, is one such material.



**CAUTION** *Regardless of wiring chart estimations, never install a wire that produces voltage drop in excess of 0.5 volt over the entire length of the circuit to be added; calculations and measurement must include the “return” or ground path.*

6. Ensure that any added electrical component is protected by a fuse or circuit breaker.

**CAUTION** *Always provide additional wiring from the electrical panel. Never “tap” or “splice” into an existing wiring harness unless directed to do so by Blue Bird Engineering Department. Any added component must be installed on a dedicated circuit breaker in the electrical panel. Never connect a new component to an existing, factory installed, circuit breaker that is being used to power another component.*

7. Push-on type connectors must be insulated.
8. When installing wiring, always use Blue Bird approved straps and wire ties to ensure that the insulation does not come into contact with sharp edges anywhere along the length.
9. Wiring must be supported with insulated straps and wire ties at least every 24 inches (762 mm).
10. Wherever wiring is connected to a moving component, such as the engine, ensure there is a slack loop of adequate length to prevent tension on the wire or the connections.
11. Position a wire clamp (holder) at both ends of the slack loop so that the loop (and not the wire or the connections) absorbs all movement.
12. Wires must be installed so that they do not come into contact with excessive heat. Support wiring at least 4 inches (100 mm) from high heat components (such as the exhaust system) or provide heat shielding to protect the wires.
13. Install a rubber grommet when wires pass through holes.
14. All heavy gauge “hot” or positive potential wiring must be protected with an approved loom material.
15. Ensure that all positive (+) wiring that could be exposed to extreme weather or chafing is covered with an approved loom.

**WARNING** *Always wear protective gear when working with heavy gauge “hot” conductors, including insulated footwear.*

16. Avoid routing electrical wiring less than 6 inches (150 mm) from a fuel-handling component (i.e. fuel lines, fuel tank, etc.).

17. Do not "splice" or "tap" into existing wiring when adding components. Always run full length to a proper source in the electrical panel. See Steps 8 and 9 above.
18. When adding electrical components, it is sometimes necessary to use a relay to switch the device. High power components, such as lights, are one example.
19. If the battery cables are both disconnected, always connect the POS (+) cable first. Connect the NEG (-) cable last to avoid arcing.

### **Keeping Your Bus Looking New**

The best way to preserve the appearance of your new bus is to keep it clean. Wash the bus frequently using only cold water and mild soap. Do not wash the bus in direct sunlight or use harsh or gritty cleaning compounds. Even strong soap and cleaning chemicals can harm the paint on your bus and should be avoided.

The soap should never be allowed to dry on the surface of the paint. Rinse thoroughly and immediately to preserve the paint finish.

**CAUTION** *Pressure washing may cause damage to the finish. Always test the effects of the pressure washer, and the chemicals you intend to use, on a similar finish prior to using it on your bus. If your pressure washer is the "re-circulating" type, there should be a filter in place to prevent blasting the paint with the grit removed from the bus.*

Always polish with a non-abrasive wax to remove any accumulated residue and to avoid the "weathered" look.

Sometimes, calcium chloride (salt) and other ice melting chemicals will be deposited on the painted surfaces. If these materials are allowed to stay on the paint, they will harm the surface and allow corrosion to begin. Road oils, tree sap, pollution from industrial discharges and bird droppings will also damage the paint. These chemicals and compounds must be removed as quickly as possible.

Paint removal in localized areas due to stone impact, deep scratches and abrasive chemicals must be repaired as soon as possible. These types of damage will quickly result in major corrosion problems and may void the exterior finish warranty.

"Tracked in" petroleum products and road salts will rapidly damage the floor covering. These materials must be removed from the floor promptly to maintain the floor. Frequent mopping with mild soap is recommended to prevent premature deterioration of the floor covering.

**WARNING** *Continuous care is required to be certain the stepwell and entrance area are kept clean. Never use this area for storage of your ice scraper, whisk broom, etc. This practice not only presents a safety hazard for passengers, but it can also interfere with the proper operation of the door.*



## Driver's Area

The driver's area of the Blue Bird Vision is designed to afford the operator easy access to all the controls necessary for the safe operation of the vehicle.

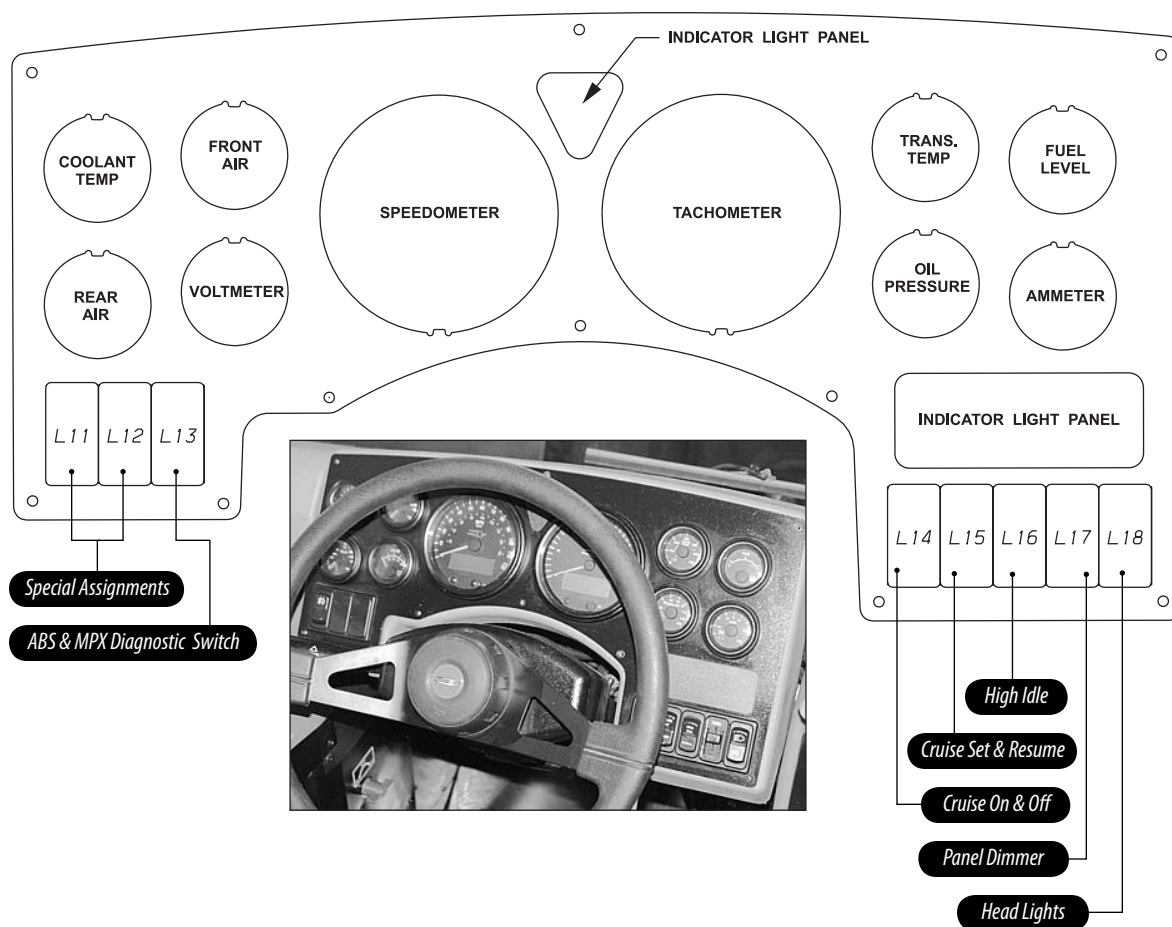
The driver should always position his or her body in a comfortable manner, close to the position normally occupied while driving. The driver should look around, be aware of the location of all controls and make any adjustments necessary to the position of the seat, mirrors and pedals.



## Instrument Panel and Controls

The instrument cluster can contain up to 10 gauges and 2 Indicator Light Panels. The individual gauges included in your bus are determined by the options chosen at the time of manufacture.

**WARNING** Be sure to become familiar with the gauge locations and functions before transporting passengers.



### Setting the Clock

Just below the LCD, on the tachometer face, are two momentary buttons. To set the clock, start the bus and press the left button repeatedly until the desired hour appears. To set the minutes, repeatedly press the right button. Parenthetically, the left button is marked "H" for "Hour" and the right button is marked "M" for "Minute".

### Set the Trip Odometer

The Trip Odometer is located on the LCD on the Speedometer. The trip odometer may be displayed by pressing the "t" button. This will toggle you between the Odometer and the Trip Odometer. You will know the trip odometer is being displayed by the "T1" symbol in the top right corner of the message center display. To zero trip odometer, while "T1" is displayed, press and hold the "t" button for 5 seconds.

### Cruise Control Operation

The Blue Bird Vision is equipped with a cruise control to help the driver maintain a uniform speed during operation on long periods of travel. The cruise control is designed to improve fuel economy and lessen driver fatigue.

**WARNING** *The cruise control maintains speed set by the driver. Cruise control is not an "auto-pilot"; the driver must remain in place and in control of the vehicle at all times.*

The Cruise Control switches are located on the dash switch panel, to the right hand side of the steering wheel.

To Operate Cruise Control:

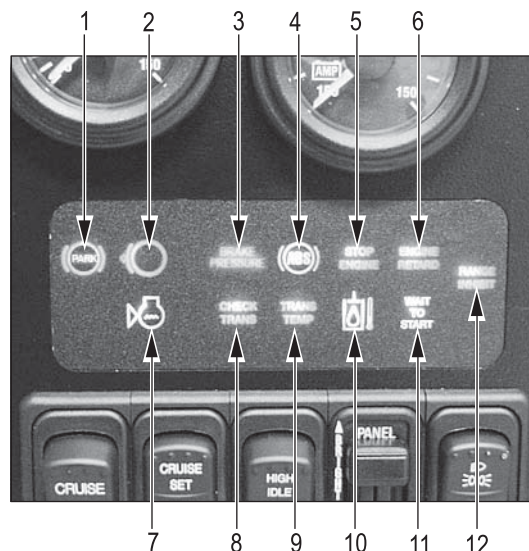
1. Attain the desired speed in the normal manner, with the foot-operated accelerator.
2. Press the top edge of the Cruise "On-Off" switch to activate the cruise control system.
3. Press the top edge of the Cruise "Set-Resume" switch to set the speed.
4. To momentarily deactivate the cruise feature, press the brake pedal. This will disengage the cruise control and begin to apply brakes.
5. When you wish to again use the cruise control feature, simply press the lower edge of the "Set-Resume" switch. This will cause the speed to revert to the previously set level, providing the ignition has not been turned off.
6. To adjust the speed at which the cruise control is operating, release the cruise control by pressing the brake, and then use the throttle to reach the desired speed. Then press the top edge of the "Set-Resume" switch.



If the ignition is switched "Off", it will reset the cruise control. To use it again, simply reactivate according to steps 1 through 6 above.

#### Indicator Light Panel

1. Park Brake - On when park brake is set; if the park brake is not set when the ignition is switched off light will flash for a period of 2 minutes or until park brake is set. Also, will flash if speed of vehicle is above 3 MPH or until park brake is disengaged.
2. Stop Light - On when the brakes are applied.
3. Hydraulic Brake Failure - Turned on when there is a failure in the hydraulic braking system. Vehicle should not be driven until hydraulic brake system is serviced.
4. Anti-Lock Braking - ABS indicator turned on when a fault is detected in ABS system. ABS system should be serviced to identify problem.
5. Stop Engine - Turned on when there is a condition in engine that may cause damage if engine continues to run. Stop engine and have serviced.
6. Engine Retard - Turned on when engine senses something outside normal operating parameters. When this happens, engine performance will automatically be reduced. Engine should be serviced to identify problem.
7. Low Coolant Level - Turned on when coolant level drops below 50% normal range. Indicator will blink when level in reservoir indicates 0 percent. Engine should be stopped to prevent overheating.
8. Check Transmission - Turned on when fault is detected in transmission. Transmission should be serviced to identify problem.
9. High Transmission Temperature - Will come on when operation temperature of transmission fluid is greater than 250° F. Vehicle should be stopped to prevent damage to transmission.
10. High Hydraulic Oil Temperature - Turned on when hydraulic oil temperature is over 200° F. Engine should be turned off to prevent damage to hydraulic system.
11. Wait to Start - Indicator is turned on when engine is preparing itself to be started. This may include self-diagnosis and heating intake grids.
12. Range Inhibit - Turned on when the transmission senses something outside normal operating parameters. Transmission should be serviced.



## Steering Column Controls

### Steering Wheel Adjustment

To adjust the steering wheel position, press downward on the tilting lever located at the left side of the steering column. Tilt the column to the desired position. To raise or lower the steering wheel, pull upward on the tilt lever.

### Hazard Flashers

The hazard flasher switch is mounted beneath the directional indicator lever, on the steering column. To activate the hazard flashers, pull outward on the red tang. To cancel the hazard flasher, move the turn indicator lever to indicate a turn.

### Directional Indicator Lever

The directional indicator lever is located to the driver's left, mounted on the steering column. To activate the directional signal, pull the lever down to indicate a left turn and push it upwards to indicate a right turn.

### Headlight Dimmer Switch

The headlight dimmer switch is located on the turn indicator lever. Pull the lever toward you to toggle the switch.

## Driver's Storage

The driver's storage is located to the left of the driver's seat. The cover to the storage area serves as a left armrest.



*Tilt & Telescopic Lever*



*Hazard Flasher Switch*

*Directional Indicator & Headlight Dimmer*





## Switch Panels

The switch panels, located to the left of the driver, are designed to house most of the control switches used in the daily operation of the vehicle.

Depending on the options installed at the time of manufacture, there will be several switches in the panel. The position each switch occupies is determined by the options installed at the time of manufacture.

See the "Main Switch Panel" for the switch positions and the possible function assigned to those positions.

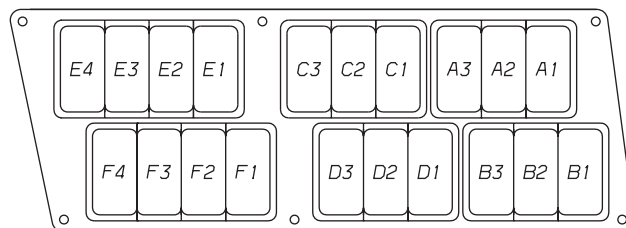


That part of the instrument cluster where the radio is located is to the driver's left, and forward of the main switch panel. For switch position assignments see "Radio Panel".

### Main Switch Panel

#### Switch Possible Functions

A1	Front Dome	L.H. Dome	
A2	Rear Dome	R.H. Dome	
A3	Dome	R. Rear Dome	Clearance Lights
B1	Driver's Dome		
B2	Service Door		
B3	Exit Door ARR (Air)		
C1	Fan		
C2	Fan		
C3	Fan		
D1	Panel Dimmer		
D2	Heater Mstr		
D3	Strobe		
E1	Heated Mirror		
E2	Destination Sign		
E3	Sand Refill	Sand Refill Stop	
E4	Lift		
F1	Lift Door	Lift Door / Emergency. Exit	
F2	Roof Vent		
F3	Roof Vent		
F4	Aux Heater		

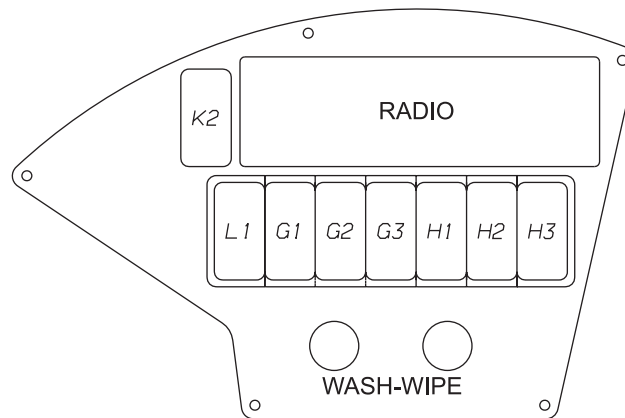


## Radio Panel

### Switch Possible Functions

G1	Work Light Pilot	Work Light	
G2	Work Light Master	Work Light Cancel	
G3	Work Light Start	Work Light (select start)	
H1	Work Light Emergency	Work Light Emergency (momentary)	
H2	Cross Arm Light	Chime or Sanders	Work Light Monitor
H3	Stop Arm Hi / Lo		
L1	Cross Arm Cancel*	Stop Arm Cancel	Cross/ Stop Arm Cancel
K2	Internal / External		

\*Switch L1 can be in the seat belt circuit in certain cases. There is also a switch panel on the instrument cluster. It is located at the bottom of the cluster and on both sides of the steering wheel. For the switch position assignments, refer to chart referencing switches at the top of page 19.



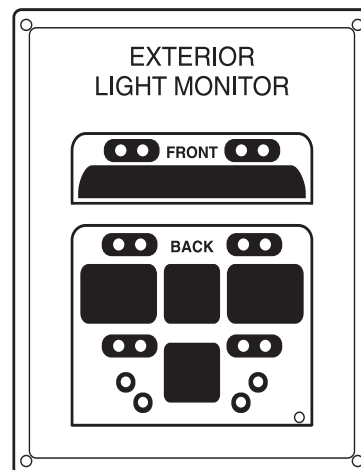
## Destination Signs

The destination sign is accessible from the inside of the bus, through a hinged panel over the windshield. The interior of the destination sign should be maintained as clean as possible. Periodic lubrication with light oil is recommended. The destination sign uses number 89 light bulbs.



