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Thank you for selecting the Blue Bird Conventional bus body. This body/chassis combination is the result of developments in mass transportation which have been ongoing since 1927. The design and construction of the Conventional bus body reflects Blue Bird’s concern for efficiency and—above all—safe operation.

This manual has been prepared to acquaint you with various aspects of service, maintenance, and operation. It explains the various features and controls which should be familiar to the operator before he or she attempts to drive the unit, and it will help keep your Blue Bird Conventional in top operating condition and help extend its service life.

Your Conventional may have all or some of the equipment described in this manual. Therefore, you may find maintenance data for equipment not installed on your bus. Please note that some sections of the manual are written for more than one product offered by Blue Bird, so some illustrations may differ slightly from what you find on your own bus. Text, illustrations, and specifications in this manual are based on information available at the time of printing. We reserve the right to make changes at any time without notice. You are encouraged to contact your Blue Bird distributor if additional maintenance information or assistance is needed. For chassis-related service and maintenance information, contact your local chassis distributor or representative.

The complete line of Blue Bird Service Parts is available from your Blue Bird distributor. The use of original Blue Bird replacement parts and components will help ensure that your Conventional remains true to its original design, best preserving our high standards of performance, efficiency, and safety.

Proper operation, service, and maintenance are important to the safety and reliability of all motor vehicles. The information contained herein is provided as a reference for systems and components that require periodic service. The intervals given are manufacturer’s recommendations and should be considered maximum intervals. Actual operating conditions must be considered and maintenance intervals adjusted accordingly. Any time a system does not perform satisfactorily, corrective service should be performed at once.

Familiarity with automobile operation and controls is not a prerequisite, but is assumed to be common knowledge to all who will be operating this coach. Basically, control and operation are the same for both, but the driver must recognize some distinct differences before attempting to operate the coach.

Remember: The bus is eight feet wide without outside mirrors and is 25 to 40 feet long. Therefore, it is two feet wider and two to three times as long as the average automobile. Acceleration will very likely be slower than that of an automobile. The new operator may find that steering, brakes, and other systems feel different from what is familiar. This makes it very important, from a safety standpoint, for him or her to become completely familiar with bus operation through experience before attempting passenger transit. The operator will observe other differences, but after basic familiarization and some practical experience, he or she will find the operation quickly becomes quite natural, comfortable, and far from difficult.

CAUTION: No one should attempt to operate this coach without: (1) thorough knowledge of all instruments and controls; (2) supervision, or actual driving experience in this or a similar vehicle under supervision; and (3) an appropriate license or permit to operate. Do not drive the coach until the space in front, on the sides, and in the rear is unobstructed. Most accidents occur because the operator did not ensure a clear path before driving.

The operator should read this manual, as well as the manual supplied by the chassis manufacturer, before attempting to drive the unit.

This manual provides you with the most current maintenance and operation information available. We welcome your comments and suggestions regarding this manual. Please direct all correspondence to:

Blue Bird Body Company
Attn: TECHNICAL PUBLICATIONS
P.O. Box 937
Fort Valley, GA 31030
FOREWORD

This Operator’s Manual provides some general and specific information regarding safe operation and maintenance of your Blue Bird bus. It does not address all items or situations that may arise, and it is not a substitute for proper driver and mechanic training. Exercise of care, common sense, and good driving and working practices are required for safe operation.

If this manual does not adequately address your specific questions or concerns, please contact your Blue Bird distributor. The distributor will answer your questions or put you in contact with the proper factory personnel.

Throughout this guide you will find CAUTIONS and WARNINGS. CAUTIONS are given to prevent you from making an error which could damage the vehicle and possibly cause personal injury. WARNINGS remind you to be especially careful to avoid personal injury.

Blue Bird Corporation offers many items as standard and optional equipment to meet Federal, state, and local specifications and individual customer requirements. Properly selected equipment can help ensure reliable and safe transportation of passengers.

Examples of this safety equipment include: stop arms, crossing guards, warning lights, warning light monitors, mirrors, first aid kits, fire extinguishers, warning reflectors, fusees, directional and brake lights, warning buzzers, security locks, emergency exits, and seat belts.

It is the driver’s responsibility to ensure that the safety items are in proper order. Equipment relating to safety should be checked for operation on a daily basis. Safety equipment may vary due to Federal and state specifications, and individual customer requirements.

In addition, the driver/operator must ensure that the loading area around the bus is clear of pedestrians before stopping, and that all unloaded passengers are a safe distance away from the bus before moving.

Blue Bird has mounted the bus body on the chassis you have received. You should also have received with your vehicle an operator’s manual from the chassis manufacturer. If you failed to receive such a manual, contact the chassis manufacturer’s closest dealership immediately to obtain one. Please read this manual and the chassis manual carefully before operating or repairing your bus.

REPORTING SAFETY DEFECTS

If you believe your vehicle has a safety defect which could cause a crash or could otherwise result in injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) as well as Blue Bird Corporation.

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, and/or Blue Bird Corporation.

To report safety defects, or to obtain information about motor vehicle safety, you may call NHTSA’s Auto Safety Hotline toll-free at (800) 424-9393, or (202) 366-0123 in the Washington, DC area. You may access their website at http://www.nhtsa.dot.gov/. Their mailing address is:

NHTSA
U.S. Department of Transportation
Washington, DC 20590
COACH IDENTIFICATION

The **Vehicle Certification Plate** certifies that the vehicle conforms to all applicable Federal Motor Vehicle Safety Standards in effect at the date of manufacture. Do not remove or deface this plate. This plate is located over the driver’s window.

The **Body Serial** and **Service Number Plate** is located on the front upper inner panel above the windshield. Refer to the data on this plate for registration purposes or for replacement part information.

INSPECTION

PRIOR TO PLACING THE NEW BUS IN SERVICE, PERFORM THE FOLLOWING:

- Check torque on the body tie-down bolts.
- Check brake adjustment, suspension torques, and any other items indicated by your chassis manufacturer.

DAILY INSPECTION

To keep your bus in the best operating condition in terms of safety, convenience, service, and operating expense, follow these recommended inspection procedures on a daily basis, as well as all inspection procedures recommended by your chassis manufacturer. Any malfunctions or defects should be corrected before the next trip. Report needed services to responsible maintenance personnel.

**Outside the bus:**

- Wipe clean the windshield, mirrors, front windows, headlights, taillights, directional lights, and stop lights.
- Is the tailpipe clear?
- Does the rear emergency door open and close? Check warning buzzer operation.
- Check tire pressure and treads. Are the lug nuts in place?
- Drain the air brake tank.
- Is the area under the bus all clear?
- How is the general outside appearance? Is it clean? Is there a clear view of identifying features (license plate, school/organization name, bus number, etc.)?
- Are the mirrors clean and adjusted?
Inside the bus:

- Are the seats and floor clean? Are the steps and aisle clear?
- Verify that the emergency exits, rear door, and windows can all open and close.
- Check emergency equipment and first aid kit.
- Is fire extinguisher in place?
- Are the windshield and windows around the driver’s area clean?
- Are the mirrors clean and adjusted?
- Are emergency doors/windows unlocked and operating freely?
- Do buzzers activate when exits are not fully latched?

Starting the engine:

- Be sure parking brakes are on.
- Put in Neutral.
- With key on, check fuel gauge. Check brake warning buzzer or light, neutral safety switch.
- Start engine. Look and listen for trouble signs; check gauges.

With the engine running, check (from driver’s seat):

- Mirrors, interior and stepwell lights, service door seal.
- Does the steering feel OK? Is there any unusual noise?
- Are the horn, defroster/heater blower, and windshield wipers working properly?
- Does brake pedal have right height and feel; is gauge reading OK? Parking brake release, reset.

Outside checks required before driving away:

- Check right- and left-turn signals in front and rear. Are they clean and flashing?
- Are flasher warning lights in front and rear clean and flashing?
- Is stop arm clean and working?
- Check hi-lo beams in headlights.
- Are stop lights and taillights clean and working?
- Is hazard flasher working?

Final check while moving the bus:

- Is seat belt fastened?
- Do brakes stop and hold?
- Does steering feel OK? Are there any unusual noises? Is bus under control... tracking straight?
- Brake to a stop. Are all gauges OK?

Remember: Safety on the road depends on you. Observe weather and road conditions and drive accordingly. Be physically and mentally alert. When backing up near pedestrians or in congested areas, use outside monitor or director. Look around before driving away from where you are parked and observe all traffic rules and regulations.

WEEKLY INSPECTION

- Inspect seat cushion attachments for tightness.
- Inspect seat belts and buckles.
- Inspect outside lights for proper operation.
SWITCH PANEL

1. Pilots—shows when red and amber warning lights are flashing.
2. Main Heater Switch—controls front heating system.
3. Defrost Switch—controls defrosting output.
4. Circulates air to driver’s or passengers’ areas.
5. Circulates reheated or fresh air.
6. Right-hand heater switches.
7. Underseat heater switches.
8. Manual Warning Light Starter—system may vary on different units.
10. Clearance Lights—located on outside of body.
13. Accessories—These include lighted destination signs.
14. Left Windshield Wiper.
15. Right Windshield Wiper.
16. Heater Pump—auxiliary water circulating pump for heating system.
17. Panel Illuminating Lights.

DESTINATION SIGNS

**Hinged Sign Front**—Mounted on outside of front roof cap with internal control for changing sign. Periodically lubricate hinges and lever assembly with lightweight lubricating oil.

**Hinged Sign Rear**—Mounted on outside of rear roof cap, manually changed from outside. Periodically lubricate hinges with lightweight lubricating oil.

**One Station Lighted Curtain**—Replace bulbs as needed. May occasionally loosen and cause slack in the curtain due to vibration. To tighten curtain, loosen bolts, pull curtain tight, retighten bolts.

**Roller Destination Sign with Lighted Curtain**—Replace bulbs as needed. May occasionally require same adjustment as One Station Sign. Periodically lubricate roller gears with light grease, such as “White Lube,” and hinges on access door with lightweight lubricating oil. To change sign, turn crank located on front upper inner panel above windshield to desired destination.

**Two Station Sign**—Front-lighted, sign material masonite with lettering on both sides. Lubricate interior door hinge on front upper inner panel with lightweight lubricating oil.

**Lighted “School Bus” Sign**—Back-lighted yellow plexiglass sign. Replace bulbs as needed. Lubricate interior door hinge on front upper inner panel with lightweight lubricating oil.

**NOTE:** All maintenance procedures to be done at six months or 6,000 mile intervals, whichever occurs first.
SEATS AND SEAT BELTS

DRIVER’S SEAT (Standard)

The driver’s seat may be adjusted fore and aft by pushing forward the release lever located beneath the seat at the center right side, adjusting the seat, and releasing the lever when the seat is in the desired position. To raise or lower the seat, release two height adjustment handles by turning counterclockwise. Raise the seat by lifting it to the desired position. Lower the seat by depressing the height adjustment pedal to release the latch mechanism. Retighten the adjustment handles after the seat is in the desired position.

WARNING: Do not attempt to adjust seat while vehicle is in motion. Do not adjust height adjustment while sitting in driver’s seat. Keep feet and other items away from height adjustment handles and pedals while vehicle is in motion.

BOSTROM DRIVER’S SEAT (Optional)

1. Weight and Height Adjustment—To adjust, push in valve knob to raise seat and pull out to lower. When adjusted properly, the seat should not be pushed against the top or bottom end limits of vertical motion under normal driving conditions. Adjustment position should also provide for driving visibility and vehicle control.
2. Fore and Aft Adjustment—Hold lever to the left to adjust seat position forward or backward.
3. Back Angle Adjustment—Lean forward slightly to remove pressure from seat back. Hold handle rearward to adjust to any position within range.
4. Cushion Tilt Adjustment—Rotate seat tilt knob to decrease or to increase seat tilt.
5. Lumbar Adjustment—Rotate knob forward to increase or rearward to decrease the support in the lumbar area.

WARNING: Do not attempt to adjust seat while vehicle is in motion. Do not adjust height adjustment while sitting in driver’s seat. Keep feet and other items away from height adjustment handles and pedals while vehicle is in motion.
**DRIVER’S SEAT LUBRICATION**

Moving parts of the driver’s seat require lubrication for ease of operation, as well as longevity and prevention of excessive wear.

Currently available is white lithium-based grease in an aerosol can. It gives excellent coverage when carefully directed into moving part joints. The very light coating of lubrication provided by aerosol-carried solvent-type solution works very well for penetrating into a joint and cleaning away dirt, but it should only be depended on for lubrication if it is applied frequently. A common 10W30 or 10W40 motor oil will provide good lubrication.

Remember that all moving part joints, tilt pivots, slide forward/back adjustment, and vertical motion pivots (four in all) require lubrication. This should be done every six months or 6,000 miles, whichever occurs first, with a lithium-based grease in aerosol form.

**DRIVER’S SEAT BELT OPERATION**

Driver’s seat belt should be worn at all times when the vehicle is being driven. Blue Bird driver’s seat belts have automatic locking retractors and are self-adjusting. They also have an anti-cinch device which prevents uncomfortable tightening of the belt as you drive. To use, withdraw an adequate length of belt from the retractor or retractors to allow the buckle halves to connect. After engaging the buckle halves, let the retractor withdraw the belt to a snug fit. Verify that the automatic locking mechanism is working properly by pulling the belt sharply against the retractor, which should resist. The buckle can be released by pushing the button in its center.

**DRIVER’S SEAT BELT WITH SHOULDER HARNESS (IF SO EQUIPPED)**

Driver’s seat belt should be worn at all times when the vehicle is being driven.

Driver’s seat belt shoulder harness is emergency locking; lap belt may be either emergency locking or automatic locking depending on the option chosen. The emergency locking retractor used for all shoulder harnesses and specified lap belts is dual sensitive. Emergency locking retractor engages when the vehicle tips 15° or more, or if belt speed exceeds a preset rate. Automatic locking retractors for specified lap belts are self-adjusting. Adjust the shoulder belt bracket upward for taller drivers, downward for shorter drivers, or otherwise adjust to obtain maximum comfort.

To use, withdraw an adequate length of belt from the retractor or retractors to allow the buckle halves to connect. After engaging the buckle halves, let the retractor withdraw the belt to a snug fit. The buckle can be released by pushing the button in its center.

**PASSENGER SEAT BELT OPERATION (IF SO EQUIPPED)**

Individual lap belts for passengers are retractable or non-retractable depending on option ordered. Insert the catch into the buckle, test for assurance of latch fit, and pull loose end of strap until belt fits snugly across the lower hips. The buckle can be released by pushing the button in its center. The adjustable end can be moved outward on its strap by turning 90° to the strap and pulling.

**SEAT BELT INSPECTION AND MAINTENANCE**

Inspect seat belts and their attachments on a weekly basis. Check seat belt buckles and adjustability to ensure proper operation. If necessary, lubricate buckle with a graphite lubricant. When buckle is found to be inoperable, replace immediately. If there are any defects in the webbing (i.e., torn or frayed), the seat belt must be replaced immediately to ensure passenger safety. Hand-wash webbing with warm water and mild soap. Rinse thoroughly and dry in the shade. Do not bleach or redye, because such processing may severely weaken the assembly.

**WARNING:** Be sure the lap belt is fitted snugly around the hips, not the waist. Failure to do so may increase the chance of injury in the event of a collision. Do not bleach or redye, because such processing may severely weaken the assembly.
SEA INSPECTION AND MAINTENANCE
Blue Bird seats are built to meet Federal Motor Vehicle Safety Standards. In order to provide even safer passenger transportation, follow these guidelines:

1. Inspect and retighten seat leg and wall side mounting bolts every 90 days.
2. Inspect and retighten cushion attachments with a Phillips-head screwdriver on a weekly basis.
3. Inspect upholstery for cuts and tears every 90 days. If upholstery is torn, remove it by taking out the staples at the bottom front of seat back or bottom of cushion and pulling the cover away. For installation of new cover, reverse this procedure.
4. School bus seats are equipped with a special foam back pad. If the pad becomes damaged, it should be replaced with an approved replacement part. Aftermarket suppliers should be checked for compliance with Federal standards.

SEA CARE AND CLEANING
It is imperative that the interior of the bus be kept clean and seats are an important part of this maintenance. Regular cleaning and care will prolong the life of the seats and improve the general appearance of the entire bus.

Everyday dirt and soil—Most everyday soil and dirt may be removed with a soap and water solution. If the stain is persistent, a stiff bristle brush may be used. Fabric-covered seats should be rinsed with clean water after the stain is removed.

Paint, tar, and asphalt—Remove the stain immediately using a damp cloth and kerosene. Rub gently, using small strokes. Rinse thoroughly. NOTE: This type of stain may become permanent if not cleaned immediately.

Nail polish and lacquer-based stains—Soak up as much as possible with dry cloth immediately. Any remaining stain may be removed with a nonflammable cleaning fluid such as “Tuff Stuff” or “Armor All” cleanser. Rinse thoroughly with clean water.

Gum, grease, and shoe polish—Remove as much as possible immediately. If left for any length of time, shoe polish will stain permanently. Clean any remaining stain with “Tuff Stuff” or “Armor All” cleanser.

Ink—Remove stain immediately using a damp cloth and alcohol.

SEA CUSHION REMOVAL AND INSTALLATION—DOT SEATS

WARNING: If seat cushions are removed for maintenance, they must be reinstalled using the following instructions. Failure to comply with these instructions could result in injury from unattached seat cushions in the event of an accident.

Removal
1. Loosen the two front swivel type clamps at the front underside of the cushion with a Phillips-head screwdriver. Caution: Do not remove clamps.
2. Rotate the swivel clamps so as to clear the front retaining channel frame.
3. Lift the forward edge of cushion two to three inches and pull cushion forward to remove.

Installation
1. Place the rear edge of cushion down on the base portion of the seat frame. Lifting the forward edge two to three inches, slide the cushion to the rear to engage the positive type clamp into the rear retaining channel.
2. Lower the forward edge to the frame, making sure the swivel clamps are inside the frame and the positive type clamps are secure on the rear retaining channel.
3. Rotate the swivel clamp to engage the forward retaining channel frame.
4. Tighten with Phillips-head screwdriver until clamps do not rotate.
SEAT CUSHION REMOVAL AND INSTALLATION—DOT SEAT BELT SEATS

Removal
1. Loosen the two front swivel-type clamps at the front underside of the cushion with a Phillips-head screwdriver. Caution: Do not remove clamps.
2. Rotate the swivel clamp located at the rear underside of seat cushion.
3. While lifting the rear edge of the cushion, pull the cushion to the rear and remove.

Installation
1. Place the forward edge of the cushion two inches to the rear of the front retaining channel. Slide the cushion forward, engaging the positive clamps onto the forward retaining channel.
2. Lower the rear edge to the frame and rotate the swivel clamps so they engage the square tube crossmember.
3. Tighten screws in front and rear clamps with Phillips-head screwdriver until clamps do not rotate.

TRACK MOUNTED PASSENGER SEATS
If your bus is equipped track mounted passenger seats and you relocate the seats or remove the seats to accommodate wheelchairs, you must follow rules of spacing and placement to comply with FMVSS 222 “School Bus Passenger Seating and Crash Protection” and FMVSS 217 “Bus Window Retention and Release”.

The decal (as shown) which gives these rules is installed on the interior body panel above the windshield.