### Doran Warning Light Monitor

The Doran Monitor™ is a current-sensing device. Therefore, if current is flowing through one of the bus lamp circuits, the monitor senses it and illuminates the corresponding monitor light emitting diode (LED). When a lamp burns out, current flow through the circuit stops and the corresponding LED on the monitor does not illuminate, indicating the outside lamp is not functioning. The Doran™ Monitor is located in the bulkhead over the windshield and slightly to the left of the driver. The Doran Warning Light Monitor system does not substitute for a pre-trip inspection that should be performed prior to each trip.



### Interior Compartments

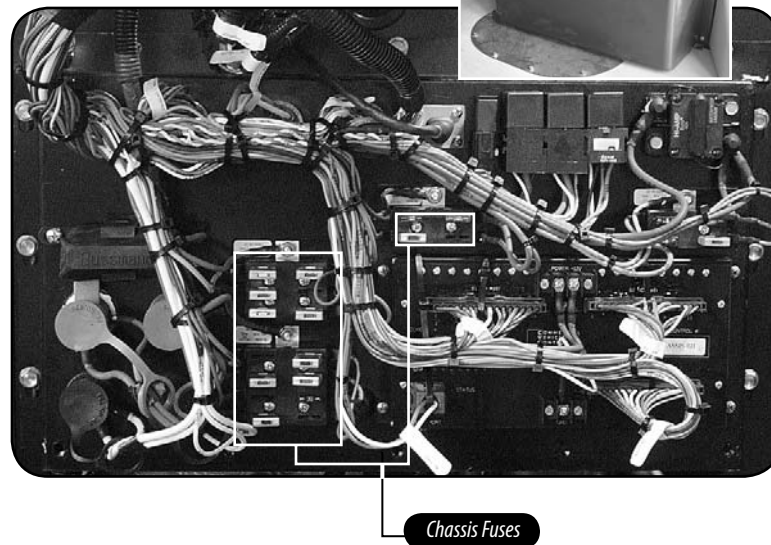
There are a variety of interior compartments depending on the options selected at the time of manufacture.

- There is a glove box located in the dash on the right side.
- There is a glove box located above the windshield, at the far right hand corner, adjacent to the entrance door.
- There may be a toolbox located under the rearmost seat on the right-hand side (curb side).
- Some models feature a document pouch on the barrier behind the driver's seat.



## Power Distribution Unit

The PDU is a chassis electrical panel located under the transmission shifter, mounted on the floor of the bus near in the center. The cover can be removed by removing four screws. The fuses for the chassis electrical systems are located on the PDU in two rows. The identification for each fuse function is listed on the decal in the inside of the cover. If a fuse is open or "blown", replace it one time. If the fuse opens again, seek professional help to isolate and correct the problem.





## Body Electrical Panel

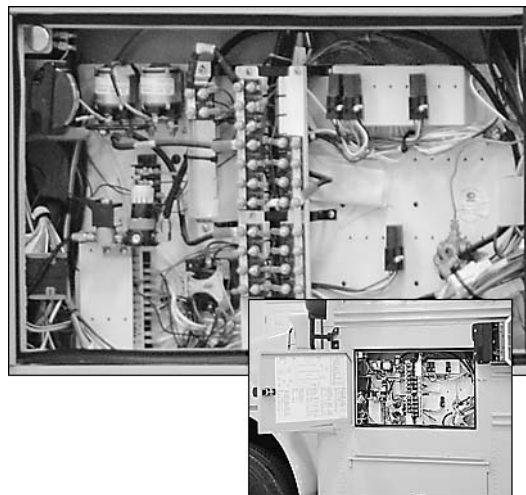
The electrical panel is located outside the bus, immediately under the driver's window.

To access the electrical panel:

1. Press on the button at the center of the panel latch.
2. When the latch springs open, use it as a handle to swing the compartment door open.
3. Secure the panel door in the open position with the position rod, located at the bottom inside corner of the panel. Drop the loose end into the "eye" provided in the electrical panel box.

To close the electrical panel door:

1. Remove the position rod from the "eye" in the electrical panel box and store it in the lip of the panel door.
2. Close the panel door.
3. While pressing firmly on the door, press the latch handle into the locked position.



Position Rod

## Driver's Seat

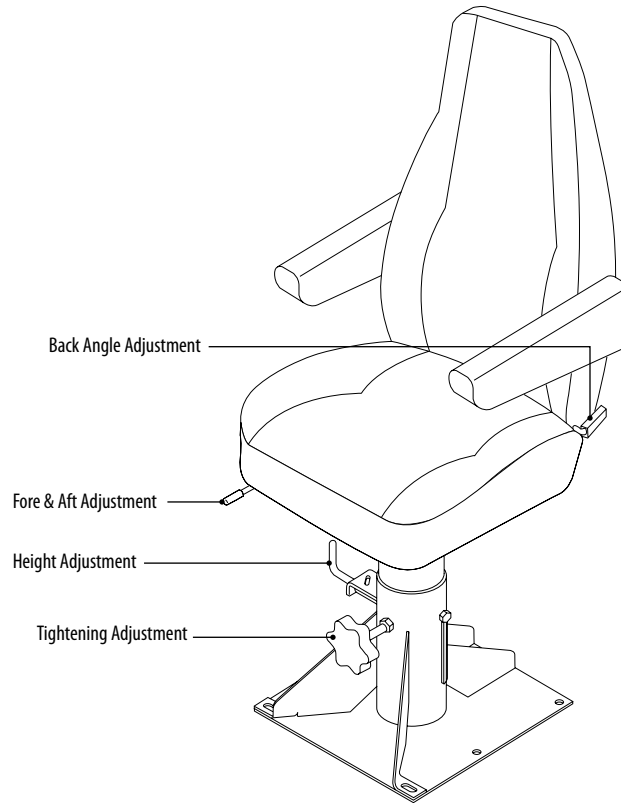
**WARNING** Do not attempt to adjust the driver's seat while the bus is in motion. Ensure your feet do not engage the seat adjustment controls while the bus is in motion.

The standard driver's seat in the Blue Bird Vision is the Routemaster, by Bostrom™. To adjust the driver's seat for maximum control, safety and comfort:

1. Push the height adjustment knob in to lower the seat, and pull out on it to adjust the seat higher. Take special care not to hit the height control knob while driving. The seat will suddenly drop. The seat should not reach the limits (top or bottom) during normal operation.
2. To adjust the driver's seat fore and aft position, hold the fore and aft position lever to the left and position the seat to allow access to the control pedals. Pushing down the back angle adjustment lever and moving your body to position the seat back at the desired angle accomplish seat back angle adjustment.
3. The seat cushion tilt adjustment is located to the right front corner of the driver's seat. Turn the knob to position the seat cushion angle as desired.
4. Lumbar adjustment is possible by turning the lumbar adjustment knob, located on the right hand side of the seat back. Rotating the knob clockwise will increase the lumbar support; counterclockwise will decrease the lumbar support.
5. The driver's seat requires periodic lubrication in order to maintain smooth operation. A white, lithium based grease is currently available for this purpose. Common 10W30 motor oil will suffice. Whatever the lubrication product used, a light coat is all that is needed. The seat should be cleaned and lubricated at 6 month or 6,000 mile intervals, whichever occurs first.

**WARNING** The driver's seat belt should be worn any time the bus is moving.

The driver's seat belt on the Blue Bird Vision features automatic-locking retractors. These retractors are self-adjusting. They also feature an anti-cinch device that helps to prevent the belt from becoming uncomfortably tight while driving.





To use the belt, withdraw an adequate amount of the belt from the retractor and engage the two halves of the buckle. Release the belt, allowing the retractor to stow the unused portion. After the belt sets, tug on it to ensure the locking mechanism is engaged. To release the buckle, push the button in the center.

If your driver's seat is equipped with a shoulder restraint, it is an emergency activated restraint. The lap belt in this case may also be emergency locking. However, the lap belt may be automatic locking, depending on the options chosen at the time of manufacture. Emergency activated seat belts monitor 2 conditions: if the bus tips 15° or more, or if the seat belt/shoulder harness begins to pay out at more than a preset rate. If either of these conditions exists, the mechanism will automatically lock into place, restraining the driver.

To use the seat belt/shoulder harness, pull out an adequate amount of webbing and engage the buckle. The retractors will pull the harness snugly into place. You may adjust the height of the shoulder harness by positioning the bracket to the most comfortable level. The buckle can be released by pressing on the button at the center.



## **Passenger Seats**

### **Seat Inspection and Maintenance**

Blue Bird passenger seats are built to comply with Federal Motor Vehicle Safety Standards (FMVSS). To ensure your passengers the safest possible transportation, periodic inspection and maintenance must be accomplished.

- Inspect the mounting hardware securing the seat frame to the bus body at least every 90 days. Tighten as necessary.
- Weekly, check the seat cushion attachment to the seat frame. Try to move the seat frame at this time to determine if the frame is loose.
- Check the upholstery weekly for cuts, wear spots, and soil.
- Check the seat back foam for soft or worn areas. Replacement must be with a foam product approved for this purpose. There are aftermarket providers of this material. The use of these third party materials places the responsibility for FMVSS compliance with the vehicle owner.

### **Cleaning**

It is important to keep the interior of the bus as clean as possible. This includes the passenger seating. Regular cleaning and maintenance will help to prolong the service life of the seating and will enhance the general appearance of the bus.

For the common, everyday dirt and soil, a solution of mild soap and water will suffice. For those persistent stains and particles, a stiff brush will be helpful.

For stains of paint, tar and asphalt, the stain must be removed as soon as possible. Rub the stain gently with a series of small strokes. Rinse thoroughly with clean water. This type of stain will become permanent in a very short time.

Lacquer-based stains require immediate attention as well. Soak up as much of the material as possible with a clean dry cloth. Remove the remaining stain with a non-flammable cleaning fluid. Tuff Stuff™ and Armorall™ are two examples of this type-cleaning agent.

Wax-based stains, such as chewing gum, shoe polish or grease stains may be removed in the same manner as the lacquer-based stains. These stains will become permanent in a short while.



### Cushion Removal

Passenger seat cushion removal is accomplished by the following:

1. Loosen clamps in 2 places at the forward edge of the seat cushion. Do not remove the clamps.
2. Rotate the clamps to clear the retaining channel.
3. Lift the leading edge of the seat cushion 2 to 3 inches and pull forward to remove it from the seat frame.

### Cushion Installation

**WARNING** *Passenger seat cushions must be installed in the manner prescribed below. Failure to properly install the passenger seat cushions could result in injury to passengers in the event of a collision.*

1. Position the rear edge of the seat cushion on the seat frame.
2. Lift the forward edge 2 or 3 inches.
3. Push the seat cushion to engage the positive clamp into the rear-retaining channel.
4. Ensure the swivel clamps at the forward edge of the seat cushion are positioned to clear the seat frame.
5. Ensure the rear clamps are securely engaged.
6. Lower the forward edge of the seat cushion into place.
7. Swivel the forward seat cushion clamps into position and tighten securely.

### **Seat Cushions with Seat Belts Equipped**

#### **Removal**

1. Loosen the forward clamps.
2. Loosen the rearward swivel clamps.
3. Rotate the rearward clamps and lift the rear edge of the cushion.
4. Pull the seat cushion to the rear to disengage the front clamps.
5. Lift the seat cushion from the seat frame.

#### **Installation**

1. Position the forward edge of the seat cushion about 2 inches inside the seat frame.
2. Slide the seat cushion toward the front of the seat frame until the positive clamps engage the front retaining channel.
3. Lower the rear of the seat cushion and turn the swivel clamps to engage the square tubing at the rear of the seat frame.
4. Rotate the swivel clamps into locking position.
5. Tighten all hardware securely.

### **Seat Belts**

#### **Locking Lap Belts**

Individual lap belts for passengers can be either retractable or non-retractable, depending on the options ordered at the time of manufacture. The use of the belt is essentially the same in either case.

- Place the catch securely into the buckle.
- Test for positive lock.
- Pull the loose end of the webbing to fit snugly across the lower hips.
- To remove the belt, press the button in the center of the buckle.
- To adjust the belt for larger persons, turn the buckle 90° to the webbing and pull to the desired length.



### Belt Inspection / Maintenance

Inspect the passenger lap belts on a weekly basis (more often if conditions warrant).

- Check the buckle for positive lock.
- Check the webbing for adjustment.
- Check the webbing for general appearance and weak places due to wear or vandalism.
- The webbing can be safely washed with a mild soap and water solution.
- Do not use bleach or re-dye the webbing.
- Any cuts or worn lap belt webbing must be replaced as soon as possible.
- Any buckles found to be difficult or impossible to operate must be replaced as soon as possible.
- The buckle must release smoothly and easily.

**WARNING** *Never allow a passenger to strap into a safety belt that is difficult to release. Ensure that all passengers use the lap belt properly. The webbing must be fitted snugly across the body as low as possible. Wearing the webbing high around the waist will result in risk of additional injury in the event of a collision. Do not use bleach or other harsh cleaning chemicals on the seat belt webbing. Do not re-dye the webbing. These processes can severely weaken the material.*

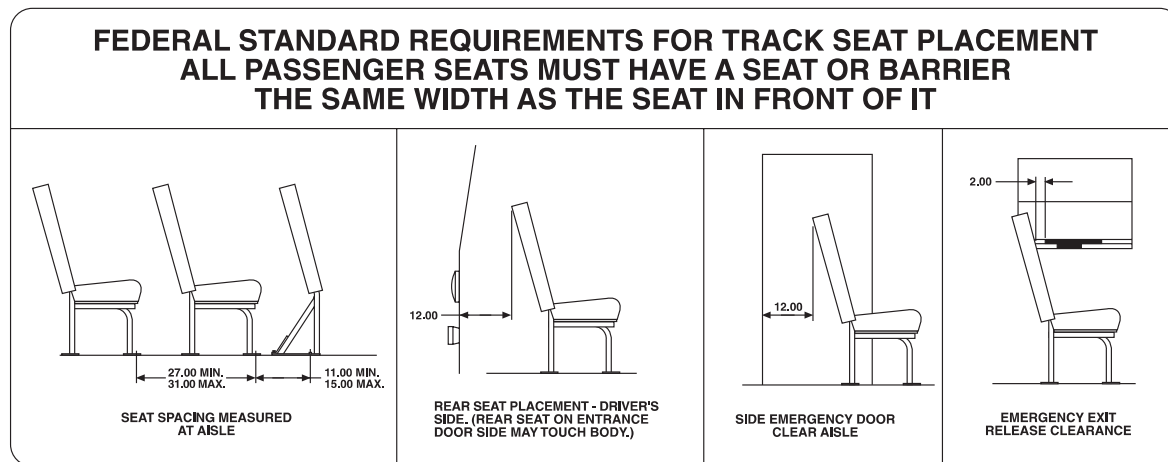
**WARNING** *Seat belt assemblies must be serviced as a set only! Buckles and tongues on one manufacturer's belt assembly are not designed to be interchangeable with another manufacturer's belt assembly. They may appear to fit but could unlatch when subject to forces below those required for safe restraint.*

## Track-Mounted Seating

If your Blue Bird Vision is equipped with track-mounted passenger seats, you are responsible to ensure seat spacing in accordance with FMVSS 222 "School Bus Passenger Seating and Crash Protection" and FMVSS 217 "Window Bus Retention and Release". A decal outlining these requirements is located above the windshield of the bus.

All passenger seats must have a seat or suitable barrier in front of them to provide compartmentalization as required by Federal Motor Vehicle Safety Standards. When you reconfigure the seats to accommodate special needs, it is possible you will need additional barriers to comply with FMVSS rules. These barriers are available from Blue Bird Body Company Parts Sales.

It is the responsibility of the entity installing seating in a school bus to ensure compliance with all applicable laws. We have quoted the known federal rules, but your state or locale may have other requirements. Blue Bird Body Company cannot be responsible for parts, equipment or seating not installed by the company at the time of manufacture. Likewise, Blue Bird Body Company cannot be responsible for any modification to factory-installed equipment and components.





## Child Restraints

### Young Children And Infants

Everyone in a vehicle needs protection. This includes infants and all other children. Neither the distance traveled nor the age and size of the traveler changes the need for everyone to use safety restraints. In fact, the law in every state in the United States and in every Canadian province says children up to a certain age must be restrained while in a vehicle.

Every time infants and young children ride in vehicles, they should have the protection provided by the appropriate restraint. Restraints must meet all applicable federal motor vehicle safety standards.

**WARNING** *People should never hold a baby or young child in their arms while riding in a vehicle. During a crash a baby will become too heavy to hold. For example, in a crash at only 25 mph, a 12 lb. baby will suddenly become a 240 lb. force on a person's arms. A baby should always be secured in an infant restraint. Young children must be secured in appropriate child restraints.*

### How Child Restraints Work

A child restraint system is any device designed for use in a motor vehicle to restrain, seat, or position children. A built-in child restraint system is a permanent part of the vehicle. An add-on child restraint system is a portable one that must be installed.

For years, add-on child restraints have used the adult belt system in the vehicle. To help reduce the chance for injury, the child must be secured within the restraint. The vehicle's belt system secures the add-on child restraint, and the add-on child restraint's harness system holds the child in place within the restraint.

When securing an add-on child restraint, refer to the instructions that come with the restraint. These instructions may be labeled on the restraint itself or in a booklet, or both.



### Universal Child Restraint Anchorage

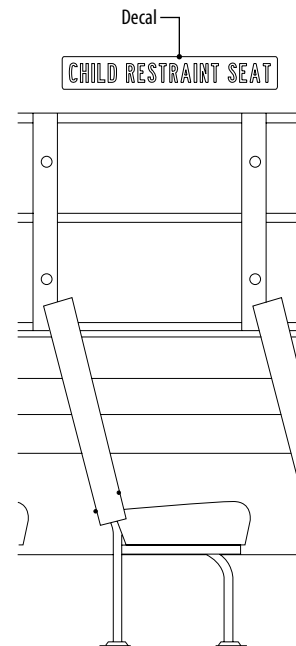
Seats in this bus equipped with the universal child restraint anchors are identified by a decal located over the seat above the window.

This vehicle may be equipped with a universal child restraint anchorage system. If so, you'll find two anchors in the front lower seatback where the bottom of the seatback meets the back of the seat cushion and a third anchor in the lower rear seatback. (See the Universal Child Restraint Anchorage illustration.)

In order to use this system, you need either a forward-facing child restraint that has attaching points (A) at its base and a top tether anchor (B), or a rear-facing child restraint that has attaching points (A) as shown.

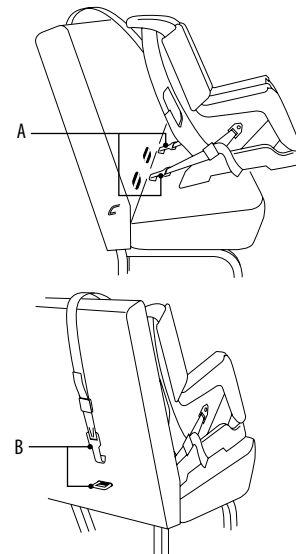
Whenever applicable, use the universal child restraint anchorage system instead of the vehicle's safety belts to secure a child restraint.

**WARNING** *If a child restraint isn't attached to its anchorage points, the restraint won't be able to protect a child sitting there. In a crash, the child could be seriously injured or killed. Make sure that the child restraint is properly installed using the anchorage points.*



### Securing A Universal Child Restraint

1. Find the anchors (A) for the seating position you wish to use, where the bottom of the seatback meets the back of the seat cushion. See illustration.
2. Put the child restraint on the seat.
3. Attach the anchor points on the child restraint to the anchors in the bus seat. The child restraint instructions will show you how.
4. Attach the top strap to the top strap anchor (B). Tighten the top strap according to the child restraint instructions.
5. Push and pull the child restraint in different directions to ensure it is secure.



## Wheelchair Lift

Either Ricon™ or Braun™ supplies this Blue Bird Vision optional feature. The appropriate operator's manual from the OEM is provided with your new bus. The wheelchair lift requires specific care and maintenance, and each vendor has requirements that must be met for the continued safe operation of the lift.

- The Ricon™ model S5010, "S" series lift provides a 34-inch (.864 m) by 51-inch (1.295 m) platform for the transport of the passenger.
- The Braun™ model L919FIB also provides a 34-inch (.864 m) by 51-inch (1.295 m) platform for the transport of the passenger.
- Both lifts provide a maximum of 48 inches (1.219 m) lift from the ground (street) level to the floor of the bus.

It is important that drivers familiarize themselves with the correct operational procedure (as outlined in the lift manufacturer's instruction manual) prior to attempting to load or unload a passenger.

1. Bring the vehicle to a complete stop, set the parking brakes and shift the transmission to Neutral ("N").
2. Activate the appropriate exterior warning lights required by state and local laws by turning the Lift Door switch on.
3. Place the Lift switch in the On position. This engages the brake interlock, to hold the bus in position.
4. Go to the Lift Door to open it from the outside. Use the lift control pendant to operate the lift in accordance with the instructions in the lift manufacturer's Operator's Manual

**CAUTION** *Be certain you understand the complete operating instructions for the lift before you attempt to load or unload a passenger.*

5. After the passenger is either loaded or unloaded, the lift must be stowed and the lift door securely closed and latched.
6. The Lift Switch must be in the "Off" position to release the interlock system.

All wheelchair lifts used in the Blue Bird Vision are provided with a method for manual operation of the lift. Refer to the lift manufacturer's instruction manual for the location and manual "emergency" operation.



## Windshield Wiper Blade

To replace a windshield wiper blade:

1. Remove the locknut (1) from the center of the wiper blade assembly.
2. Disconnect the washer hose.
3. Remove the wiper blade assembly.

Installation of a new wiper blade assembly is accomplished in the reverse order of the removal instructions above.



## Windows

Windows are located throughout your Blue Bird Vision bus. For safety purposes, keep all windows clean to ensure maximum visibility. Use a silicone spray lube every 30 days for maintaining latches and top window slides.

## Mirrors and Mirrors Adjustment

**WARNING** *The mirror system on this Blue Bird Vision has been designed to meet all field-of-view regulations. However, it is the responsibility of the driver to properly adjust the mirrors to provide adequate safety. Mirrors provide additional visibility and they must be properly adjusted for each driver prior to each trip. Mirrors are not a substitute for proper driver training and caution. Do not move the bus until each disembarking passenger is accounted for and clear of the vehicle. Failure to strictly adhere to this procedure can result in serious injury or death.*

There is a minimum of 4 external rearview mirrors on the Blue Bird Vision™. The curb-side rearview flat mirror and convex mirrors are both mounted from the top of the bus, near the top right-hand corner of the windshield. The two mirrors are mounted in a common housing. The driver's side rearview mirrors are mounted near the bottom left-hand corner of the windshield.

There is a minimum of 2 cross-view mirrors on the Vision, one at the forward, outside corner of each fender. The hardware for the fender mounts must be maintained at 20 – 25 Ft lb torque (27 – 34 N•m) to minimize vibration.

**CAUTION** *Do not over-torque the mirror mounting hardware.*

The outside rearview mirrors are designed to allow the seated driver a comprehensive view of the areas at each side of the bus and to the rear of the bus.

**WARNING** *There is a "blind spot" directly behind the bus that extends several feet to the rear of the vehicle.*

Mirrors must be adjusted for each individual driver of the bus.

1. Ensure the driver's seat is properly adjusted.
2. Adjust the right-hand flat mirror so that the tops of the right-hand windows are visible in the upper edge of the mirror and the right-hand side of the bus is visible along the vertical, inside edge.
3. Adjust the right-hand convex mirror so that the view in the convex mirror overlaps the view provided by the flat mirror above it. The right-hand side of the bus must be visible in this mirror as well.
4. Adjust the left-hand flat mirror in the same manner as described for the right-hand flat mirror.



- The driver must be able to see the entire test cylinder in each location.
- The driver must be able to see the entire top surface of cylinders "M" and "N".
- The driver must have a view of at least 200 feet from the surface of the mirror.
- The elliptical cross-view mirrors should be adjusted so the seated driver has a complete view of all cylinders "A" through "P", when they are positioned as shown in the illustration, and not directly visible.

- All mirrors must be cleaned and adjusted as necessary to provide a safe driving environment. The use of a mild ammonia/water solution is recommended to clean mirrors.

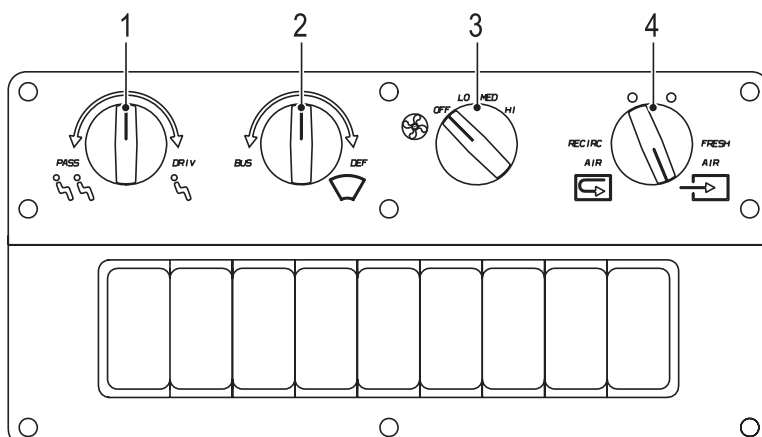


## Heaters and Defrosters

The heater on your Blue Bird Vision is a hot water type heater. The heat is produced by the engine and picked up by the engine coolant. When heat is desired in the passenger coach, the hot engine coolant is routed through heat exchangers (heater cores) located in the passenger area.

The heater may have a series of fan motors incorporated in the system to help direct warm airflow to particular areas of the coach, such as defrosters and the stepwell area. The heater controls are located to the left of the driver, on the switch panel. The warm air de-fusers are capable of being turned in different directions to help eliminate cool spots.

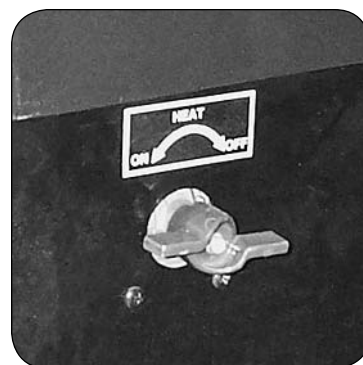
1. Damper - Adjusts air flow balance in two directions. By turning knob clockwise, a damper is moved and air is diverted toward the driver. By turning counterclockwise, the air is diverted toward passengers. The amount of air diverted is proportional to amount the knob is turned.
2. Defrost - Adjusts the air flow balance between the vehicle compartment and the windshield. By turning knob clockwise, a damper is moved and air is diverted toward the windshield. This should be done to defrost the windshield.
3. Blower - Adjusts the speed of the fan, which circulates the air in the system. In the counter clockwise position, the blower is off. By turning clockwise, 3 speeds can be achieved — low, median and high.
4. Fresh Air Damper - Controls the type air, which is circulated by the heater system and fan. By turning clockwise, air is circulated from the interior of the vehicle. This is desirable when trying to heat passenger compartment rapidly. By turning the control knob counterclockwise air from outside the bus is used in the system. This is helpful when trying to cool the vehicle.





The filters in the heater system must be maintained and changed on a regular basis, to maintain the airflow across the heater cores. The main heater filter is located behind a small panel at the driver's left. This panel is held in place by luggage type over the center clasps. To remove the filter, pull upward and outward. To replace the filter, press it firmly into position and replace the cover panel. The cover panel must be in place to maintain the airflow through the filter.

There is a cut-off valve located near the driver's left knee that will stop engine coolant flow into the heater core during warm weather.



There are two other heater cut-off valves to prevent engine coolant entering the passenger area during warm weather. One is at the firewall just below the engine coolant reservoir; the other is under the alternator at the engine coolant return to the water pump. All three valves must be in the open position to provide heat to the coach. Service personnel should normally position these valves at appropriate times.

If all the valves are open and there is no heat, check the coolant level. The efficiency of the heaters is determined, in part, by the speed of the engine. The water pump is a major factor in the circulation of the engine coolant; it pumps more when the engine is working. The engine also produces more heat when working than when idling. Your bus may be equipped with an auxiliary water pump in the heater system.

The Vision is equipped with a ducted defroster unit that is a part of the main or "driver's" heater. The airflow to the defroster duct is controlled by the manipulation of the switches at the driver's command.

Some options will also include a fan, mounted over the driver's head and to the left or right. This auxiliary fan will greatly increase the amount of warm air directed at the windshield.

If the auxiliary defroster fan begins to vibrate noticeably, carefully remove the front portion of the fan guard by disengaging the plastic clips around the perimeter.

Using a soft clean cloth, wipe the fan blades clean. Replace the fan guard before operating the fan.

**WARNING** *Never operate a fan without the fan guard in place. The spinning fan blade can cause serious bodily harm.*

If the preceding procedure fails to correct the vibration problem with the auxiliary fan, refer to properly qualified service personnel.





### Heater Options

There are several heater options available on the Blue Bird Vision. The placement and BTU rating of these options is determined by the choices made during the manufacture of your bus. Some considerations for the heaters in the coach area include the duration and severity of the cold weather experienced in your locale.

It is important that you familiarize yourself with the placement of the ancillary heaters because the filter for each must be maintained in a clean condition. Please refer to the vendor material supplied with your bus to learn the proper method of changing the filters. Generally, the heaters will be located under a passenger seat. The heater could be mounted to the underside of the seat, or it could be mounted on the floor under the seat. The mounting is dependant upon the options chosen.

**CAUTION** *After the first 1000 miles of operation, ensure that service personnel inspect and tighten all the hose clamps in the system to prevent engine coolant loss.*

## **Emergency Equipment**

### **First Aid Kit**

The first aid kit is located over the windshield toward the curbside of the bus. Each state has a specific location and contents guide that must be followed.

### **Fire Extinguisher**

The fire extinguisher is located according to options selected at time of manufacture. In all cases it will be mounted in the driver's area or near the emergency exits. All states have specific requirements for the location, type and size of the fire extinguisher for school buses operating within the state. All states have the requirement that the fire extinguisher be monitored to keep the charge level within the acceptable range, and the expiration date current. It is the responsibility of the driver to ensure compliance prior to each trip.

### **Body Fluids Clean-up Kit**

The body fluids clean-up kit is located in the general area of the first aid kit. However, each state has specific requirements for the location and labeling of this equipment. Know your state's requirements and maintain the kit accordingly.

### **Fire Axe and Crowbar**

The fire axe and crowbar are located on the electrical panel access cover to the left of the driver. Check the fasteners every 30 days to ensure they are tightened securely.

### **Flare Kit**

The flare kit is mounted on the left-hand side panel behind the driver's seat. The kit contents should be inventoried every 30 days, or as required by your state and local regulations. The mounting fasteners should be checked monthly to ensure security.



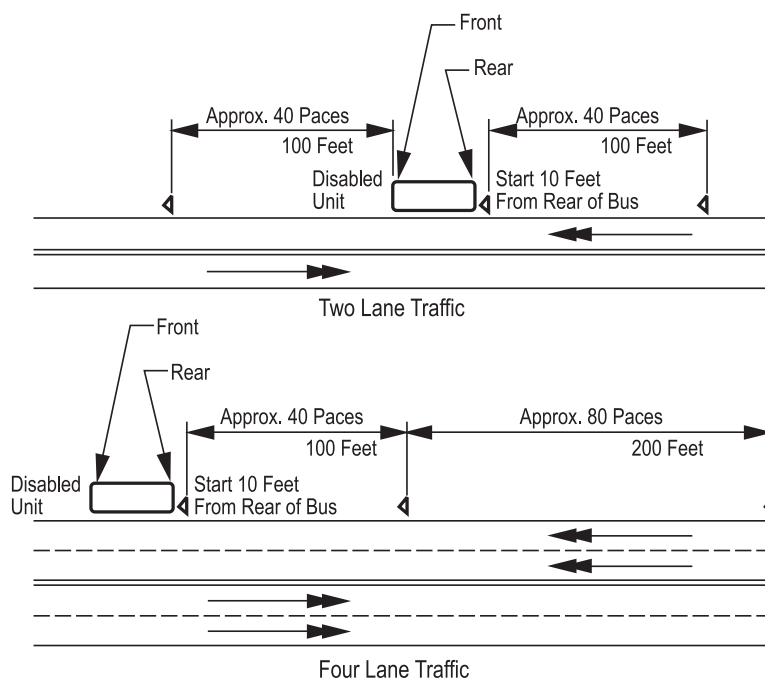
### Triangular Markers

For those states requiring the triangular markers to be located in the driver's compartment, this container is mounted under the driver's seat. For other states, it is mounted on the floor, under the rearmost left-hand seat or under the second right hand seat. The contents of the triangular warning device kit should be checked each month or as the regulations of your state dictate.

#### Marker Placement:

On a two-lane roadway, place a triangular marker 100 feet (about 40 paces) to the front of the vehicle, with reflective side facing oncoming traffic. Place another triangular marker 100 feet (about 40 paces) to the rear of the vehicle, with the reflective side toward overtaking traffic.

On a four-lane roadway, place one triangular marker 100 feet (about 40 paces) to the rear of the vehicle. Place another triangular marker 200 feet (about 80 paces) from the first marker (300 feet behind the vehicle). The reflective side should be facing overtaking traffic.



## Emergency Exits

Emergency exits are clearly identified with the words, "EMERGENCY EXIT". The operating instructions are written close to, or on, each exit.

Some units are equipped with an audible alarm that sounds when an emergency exit is unlatched. If a buzzer sounds when the ignition is switched to the "ON" position, check all the emergency exits to determine that they are closed and latched.

All emergency exits on this Blue Bird Vision meet FMVSS 217, "Bus Window Retention and Release". These illustrations are "typical" and depict various styles of emergency exits. The exits on this vehicle vary, depending on options selected at the time of manufacture.

**WARNING** All "Emergency Exits" should be inspected and tested daily. The labels and decals should be observed to be present and in a legible condition.

Note: See also "Transpec Safety Vent" below in this manual.