All passenger seats must have a seat or barrier in front of it to provide compartmentalization required by Federal Motor Vehicle Safety Standards. As you reconfigure your bus, you may need additional barriers. Barriers are available from Blue Bird Body Company Part Sales.
MIRRORS AND ADJUSTMENT

WARNING: The vehicle’s mirror system has been designed to comply with all field-of-view requirements, but it is the owner’s responsibility to adjust the mirrors properly before placing the vehicle in service and to maintain the adjustment during the service life of the vehicle. Mirrors provide additional driver visibility on buses. To be used effectively, mirrors must be properly adjusted for each driver and the driver must be aware of the limitations on viewing area that exist even when mirrors are properly used. Mirrors are not a substitute for proper driver training and care that should be exercised when operating the vehicle and loading or unloading passengers. Do not move the bus until you have accounted for each passenger that has disembarked and have confirmed that all passengers are clear of the bus. Failure to follow these procedures could cause serious injury or death.

INTERIOR MIRRORS

An inside rearview mirror measuring 6 by 30 inches (15 by 76 cm) is standard equipment. It can be adjusted by loosening the bolts and nuts in slotted holes. Adjust the mirror to give the operator a clear view of bus interior and roadway to the rear.

WARNING: Many school bus passengers are energetic children who are small and playful and do not understand the hazards of buses. After unloading, some children could be outside the field of vision of your mirrors or could dart out of view quickly. After unloading passengers, do not move the bus until you have confirmed the location of each disembarked passenger, and know that all are completely clear of the bus. Failure to follow this procedure could cause serious injury or death.

EXTERIOR REARVIEW

Standard equipment on all school buses includes four outside rearview driving mirrors (two per side), and two elliptical crossview mirrors (one per side). The outside rearview driving mirrors include one flat and one convex on each side, both measuring 6.5 by 10 inches (16.5 by 25 cm). The outside rearview driving mirrors are designed to provide the seated driver a view of the roadway to the rear and to the sides of the bus. The elliptical crossview mirrors are designed to allow a seated driver to view all areas around the front of the bus not visible directly. The elliptical crossview mirrors are designed to be used to view pedestrians while bus is stopped. DO NOT USE THE ELLIPTICAL CROSSVIEW MIRRORS TO VIEW TRAFFIC WHILE BUS IS MOVING. IMAGES IN SUCH MIRRORS DO NOT ACCURATELY SHOW ANOTHER VEHICLE’S LOCATION.

CAUTION: A convex mirror has a curved surface and is designed to provide a wide view with minimum distortion. However, persons or objects seen in a convex mirror will look smaller and appear farther away than when seen in a flat mirror or viewed directly. Therefore, use care when judging the size or distance of a person or object seen in a convex mirror. Wait until you can view the person or object directly or in a flat mirror to determine their size and distance.
Proper adjustment is necessary for any mirror system to perform as designed. The following adjustment sequence should be used to allow the driver to obtain the maximum viewing area with the mirror system.

1. Adjust the driver’s seat to the desired position.
2. Adjust the right-side flat driving mirror so that the tops of the side windows are visible in the upper edge of the mirror, and so that the right side of the bus body is visible in the inside edge of the right-side flat mirror.
3. Adjust the right-side convex driving mirror so that the view in the top of the convex mirror overlaps the view provided by the right-side flat driving mirror, and so that the right side of the bus body is visible in the inside edge of the right-side convex mirror.
4. Adjust the left-side flat driving mirror and the left-side convex driving mirror following the same procedures described for the right-side mirrors. See Steps 2 and 3 above.
5. Adjust the elliptical crossview mirrors by positioning each mirror head so that the center of its field of view is pointed directly at the eyes of the seated driver.
6. Make a final adjustment to the mirror system so that the seated driver can view the areas required by Federal Motor Vehicle Safety Standard 111, including the entire top surface of cylinders M and N when located as illustrated and rearward a minimum of 200 feet (measured from the mirror surface) using the outside rearview driving mirrors. The elliptical crossview mirrors should be adjusted to provide the seated driver a view of the entire surface of any cylinder A thru P (when located as illustrated) not visible by direct view of the driver. The view provided by the elliptical crossview mirrors must overlap the view provided by the outside rearview driving mirror system.

**MAINTENANCE**

All mirrors should be cleaned once a week (or more if needed), preferably with an ammonia solution. Keep the mounting fasteners tight so that mirrors will not vibrate. Check weekly and retighten, if necessary.
ELECTRICAL SYSTEMS

The following guidelines must be followed when doing any work on vehicle electrical components or wiring:

1. Before beginning any electrical work, disconnect all batteries. Always remove all battery ground straps first and replace last to prevent accidental arcing.
2. Use only proper gauge wiring with high temperature insulation, such as chemically cross-linked polyethylene, which meets SAE J-1128 (150°C).
3. Be certain any added circuit is protected by a fuse or circuit breaker.
4. Any push-on terminal must be insulated.
5. When installing or replacing any wiring (other than ground straps), observe the following:
   A. Always use clamps to secure wires away from any sharp metal edges or moving components.
   B. Support wires at least every 30 inches (76 cm) with insulated clamps.
   C. Where wiring is connected to moving component such as the engine, provide an adequate slack loop to allow for motion in all directions. Clamp at both sides of loop.
   D. Be certain there is sufficient length in wires so no wires are pulled in tension.
   E. Wires should be secured to remain four inches (10 cm) from exhaust pipes, manifolds, or turbochargers unless components are shielded.
   F. Use rubber grommets whenever wires must pass through holes.
   G. Cover all full-time hot or accessory and ignition hot wires with approved loom.
   H. Avoid routing wires in contact with fuel lines or plastic components.
6. Always be sure ground straps are replaced when any work is done on engine components. The alternator must have at least a six (6) gauge strap. The engine must have one strap, engine block, and transmission (use bolt that mounts transmission to rear face of engine block). Allow slack loop for engine motion. Use external star tooth washer between cable and frame.
7. Do not “splice” into existing wires. Route wire full-length to appropriate source instead.
8. If accessories must be added, relays may be required; check installation instructions thoroughly. Use bank of circuit breakers in the electrical panel unless the accessory must be on during cranking, in which case the “hot bar” should be used.
9. Always use insulated rubber boots over hot six (6) gauge wiring on alternator, ammeter shunt, or junction blocks.

Quick Reference
Wiring Circuit Color Code Major Circuits

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Rear Directional Light</td>
<td>Yellow</td>
</tr>
<tr>
<td>Right Rear Directional Light</td>
<td>Dark Green</td>
</tr>
<tr>
<td>Stoplights</td>
<td>Red</td>
</tr>
<tr>
<td>Back-up Lights</td>
<td>Blue</td>
</tr>
<tr>
<td>Taillights</td>
<td>Brown</td>
</tr>
<tr>
<td>Ground</td>
<td>White</td>
</tr>
<tr>
<td>Ignition Feed, Primary Feed</td>
<td>Black</td>
</tr>
</tbody>
</table>

Refer to the master wiring diagram for wire colors for other circuits.
**BODY WIRING IDENTIFICATION**

<table>
<thead>
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<td>14 GA Purple</td>
<td>52</td>
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<tr>
<td>4 GA Blk/SAE Stamp</td>
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<td>14 GA Red</td>
<td>53</td>
</tr>
<tr>
<td>6 GA Black</td>
<td>14</td>
<td>14 GA Red/White</td>
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<tr>
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<tr>
<td>10 GA Black</td>
<td>23</td>
<td>14 GA Yellow</td>
<td>73</td>
</tr>
<tr>
<td>10 GA Black/Yellow</td>
<td>24</td>
<td>14 GA Yellow/Black</td>
<td>74</td>
</tr>
<tr>
<td>10 GA Red</td>
<td>25</td>
<td>14 GA Yellow/Green</td>
<td>75</td>
</tr>
<tr>
<td>10 GA Yellow</td>
<td>27</td>
<td>16 GA Black</td>
<td>111</td>
</tr>
<tr>
<td>10 GA Yellow/Black</td>
<td>1</td>
<td>16 GA Black/White</td>
<td>112</td>
</tr>
<tr>
<td>14 GA Black</td>
<td>32</td>
<td>16 GA Brown</td>
<td>113</td>
</tr>
<tr>
<td>14 GA Black/Yellow</td>
<td>3</td>
<td>16 GA Brown/Orange</td>
<td>114</td>
</tr>
<tr>
<td>14 GA Blue/Black</td>
<td>34</td>
<td>16 GA Gray</td>
<td>115</td>
</tr>
<tr>
<td>14 GA Brown</td>
<td>35</td>
<td>16 GA Green/Black</td>
<td>117</td>
</tr>
<tr>
<td>14 GA Brown/Tan</td>
<td>37</td>
<td>16 GA Lt. Blue</td>
<td>121</td>
</tr>
<tr>
<td>14 GA Brown/White</td>
<td>41</td>
<td>16 GA Orange</td>
<td>122</td>
</tr>
<tr>
<td>14 GA Green</td>
<td>42</td>
<td>16 GA Pink</td>
<td>123</td>
</tr>
<tr>
<td>14 GA Green/Black</td>
<td>43</td>
<td>16 GA Red/Black</td>
<td>124</td>
</tr>
<tr>
<td>14 GA Green/White</td>
<td>44</td>
<td>16 GA Tan</td>
<td>125</td>
</tr>
<tr>
<td>14 GA Lt. Blue</td>
<td>45</td>
<td>16 GA Tan/Orange</td>
<td>127</td>
</tr>
<tr>
<td>14 GA Orange/Black</td>
<td>47</td>
<td>16 GA White/Green</td>
<td>131</td>
</tr>
</tbody>
</table>

**NORMAL CURRENT USAGE**

*Standard Equipment*

**Constant Load**

<table>
<thead>
<tr>
<th>Item</th>
<th>Number of Items</th>
<th>Current (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster Lamps</td>
<td>6</td>
<td>4.14</td>
</tr>
<tr>
<td>Clearance Lamps</td>
<td>4</td>
<td>2.76</td>
</tr>
<tr>
<td>Intermediate Side Mkr.</td>
<td>2</td>
<td>1.38</td>
</tr>
<tr>
<td>Tail Lamp*</td>
<td>2</td>
<td>1.18</td>
</tr>
<tr>
<td>Ignition</td>
<td>1</td>
<td>2.50</td>
</tr>
<tr>
<td>Instrument Panel</td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>Headlamps (Dual Low Beam)</td>
<td>2</td>
<td>8.40</td>
</tr>
<tr>
<td>Parking Lamps</td>
<td>2</td>
<td>1.18</td>
</tr>
<tr>
<td>90-FC &amp; MB Heater**</td>
<td>1</td>
<td>27.00</td>
</tr>
<tr>
<td>90-Conv. Heater**</td>
<td>1</td>
<td>31.50</td>
</tr>
</tbody>
</table>

**Intermittent Load**

<table>
<thead>
<tr>
<th>Item</th>
<th>Number of Items</th>
<th>Current (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stepwell Light</td>
<td>1</td>
<td>0.44</td>
</tr>
<tr>
<td>Stop Lamp*</td>
<td>2</td>
<td>4.20</td>
</tr>
<tr>
<td>Dome Lamps (each)</td>
<td>Varies</td>
<td>0.58 ea.</td>
</tr>
<tr>
<td>Back-up Lamps</td>
<td>2</td>
<td>4.20</td>
</tr>
<tr>
<td>Electric Wipers</td>
<td>2</td>
<td>8.00</td>
</tr>
</tbody>
</table>

*Combined Stop and Tail Lamp
**Use Applicable Heater
**Optional Equipment**

**Note:** To figure current draw, add constant load and 35 percent of intermittent load.

**Policy**
1. Warning light options include lights, standard flasher, and pilot light. If optional flasher unit is desired, add current draw of that option.
2. Directional light options include lights and standard thermal flasher.

<table>
<thead>
<tr>
<th>Constant Load</th>
<th>Option Number</th>
<th>Current (Amps)</th>
<th>Intermittent Load</th>
<th>Option Number</th>
<th>Current (Amps)</th>
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<tbody>
<tr>
<td>Auxiliary Fan</td>
<td>0525</td>
<td>3.0</td>
<td>Directional Lights</td>
<td>1686</td>
<td>2.10</td>
</tr>
<tr>
<td></td>
<td>0531</td>
<td>6.0</td>
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</tr>
<tr>
<td></td>
<td>0532,0546</td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Exhaust Fan</td>
<td>0552</td>
<td>2.0</td>
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<tr>
<td>Heater</td>
<td>1145</td>
<td>31.5</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>1154</td>
<td>9.0</td>
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<td></td>
<td>1325,1330</td>
<td>4.5</td>
<td>Dome Lights</td>
<td>1825,1828,</td>
<td>4.20</td>
</tr>
<tr>
<td></td>
<td>1336,1342</td>
<td>9.0</td>
<td></td>
<td>1831<strong>1832</strong></td>
<td></td>
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<td>Heater Pump</td>
<td>1416</td>
<td>6.75</td>
<td>Directional Lights</td>
<td>1697,1701,</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1719,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1723,</td>
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<td>1727,1731,</td>
<td></td>
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<tr>
<td>Clearance Light</td>
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<td>7&quot; Stop Lights</td>
<td>6723</td>
<td>4.79</td>
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<tr>
<td></td>
<td>1581</td>
<td>1.08</td>
<td></td>
<td>1940</td>
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<tr>
<td></td>
<td>1591</td>
<td>0.54</td>
<td></td>
<td>6728</td>
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<tr>
<td>Cluster Light</td>
<td>1642</td>
<td>1.62</td>
<td>Warning Lights</td>
<td>1987,1990,</td>
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<tr>
<td>Door Light</td>
<td>1878-01</td>
<td>0.59</td>
<td>1992,</td>
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<td></td>
<td>1878-02</td>
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<tr>
<td></td>
<td>1878-03</td>
<td>1.77</td>
<td>2017</td>
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<tr>
<td>P.A. System</td>
<td>2525,6404</td>
<td>0.40</td>
<td>Solenoid Switch</td>
<td>2130,2131,</td>
<td>0.75</td>
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<tr>
<td>Radio</td>
<td>2532,2535</td>
<td>0.60</td>
<td>DOT Buzzer</td>
<td>3001-01</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>3001-03</td>
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</tr>
<tr>
<td>Radio &amp; P.A.</td>
<td>2534,6406</td>
<td>1.00</td>
<td>Emergency Door</td>
<td>3020</td>
<td>0.94</td>
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<tr>
<td>Dest. Sign</td>
<td>3052,3053</td>
<td>4.06</td>
<td>Pilot Light &amp; Buzzer</td>
<td>3025</td>
<td>0.94</td>
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<tr>
<td>Dest. Sign (Roll)</td>
<td>6165</td>
<td>4.06</td>
<td>Chime System</td>
<td>3040</td>
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<tr>
<td>School Bus Sign</td>
<td>3064</td>
<td>4.06</td>
<td>Stop Arm w/ Lights</td>
<td>3135,3148,</td>
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<td></td>
<td></td>
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<td>3155,3162</td>
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<td>Stop Arms Dual w/ Lights</td>
<td>3149</td>
<td>3.60</td>
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<tr>
<td></td>
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<td></td>
<td>Pushout Windows w/ Buzzer</td>
<td>3343</td>
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<td>4015,4475</td>
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<td></td>
<td></td>
<td></td>
<td>56&quot; Wheelchair Lift</td>
<td>0467</td>
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<td></td>
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<td></td>
<td>35&quot; Wheelchair Lift</td>
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<td></td>
<td></td>
<td></td>
<td>42&quot; Wheelchair Lift</td>
<td>0465,0466</td>
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# LIGHT BULB DATA

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<thead>
<tr>
<th>Lamp Description</th>
<th>Trade Name</th>
<th>Trade No.</th>
<th>Color</th>
<th>Bulb No.</th>
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<td><strong>INTERIOR LIGHTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dome</td>
<td>Weldon</td>
<td>8005</td>
<td>(Standard)</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>Weldon</td>
<td>8010</td>
<td>(Deluxe)</td>
<td>93</td>
</tr>
<tr>
<td>Stepwell</td>
<td>Arrow</td>
<td>35</td>
<td></td>
<td>67</td>
</tr>
<tr>
<td>Emerg. Door Light</td>
<td>Weldon</td>
<td>8025</td>
<td></td>
<td>67</td>
</tr>
<tr>
<td>Switch Panel Pilots</td>
<td>Cole Hersee</td>
<td>PL19</td>
<td></td>
<td>53</td>
</tr>
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<td></td>
<td>Dial</td>
<td>41204-1211</td>
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<tr>
<td>Switch Panel Illum.</td>
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<td></td>
<td>53</td>
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<td><strong>EXTERIOR LIGHTS</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Directional</td>
<td>KD</td>
<td>772-9105</td>
<td></td>
<td>1156</td>
</tr>
<tr>
<td></td>
<td>Weldon</td>
<td>1010 Series</td>
<td>Red and Amber</td>
<td>1156</td>
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<tr>
<td></td>
<td>Signal Stat</td>
<td>1604</td>
<td>Plain and w/ Arrow</td>
<td>1156</td>
</tr>
<tr>
<td>Warning Light</td>
<td>Weldon</td>
<td>1020-Series</td>
<td>Red and Amber</td>
<td>4636</td>
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<tr>
<td>Cluster and Marker</td>
<td>Weldon</td>
<td>5050</td>
<td>Amber and Red</td>
<td>409</td>
</tr>
<tr>
<td></td>
<td>Peterson</td>
<td>122</td>
<td>Amber and Red</td>
<td>194</td>
</tr>
<tr>
<td>Side Directional</td>
<td>Truck Lite</td>
<td>120034</td>
<td>not replaceable</td>
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<tr>
<td></td>
<td>Arrow</td>
<td>059-9900021CP</td>
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<td>1073</td>
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<tr>
<td>Stop-Tail/Tag</td>
<td>Grote</td>
<td>01-5085-88</td>
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<td>1157</td>
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<td>Signal Stat</td>
<td>2103</td>
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<td>1157</td>
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<td>Back-up</td>
<td>KD</td>
<td>854-5301</td>
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<td></td>
<td>Weldon</td>
<td>7-1010-1</td>
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<tr>
<td>Stop</td>
<td>Weldon</td>
<td>1010</td>
<td>Red</td>
<td>1156</td>
</tr>
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<td></td>
<td>Arrow</td>
<td>438</td>
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<td>KD</td>
<td>772-9105</td>
<td></td>
<td>1156</td>
</tr>
<tr>
<td>Destination Sign</td>
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<td></td>
<td></td>
<td>89</td>
</tr>
<tr>
<td>School Bus Sign</td>
<td></td>
<td></td>
<td></td>
<td>TS93</td>
</tr>
</tbody>
</table>
VISIBILITY EQUIPMENT REQUIRED BY FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS)

- Warning Lamp - 2 Red
- 8 Lamp System, Optional - 4 Red, 4 Amber
- Front Identification Lamps - 3 Amber
- Front Clearance & Side Marker Lamp - 2 Amber
- Rear Clearance & Side Marker Lamp - 2 Red
- Intermediate Side Marker Lamp - 2 Amber - On Vehicles 30’ or Longer
- Intermediate Side Reflector 2 Amber On Vehicles 30’ or Longer
- Front Side Reflector - 2 Amber
- Front Side Reflector - 2 Amber
- Headlamp System - 2 Clear
- Front Side Marker Lamp 2 Amber (Chassis Supplied)
- Rear Side Reflector 2 Red
- Turn Signal Lamp - 2 Amber Used as Turn Signals and Hazard Warning Signals
Warning Lamp - 2 Red
8 Lamp System, Optional - 4 Red, 4 Amber

Rear Identification Lamps - 3 Red

Rear Tail & Stop Lamp - 2 Red
Rear License Plate Lamp - 1 White
Combined with Tail Lamp

Rear Side Reflector - 2 Red

Rear Back-Up Lamp - Operated by Chassis Furnished Switch

Rear Turn Signal Lamp - 2 Red or Amber
Used as Turn Signals & Hazard Warning Signals

Stop Lamps - 2 Red
Because warning lights are such an essential safety feature, it is important to know when they are not working properly. This is the function of the Doran monitor (Figure 1). Its display is a schematic of the lights as they appear outside the bus. It continuously monitors the current in each lamp. If current is flowing through a particular bus lamp circuit (i.e., the light is on), the monitor senses this and lights the corresponding monitor bulb. If the bus lamp burns out, current ceases and the corresponding monitor bulb goes out, indicating a fault. Once the defective lamp is replaced, and the warning lights are working normally again, this also should be shown by the monitor.