### Transpec Safety Vent

Transpec™ Safety Vents are designed to provide years of reliable service with a minimum of maintenance. All components are rust proofed with lifetime finishes. Moving parts are Teflon™-coated to eliminate the need for lubrication. Using paint or other coatings, such as graffiti-deterring coating, is not recommended.

Suggested maintenance includes periodic inspection of all fasteners for evidence of loosening from tapering or vibration. Regular cleaning with mild soap and water is best. Most other cleaning solutions available contain chemicals that will attack the plastics used in the manufacture of the vent. Graffiti removing compounds usually contain acetone, ether, lacquer thinner or other similar chemicals that are known to affect the strength of high impact plastics.

Most of the component parts for the safety vent are available for repairs, except the hinge. The decals are available from your Blue Bird distributor.



## Engine Access

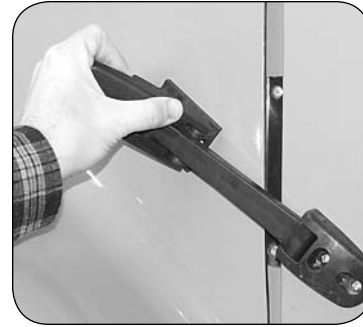
Engine access is gained by releasing the over-the-center cam type latches. One latch is located to either side of the engine cover (hood), near the front corner post of the coach.

1. Pull the front edge of the latch toward you.
2. As the cam clears the center, the rubber latch will pull the end section free of the latch hinge.
3. Allow the rubber latch to "dangle".
4. Repeat the process on the opposite side of the bus.
5. Pull firmly on the hood from the center of the front by placing your hand into the gripwell.
6. Gas springs will limit the forward/downward motion of the hood.
7. Allow the hood to rest against the gas springs.

**CAUTION** *Ensure that the mirrors do not hit anything as you open the hood. Never allow the weight of the hood to rest on the mirror mounts.*

To secure the hood in the closed position:

1. Release the hood lock located on either the right or left gas spring. See the pictures below.
2. Close the hood and seat it properly.
3. Position the trailing end of the latch in the fixed mounting hinge on the body cowling.
4. Working against the elasticity of the strap, push the latch end until it passes over the center of the cam.
5. Allow the latch to rest against the cowling. The elasticity of the latch strap will secure the hood while the bus is in motion.





## Entrance Door

There are two styles of entrance doors available on the Vision.

- The standard outward opening door.
  - A jackknife door set.
1. Keep the mechanism securely tightened.
  2. Lubricate the mechanism periodically, including all hinges and swivel parts.
  3. For manual door openers, ensure that the hand-operated mechanism works freely and crosses the center of the cam as the door closes.
  4. Repair or replace any worn seals as soon as possible.
  5. Before each trip, ensure that the door opens and closes properly, and that the hand lever crosses the locking cam as the door panels seat.

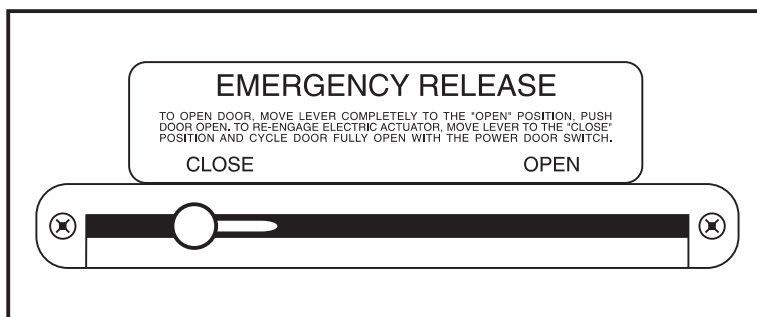
Regardless of the door style installed in your bus, the mechanism can be operated in only one of three ways:

The driver's manually operated opening lever is designed to incorporate an over-center cam locking action and features an automatic latching device. The driver automatically disengages the latch mechanism as the door is opened.

The doors may be pneumatically operated. In this case, the driver's manually operated lever is replaced with a control valve, and there is an "EMERGENCY" release located over the door to facilitate opening the doors if air pressure fails.

There is also an electrically operated option. The driver controls the door operation by the use of a switch that activates a motor mounted in the header. There is an "EMERGENCY" release for the electrically operated door as well.

To operate the door when the power assist (pneumatic or electrical) fails, move the "EMERGENCY RELEASE" in the door header to the right to the "OPEN" position.



### Security Locks for Doors

The security lock for the outward opening door is a “bolt” that slides into a hole in the header, when the door is in the closed position. The bolt is operated with a key from outside the bus. The driver must flip the hinged stop on the control lever down to prevent the manual control lever crossing the cam center and locking the door. If this happens, entrance may usually be gained through the rear door.

The security lock for the jackknife door is a key operated latch that engages a hook on the opposite door panel. The door must be closed completely for this feature to operate properly. The mechanism can only be operated from outside the vehicle with a key. To operate the security lock, insert the key and rotate the lock ring to engage the bracket on the other door panel. Remove the key. To open the door, insert the key into the security lock and rotate the latching lever as far as possible. Remove the key and open the door.

The security lock for the rear or emergency door may be a simple slide bolt type, or it may have a lock cylinder to position in the latch mechanism. Either type operates as an interrupt in the ignition system to prevent the bus from being cranked while the door is locked.



### Emergency Door

The rear center emergency door is 37.7 inches (.957 m) wide by 52.5 inches (1.333 m) high. The latching mechanism for the emergency door includes a single or three point bar lock. There is an inside handle and guard and an outside handle. The outside handle is recessed into the door. There are two panes of glass fitted in the door to assist the driver with rear view, eliminating some of the “blind” area at the rear of the bus.

This door is identified as “EMERGENCY DOOR” with 2 inch lettering. The identifying decal is located at the top of the glass panel.

The Vision is fitted with an audible alarm, activated by operation of the door latching mechanism. This alarm is provided to alert the driver that the rear door is unlatched.

Note: See also the sections of this manual entitled “EMERGENCY EXITS” and “SECURITY LOCKS” for optional variations and door locations.



## Exterior Compartments

There may be a luggage compartment on either the left (street) side or the right (curb) side of your bus. This luggage compartment will be positioned between the front and rear wheels. It may be singlewide (55 inches in width) or doublewide (75 inches in width). The fuel tank option chosen will determine the actual location of the luggage compartment.

A tool compartment can be located on either side of the bus just ahead of the rear axle.

## Battery Compartment

The battery compartment is located under the driver's window, immediately below the electrical access panel. Some states require that the battery access door be identified with a decal. To access the battery box, pull outward on the leading edge of the latch.

If the battery access door is provided with a lock, the fuel door key will operate it.

To secure the battery compartment door:

1. Ensure the battery tray is secure.
2. Press the battery compartment door closed.
3. The spring-operated latch will automatically latch the door.

## Fuel Door

The fuel door is located in the right rear overhang. The fuel door may be fitted with a security lock. If so, you must use the key to unlock the access door before fueling.

**WARNING** Remove the fuel cap slowly as fuel spray may cause injury.

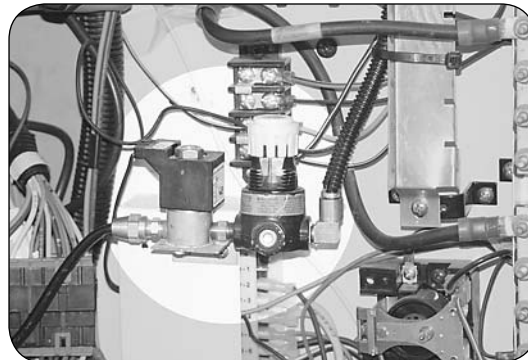
**WARNING** Observe fueling instructions that are printed on the inside of the fuel access door to avoid fire and/or explosion that could result in serious bodily harm or death. Never fill to more than 95% liquid capacity. 95% capacity is reached at the initial pump cut-off.

## Stop Arms

Federal Motor Vehicle Safety Standard 131 requires all school buses in the United States to have a "Stop Arm". However, each state has specific requirements pertaining to the installation of the stop arm or stop arms. All stop arms are provided as kits. There is a kit to match the state requirements from where the school bus was ordered. While the stop arms all provide an extra safety warning to alert other drivers, the specific requirements for the blade, lights, lettering and reflectivity vary greatly. Usually, the stop arm is located on the left side of the bus, at the front under the driver's window. Sometimes, there is another stop arm on the left toward the rear of the bus. The driver most commonly manually controls stop arms. There is a switch provided for this purpose. However, some states require that the stop arm be operated in concert with the warning lights when the bus is preparing to stop. In this case, the electronic controls are wired into the lighting system. Operation is automatic when the driver activates the warning light switch.

For pneumatically operated (air pressure) stop arms, the electric control switch operates an air solenoid valve that controls the flow of air to operate the stop arm. The air-operated system is dependant on the air brake system for pressure to operate.

The stop arm system does not require any special maintenance; however, the air pressure may need periodic adjustment. The air regulator is accessible from the electrical panel located under the driver's window, outside of the bus. Comparing it to the illustration may identify the air regulator. To adjust the air pressure, remove the wire-retaining clip and pull downward on the red lock ring. Turn the knob counterclockwise to decrease the airflow, and then slowly increase the air pressure until the stop arm is fully extended. Push the red lock ring upward and install the wire-retaining clip.





The stop arms can be electrically operated. There can be a discrete switch for the driver, or the system can be wired into the warning light circuit. In either case, the electrically operated stop arm requires some preventative maintenance to continue to operate as designed.

- Monthly, lubricate the breakaway hinge at the four pivot points. Use a high performance, penetrating lubricant. Triflow™ with Teflon™ is one such lubricant.
- Ensure that the stop arm moves freely.
- Check all the fasteners for security and tighten as necessary.
- Quarterly, remove the covers (both front and rear) to inspect the security of the internal fasteners. Tighten as necessary.

Some stop arms are equipped with lights. If so equipped, the lights must be on when the stop arm is extended. A few states allow the lights to be on while the stop arm is retracted. In these cases, the driver will be alerted by an audible signal.

Repair, maintenance and adjustment of the pneumatically operated Stop Arms and Crossing Arms should be referred to trained service personnel.

## **Tires, Wheels and Rims**

The tires on your Blue Bird Vision must be properly inflated whenever the vehicle is being operated. Tire pressure that is too low causes a loss of driver control, excess heat in the tire due to “flexing” of the sidewalls and excessive tire wear at the outside edges of the tire. Excessive tire pressure is dangerous because of the explosive nature of escaping pneumatic pressure and causes excessive tire wear in the center of the tread due to the crowning effect. The wheels on the Blue Bird Vision are steel, disc type wheels. There are 10 stud (or lug bolt) holes, on an 11.25-inch (285.74 mm) “hole circle” in an equidistant pattern. The wheel can be either hub-piloted or stud-piloted. There are 5 hand holes forming spokes in the wheel.

**WARNING** *Never operate a vehicle with under-inflated tires. Low air pressure can cause the tire to “flex” too much, creating excessive heating, possibly to the point of ignition. Low tire pressure also causes a loss of driver control. An inflated tire and rim assembly is a very dangerous item. When misused or in a worn-out condition, the tire can separate from the wheel and rim in an explosive manner. Fatal accidents have occurred as a result of improper training and care while handling inflated tires. Always refer to expert service personnel when possible. Without the proper tools, training and experience, it is very dangerous to replace a tire on the bus.*

The tires on the Vision are tubeless type, and are mounted on 15° drop center rims and wheels.

If there is a properly inflated spare available and you feel professional assistance is not an option, refer to the section on jacking the bus.

**WARNING** *Never attempt to inflate a seriously low tire. The rims may become dangerous at such times. Always seek professional service in this case.*

**WARNING** *Tire inflation pressure must not exceed the recommendations of the tire manufacturer or the wheel/rim manufacturer. You must consider the specific load, speed and application when pressurizing a tire. The inflation pressure information on the tire sidewall does not take the wheel/rim capacities into consideration. Tires should never be inflated beyond the pressure listed on the vehicle certification plate without consulting the tire manufacturer and the wheel/rim manufacturer.*



## Spare Wheel Location

The Vision may be fitted with a spare wheel and tire, depending on the options chosen at the time of manufacture.

The recommended procedure in the event of a flat tire is to summon professional assistance. The task of replacing a wheel on this vehicle is a difficult and dangerous one.

**WARNING** *Read and understand all the instructions in this manual, pertaining to changing a tire, before attempting to lift the bus or remove a wheel.*

The spare wheel/tire assembly may be located in any one of three possible locations, depending on the options chosen. Most buses do not have a spare wheel.

The spare may be mounted under the bus, in a special spare wheel carrier. The physical location of this carrier depends on the options chosen at the time of manufacture.

To remove a spare wheel stowed in this manner:

1. Remove 2 hex nuts securing the wheel.
2. Rotate the wheel assembly to release it from the locking mechanism.
3. Position the lug wrench into the hole provided and carefully winch the spare wheel to the ground.

**WARNING** *Maintain a firm grip on the lug wrench during this procedure. The wrench could slip due to the weight of the wheel and cause serious injury or death.*

To place the damaged wheel and tire into the spare carrier:

1. Position the wheel on the ground beneath the carrier.
2. Place the metal strap into the center of the wheel.
3. Remove the slack in the support cable while holding the metal keeper strap in position.
4. When the weight of the damaged wheel holds the keeper strap in position, continue to winch the assembly into the locked position.
5. Rotate the assembly to secure in position.
6. Install hex nuts to lock the assembly into position for transport.

The spare wheel could be stowed in a special compartment at either side of the bus, but generally this compartment is positioned on the right-hand (curb) side of the vehicle. The exact position is determined by the options chosen at the time of manufacture.

To remove a spare wheel assembly from this type stowage:

1. Unlatch the compartment door and stow it with the chain and hook assembly provided for this purpose.
2. Remove the "keeper" pin.
3. Pull the spare wheel carrier rack toward you as far as possible.
4. Remove the wheel hold-down clamp and lift the wheel assembly to place it on the ground.

**WARNING** *Do not slide the wheel assembly over the edge of the sliding rack. The rack will suddenly retreat into the compartment and drop the spare wheel assembly, possibly causing serious injury.*

To place the damaged wheel and tire assembly into the spare wheel compartment:

1. Position the spare carrier slide in the retracted position.
2. Position the damaged wheel against the opening in as high (nearly vertical) a position as possible.
3. Lift the damaged wheel and tire from the bottom, pushing inward at the same time.
4. The spare wheel will slide into the compartment.
5. Pull the rack out far enough to position and install the hold down clamp.
6. Secure the sliding rack.
7. Close and secure the compartment door.

The spare wheel may be mounted inside the bus. If so, it is located at the left-hand side of the bus, behind the last seat.

To remove the spare wheel and tire assembly from this stowage:

1. Open and secure the rear (EMERGENCY) door.
2. Remove the spare cover, if so equipped.
3. Remove the hexnut(s) securing the spare wheel to the carrier.
4. Carefully place the spare wheel on the ground through the rear door.

Mounting the damaged wheel and tire assembly in the spare carrier is accomplished in the reverse order of the removal procedure.



## Jacking Instructions

Roadside tire service should be performed by qualified professional personnel using the proper equipment.

Blue Bird does not recommend using the bumper to lift the bus. This bus should be lifted by means of a floor jack positioned under the axle, or by hydraulic lift on a heavy-duty tow vehicle. Ensure that the lifting device is secure against slipping off the axle. Most hydraulic jacks are more secure if positioned under the axle wrap-around; the fitting from which the axle/suspension U-bolts protrude. If the lifting device has a fitting which will prevent slippage, the axles may be lifted at a position inboard of the axle wraparound plates.

If the bus must be towed, use proper towing straps, not chains.

1. Ensure the bus is parked on a flat, level surface of sufficient firmness to support the weight of the bus concentrated on the "footprint" of the jack.
2. Chock the wheels in both directions.

**WARNING** *Never work under or around a bus supported only by a hydraulic jack. Always use jack stands or blocks as a safety device.*

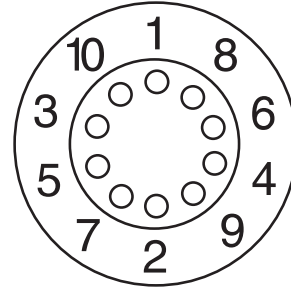
3. Position the jack at the jack point shown in the illustration, nearest the wheel to be removed.
4. Ensure the lugs are "broken loose".
5. Raise the wheel enough to rotate the wheel.
6. Position jack stands or blocks under the axle, inboard of, and as near the jack as practical.

## Changing a Flat Tire

The lug nuts are tightened to a torque value of 450 - 500 Ft lb (610 – 678 Nm). Without the proper power tools, it is very difficult to remove the lug nuts. The lug nuts must be “broken loose” before lifting the wheel completely off the ground.

**WARNING** *Never work around or under a bus supported only with a bottle jack.*

1. Chock all wheels. Properly position a jack or lift and raise the bus only a small amount, as seen by the suspension beginning to extend slightly.
2. Loosen the lug nuts slightly while the weight of the bus is still preventing wheel movement. Then raise the bus sufficiently to install a fully-inflated wheel.
3. Remove the lug nuts.
4. Position the spare as near to the hub as possible. You will probably need to raise the hub slightly to position the wheel on the studs (lugs).
5. Hand-tighten all lug nuts.
6. Using the lug wrench, tighten all the lugs until seated, but not yet fully tightened.
7. Lower the bus enough to lock the wheel in place.
8. Torque the lug nuts to 50 ft lbs (68 Nm) in the sequence shown.
9. Check the wheel for proper positioning on pilots and proper seating against the flange.
10. Tighten the nuts to 450–500 ft lbs (610 – 678 Nm) in the sequence shown.
11. Lower the jack and remove it from under the axle. Stow the damaged wheel and tire assembly, and the tools.





## Engine Cooling System

In today's modern engine designs, accurate maintenance of the cooling system is critically important to engine life. Simply maintaining coolant level and performing occasional coolant changes does not adequately ensure that the cooling system is healthy. The chemical balance of engine coolant must always be correct. This requires diligent adherence to the engine manufacturer's coolant specifications, maintenance schedules, and procedures. Accurate coolant system maintenance records should be kept.

The engine coolant level in the reservoir should be checked daily as a part of routine pre-trip inspection. But whenever the coolant level is low, it must be replenished with only pre-mixed coolant of the same type and brand installed. Never top off coolant with plain water.

Careful pre-trip inspection and a program of routine maintenance checks of the condition of the cooling system by service technicians should ensure against enroute emergencies such as worn hoses or loose clamps resulting in coolant loss. In the case of such an emergency, however, if anything other than original premixed coolant is added in order to allow the bus to proceed to a service facility, the coolant system must be completely drained, flushed, and properly refilled with approved coolant before being returned to routine service. Any enroute event requiring topping off of the coolant should be reported to service personnel responsible for maintenance of the bus.

**WARNING** *Exercise extreme care when removing the cap from the engine coolant reservoir. Always allow time for the engine to cool before removing the cap. The pressurized coolant may be very hot and can spray out, causing serious burn injuries.*

### Coolant Types

Engine coolant is generically divided between two types; "standard" and "long-life" (or "extended-life"). Extended-life coolants generally allow longer intervals between coolant changes (sometimes requiring additives to be added near the midpoint of their service life, and/or for special testing to be performed at certain intervals). Engine manufacturers, however, differ somewhat in regards to specifications for coolants which they recognize as "long-life" when used in their respective engines.

Blue Bird buses built as of August, 2006 come from the Blue Bird factory with one of three types of coolant. The standard coolant is John Deere Cool-Gard 50/50 premix, which is green in color. This coolant is considered extended life when installed in John Deere engines. It is to be considered standard-life coolant when installed in Caterpillar or Cummins engines.

Caterpillar equipped buses purchased with a long-life coolant option have been filled with Shell Rotella ELC 60/40 premix, which is red in color.

Cummins equipped buses purchased with a long-life coolant option have been filled with Fleetguard ES Optimax 60/40 premix, which is red in color.

Blue Bird installs decals on or near the deairation tank filler which state the type of coolant installed at the factory. The decal states the approved premixed coolant and coolant manufacturer's part number for one gallon quantities. The decal also lists the manufacturer's part number for the concentrate which is approved for mixing with the premix for stronger glycol concentration.

**CAUTION** *When replenishing or replacing coolant, only use coolant of the same type already installed. Never mix coolants of different color, type, or brand. Plain water is corrosive at engine operating temperatures. Never add plain water to the system. When using concentrated coolant to raise the glycol concentration for extreme temperature environments, Blue Bird recommends only mixing the concentrate with pre-mixed coolant of the same type; not mixing with water.*

#### Coolant Testing and Replacement

Each engine manufacturer has its own specific requirements for coolant testing and maintenance. Therefore, refer to the engine Operator's Manual for your bus and follow the engine manufacturer's maintenance specifications.

Blue Bird recommends that Caterpillar cooling systems with red extended life Shell Rotella ELC coolant should be tested according to the Caterpillar Operation and Maintenance Manual.

Blue Bird recommends that Cummins cooling systems with red extended life Fleetguard ES Optimax coolant should be tested by sending samples to a Fleetguard lab for a monitor C test as specified in the Cummins Operator's Manual.

The John Deere Cool-Gard coolant may be tested by sending a sample to John Deere for a Cool Scan test, or may be manually tested by qualified service technicians using a John Deere Three Way test strip, which is included in John Deere 3-Way Heavy Duty Coolant Test Kit TY6175.

Follow the engine manufacturer's procedure for draining, flushing, and refill.

Blue Bird buses equipped with Caterpillar or Cummins engines may also be equipped with an optional coolant filter. The coolant filter element installed at the Blue Bird factory is compatible with all three of the above-described coolants:

BLUE BIRD NUMBER	0064641
VENDOR (Wix) PART NUMBER	24070

**Shutters**

If your bus is equipped with radiator shutters, the purpose is to help control the engine operating temperature in extremely cold weather. The shutters are automatically controlled by the operating temperature of the engine, and are effective by controlling the amount of air flowing through the radiator cooling fins.

The shutters must be maintained and kept free of foreign material that would prevent them from operating. It is a good idea to inspect them for obstruction on a routine schedule, such as when checking the engine oil level. Remove any debris and, if necessary, seek technical assistance to determine whether the shutters operate properly.

### **High Idle Function**

The high idle control positions the throttle at high idle. This allows the engine to warm up faster than at the normal low idle position. High idle is limited to 1000 to 1200 revolutions per minute (RPM). High idle can be activated by a switch in the driver's area. With the transmission in the neutral position and the park brake set, move the toggle switch to the "HIGH IDLE" position to maintain a constant engine RPM above the normal idle speed.

**CAUTION** *Do not move the toggle switch to the high idle position unless the transmission is in Neutral and the park brake is engaged.*



### Prior to Starting the Engine

For the most complete engine starting details, refer to the Operator's Handbook from the engine manufacturer. A copy of this manual is provided in the material shipped with your new Blue Bird Vision. The information and/or instructions in the manufacturer's handbook will take precedence over the limited information in this manual.

Your Blue Bird Vision may be equipped with an engine alarm system, designed to help prevent major damage due to high coolant temperature and/or low engine oil pressure. If so equipped, when the engine coolant temperature exceeds 210° F (99° C) and/or the engine lubricating oil pressure falls below 6 psig, an alarm will sound.

**CAUTION** *The engine must be shut down immediately when the alarm sounds to avoid costly engine damage.*

**WARNING** *Engine exhaust contains products of combustion that may be harmful to your health. Always start and operate the bus in a well-ventilated area. If the engine must be operated in an enclosed area, vent the exhaust to the outside.*

Perform the required, daily, under-the-hood inspection and maintenance. Also perform any other periodic maintenance prior to starting the engine. This routine can help avoid costly major repairs later.

**CAUTION** *Engage parking brake for safety purposes.*

1. Look for obvious oil leaks, coolant leaks, loose belts and trash build-up.
2. Remove trash build up and arrange for any necessary repairs as a result of your inspection.
3. Look for cracks in the coolant hoses that may not be leaking yet.
4. Look for cracks in the drive belts and check that they are tight enough to drive the accessories.
5. Check the wiring for loose connections and obvious breaks in the insulation or frayed wires.
6. Check the oil level.
7. Check the fuel supply. Drain water from the separator, if equipped. Ensure the fuel supply valve is open.
8. Check the coolant level.
9. Check the air intake service indicator.

## Using Booster Cables

**WARNING** *Ensure that the ignition switch of the disabled vehicle is in the "OFF" position. Always connect the POS (+) battery cable first. Connect the NEG (-) cable to the chassis, away from the batteries. The batteries produce a highly flammable gas. Do not smoke while working near batteries. Take all precautions to prevent sparks from any source in the proximity of the batteries.*

1. Ensure the posts on the jumper and bus batteries are clean.
2. Using the RED jumper cable, connect the POS (+) terminal of the bus battery to the POS (+) terminal of the jumper battery.
3. Using the BLACK jumper cable, connect one end to the NEG (-) terminal of the jumper battery.
4. Connect the other end of the BLACK jumper cable to a solid chassis ground on the bus, such as the engine. Do not connect the black jumper cable to the NEG (-) terminal of the bus battery.

**CAUTION** *Do not crank the engine for more than 30 seconds. Allow the cranking motor to cool at least 2 minutes between attempts to start the engine.*

5. Allow time for the jumper battery to boost the bus battery before attempting to start the engine.
6. After the engine starts, remove the NEG (-) BLACK booster cable from the ground on the bus.
7. Remove the NEG (-) BLACK booster cable from the terminal of the booster battery.
8. Remove the POS (+) RED booster cable from the POS (+) terminal of the bus battery.
9. Remove the RED booster cable from the POS (+) terminal of the booster battery.



## Starting the Engine

**WARNING** *Never use ether as an aid in trying to start the engine.*

1. Engage the parking brake and place the transmission in neutral.
2. Turn the keyed ignition switch to the "ON" position.

**CAUTION** *Wait until the "Wait to Start" light is no longer illuminated before turning the ignition to the "Start" position.*

3. Once the "Wait to Start" light is no longer illuminated, turn the key to "START", to crank the engine.

Note: If the engine does not start after a maximum of 30 seconds of cranking, release the key start switch.

The air inlet heater will turn on if the sum of the coolant temperature and the air inlet temperature is less than 109° F (25° C). The "Wait to Start" indicator time may vary somewhat depending upon the temperature. Colder temperatures may increase the time the "Wait to Start" indicator illuminates.

**CAUTION** *The switch should be held in the "Start" position for a maximum of 30 seconds. If the engine has not started in 30 seconds, the operator should not try to start the engine again for at least 2 minutes, in order to allow the starter (cranking motor) time to cool*

If the ignition fails to make a connection, check the vandal lock(s) to ensure it/they is/are not engaged.

4. The "CHECK ENGINE" lamp will flash while the engine is cranking. This lamp will extinguish after the engine starts and achieves proper oil pressure.
  - If the lamp fails to flash during cranking, have qualified service personnel correct the problem.
  - If the lamp continues to flash after the engine is running, refer to qualified service personnel.

The "AIR INLET HEATER" indicator lamp will flash for a minimum of 2 seconds, regardless of the coolant temperature. If the "AIR INLET HEATER" flashes for more than 2 seconds, wait until the lamp stops flashing before attempting to start the engine.

**CAUTION** *Do not engage the cranking motor when the flywheel is turning. Do not attempt to start the engine under load.*

**CAUTION** *The oil pressure should rise within 15 seconds after the engine starts. Do not increase engine speed until the oil pressure gauge indicates normal. If oil pressure is not indicated on the gauge in 15 seconds, do not operate the bus. Stop the engine and refer to qualified service personnel.*

5. Release the key switch and allow it to return to the "ON" (or run) position immediately after the engine starts. After the engine starts, ensure that the transmission is still in the neutral position. Once a normal engine oil pressure and air pressure are established, the vehicle may be operated at a light load and speed.
6. After the engine has started, the air inlet heater may continue to run in a "continuous" mode or intermittently. The air inlet heater will automatically turn off when the sum of the engine coolant temperature and the air inlet temperature exceeds 127° F (35° C).
7. If the engine is operated at a light load and low speed, it will reach normal operating temperature more quickly than if it idles at no load. When idling in cold weather, increase the engine idle speed to a maximum of 1200 revolutions per minute (RPM); this is the "HIGH IDLE" function. Do not exceed the no-load recommended RPM during the warm up process. Limit unnecessary idle time to 10 minutes.

## Starting Problems

For more detailed instructions, refer to the engine manufacturer's Operator's Manual or Handbook.

One or more of the following items may cause an occasional starting problem:

- The Park Brake must be on to start the bus.
- The Transmission must be in Neutral.
- If the bus is equipped with Vandal Locks, the bus will not start unless the doors or windows equipped with Vandal Locks are closed.
- Low battery charge.
- A malfunctioning starter.
- Problems with the wiring harness or connections.
- A lack of fuel.

If the fuel system has been run dry, fill the fuel tank and prime the fuel system. Locate the remote fuel filter between the frame rails near the rear axle. Press the black button on top of the filter repeatedly to prime the system. When button becomes hard to press, system is primed.





## Allison Automatic Transmission

The information in this Operator's Manual is intended to assist the driver in selecting the proper gear for the circumstances. Allison supplies more detailed information about your particular transmission than space allows in this manual. Read and understand the Allison Transmission Operator's Manual for more details about operation, care, and maintenance. If you did not receive this manual with your bus, please contact the transmission supplier.

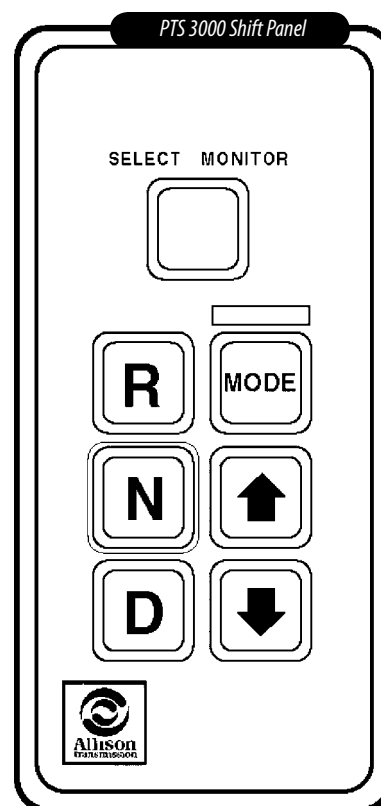
The Blue Bird Vision is equipped with one of several Allison PTS™ Series transmissions depending upon options chosen at the time of purchase. For the Driver, the operation of the various PTS Series transmission models is the same, except for these differences:

- The optional PTS 2200 transmission is operated by a shifter lever mounted on the dash to the driver's right, and includes a Park position.
- The standard PTS 2500 model is operated by a shift lever and does not have a Park position.
- The PTS 3000 is operated by a push button shifter panel.

**WARNING** Each time you park the bus or leave the driver's seat while the engine is running:

1. Apply the service brakes to bring the vehicle to a complete stop, and continue to hold the brake pedal.
2. Ensure the engine idle is in the "low" position.
3. Shift the transmission to Neutral.
4. Apply the park brake. (On buses equipped with hydraulic brakes, fully lift the park brake lever. On buses equipped with air brakes, Pull the Park Brake valve.)
5. Release the service brake pedal, allowing the park brake to take on the load of holding the bus.
6. If the transmission has a Park position (PTS 2200), shift the transmission to Park.
7. If parked in any unusual situation, such as a severe incline, chock the wheels and take any other precautionary measures necessary to ensure the bus doesn't move.

*If this procedure is not followed, the bus could move unexpectedly and cause serious injury or death and/or property damage.*



## Allison Model 3000 PTS Transmission

The Allison electronic transmission provides five forward speeds and one reverse. Fourth gear is a 1-to-1 ratio while the fifth gear is an overdrive with a 0.75-to-1 ratio. The push-button shift selector is located on the right area of the dash. The transmission and selector must be in neutral to start the engine.

Transmission and shift selector will return to "N" when engine is stopped and power switched off. If it does not return to "N" or if it starts in any other gear, the unit has malfunctioned. Seek service immediately.

The push-button shift selector has "R", "N", "D", down arrow, up arrow, a "MODE" button, and a digital display. When a range button is pressed, a tone sounds, the "SELECT" indicator displays the chosen operation (if the Electronic Control Unit [ECU] determines the shift is acceptable), and the transmission shifts to the starting range as indicated on the monitor display. In "DRIVE", selection of a specific gear can be accomplished by pressing the "UP" or "DOWN" arrow buttons. Conditions resulting in the "CHECK TRANSMISSION" light, located in the instrument cluster, will disable the pad and no tones will sound (see Check Transmission Light).

The "MODE" button, located on the push-button shift selector, activates an alternate shift schedule. By default, the start up is in primary or power mode. Pressing the "MODE" button causes the transmission to enter the economy mode. The display will indicate the economy mode is engaged. In economy mode, the transmission shifts to higher gear at lower engine rpm.

### Allison Model 3000 PTS Transmission Gear Selection

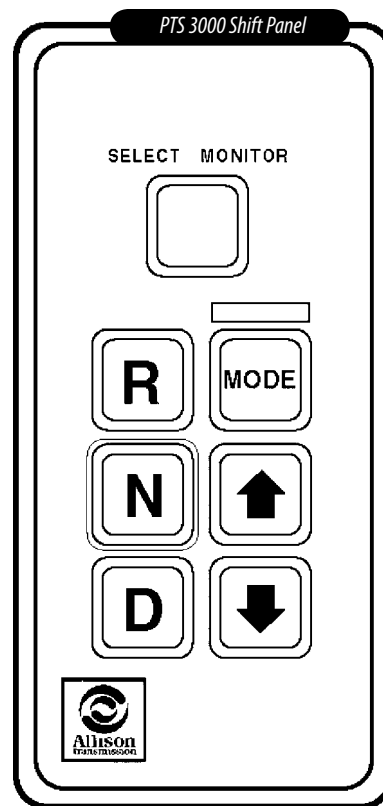
**WARNING** When leaving the vehicle while the engine is running, the operator must ensure the transmission is in "Neutral", the parking brake is engaged, and the wheels are chocked. The vehicle may move unexpectedly without these precautions.

**R—Reverse.** The vehicle must be completely stopped before shifting from forward to reverse or from reverse to forward. The select indicator and the monitor will display "R" when the vehicle is in reverse.