The Doran monitor is a reliable, long-life device, but as with most electrical instruments, it can be overheated and damaged if an overload occurs in a bus light. Such overloads can exist if a bus light circuit becomes shorted, forcing current through a coil in the monitor which exceeds the coil’s rated capacity. Short circuits can occur if improper connections are made during installations, bus repairs, etc. If the monitor has an optional thermistor overload protection, the tail light circuits are overload-protected (thermistors are located on the bottom of the component side of the printed circuit board).

If the Doran monitor is not working properly, check the troubleshooting chart below to find a possible cause and solution.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Possible Diagnosis</th>
<th>Possible Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>All lights on the monitor are inoperative, even though the exterior lights on the bus operate properly, and all connections are still intact.</td>
<td>Overloading or physical damage has burned or broken a path on the printed circuit board.</td>
<td>Field repair of printed circuit boards is generally not considered practical. A replacement monitor is recommended. Inoperative monitors under warranty should be returned to the Blue Bird Body Company for repair or replacement under the terms and conditions of warranty for electrical parts.</td>
</tr>
<tr>
<td>A particular light is inoperative, even though the corresponding exterior bus lamp operates properly, and all connections to the monitor are intact.</td>
<td>1. A burned-out coil or inoperative reed switch. 2. A loose connection in one or both leads of the light emitting diode (LED) on the monitor.</td>
<td>1. Burned-out coils can usually be detected by inspection upon removal from the bus. If a burned-out coil has not scorched the board and distorted a PC path, a replacement coil/reed switch kit (available from most electronics suppliers) can be installed. 2. LEDs seldom fail unless they are installed with incorrect polarity or have suffered physical damage. The LED recessed design of face plate protects against normal usage. (LEDs can be ruined by Ohm meters, and such devices must be avoided.)</td>
</tr>
<tr>
<td>A monitor light stays on even when the exterior light of the bus is turned off.</td>
<td>The reed switch located inside the monitor coil is not operating properly.</td>
<td>Replace the coil and reed switch.</td>
</tr>
<tr>
<td>The tail light monitor and exterior tail lights fail to operate.</td>
<td>1. Tail light bulbs may need to be replaced. 2. An overcurrent situation. The thermistor has protected the entire circuit.</td>
<td>1. Replace tail light bulbs. 2. Remove power from the circuit and monitor. Repair overcurrent, and reconnect. Some possible causes of overcurrent include: a dead short, use of the wrong taillight bulb, and parallel wiring of additional taillights.</td>
</tr>
</tbody>
</table>
TOOLS AND SUPPLIES REQUIRED FOR REPAIR

- Hand tools as required to remove mounting screws at bus panel.
- Tags suitable for use in marking connecting wires, and also for recording the monitor problem.
- A 30- or 40-watt soldering iron for electronic repair (do not use a 100-watt “shop” iron).
- Small wire clippers.
- Pointed tweezers (Claus #225, or equivalent).
- 60/40 resin core solder, .031 or .062 thick (Kester “44” or equivalent).
- Replacement coil/reed switch kits. Note that coils for bus warning lights are 10-turn coils; those for tail lamps are 50-turn coils, and those for back-up lights, turn signals, and stop lights are all 16-turn coils. The proper coil MUST be used in replacement.

REPAIR PROCEDURE

**NOTE:** Field repair is not intended for monitors covered by Blue Bird Body Company warranty. Inoperative monitors under warranty should be returned to Blue Bird Body Company for repair or replacement under the terms and conditions of warranty for electrical parts. These instructions should only be followed by qualified repair personnel.

1. MOST IMPORTANT! Carefully note and record exactly which monitor lamps are not operating properly. Include this information on a tag to be attached to the monitor after removal from the bus panel.
2. Disconnect bus battery.
3. Remove mounting screws, which attach the monitor to the bus panel, being careful not to pull loose any connecting wires.
4. Remove one connecting wire at a time from monitor terminals, tagging EACH WIRE with the terminal number shown on the monitor.
5. If installing a spare monitor, record the monitor serial number for future reference. The number is shown on both the protective fiberboard back plate and on the monitor printed circuit board.
6. With the monitor removed from the bus and to a repair bench, remove the four nuts to remove the monitor PC board from the face plate. Pull the protective fiberboard backing from the terminals, being careful not to bend or tear it; retain for later use.

7. Locate the components to be replaced by referring to Diagram of Coils and Reed Switches in Figure 3 on the following page. Locate the solder points for these components.

8. Replace the inoperative coil/reed switch assembly as follows:
   a. With wire clippers cut the reed switch leads (2) and the coil leads (2) as close to the board surface as possible. (If a tail lamp monitor is to be replaced, pull the protective shield loose and retain for reuse later).
   b. With soldering iron, CAREFULLY melt-out the remaining coil and reed switch leads from the solder side of the board, pulling gently on the leads with tweezers. With the lead stubs removed, touch the holds in the PC board with soldering iron to “clear” them for replacement lead insertion.
   c. Insert replacement coil and reed switch leads, guiding them into proper holes with thumb and forefinger. Hold coil snug to the board while leads are bent over the solder side of the board. It is recommended that excess leads not be clipped until after soldering is completed. This will help to minimize shock or vibration on the reed switch, when leads are later trimmed. (Reed switches are encased in a fragile envelope and should be handled carefully to avoid chipping of envelope or distortion of leads).
   d. Place a bead of solder on the remaining lead ends, being careful not to interfere with other nearby solder points or PC paths.

9. If a tail lamp has been replaced, clean the original sealant from the protective shields and reinstall with new Silicone rubber sealant as recommended.

10. Visually examine all other components, leads, PC paths, and LEDs for any remaining problems to correct. Reinstall monitor in bus, making sure battery is disconnected and that wires are reconnected to the monitor in the same order as shown in the chart on the following page.

If additional instructions are needed after following the above procedure, contact Blue Bird Body Company.

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Figure 2—Doran Exterior Light Monitor. Diagram of coils and reed switches with indication of the LEDs they control.
Blue Bird uses circuit breakers instead of fuses. The circuit breakers are a quick resetting type. The advantage of this type circuit safety device is that it requires no replacement, as with fuses. When the breaker opens a circuit, follow standard electrical troubleshooting procedures within the circuit to determine the cause of overload. Exposed wires and electrical shorts are the most common causes. Breakers can be accessed by removing the access panel and switch panel as highlighted at right.
CONTINUING MAINTENANCE REQUIREMENTS
1. Keep working parts of control tightened.
2. Lubricate all working parts periodically, including hinges and overhead controls (see Body Component Maintenance Chart).
3. Repair or replace worn seals.
4. Maintain proper door opening and closing adjustment (see Body Component Maintenance Chart).

OUTWARD OPENING
Doors are mounted in a prefabricated framework, which eliminates the effect of body construction variations on door and seal operation. Doors are suspended completely on sealed ball bearings located at the top corners of the framework, inside the body. The interlink connection between the doors is a single assembly with oppositely threaded spherical bearing rod-end connectors on each end providing simple link length adjustment without disassembly. Simply loosen the lock nut, turn the tube, and retighten the nut when satisfactorily adjusted. The geometry of the mechanical link between the doors causes the rear door to close well ahead of the front door, so that the front nosing seal rubber always overlaps the rear. Oil-impregnated bronze bearings in the lower corners of the framework serve as pivots (not supports). All controls and mechanisms and the complete lower step tread are sealed inside the bus and out of the weather when the door is closed.

In the interest of safety through maximized driver visibility, the doors have been designed to have as much clear glass opening as possible. A four-inch-wide pad is mounted to the header cover over the opening.

The manual control is the Blue Bird cover over center locking type with built-in Saf-Latch. The door’s ease of operation allows use of a short-handle arm, so the handle is six inches closer to the driver in the open position than with the jackknife door.

The electric operator is also the linear motion type with a ball-screw drive. It is connected to a lever off the front door. Mechanically-operated switches control automatic stop positions as well as stepwell and warning lights.

OUTWARD OPENING (AIR DOOR)
The air operator is a simple linear cylinder connected to a lever on each door and located inside the header cover. An interconnecting link between the doors controls their operation sequence. A safety release valve is located over the door and stepwell lights are operated by air pressure switches inside the header cover. Door operation by the driver is managed by a simple two-way manually operated valve, and air pressure holds the door either open or closed depending on the position of the valve. The operation speed is adjustable by use of flow control valves at cylinder inlet and outlet.