**N—Neutral.** Use neutral to start the engine, to check vehicle accessories, and for extended periods of engine idle operation. Under normal operation, the transmission is directed by the ECU to neutral during the startup procedure. This occurs automatically with the push-button selector. If the vehicle starts in any range except neutral, seek service immediately.

**WARNING** Do not allow your vehicle to coast in neutral. This practice can result in transmission damage. Engine retard and braking assistance is not available when the transmission is in neutral. It may not be possible to get the transmission back into gear while the bus is moving.

**D—Drive.** When "D" is selected, the vehicle will start to move in first gear and the



**CAUTION** If the transmission will not shift into "D" (drive), or "R" (reverse), it may be because of an adverse operating condition. Check for the illumination of the "RANGE INHIBITED" light or "CHECK TRANS" light. See the appropriate section of the Allison transmission manual.



transmission will upshift automatically through each gear as the speed increases. As the vehicle slows down, the transmission will downshift automatically. The select indicator will display the highest gear available and the monitor will display the current operating gear.

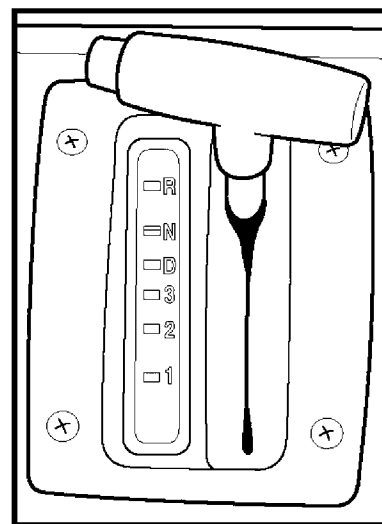
**2, 3, 4, 5 Gears.** Occasionally, the road conditions, load, or traffic conditions will make it desirable to restrict the automatic shifting to a lower gear. Positions "5", "4", "3", and "2" provide progressively greater engine braking for going down grades (the lower the gear, the greater the braking effect). Push the "Up" or "Down" arrow to the desired gear. The select indicator will display your choice and the monitor will display the gear the bus is operating in.

**1 Gear.** Use position "1" gear when pulling through mud and deep snow, when maneuvering in tight spaces, or while driving up or down grades. Low gear provides the vehicle maximum power and maximum engine braking power.

The transmission incorporates a hold feature to prohibit upshifting beyond the gear selected during normal driving. For downhill operation, however, the transmission may upshift beyond the selected gear when the engine's governed speed is exceeded, and damage to the engine is possible.

### Allison Model 2200 and 2500 PTS Transmission

The Allison transmission provides four forward speeds and one reverse. The transmission is controlled with the selector lever located to the driver's right. The selector lever must be in the "N" position (neutral) to start the engine. If the engine starts in any other position, the neutral start switch is malfunctioning. Use "D" (drive) for all normal driving conditions. The vehicle will begin to move in first gear, and as you press the accelerator, the transmission will upshift automatically. As the vehicle slows down, the transmission will automatically downshift to the correct gear. Use "3" and "2" when the road, load, or traffic conditions make it desirable to restrict the automatic shifting to a higher range. When the conditions improve, return the range selector to the normal driving position D. These positions also provide progressively greater engine braking power (the lower the gear range, the greater the braking effect). Use "1" when pulling through mud or snow or driving up steep grades. This position provides maximum engine braking power. Use "R" (reverse) for backing the bus. The bus should be completely stopped before shifting from a forward gear to reverse. Reverse gear provides the greatest traction.



#### Allison 2500 PTS Transmission Gear Selection

**WARNING** When leaving the vehicle while the engine is running, the operator must be sure the transmission is in Neutral, the parking brake is engaged, and the wheels are chocked. The vehicle may move unexpectedly without these precautions.

**R—Reverse.** Use reverse to back up the vehicle. The vehicle must stop completely, with the engine returning to idle speed, before shifting from forward to reverse or

from reverse to forward. If your bus is equipped with a reverse warning signal, it will activate when shift selector is in reverse.

**CAUTION** Do not idle in "R" (reverse) for more than five minutes. Extended idle time in "R" (reverse) may cause transmission overheating and damage. Always select "N" (neutral) whenever time at idle exceeds five minutes.

**N—Neutral.** Use neutral to start the engine, to check vehicle accessories, and for extended periods of engine idle operation. If the vehicle starts in any other range, seek service immediately.

**WARNING** Do not allow your vehicle to coast in neutral. This practice can result in transmission damage. Engine retard and braking assistance is not available when the transmission is in neutral. It may not be possible to get the transmission back into gear while the bus is moving.

**D—Drive.** When "D" is selected, the vehicle will begin to move in first gear and the transmission will upshift automatically through each gear as speed increases. As the vehicle slows down, the transmission will downshift automatically.

**CAUTION** Do not idle in "D" (drive) for more than five minutes. Extended idle time in "D" (drive) may cause transmission overheating and damage. Always select "N" (neutral) whenever time at idle exceeds five minutes.

**2, 3, 4 Gears.** Occasionally, the road conditions, load, or traffic conditions will make it desirable to restrict shifting to a higher gear. Positions "4", "3", and "2" provide progressively greater engine power and braking for going down grades (the lower the gear, the greater the braking effect).

**1 Gear.** Use position "1" gear when pulling through mud and deep snow, when maneuvering in tight spaces, or while driving up or down grades. Low gear provides the vehicle with its maximum power and maximum engine braking power.

**Park.** If your bus is equipped with a "Park" selection, use it only after coming to a complete stop, and then apply the parking brake. Do not rely upon the transmission park pawl position alone to prevent the bus from rolling.

## Allison Automatic Transmission Driving Tips

### Accelerator Control

The pressure of your foot on the accelerator pedal influences the automatic shifting. An electronic signal tells the ECU how far the driver has depressed the pedal. This provides the accurate shift spacing and control necessary for maximum performance.

### Downshift or Reverse Inhibitor Feature with Allison 3000 PTS Transmission

Although there is no limitation on upshifting, there is a limit on downshifting and shifts from neutral into drive or reverse. If a downshift or neutral-to-range shift is

**CAUTION** If the transmission will not shift into "D" (drive), or "R" (reverse), it may be because of an adverse operating condition. Check for the illumination of the "RANGE INHIBITED" light or "CHECK TRANS" light. See the appropriate section of the Allison transmission manual.



selected when the engine speed or throttle position is too high, the ECU/TCM will not allow the shift until reaching a lower speed. If idle speed is too high, shifts to range are prohibited. A continuous “beep” tone sounds when reverse is selected during forward movement or if a neutral-to-range shift is selected at too high an engine speed.

#### **Cold Weather Starts**

Most Allison transmissions are programmed to restrict operation until operating temperature is reached. When the transmission fluid temperature is below -25° F (-32° C), the transmission will not shift into an operating range and the “Check Transmission” light will be illuminated. When the transmission fluid temperature is between -24° F and 20° F (-31° C to -7° C), the transmission will operate in 1st, 2nd, or Reverse only. If there is no other problem with the transmission, the “Check Transmission” light will not be illuminated. For transmission fluid temperatures above 20° F (-7° C), the transmission will shift and operate in a normal manner. Be sure to read and understand the cold weather operation instructions in the Allison Transmission™ Operator’s Manual supplied with the bus.

#### **Using the Engine to Slow the Vehicle**

To use the engine as a braking force, shift the range selector to the next lower range. If the vehicle is exceeding the maximum speed for a lower gear, use the service brakes to slow the vehicle to an acceptable speed where the transmission may be downshifted safely. After reaching the lower speed, the ECU will automatically downshift the transmission. Engine braking provides good speed control for going down grades. When the vehicle is heavily loaded, or the grade is steep, it may be desirable to select a lower range before reaching the grade. If engine-governed speed is exceeded, the transmission will upshift automatically to the next range.

**CAUTION** *The transmission incorporates a hold feature to prohibit upshifting above the range selected during normal driving. For downhill operation, select a lower transmission range. However, if engine governed speed is exceeded, the transmission may upshift to the next higher range. Use the vehicle brakes to prevent exceeding engine governed speed in the held range.*

**WARNING** *If you only downshift or only use the service brakes when driving down a steep grade, you can lose control. To maintain control, combine downshifting, braking, and other retarding devices. Downshifting to a lower transmission range increases engine braking and helps maintain control. The transmission has a feature to prevent automatic up shifting above the lower range selected. However, during downhill operation, if the engine governed speed is exceeded in the lower range, the transmission may upshift to the next higher range. This will reduce braking and could cause a loss of control. Apply the vehicle brakes or other retarding device to prevent exceeding engine governed speed in the lower range selected.*

### **Electric Retarder (Optional)**

On some Visions, an electric retarder control switch is mounted on the vertical panel, left of the driver. It has five positions (one "off" and four retard positions). Each higher number increases the amount of retardation to slow the vehicle.

The retarder is a vehicle slowing device, not a stopping device. A full stop must be accomplished with the service brakes. Always release the accelerator completely before applying the retarder. Do not use the retarder when road surfaces are slippery. Consult the retarder manufacturer's Owner's or Operator's Manual for additional information.

### **Transmission Indicators**

#### **Range Inhibited Light**

Under certain adverse operating conditions, the Transmission Control Module (TCM) may determine that it is necessary to restrict gear selection to protect the transmission from damage. When this happens, the "RANGE INHIBITED" warning light will activate, and the transmission may not respond to the operator's commands. Please see the Range Inhibited Light and Shift Inhibits section of the Allison Transmission operator's manual for more information.

#### **Check Transmission Light**

The "CHECK TRANSMISSION" light is located in the instrument panel. The electronic control system is programmed to inform you if operating parameters have been exceeded and to automatically take action to protect the transmission. A diagnostic code will be registered when the "CHECK TRANSMISSION" light is on.

When the engine is started, the "CHECK TRANSMISSION" light turns on for a few seconds. This momentary indication shows that the lighting circuit is working properly.

If the light illuminates after startup, a problem has been detected. A diagnostic code will be recorded and shifts may be restricted. Depending on the problem's severity, the operator may continue driving to reach service assistance. The TCM may restrict upshifts and downshifts. Please see your Allison Transmission operator's manual for more details on how shifts may be inhibited.

#### **Transmission Oil Temperature Gauge**

An optional gauge on the instrument panel indicates the transmission oil temperature. Extended operations at low vehicle speeds with the engine at full throttle can cause excessive oil temperatures. These temperatures may overheat the engine cooling system and lead to engine and/or transmission damage.

If excessive temperature is indicated by the engine coolant temperature gauge, stop the vehicle and check the cooling system. If the cooling system appears to be functioning properly, shift to neutral and accelerate the engine to 1,200–1,500 rpm. This will reduce the transmission temperature to operating level within two or three



minutes. If high temperature persists, stop the engine and have the overheating condition investigated by service personnel.

If the transmission oil temperature gauge indicates excessive temperature, check the oil level in transmission (refer to the Oil Check Procedure in your Allison Transmission Operator's Manual). Stop the vehicle and shift to neutral. Accelerate the engine to 1,200–1,500 rpm. The temperature should return to normal within two or three minutes before the vehicle resumes operation. Normal temperature for both on and off-highway operation is 160° to 200° F. Oil temperature should never exceed 250° F. In units equipped with electronic transmissions, if the sump oil temperature reaches 250° F, the TCM will inhibit operation in the higher gears and turn on the "OIL TEMP" light, located on the shifter cover.

If high temperature in either engine or transmission persists, stop the engine and have the overheating conditions investigated by maintenance personnel.

**CAUTION** *The engine should never be operated for more than 30 seconds at full throttle with the transmission in gear and the vehicle not moving. Prolonged operation of this type will cause the transmission oil temperature to become excessively high and will result in damage to the transmission.*

## Manual Transmission

Optionally, your Blue Bird Vision may be equipped with an Eaton FS-6406A manual transmission. This six-speed transmission will benefit operators of any skill level. The uncomplicated shifting sequence is a convenience for the skilled driver and a real benefit for the less proficient.

The information in this Operator's Manual is intended to assist the driver in shift sequence operation and lubrication of the manual transmission. For further detailed information on the Eaton FS-6406A transmission see the Roadranger Driver Instructions manual or visit their website at [www.roadranger.com](http://www.roadranger.com).

The Eaton FS-6406A provides six forward speeds and one reverse, and are shifted as you would shift any synchronized manual transmission. Follow the simple 6-speed shift pattern.

## Operation

### *Driving Tips*

- Always use the clutch when making upshifts or downshifts. Premature synchronizer failure can result from not using the clutch.
- Always select an initial starting gear that provides sufficient reduction for the load and terrain.
- Never slam or jerk the shift lever to complete gear engagements.
- Never coast with shift lever in neutral position.
- Never downshift at too high of a road speed.

**WARNING** *When parking the vehicle or leaving the cab, always place the shift lever in neutral and set the parking brakes.*

### *Initial Start-Up*

**WARNING** *Before starting a vehicle always be seated in the driver's seat, move the shift lever to neutral and set the parking brakes.*

1. Make sure the shift lever is in neutral and the parking brakes are set.
2. Turn on the key switch, start the engine.
3. Apply the service brakes.
4. Depress the clutch pedal to the floor.
5. Move the shift lever to the desired initial gear.
6. Release the parking brakes on the vehicle.
7. Slowly release the clutch pedal and apply accelerator.



In the following instructions, it is assumed that the driver is used to operating heavy-duty trucks and tractors, and can coordinate the shift lever movement and clutch pedal to make smooth gear engagements while upshifting or downshifting.

#### *Upshifting*

1. Depress the clutch pedal, move the shift lever to the next desired speed.
2. Release the clutch pedal.
3. Accelerate.
4. Continue upshifting.

#### *Downshifting*

Although the transmission's first gear is synchronized it is advised that a downshift into first gear be completed at a very slow speed to prevent engine over-speed.

1. Always use the clutch when downshifting from gear to gear to prevent premature synchronizer failure.
2. Depress the clutch pedal, move the shift lever to the next desired speed.
3. Release the clutch pedal.
4. Slow the vehicle.
5. Continue downshifting.

**WARNING** Before working on the vehicle or when leaving the cab with the engine running, place the transmission in neutral, set the parking brakes, AND block the wheels.

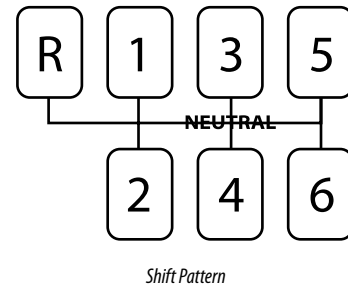
#### **Lubrication**

Proper lubrication procedures are the key to a good all-around maintenance program. If the oil is not doing its job, or if the oil is ignored, all the maintenance procedures in the world are not going to keep the transmission running or assure long transmission life.

The Eaton transmission is designed so that the internal parts operate in an oil circulating bath created by the motion of the gears and shafts.

Thus, all parts are amply lubricated if these procedures are closely followed:

1. Maintain oil level.
2. Follow maintenance interval chart.
3. Use only recommended lubricant.
4. Buy from a reputable dealer.



# Maintenance Interval Chart

Eaton Roadranger CD50 Transmission Fluid	
HIGHWAY USE - Heavy Duty and Mid-Range	
Initial Fill with Eaton Roadranger CD50 Transmission Fluid	
Every 10,000 miles (16090 Km)	Check fluid level. Check for leaks.
Every 250,000 miles (402336 Km)	Change transmission fluid.
OFF-HIGHWAY USE	
Every 40 hours	Inspect lubricant level. Check for leaks.
Every 500 hours	Change transmission fluid where severe dirt conditions exist.
Every 1,000 hours	Change transmission fluid (Normal off-highway use.)
HIGHWAY USE - Heavy Duty and Mid-Range	
Initial Fill with Other Recommended Oil	
First 3,000 to 5,000 miles (4827 to 8045 Km)	Factory fill initial drain. Refill with Eaton Roadranger CD50 Transmission Fluid; thereafter follow maintenance intervals above.
Heavy Duty Engine Lubricant or Mineral Gear Lubricant	
HIGHWAY USE	
First 3,000 to 5,000 miles (4827 to 8045 Km)	Factory fill initial drain.
Every 10,000 miles (16090 Km)	Inspect lubricant level. Check for leaks.
Every 50,000 miles (80450 Km)	Change transmission lubricant.
OFF-HIGHWAY USE	
Every 30 hours	Change transmission lubricant on new units.
Every 40 hours	Inspect lubricant level. Check for leaks.
Every 500 hours	Change transmission fluid where severe dirt conditions exist.
Every 1,000 hours	Change transmission lubricant (Normal off-highway use.)

Change your transmission oil filter every time the fluid or lubricant is changed.

## Notice

Change your transmission oil filter every time the fluid or lubricant is changed.



### Recommended Lubricant

Type	Grade (SAE)	Fahrenheit Ambient Temperature
Eaton Roadranger CD50 Transmission Fluid	50	All
Heavy Duty Engine Oil MIL-L-2104B, C or D or API-SF or API-CD (Previous API Designations Acceptable)	50 40 30	Above 10 degrees F. Above 10 degrees F. Below 10 degrees F.
Mineral Gear Oil with rust and oxidation inhibitor API-GL-1	90 80W	Above 10 degrees F. Below 10 degrees F.

**CAUTION** Do not use EP gear oil or multi-purpose gear oil. Additives and friction modifiers must not be introduced.

### Proper Oil Level

Make sure oil is level with filler opening. Because you can reach oil with your finger does not mean oil is at proper level. (One inch of oil level is about one gallon of oil.)

### Draining Oil

Drain transmission while oil is warm. To drain oil remove drain plug at case bottom. Clean the drain plug before re-installing.

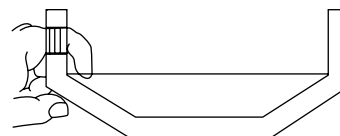
### Refilling

Clean case around filler plug and remove plug from case side. Fill the transmission to the level of the filler opening. If the transmission has two filler openings, fill to the level of both openings.

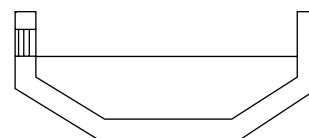
The exact amount of oil depends on the transmission inclination and model.

**CAUTION** Do not over fill - this causes oil to be forced out of the case through the front bearing cover.

**CAUTION** When adding oil, types and brands of oil should not be mixed because of possible incompatibility.



Improper Oil Level



Proper Oil Level

## Service Brakes

Your Blue Bird Vision may be fitted with hydraulic disc brakes or air-powered drum type brakes, depending on the options chosen at the time of manufacture.

There is a different feel to the operation of hydraulic brakes versus air brakes; however, they perform the same task. Either system is designed and built to stop and hold the bus under the full range of driving conditions for which the Vision is intended to operate.

**WARNING** *Hydraulic brakes are power assisted. The brakes will be noticeably less effective when the engine is not running. The bus should not be moved without the engine running.*

The hydraulic brakes are arranged in a dual system, whereby the front brakes and the rear brakes operate independently of each other. The braking function will be greatly diminished by the loss of either the front or the rear brakes; however, it will be possible to stop the bus.

**WARNING** *Do not operate the bus with the loss of either the front or the rear portion of the system. Stop the vehicle and obtain professional assistance immediately.*

The hydraulic brake system includes an auxiliary electric pump that acts as a backup for the hydraulic pressure supplied by the power steering pump. With the engine not running and the key switch in the "ON" position, the electric pump will come on. This will provide some assistance in the brake system, but it will be much less effective than the power assist provided by the power steering pump.

**WARNING** *Check the operation of this auxiliary pump before each trip. If it fails to come on when the key is turned to the "ON" position, before the engine starts do not operate the bus. Seek immediate professional assistance.*

**WARNING** *Inspect the level of the brake fluid in the reservoir on a regular basis. Too little fluid in the system will cause a malfunction. Be careful to put only brake fluid in the brake system and power steering fluid in the steering system.*

Inspect the level of the brake fluid reservoir at least weekly; more often if there is reason to believe it is low. When the brake pedal depresses more than normal (goes closer to the floor) or when the pedal feels "mushy", check the reservoir level. If you need to add fluid (DOT-3) frequently, have the system checked out by a professional mechanic.

**CAUTION** *Use only DOT-3 brake fluid in the brake system. Ensure that the fluid is put into the proper reservoir. The power steering fluid reservoir is located adjacent to the brake fluid reservoir. The brake fluid reservoir is mounted to the top of the brake master cylinder. The power steering reservoir is mounted to the firewall, adjacent to the brake master cylinder.*



## Parking Brake

Your Blue Bird Vision may be equipped with either hydraulic or air brakes. The two systems employ different kinds of parking brake mechanisms.

A Blue Bird Vision equipped with hydraulic brakes employs a hand-operated parking brakelever, located to the Driver's left. When the driver pulls this lever into the engaged position, a mechanical linkage causes a brake shoe assembly to close around a brake drum attached to the driveshaft, preventing the bus from moving. (It should be noted that this type parking brake becomes inoperative if the driveshaft is disconnected, as when the bus is being prepared for towing.) The mechanical parking brake must be kept adjusted properly for maximum holding power.

Adjust the cable linkage by turning the grip portion of the hand brake lever. The brake shoes should not engage the driveshaft when the brake is released; however, they should grip the driveshaft securely when the hand brake is engaged. When the parking brake is properly adjusted, the lever will snap firmly into place, and lever effort will be 90-100 pounds.

The parking brake should hold the fully loaded bus on a 20% incline on a dry paved surface. If the incline is wet or covered with ice or snow, do not park on it. The brake will hold, but the tires may not.

**WARNING** *Parking the bus on an incline of more than 20% will require the use of wheel chocks properly placed.*



On Blue Bird Visions equipped with air brakes, the parking brake function is provided by coil springs incorporated within the rear wheel brake actuation chambers. When the parking brake valve on the dash is pulled outward, air pressure is vented from the rear brake actuators, allowing the springs to engage the rear brakes and locking the rear wheels. When the parking brake valve is pushed in, it allows the air pressure in the rear brake actuators to overcome the spring pressure, thereby releasing the rear spring brakes.

In the air brake system, if the air compressor becomes inoperative, low air pressure may cause the rear brakes to engage and lock. If this happens, the Driver should call for professional help. If the bus must be moved, it is possible to release the rear brake chambers with a tool designed for the purpose. This tool is stowed in a tubular housing located on the side of the rear air chamber housings.

**WARNING** *Never attempt to release the spring brake until the wheels have been chocked in both directions. The bus will begin to move as the spring brakes are released, depending on the incline of the parking space.*



To release the spring brake manually:

1. Chock the wheel in both directions.
2. Remove the spring brake release stud from the stowage pocket on the side of the air chamber.

3. Run the hex nut of the release stud as far up the threads as necessary to insert the tang end into the spring brake chamber.
4. Clean the end of the spring brake chamber.
5. Remove the plastic plug in the end of the spring brake chamber.
6. Insert the tang end of the release stud into the spring brake chamber.
7. Turn the release stud 1/4-turn to the right (clockwise).

**WARNING** Ensure the wheels are chocked in both directions, before releasing the spring brake manually. The bus will move without restraint and could result in serious injury or death.

8. Using a wrench of the proper size, tighten the hexnut on the release stud until the brake releases.

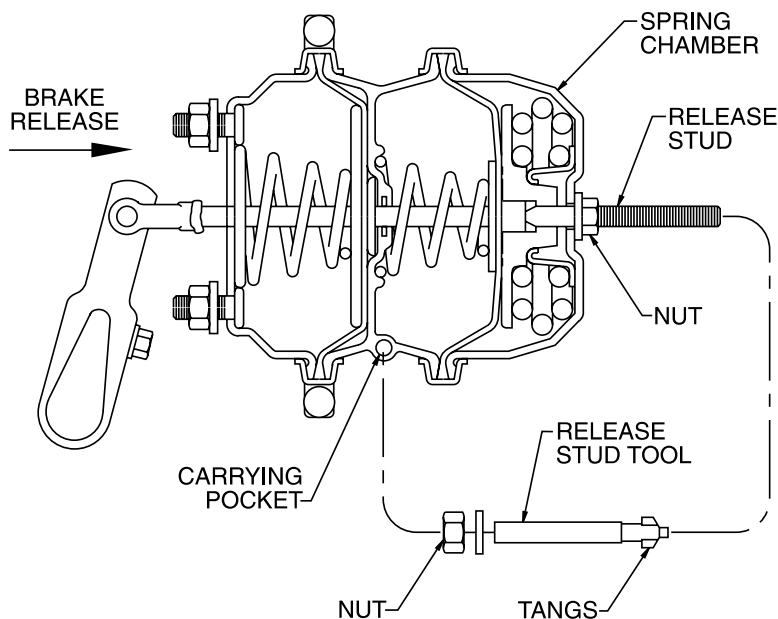
Ensure that the release stud is removed from the air chamber and stowed properly before placing the bus back in service.

If your bus is air brake equipped, it is necessary to maintain the air storage tanks and the drain valve for continued safe operation.

To drain the air tanks, turn the petcock located on the tank to allow the air pressure and water to escape the tank. This procedure should be performed daily.

**WARNING** Do not move the bus until the air system is pressurized.

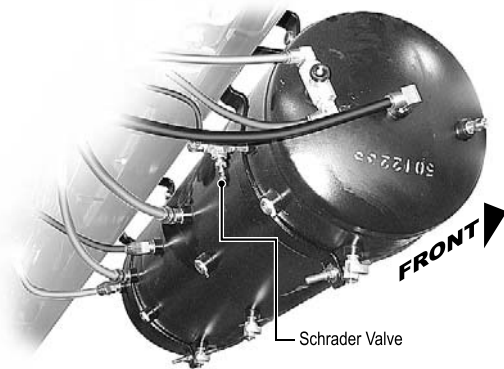
If your air system is fitted with a dryer, there should be little, if any, moisture in the tanks. However, it should be checked.





### Schrader Valve

Visions equipped with air brakes are fitted with a Schrader valve located on the air tank. This valve allows the system to be pressurized with a standard air hose without the engine running, in order to perform certain service operations, or to allow release of the spring brakes, such as in emergency situations in which the bus must be moved or towed.



### Lift Door Interlock

On Visions equipped with wheelchair lifts, a Brake/Throttle Interlock system prevents the vehicle from moving while the lift door is open. (The system is optionally installed on some vehicles to interact with the entrance door.)

The interlock causes the throttle to be inoperative, and applies the service brakes when the lift door is open. A momentary override switch is provided for special circumstances when the vehicle must be moved with the door open. (The system includes a speed-sensing feature, to prevent its activation when the bus is moving at normal driving speeds.)

The Interlock system is intended as a safety backup system to help avoid danger if the Driver fails to apply the parking brake when operating the lift. The Driver should not rely upon the Interlock system for normal roll-prevention during lift operation, and should always apply the park brake when leaving the Driver's seat for this or any other purpose.

### Towing or Pushing

The Vision should not be pushed or towed any more than enough to free the vehicle from mud or snow. Optional tow hooks are located at the front and/or rear of the vehicle under the bumper. Tow hooks are designed to tow or pull with both hooks simultaneously.

**WARNING** *The tow hooks are designed for horizontal pulling only; not for lifting. Never attempt to lift the bus by the tow hooks. Do not pull or tow with an individual hook. Blue Bird does not recommend towing or jacking the vehicle by the bumpers. When towing more than a few feet, measures must be taken to prevent potential damage to the transmission. This is accomplished by removal of the rear wheel drive axles by a qualified service technician.*

## General Maintenance Schedules

The following charts list maintenance procedures which should be performed by qualified service technicians with regularity to maintain the Blue Bird Vision.

### About Service Intervals

The charts show recommended minimum service intervals. More frequent service intervals should be considered if the vehicle is operated in extreme conditions such as high humidity and/or dusty environments. Time intervals are shown in terms of months or mileage. The correct interval will be whichever is the first to occur.

Some components should be regularly inspected, but do not lend themselves to universal intervals, because their normal service life is highly dependent upon local conditions. For these components, any estimated interval would result in overservicing in some locales and underservicing in others. Such intervals are left to the judgement of the local technician, and the service interval indicated is *As Required*. It is important to understand that this designation should not be taken as an optional inspection. Every item in the following tables should be considered mandatory, and an *As Required* interval should be viewed as emphasizing the importance of the local service operation first determining, and then strictly adhering to, an appropriate interval. Regardless of the interval determined appropriate, the operation must not be overlooked.

### Vendor-Supplied Maintenance Guidelines

The technician should bear in mind that many of the components which are installed on the Vision by Blue Bird, are neither manufactured nor serviced by Blue Bird. Service and Maintenance information more detailed than that presented in this manual may be available from the component manufacturer.


**First Month Then Every 3 Months or 3000 Miles**
**Cooling System**

Inspect & Tighten Hose Clamps	Tighten radiator hose clamps to 90 in lb. Tighten heater hose clamps to 45 in lb.
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**First 100 Miles Then Every 10,000 Miles**
**Tires & Wheels**

Inspect & Tighten Lug Nuts	Torque to 450-500 ft lb with calibrated torque wrench. Do not over-tighten. Do not lubricate nuts or studs. Operating conditions may require more frequent checks.
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**First 1000 Miles Then Every 3 Months or 6000 Miles**
**Frame**

Inspect & Tighten Body Tie Downs Body Tie Down Clamps	Inspect for missing, damaged rubber pads. Tighten clamps to 37-41 ft lb.
Inspect & Tighten Body Tie Downs Firewall Box Isolator Mounts	Inspect rubber discs for cracking or damage. Inspect spring & fastener for damage. Tighten to 52-56 ft lb.
Inspect & Tighten Body Tie Downs Front Isolator Mounts	Inspect rubber blocks for cracking or damage. Inspect spring & fastener for damage. Tighten to 52-56 ft lb.
Inspect & Tighten Body Tie Downs Rear Isolator Mounts	Inspect rubber discs for cracking or damage. Inspect spring & fastener for damage. Tighten bracket to 70-80 ft lb. Tighten Isolator to 54-58 ft lb.

**First 1000 Miles Then Every 6 Months or 6000 Miles**
**Axle & Suspension, Front**

Inspect & Tighten SofTek Spring Suspension U-Bolts	Tighten to 285-305 ft lb.
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**Axle & Suspension, Rear**

Inspect Comfort Air Suspension Ride Height	Shock length, eye-to-eye: 22.68" +- .25"
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**First 1000 Miles Then Every 6 Months or 10,000 Miles**
**Axle & Suspension, Rear**

Inspect & Tighten Comfort Air Suspension U-Bolts	Tighten 7/8" U-Bolts to 400-450 ft lb. Tighten 3/4" U-Bolts to 260-320 ft lb.
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**First 1000 Miles Then Every 12 Months or 12,000 Miles**
**Heaters & Defrosters**

Inspect Front Heater Hoses &amp; Clamps

Inspect for evidence of leaks or deterioration. replace with proper parts.

**Axle & Suspension, Front**

Inspect & Tighten AirTek Suspension Axle  
To Suspension Fasteners

Tighten to 285–305 ft lb.

**First 5000 Miles Then Every 12 Months or 24,000 Miles**
**Transmission**

Replace Transmission Sump Filter

**First 5000 Miles Then Every 24 Months or 24,000 Miles**
**Transmission**

Replace Transmission Main Fluid Filter

**First 11,000 Miles Then Every 6 Months or 6000 Miles**
**Cooling System**

Inspect Charge Air Cooler

Inspect for clogging debris.

**As Specified by Engine Manufacturer**
**Cooling System**

Replace Coolant

See your Engine Operator's Manual. Use only premixed coolant(s) approved by the engine manufacturer. Never mix different types or brands of coolant.

**Engine**

Replace Oil &amp; Filter

See Engine operators manual for oil and filter specifications and maintenance interval.

Adjust Valves

See Engine manufacturer's Service Manual for interval.

**As Specified by Transmission Manufacturer**
**Transmission**

Adjust Transmission Shift Cable

See Transmission Chapter.



## Every Day

### Doors

Test Wheelchair Lift	Follow the manufacturers recommendations.
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### Emergency Equipment

Inspect Fire Extinguisher Charge	Ensure that Extinguisher Charge is not expired.
Inspect Fire Extinguisher Mounting Bracket	Ensure that Extinguisher bracket is secure and operates correctly.
Inspect First Aid Kit Contents	Ensure that kit supplies are fully replenished, clean, and not expired.
Inspect First Aid Kit Mounting Bracket	Ensure that mounting bracket is secure and operates correctly.

### Emergency Exits

Inspect All Emergency Exits	Test all emergency exits for proper operation, including warning buzzer.
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### Warning Devices & Signs

Test Stop Arms & Crossing Arms
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### Windows

Inspect All Mirrors	Clean, adjust mirrors.
Inspect All Windows	Clean Windshield, door glass, driver's window, rear vision windows, rear door windows.

### Brakes

Inspect Air Brakes Air Lines & Fittings	Inspect for leaks or physical damage.
Drain Air Brakes Air Tanks	Drain daily in cold weather; weekly in warm weather.
Inspect Air Brakes Brake Chambers	See Air Brakes Chapter for inspection criteria.
Inspect Air Brakes Brake Shoes	Wear depends upon application environment. See Meritor Cam Brakes Appendix in Air Brakes Chapter for guidelines.

### **Cooling System**

Inspect Coolant Level	Top off with premixed coolant of same type as installed. Never mix coolants of different colors, types, or brands. See engine Operator's Manual for details.
Inspect Entire Cooling System	Visually inspect for any signs of leakage.

### **Electrical**

Inspect All Lights	Check all running, stop, marker, hazard, and warning lights for proper operation.
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### **Engine**

Inspect Oil Level	See Engine operators manual for oil specifications.
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### **Fuel System**

Inspect Fuel Cap	
Inspect Water Separator Petcock Drain	Check for water contamination.

### **Intake System**

Inspect Intake Tract Duct & Elbow	Visually inspect for proper fit and sealing, cuts, abarsions, signs of dirt contamination.
Inspect Intake Tract Restriction Indicator	Replace filter element if indicator is red.

### **Steering**

Inspect Power Steering Fluid Level	Replinish to full mark. Dextron III.
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### **Tires & Wheels**

Inspect All Tires & Wheels	Check air pressure. Visually inspect tires, tread wear, lug nuts, including spare.
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### **Transmission**

Inspect Transmission Fluid Level	Check production order for proper type of fluid to be added.
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**Every Week****Seats**

Inspect & Tighten Passenger Seats Cushion Screws	Inspect for loose cushions clips.
Inspect Passenger Seats Seat Belts	Lubricate buckles, clean webbing as required. Replace any damaged webbing straps.
Inspect Passenger Seats Upholstery	Inspect for cuts, tears, wear and soiled areas.