JACKKNIFE DOOR—(If so equipped)
1. Loosen the roller bracket at the top of the rear door.
2. Adjust the length of rod (between the door control and the door) and the location of the rod end bracket on the door for proper open and closed position.
   a. Lengthen the rod if the door opens too far and does not close against the top seal.
   b. Shorten the rod if the door closes too hard and does not open far enough.
   c. Move the rod end bracket forward if the door does not close against the seal and does not open far enough.
   d. Move the rod end bracket rearward if the door opens and closes too far.
3. Attach the roller bracket to the rear door and adjust.
   a. If the rear door hangs in the track when starting to close the door, move the bracket to the rear.
   b. If the rear door does not open to the front enough, move the roller forward.
4. Perform the following adjustments and maintenance for ease of operation. The top of door should
be approximately 3/8 inch (1 cm) below door header.
a. Move door upwards so that rubber door sweeps do not drag on stepwell treads. Adjust door height by loosening bolts and nuts that attach front door panel to front hinge. Holes in hinge are slotted. This permits vertical adjustment of door.
b. Make sure that top edge of door nosing rubber does not drag on door stop header rubber. Remove the first three upper screws in the inner and outer nosing rubber retainer strips and force the nosing rubber downwards. Replace screws after the rubber nosing has been adjusted.
c. The rear upper corner of the rear door panel should not drag on rubber door stop on the header. To provide the required clearance, move the door roller bracket towards the rear of the bus. This will effectively move the door panel away from the door stop rubber.
d. Clean stepwell rubber treads and lower door rubber sweeps regularly. Cleaning these surfaces will reduce friction as the door is operated.

5. Assure that the door control rod end bracket is mounted squarely on door. If bracket is not square to the door, the yoke end pivot pin will bind. Adjust by loosening screws and tighten after bracket has been squared up.

6. Inspect the pivot nut on rod end bracket for burrs or other surface irregularities. Grind or file pivot nut so that its upper and lower surface is smooth.

7. Lubricate door hinge pin with a spray type lubricant (LPS No. 1). Lubricant should penetrate behind each hinge lug. Door hinge will operate quietly if properly lubricated.

**ELECTRIC OUTWARD OPENING DOOR**

The electrically operated outward opening door has a rotary actuator that moves a lever attached to the front door. To open the door, place the switch in the driver’s area in the **open** position. An automatic switch stops the action of the door. To close the door, place the switch in the **close** position and the door will stop automatically when fully closed.

**Emergency Release**

With the door in the fully closed position, move the release lever in the header panel forward as far as possible. To re-engage, move the handle rearward until it locks into a parked position.
SECURITY LOCKS

JACKKNIFE DOOR

The Entrance Door Security Lock release handle is located in the rear half of the entrance door. The handle rotates counter-clockwise to the latch position or 180° clockwise to the unlatched position. It can be key locked in either position. The latch engages a bracket on the front door.

Before using this security lock, the hinged stop on the door control cover must be flipped down to keep the door control from travelling over center when closing the door.

Lubricate security lock every six months or 6,000 miles, whichever occurs first. Use LPS-1 or Apply™ type lubricant and spray into the bushing and shaft in the center at the base of the lock handle. Also spray lubricant into key lock mechanism. Rotate the lock handle to ensure smooth operation.

OUTWARD OPENING DOOR

A key-operated bolt slides into a hole in the header when the door is in the closed position and locked. This option also requires use of the hinged stop on the door control. To lubricate, run light oil down the flexible control cable from the top or bolt end.

EMERGENCY DOOR

The emergency door security lock has a lock cylinder which is placed in the lock to make the emergency door inoperable. When the cylinder is in place in the lock, the coach cannot be started. To complete the ignition circuit, the lock cylinder must be removed from the lock and placed in the receptacle at the side of the door. When this is done, the circuit is completed and the coach can then be started.

No lubrication is required with this system.

SLIDING BOLT SECURITY LOCK

The sliding bolt security lock (for the emergency door and rear emergency window) is an interior latch that prevents the door from being opened from the outside when engaged. The bolt is connected to an interlock assembly which prevents engine starting when the door is locked. If the lock is activated after the engine is running, an audible alarm is sounded in the driver’s area.

Lubricate sliding bolt mechanism every six months or 6,000 miles, whichever occurs first, with LPS-1 spray lubricant.
STOP ARMS

Stop arms are required on Blue Bird All-American, Conventional, and TC school buses per Federal Motor Vehicle Safety Standard 131. Stop arm assemblies are purchased as a kit; many different kits are available with blades to meet all state requirements. The stop arm is located on the left-hand side of the body under the driver’s window. Stop arms are most commonly operated by a manual switch on the switch panel.

For air stop arms, the manual switch activates an electric solenoid valve controlling the flow of air. Optionally, the solenoid valve may be activated by the warning lamp system. This system works in conjunction with the air system on the chassis. No preventive maintenance procedures are required with these systems.

With the electric stop arms, the manual switch activates the control relay of the stop arm. Optionally, the stop arm may be activated by the warning lamp system.

MAINTENANCE

The following preventive maintenance procedures should be followed for the electric stop arm:

Monthly
- Oil the dual-action breakaway hinge at its four pivot points with a high-performance, penetrating lubricant. Tri-Flow™ (DuPont) with Teflon is recommended.
- Check and make sure breakaway portion of hinge is free and movable.
- Check fasteners for tightness.

Quarterly
- Remove front and rear covers of base and check internal fasteners for tightness.

On units equipped with air stop arms, the air pressure may occasionally require adjustment to ensure proper opening and closing of the stop arm. Air regulator (Figure 1) is accessible by opening the electrical panel door outside under the driver’s window. To regulate the air pressure, remove the wire retaining clip below the regulator knob and pull out the red lock ring. Turn the knob counterclockwise to decrease the pressure, then slowly increase the pressure (turn knob clockwise) until the stop arm hinge is extended to approximately 90°. Relock knob by pushing in the red lock ring and reinstalling wire retaining clip.

The STOP sign must extend, and if equipped with lights, the lights must be operating any time the red lights of the warning light system are flashing. For those state-designed warning light/stop arm systems that allow the stop arm to withdraw while warning lights are operating, an audible alarm sounds to alert the driver of the condition.

![Figure 1](image-url)
STOP SIGNS AND CROSSING ARM TROUBLESHOOTING

Air Stop Signs and Crossing Arms

Problem:
Signs won’t open to 90°.

Areas to Check:
1. Faulty diaphragm.
2. Faulty solenoid valve.
3. Air pressure regulator—Air pressure regulator must precede the solenoid to prevent damage to the solenoid or to the diaphragm. Excessive pressure may cause damage to both the solenoid and the diaphragm. Pressure should not exceed 12 pounds.
4. System leak—Check to make sure that the air pressure supplied to the solenoid valve or the diaphragm is between 10 and 12 pounds. Again—CAUTION—it is very important not to exceed 12 pounds of pressure. Excessive pressure will cause damage to the diaphragm and the solenoid valve.
5. Loose fasteners.

NOTE: Solenoid valves must be checked under pressure while the electric solenoid is being activated.

Electric Stop Signs and Crossing Arms

To troubleshoot electric stop signs or crossing arms, it is important first to understand how to install them. There are two methods of installation:
1. Dark blue to a switched 12 V terminal. Red to a constant 12 V terminal. Green to a proper ground. By this method, the blue wire activates and deactivates the stop sign.
2. Dark blue and red to a constant 12 V terminal. Green to a grounded switched terminal. This method uses the green wire or the ground to activate and deactivate the stop signs and crossing arms.

Note that for the electric stop signs and crossing arms, all the works are in the base. You can troubleshoot the electric stop sign by these steps:
1. Determine if the sign is wired correctly (see Steps 1 and 2 above) and that 12 V and ground are available where required.
2. Remove the rear cover of the base.
3. Remove the red wire from the relay (wires lead to terminal on motor).
4. Remove red wire from the limit switch.
5. Replace the red wire on the limit switch with the red wire from the motor.
6. With a battery charger (or any other 12 V source), ground the motor terminal (black wire) and attach the positive 12 V to the red wire terminal on the motor. The motor should activate and run continuously until the red wire is removed.
7. With a probe attached to the 12 V positive side of the battery charger, identify the black and light blue leads on the limit switch at the motor base and attach the 12 V positive probe to one of the two leads. Either the motor will begin running or it will not. If the motor runs, it should proceed until the CAM circles and deactivates the limit switch, causing the motor to stop. At that time, change terminals with the limit switch to the other of the two leads, and again the motor should begin to run until the CAM positions itself to deactivate the limit switch. If both these points can operate the motor, then the limit switch, CAM, and motor assembly are functioning. If the motor still fails to run, and you have verified that you have the proper wiring installation as identified above, then the problem is with the relay. Once the relay is replaced, the sign should be operational.
Stop Sign Blade Failure

Problem:
Lights do not function.

Areas to Check:
1. Check that the light bulb is working.
2. Check that the ground strap is secure.
3. Check to see if 12 V is being supplied to the light bulb.

Please note that the following improvements have been made to the socket and pigtail:
A. Screws are now used instead of rivets. This makes replacement easier.
B. The braided wire ground strap, which failed on occasion, has been replaced with a two-wire socket and pigtail. This helps ensure an intact ground throughout the operation and life of the sign.
C. Lower temperature protection has been added to ensure a broader temperature range in warmer and cooler climates.

Problem:
Color fading of the blade surface.

Areas to Check:
1. The red paint used on steel blades contains a pigment that tends to bleach over time. If a blade surface fades, it may be repainted or replaced. Specialty recommends replacement due to the labor savings and cost efficiency.
2. Improvements in technology now allow aluminum reflective signs to last much longer than in the past. Decals are available for engineering grade, and the high-intensity sign costs somewhat more than the steel blade. All stop arms—air, vacuum, and electric—are available with a high-intensity face.
EMERGENCY EQUIPMENT

Each state or province has its own set of laws regarding emergency equipment. Your unit may have some or all of the items listed below. Because of variations in option packages, the placement of this equipment inside the bus may vary from one unit to another, but it is important for you to recognize and know the locations of all the emergency equipment on your bus. Furthermore, it is important for you to read all literature, labels, and any other written materials supplied by the equipment manufacturers. Be sure you familiarize yourself with all aspects of the emergency equipment before attempting to drive the bus.

FIRE EXTINGUISHER
The fire extinguisher is located in the right front corner of the bus body near the floor. Your unit may be equipped with a 2.75, 4.5, 5, or 6 pound extinguisher. Check quarterly to make sure it is fully charged.

FIRST AID KIT
Size and contents of first aid kits may vary because of different state specifications. The contents of the kit should be inspected weekly or as required by local regulation to be sure that all contents comply with state specifications.

BODY FLUID CLEANUP KIT
The body fluid cleanup kit is designed to contain accidental spillage of biological matter, minimizing risk of exposure to potential health hazards. The contents of the kit should be inspected every 30 days or as required by local regulation to be sure that all contents comply with state specifications.

FIRE AXE/CROWBAR
Your bus may be equipped with fire axe and/or crowbar. Every 30 days, inspect installation mounting fasteners to ensure that they are tight. Check fire axe and crowbar monthly to be sure that they are easily accessible and unobstructed.

FLARE KIT
Ensure that the contents of the flare kit are in place every 30 days or as required by local regulations. Inspect mounting fasteners for flare kit box every 30 days to ensure that they are tight.
**TRIANGULAR WARNING DEVICES**

Your unit may be supplied with triangular warning devices. Inspect contents of the kit every 30 days or as required by local code to ensure proper operation.

*Recommended warning device positioning*

In units with an optional locking emergency equipment compartment in the front upper panel above the windshield, all emergency supplies are located behind a door which is labeled with a list of compartment contents. To meet state regulations, the door locking mechanism is connected to a buzzer system that sounds if the compartment door is locked when the ignition is turned on.
Emergency exits are clearly identified by the words “EMERGENCY EXIT.” Operating instructions are printed nearby each exit. Some units are equipped with an audible alarm device signifying an emergency exit is unlatched or open. If a buzzer sounds when turning on the ignition switch, check emergency exits to see that they are completely closed. All emergency exits meet Federal Motor Vehicle Safety Standard 217, “Bus Window Retention and Release.” These illustrations show various types of emergency exits.

All emergency exits should be inspected and operated daily to ensure they are labeled and operate properly per the instructions provided.

Also see Transpec Safety Vent, on the following page.
The roof hatch serves as an important emergency exit, and therefore it is crucial that it is always maintained properly and instruction labels are in place and clearly visible. All emergency exits should be inspected and operated daily to ensure that they are labeled and operate properly per the instructions provided.

MAINTENANCE CAUTIONS

Transpec Safety Vents are designed to provide years of reliable service with a minimum amount of maintenance. All components are rustproof with lifetime finishes, and moving parts are Teflon-coated to eliminate need for lubrication. Use of lubricants, paints, or other coatings—such as graffiti-deterring spray—is not recommended.

Suggested maintenance includes periodic inspection of attaching fasteners for evidence of loosening due to tampering, and regular cleaning with mild soap and water. Although there are more powerful cleaning solutions available, some of them contain solvents and other chemicals that can attack the high-strength materials used in the production of safety vents. It is the customer’s responsibility to ensure that cleaning solutions are compatible with the materials used on safety vents.

Graffiti-removing cleaners often contain acetone, ether, lacquer thinner, or other solvents known to destroy the high-strength properties of many engineering plastics, and use of these cleaners must be avoided. Graffiti-resisting coatings often leave a sticky residue that interferes with the smooth up/down movement of the ventilator mechanism. Avoid using these coatings.

SERVICE AND REPAIRS

All components used in the production of safety vents are available as service parts, except for a particular hinge that represents a possible hazard if it is improperly reattached after being damaged. The hinge attaches to a hidden tapping plate that is permanently laminated between the inner and outer cover assemblies, and this tapping plate can neither be inspected nor replaced. Therefore, when the hinge is damaged, it is necessary to replace the entire assembly.

CAUTION: This hinge assembly is critical and hinge should never be removed from cover assembly. Fasteners used in this assembly are specially designed, with critical torque requirements and tamper-resistant heads.
HEATERS

GENERAL INFORMATION

Blue Bird heaters are hot water type, which depend on engine-generated heat for their function. Heat from the engine is picked up by the engine coolant, which is pumped through the heaters inside the body and back into the engine. A typical heater inside the body is made of a heat exchanger coil and fans which move air across the coil. Air moving across the coil picks up heat from the engine coolant and transfers it into the body.

Satisfactory performance of the body heaters is mostly dependent upon:
1. Adequate engine (coolant) temperature—this can be altered by thermostat rating (which should never be higher than recommended by the engine manufacturer) and/or shutters.
2. Adequate coolant flow—this varies with engine speed and can be increased if necessary by the use of an auxiliary water pump. The heaters are rated at six gallons per minute.
3. Proper fan operation—all motors have multiple speeds, and can most easily be checked for function by operating the motor switches individually and listening for variations in speed.

Many other factors affect performance, but these three are most important.

HEATER OPERATION

Be sure the engine radiator is full and all coolant flow valves are open. **For your own safety, do not leave the engine running while opening or closing valves.** Warm up the engine to operating temperature with the engine at fast idle if possible, and turn on the heater fans (and the auxiliary water pump if unit is equipped with one). Under extremely cold weather conditions, turning on the heater fans will cause the engine temperature to drop noticeably as heat from the engine is transferred into the body, but as air temperature inside the body rises, engine temperature also rises. The engine will also generate more heat as it does work in moving the vehicle. Once the engine is warm, heater fan motor speeds and subsequent air volumes across heater coils can be controlled at the driver’s discretion for best defrosting and overall passenger comfort. **NOTE:** See *Heater Bleeding Instructions* for completely filling cooling system.

The main front heater has a single-motor, dual-fan, high-volume blower assembly. Internal baffling and controls allow the operator to direct air from the blower as necessary to the driver’s area, the passengers’ area, or the windshield and windows. The switch panel knob marked REAR and DEFROST at opposite ends directs output to the defrost outlets, the underseat duct, or both.

For maximum defrost air output, the fan switch should be in the #3 (high-speed) position, the rotary control knob should be turned to DEFROST.

As the windshield is cleared, the rotary control can be turned toward the REAR position and the air directed to the rear can be divided between the driver and passengers using the rotary knob marked PSNGR - DRIVER.

DEFROSTING

Windshield fogging and frosting is caused by warm, humid air coming into contact with a colder windshield, which causes the moisture in the air to condense and even freeze if the windshield is cold enough. The warmer the windshield, the less moisture will condense. During initial warm-up, the controls should be set at maximum defrost air output to heat the inside of the windshield glass as much as possible. If the defrosters are not turned on until after condensation starts, it is more difficult to heat the glass and drive moisture away.

During warm-up, without passengers, the heater intake air should be set on the “reheat” or “inside air” position. As passengers are loaded onto the bus, the moisture content of the air inside the bus increases. The heater air intake should always be set on the “fresh air” or “outside air” position when passengers are on board. Conditions will be especially difficult when large passenger loads stay on board for extended periods of time, such as on a charter or over-the-road activity trip. Travelling at highway road speeds causes heat to dissipate through the windshield glass, and each passenger’s breath continually adds to the air’s moisture content. To reduce fogging, open the forward driver’s window slightly to let the moist
air escape, and run the heater blower at high speed with output air directed toward the windshield. If bus is equipped with adjustable static air vents in the roof, they should be kept open, and exhaust fans should be used, if present.

Auxiliary fans mounted on the dash or overhead may be helpful as an aid to defrosting. Direct them to blow with the air from the defroster outlets, rather than against it. Many different ways of positioning auxiliary fans have been found to work under various conditions, and their use on your unit can probably be determined by experience.

Air distribution for defrosting in the entrance door area can be adjusted by rotating the diffusers.

**ANTIFREEZE**

Your bus is equipped with a 50/50 solution of antifreeze and water. This solution protects to -20°F (-29°C). Driver should check antifreeze before driving into cold climates. For very cold temperatures (-50°F [-45°C] and below), the best protection is a solution of 68 percent antifreeze, but no higher concentration should ever be used.

**CARE AND CLEANING OF DEFROSTER FANS**

Defroster fan motor bearings are lifetime-lubricated, and do not require maintenance. Clean the blade and guard occasionally with a soft bristle brush and a vacuum cleaner or compressed air to help maintain efficiency. As with any other fan, if the blade is damaged or unbalanced, vibrational damage can occur to the motor or surrounding components, so the blade should be replaced immediately.

**WARNING:** Do not operate a defroster fan without the fan guard properly installed.

**Procedure:**

1. Remove front half of fan guard by gently separating plastic tabs with a screwdriver or other hard instrument. Be careful not to damage tabs, as these connect the front half of the fan guard to the rear half.
2. To remove the fan blade, use a 3/32-inch (2.4 mm) Allen wrench in the set screw located directly behind the fan. This should loosen the fan blade for removal.
3. The rear half of the fan guard can also be removed if necessary. After pulling away the fan, remove the two nuts and washers on either side of the center point and lift off rear piece.

**HEATER BLEEDING INSTRUCTIONS**

Use of antifreeze (ethylene glycol type only) is recommended for summer or winter operation because of its corrosion inhibition and lubrication properties. A solution of 50 percent antifreeze and 50 percent water is preferred, and it gives freeze protection down to about -30°F (-35°C). Ultimate protection is obtained at 68 percent antifreeze (down to about -92°F or -70°C), but no higher concentration should ever be used.