**Brakes**

Inspect Hydraulic Brakes Pads	Replace if worn to within 1/8" lining remaining.
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### Every Month or 3000 Miles

#### Doors

Lubricate All Doors Vandal Locks	Spray Apply lubricant into key locks. Use LPS #1 for sliding bolt locks.
Adjust Jack Knife Door Air Pressure	See Body Construction / Doors / Jack Knife Door
Lubricate Jack Knife Door Hinge Pins	LPS 1
Adjust Jack Knife Door Roller Bracket	Adjust for proper open/closed position.
Adjust Jack Knife Door Switch	See Body Construction / Doors / Jack Knife Door
Adjust Outward Opening Door Control Rod	
Adjust Outward Opening Door Control Rod Bracket	Adjust for full and secure closure without binding.
Adjust & Lubricate Outward Opening Door Linkage	Adjust linkage for firm closure, and to ensure rear panel closes first.
Lubricate Outward Opening Door Pivots	Lubricate pivot pins with LPS 1.
Adjust Outward Opening Door Roller Bracket	Adjust for full and secure closure without binding.
Lubricate Wheelchair Lift Lube Points	See model-specific literature provided with lift.

#### Emergency Exits

Lubricate All Emergency Exits Hinges	LPS #1
Lubricate Rear Emergency Door Hinges	Lubricate at hinge grease fittings.
Lubricate Rear Emergency Door Hold-Open	Apply ASTM D4950 GC-LB Grade 2
Lubricate Roof Hatch Hatch Seal and Latch	Silicone lubricant to prevent sticking of rubber seal. Spray silicon lubricant into latch mechanism.

#### Floor

Inspect Floor Drains	Check drain hole in each body section under window for debris obstruction.
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### Seats

Lubricate Driver's Seat	Lubricate per manufacturers recommendation.
Inspect & Tighten Passenger Seats Mountings	Use standard torque for bolt size , tread type and grade.

### Warning Devices & Signs

Lubricate Stop Arm, Electric 4-Point Pivot	Lubricate four hinge pivot points with Try-Flow lubricant
Inspect & Tighten Stop Arm, Electric Fasteners	Check interior and exterior fasteners for loosening.

### Windows

Lubricate Passenger Windows Latches & Slides	Use silicone lubricant.
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### Electrical

Inspect Battery Electrolyte Level	Replenish with distilled water.
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### Every Month or 6000 Miles

#### Warning Devices & Signs

Adjust Stop Arm, Air Air Pressure	Adjust for full deployment and retraction
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### Every Month or 10,000 Miles

#### Axle & Suspension, Rear

Inspect Rear Axle Lubricant Level	If low, refill to bottom of filler opening. Use same lubricant type as already installed.
Inspect Spring Suspension Whole Assembly	Visually inspect for damage.

### Every Month or 300,000 Miles

#### Brakes

Inspect Hydraulic Brakes Fluid	DOT-3 brake fluid.
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### Every 3 Months or 3000 Miles

#### Cooling System

Inspect Radiator Fins	Clean debris from fins.
Inspect Water Pump Belt	Inspect condition and tension of belt.

### Every 3 Months or 5000 Miles

#### Brakes

Lubricate Air Brakes S-Cam	See Meritor Cam Brakes Appendix in Air Brakes Chapter for guidelines.
Lubricate Hydraulic Brakes Calipers	Lube per meritor specs.

#### Driveline

Lubricate Driveshafts Slip Joint	NLGI Grade #1 or #2 multipurpose grease.
Lubricate Driveshafts U-Joint Bolts	NLGI Grade #1 or #2 multipurpose grease.
Inspect & Tighten Driveshafts U-Joint Bolts	Tighten to 45-50 ft lb.

#### Electrical

Inspect Alternator Connections	Inspect for loose wires, damaged terminals, damaged insulators.
Inspect Battery Ground Strap	Check for solid connection, tight fasteners and absense of corrosion.

#### Fuel System

Inspect Fuel Lines	Inspect for leaks or signs of abrasion.
Inspect Fuel Tank Vent	Inspect for obstruction.

#### Intake System

Inspect Air Cleaner Filter Element	Inspect for proper seating, secure lid. Replace if soiled, wet, or damaged.
Inspect Intake Tract All Fasteners	Inspect for signs of contaminate infiltration, loose clamps, wear spots, holes in piping
Inspect Intake Tract Charged Air Tubing	Inspect for signs of contaminate infiltration, loose clamps, wear spots, holes in piping
Inspect & Tighten Intake Tract Hose Clamps	Tighten to 10 in lb.
Inspect & Tighten Intake Tract Spring Loaded Clamps	Tighten to near full spring compression.
Inspect Intake Tract Support Bracket	Visual inspection. Repair damaged parts immediately.



Inspect & Tighten Intake Tract T-Bolt Clamps	Tighten to 50 in lb.
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Inspect & Tighten Intake Tract Worm Gear Clamps	Tighten to 38-42 in lb.
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### **Steering**

Lubricate Axle Steering Linkage Drag Link	NLGI #2 EP multipurpose grease rated GC-LB or equivalent.
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Lubricate Axle Steering Linkage King Pins	NLGI #2 EP multipurpose grease rated GC-LB or equivalent.
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Lubricate Axle Steering Linkage Tie Rod Ends	NLGI #2 EP multipurpose grease rated GC-LB or equivalent.
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Lubricate Intermediate Steering Shaft Slip Joint	Lubricate splines with multipurpose grease.
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### **Every 3 Months or 24,000 Miles**

#### **Brakes**

Inspect Air Brakes Air Dryer	See Bendix appendix for specific model in Air Brakes Chapter.
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Inspect Hydraulic Brakes Booster & Master Cylinder	Inspect for signs of leakage or physical damage.
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### Every 6 Months or 6000 Miles

#### Warning Devices & Signs

Lubricate Destination Sign Hinges

Lubricate Destination Sign Roller Gears

Lightweight grease such as White Lube.

#### Axle & Suspension, Front

Inspect AirTek Suspension Air Spring

Inspect for wear, abrasions, cuts, or other damage.

Inspect AirTek Suspension Ride Height

Shock length, eye-to-eye: 18.5"  $\pm$  .25"

Inspect & Tighten AirTek Suspension Ride Height Control Valve Bolts

Tighten to 8–10 ft lb.

Inspect & Tighten AirTek Suspension Shackle Bracket Pivot Bolts

Tighten to 300–325 ft lb.

Inspect & Tighten AirTek Suspension Shock Absorbers

Inspect for signs of leakage, wear, or damage. Tighten mounting bolts to ( 125 ft.lbs - 135 ft,lbs )

Inspect AirTek Suspension Whole Assembly

Visually inspect for damage.

Inspect & Tighten SofTek Spring Suspension Shackle Bracket Pivot Bolts

Tighten to 380–420 ft lb.

Inspect & Tighten SofTek Spring Suspension Shock Absorbers

Inspect for signs of leakage, wear, or damage. Tighten mounting bolts to 215 ft lb.

Inspect & Tighten SofTek Spring Suspension Spring Pin Lock Bolts

Tighten to 380–420 ft lb.

Inspect SofTek Spring Suspension Whole Assembly

Visually inspect for damage.

#### Axle & Suspension, Rear

Inspect & Tighten Comfort Air Suspension Shock Absorbers

Inspect for signs of leakage, wear, or damage. Tighten upper shock mounts to 50–70 ft lb. Tighten lower shock mounts to 150–180 ft lb.

Inspect Comfort Air Suspension Whole Assmebly

Visually inspect for damage.



### Brakes

Replace Air Brakes Air Compressor Filter

Clean Air Brakes Check Valves

Clean & Lubricate Air Brakes Treadle Valve | See Bendix Treadle Valve Appendix in Air Brakes Chapter.

Clean Air Compressor Governor

Inspect Hydraulic Brakes Calipers | Inspect for signs of leakage or physical damage.

Adjust Hydraulic Brakes Park Brake Lever | Adjust engagement pressure at the lever to 90–100 lb.

### Electrical

Inspect Battery Battery Posts | Clean and apply anti corrosion agent.

### Exhaust System

Inspect Exhaust Pipe Joints | Inspect for loose clamps, leaks, damage.

### Fuel System

Replace Fuel Filter Filter Element

Clean Fuel Filter Inlet Screen | Clean. Replace if damaged.

### Steering

Lubricate Steering Gear Pitman Arm Pivot | NLGI #2 EP multipurpose grease rated GC-LB or equivalent. Use hand-operated grease gun.

### Every 6 Months or 10,000 Miles

#### Axle & Suspension, Rear

Inspect & Tighten Comfort Air Suspension Air Spring Anchor Bolts	Tighten to 20–30 ft lb.
Inspect & Tighten Comfort Air Suspension Air Spring Fasteners	Torque to 30–35 ft lb.
Inspect & Tighten Comfort Air Suspension Leveling Valve Mount Bolt	Tighten to 60–85 in lb.
Inspect & Tighten Comfort Air Suspension Lever Linkage Locknut	Tighten to 100–150 in lb.
Inspect & Tighten Comfort Air Suspension Lower Shock Mount	Tighten to 260–320 ft lb.
Inspect & Tighten Comfort Air Suspension Quick Align Bolts	Tighten to 525–575 ft lb.

#### Brakes

Lubricate Air Brakes Cam Shaft Housing	NLGI #2 EP multipurpose grease rated GC-LB or equivalent. Use hand-operated grease gun.
Lubricate Air Brakes Haldex Slack Adjusters	See Haldex lubricant specs in Air Brakes chapter.
Lubricate Air Brakes Meritor Slack Adjusters	See Meritor lubricant specs in Air Brakes chapter.

#### Engine

Inspect Belt & Tensioner	Closely inspect Belt & Tensioner
Clean Crankcase Breather	Clear breather hose of debris or obstruction.
Test Engine Oil	Perform oil sample analysis per Caterpillar specifications.

#### Steering

Lubricate Steering Column	Vision manual says to lubricate steering column. Where? With what? Check model applicability
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### Every 12 Months

#### Intake System

Test Intake Tract Restriction Indicator	Test indicator with vacuum gauge and pump.
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**Every 12 Months or 12,000 Miles**
**Heaters & Defrosters**

Tighten Front Heater Fasteners	All fasteners holding such heaters in place in unit. For details on fasteners check installation prints.
Clean Front Heater Filter & Core	Clean dust from cores. Replace filter elements.

**Axle & Suspension, Front**

Inspect & Tighten AirTek Suspension Air Spring Fasteners	See a instl. diagram for torque spec's.
Inspect & Tighten AirTek Suspension Pin Lock Bolts	Tighten to 380–420 ft lb.

**Axle & Suspension, Rear**

Inspect Comfort Air Suspension Ride Height	Shock length, eye-to-eye: 24.68" +- .25"
Inspect Comfort Air Suspension Ride Height	Shock length, eye-to-eye: 21.75" +- .25"
Inspect & Tighten Comfort Air Suspension Shock Absorbers	Inspect for leakage or damage. Torque upper mount bolts to 50–70 ft lb. Torque lower mount bolts to 160–180 ft lb.
Inspect & Tighten Comfort Air Suspension Torque Arm Bolts	Torque to 150–205 ft lb.
Inspect & Tighten Comfort Air Suspension U-Bolts	Torque 7/8" bolts to 400–450 ft lb. Torque 3/4" bolts to 260–320 ft lb.
Inspect & Tighten Rear Axle U-Bolts	Tighten to 300–350 ft lb.
Inspect Spring Suspension Rebound Pins	Verify that cotter pins are installed.
Inspect & Tighten Spring Suspension Shock Absorbers	Inspect for signs of leakage, wear, or damage. Tighten locknuts to 75–100 ft lb.
Inspect & Tighten Spring Suspension Spring Radius Fasteners	Tighten locknuts to 100–125 ft lb.

**Cooling System**

Test Entire Cooling System	Pressure Test Cooling system.
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**Steering**

Inspect Hydraulic Pump Body & Seals	Inspect for leaks.
Inspect Steering Gear Body & Seals	Inspect for leaks.

### Every 12 Months or 24,000 Miles

#### Brakes

Clean Air Brakes Pop Off Valves

#### Steering

Replace Hydraulic Reservoir Filter Element

Replace element and fluid. Replace more frequently in severe operating conditions. Dextron III.

#### Transmission

Inspect Transmission Vent

Clear vent hose of debris or obstruction.

### Every 12 Months or 50,000 Miles

#### Axle & Suspension, Rear

Replace Rear Axle Petroleum Based Lubricant

Hypoid Gear Oil. Viscosity depends upon operating climate. See Viscosity/Temperature chart.

### Every 12 Months or 100,000 Miles

#### Axle & Suspension, Rear

Replace Rear Axle Synthetic Lubricant

Viscosity depends upon operating climate. See Viscosity/Temperature chart.

### Every 18 Months or 20,000 Miles

#### Cooling System

Lubricate Shutters Pivots

Use Never Seize spray lubricant.

### Every 24 Months or 24,000 Miles

#### Brakes

Clean Air Brakes Parking Brake Valve

See Bendix Appendixes in Air Brakes Chapter.

Clean Air Brakes Quick Release Valves

See Bendix Appendixes in Air Brakes Chapter.

Clean Air Brakes Relay Valves

See Bendix Appendixes in Air Brakes Chapter.

Clean Air Brakes Spring Brake Valve

See Bendix Appendixes in Air Brakes Chapter.



Fluids & Filters				
Fluid	Type	Capacity	Filter	Comments
Engine Oil Shallow Oil Sump	Caterpillar DEO	With Filter Change: 19 Quarts (18 Liters) Without Filter Change: 17 Quarts (16 Liters)		SAE 10W-30 viscosity when ambient temperature is above 0°F (-18°C) and below 104°F (40°C). See Engine Oil Viscosity chart, below, for other temperature ranges.
Engine Oil Deep Oil Sump	Caterpillar DEO	With Filter Change: 27 Quarts (25 Liters) Without Filter Change: 25 Quarts (23 Liters)		
Engine Coolant	John Deere Cool-Gard 50/50 premix (standard only)	7 ½ Gallons (excluding heater system)	BB 0064641 Wix 24070	Caterpillar and Cummins equipped buses may have optional extended-life coolant installed. Never mix different coolant colors, types, or brands. See Engine Cooling System section for details.
Transmission Fluid	Transynd™	7.4 Quarts (7 liters)	BB 0033381	Transmission refill capacity is substantially less than the initial fill because some fluid remains in the transmission cavities after draining.
Rear Axle Oil	Hypoid Gear Oil	35 pints (16.9 liters)		See Rear Axle Viscosity Chart for appropriate viscosity.
Front Axle Grease	Chevron Dura Lith Grease EP NLGI 2			
Front Axle Oil	Chevron RPM Synthetic Transmission Fluid SAE 50			If equipped with optional front oil lubricated bearings.
Brake Fluid	DOT 3		BB 0067254	DOT 3 and DOT 5 must not be mixed. If brake system becomes contaminated with DOT 5, the system must be flushed, and major components may require replacement.
Brake Interlock	DOT 5		BB 1940881	On units with hydraulic brakes and brake interlock feature*
Hydraulic Steering	Dexron III™	2 Quarts (approximate)		
AD-9 Air Dryer Element			BB 0020138	On units with air brakes.
AD-IP Air Dryer Element			BB 0066221	On units with air brakes.
Fuel Filter / Water Separator			BB 1967009	
Windshield Washer Fluid		1.05 Gallons		



### Rear Axle Viscosity /Temperature Chart

Meritor Lubricant Specification	Description	Cross Reference	Minimum Outside Temperature	Maximum Outside Temperature
0-76-A	Hypoid Gear Oil	GL-5, S.A.E. 85W/140	+10° F (-12.2° C)	*
0-76-B	Hypoid Gear Oil	GL-5, S.A.E. 80W/140	-15° F (-26.1° C)	*
0-76-D	Hypoid Gear Oil	GL-5, S.A.E. 80W/90	-15° F (-26.1° C)	*
0-76-E	Hypoid Gear Oil	GL-5, S.A.E. 75W/90	-40° F (-40° C)	*
0-76-J	Hypoid Gear Oil	GL-5, S.A.E. 75W	-40° F (-40° C)	+35° F (+1.6° C)
0-76-L	Hypoid Gear Oil	GL-5, S.A.E. 75W/140	-40° F (-40° C)	*

\* No upper limit on these temperatures. However, axle sump temperature must never exceed +250° F (121° C).

### Engine Oil Viscosity

Viscosity Grade	Minimum Ambient Temperature	Maximum Ambient Temperature
SAE 0W-20	-40° F (-40° C)	50° F (10° C)
SAE 0W-30	-40° F (-40° C)	86° F (30° C)
SAE 0W-40	-40° F (-40° C)	104° F (40° C)
SAE 5W-30	-22° F (-30° C)	86° F (30° C)
SAE 5W-40	-22° F (-30° C)	122° F (50° C)
SAE 10W-30	0° F (-18° C)	104° F (40° C)
SAE 10W-40	-0° F (-18° C)	122° F (50° C)
SAE 15W-40	15° F (-9.5° C)	122° F (50° C)

## NOTES

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## NOTES

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