If it becomes necessary to completely refill the chassis coolant system, the following procedure must be followed to ensure adequate heater bleeding. During the bleeding process, it will be necessary to remove the radiator cap and refill cooling system several times to ensure adequate coolant is available to replace purged air and coolant lost when bleeding.

**WARNING:** Use extreme care when removing radiator cap. As coolant becomes hot, pressure builds
up in the cooling system. Rapid venting and/or removal of radiator cap will cause coolant to boil up and spray out, and can result in serious burns. Vent off pressure slowly before removing radiator cap.

**Procedure**

1. With the engine off, shut all engine heater return valves or clamp closed heater return hose as close to engine as possible. Close heater hose supply line gate valve located on left front heater.
2. Fill cooling system completely, including surge tank, with coolant and run engine for a few minutes to bleed air from cylinder block and heads.
3. Open the heater hose supply line gate valve located on left front heater. Turn on heater water pump, if equipped.
4. Using a suitable container to catch the coolant, run the engine between 2,000 and 3,000 rpm. Loosen bleeder valve located in heater hose return line in engine compartment. Bleed air and coolant through bleeder valve until air is eliminated from heater system. Stop bleeding when continuous stream of coolant comes from bleeder valve.
   **Note:** It will be necessary every few moments to refill the radiator or surge tank.
5. When all the air has been purged from the heater system, open valve in heater hose return line or unclamp return hose.
6. Run engine between 2,000 and 3,000 rpm until thermostats open. To assist in deaerating the entire cooling system, accelerate the engine a few times before and after the thermostats open.
   **Note:** Thermostats have opened when upper radiator tank and radiator hose becomes hot.
7. Refill cooling system including radiator and coolant surge tank.

**WARNING:** Never idle engine in closed areas. Never sit in a parked vehicle for an extended period of time with the engine running. Exhaust gases, particularly carbon monoxide may build up. These gases are harmful and potentially lethal. Carbon monoxide is colorless and odorless, but can be present with all other exhaust fumes. Therefore, if you ever smell exhaust fumes of any kind inside your vehicle, have it inspected immediately by your dealer and have the condition corrected. Do not drive with exhaust fumes present.

**WARNING:** Use extreme care when removing radiator cap. As coolant becomes hot, pressure builds up in the cooling system. Rapid venting and/or removal of radiator cap will cause coolant to boil up and spray out, and can result in serious burns. Vent off pressure slowly before removing radiator cap.

**REMOVAL OF UNDERSEAT FAN AND MOTOR ASSEMBLY**

1. Remove front and rear screws securing outlet to heater (Figure 1).
2. Lower outlet panel and move it toward aisle to clear end of heater (Figure 2).
3. Rotate outlet panel toward rear, away from heater, exposing fan and motor assemblies. Remove screws securing fan and motor to heater for service (Figure 3).
REMOVAL OF UNDERSEAT HEATER FILTER

1. Remove fasteners that secure seat cushion and remove seat cushion.
2. Remove filter by pulling tab in center.
3. Put filter back into place by sliding edges and corners into rectangular opening on top so that it lies centered over the fins.

REMOVAL OF UNDERSEAT HEATER COIL

1. Remove fasteners that secure seat cushion and remove seat cushion.
2. Remove screws securing heater to seat frame.
3. Slide heater toward aisle and remove heater to wall trims.
4. Remove hose cover trims at floor, exposing hoses.
5. Be sure to clamp the hoses shut in order to reduce spillage.
6. Loosen hose clamps and remove hoses from coil.
7. Move heater out from under the seat. Remove end caps and four screws retaining the coil.

PREVENTIVE MAINTENANCE—to be performed annually

Hoses
Check all water hoses for kinks that can prevent water flow or chafing that can cause failure. Look and feel for hardening of rubber, or cracks that result from aging. Hoses should be replaced when external cover tube cracks first appear. Hoses exposed under floor and in the engine area will deteriorate faster than those inside the body due to their exposure to the elements. Therefore, these hoses need to be checked more frequently.
Coils
The heater will be most efficient when the coil and fins and air flow passages are kept clean and free from dust and dirt. The coil should be cleaned carefully with compressed dry air or vacuum and a soft bristle brush. Damaged fins should be straightened with a fin comb to prevent air flow restrictions. The heater coil can be accessed through the filter access panel at the top of the driver’s side of the main heater, or for underseat heaters, underneath the passenger seat cushions. Cleaning filters often will reduce the need to clean the coils.

Motors, Switches, Blowers, and Fans
Motors are essentially maintenance-free and do not require lubrication or cleaning, but excessive vibration caused by damaged blower wheels or fans can cause motor damage. Check wheels and fans for obstruction or damage by running each fan alone, then listening and feeling for irregularity. Replace damaged wheels or fans to prevent vibratory damage to surrounding and supportive housing parts and fasteners as well as motors.
Switches are also maintenance-free, but loose wiring connections to switches or motors can cause excessive resistance and overheating damage. Wires to switches can be checked or repaired by removing the switch mounting panel next to the driver’s seat.

Panels and Housings
Fasteners which connect and retain structural and access panels should be checked and tightened as necessary. A loose screw may allow a panel to vibrate, resulting in excessive noise, more loose screws, and/or metal fatigue.

Hose Repair
Hoses are installed with as few joints as possible so as to minimize the possibility of leaking joints. If a portion of hose becomes damaged, a new piece can be spliced in by use of a four-inch (10 cm) brass tube (Blue Bird Part No. 1701903) and hose clamps. If hose is damaged because of age, its entire length should be replaced. Air duct hose can be repaired with a good brand of wide PVC tape or duct tape.

Heater Water Capacity Chart
Note: Water capacity of heaters includes tubing within heater enclosure.

<table>
<thead>
<tr>
<th>Description</th>
<th>Capacity (Quarts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 Front Heater</td>
<td>4.30</td>
</tr>
<tr>
<td>50 RH Front Heater</td>
<td>1.56</td>
</tr>
<tr>
<td>50 Underseat Heater</td>
<td>1.50</td>
</tr>
<tr>
<td>80 Underseat Heater</td>
<td>2.34</td>
</tr>
<tr>
<td>1 Foot (30 cm) of Connecting Line</td>
<td>0.17</td>
</tr>
</tbody>
</table>

Example:
60 passenger with a 50 RH front heater and 80 underseat heater located in overhang.

<table>
<thead>
<tr>
<th></th>
<th>Capacity (Quarts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 Standard Front Heater</td>
<td>4.30</td>
</tr>
<tr>
<td>50 RH Front Heater</td>
<td>1.56</td>
</tr>
<tr>
<td>80 Underseat Heater</td>
<td>2.34</td>
</tr>
<tr>
<td>76 feet (23 m) of Heater Pipe with 0.17 quarts per foot</td>
<td>12.92</td>
</tr>
<tr>
<td><strong>Total Capacity</strong></td>
<td><strong>21.12 quarts</strong></td>
</tr>
</tbody>
</table>

**NOTE:** Total capacity of complete system in this example is 21.12 quarts (20 L) plus capacity of engine and radiator. Refer to chassis manufacturer operating manual for engine and radiator capacity.
HEATER SERVICE
Use the following two diagrams as guides in helping to service the heater components.

Diagram 1
HEATER SERVICE—Continued

Diagram 2
WINDSHIELDS AND WINDOWS

WINDSHIELD GLASS REPLACEMENT

The windshield is four-piece flat.

1. Remove vertical filler strip in glazing rubber on each side of broken glass; remove horizontal filler strip in glazing rubber on top and bottom of broken glass. It will be necessary to cut the horizontal filler strip after it is pulled past the glass.

2. Starting at a corner, push glass free of glazing rubber from inside of bus outward, and remove.

3. Position new glass in glazing rubber.

4. Using installation tool, work glass into glazing rubber (Figure 1).

5. Seal glass to glazing rubber from outside of the bus with an adhesive sealant such as Silastic 732 RTV Adhesive/Sealant.

6. Apply soapy solution to filler strip channel on glazing rubber to act as a lubricant for easier installation of filler strip.

7. Using filler strip tool, insert filler strip into channel on glazing rubber (Figure 2).

SPLIT SASH WINDOW AND GLASS REPLACEMENT

NOTE: The glass used in Blue Bird buses meets Federal Motor Vehicle Safety Standards 205 and 217. Therefore, when a piece of glass is broken, it should be replaced with an identical piece.

1. Remove four screws securing window frame to bow.

2. Pull window to inside of body and remove.

3. Remove six screws (three on each side of window) holding assembly together.
4. On bottom glass, simply pull aluminum channel off top and bottom of glass.
5. To remove glass from top part of window, remove six screws holding frame around glass.
6. Reassemble window by reversing above procedure.
7. Apply weather seal caulking around window frame to prevent leaking.

**WARNING:** When replacing broken or damaged glass, use extreme care at all times to prevent personal injury. Use proper replacement parts, tools, and personal protective equipment, such as gloves and safety goggles.

**WINDOW LATCH REPLACEMENT**

1. Remove screw and block located in side channel directly above stationary glass (Figure 1).
2. Lower sliding sash so that latch enters large notch covered by block removed in Step 1.
3. With latch in large notch, push finger holds outward until inside edge is exposed (Figure 2). Pull latch out of finger hole opening.
4. Finger latch is pried off attached metal latch with any tool that provides leverage. Latch may now be removed and replaced.
5. Reassemble by reversing procedure.

**NOTE:** Lubricate latches and sliding seal of top window with silicone spray every 30 days. See decal on driver’s window.
ENTRANCE DOOR GLASS REPLACEMENT
1. Apply pressure against glass from the outside of the bus, starting at a corner and push glass and glazing rubber off of metal flange.
2. Remove glazing rubber from around glass.
3. Put glazing rubber on new glass.
4. Wrap a cord around the glazing rubber and rest the glass on the bottom flange of the opening from outside the bus.
5. Pull cord slowly and work glazing rubber onto metal flange.
6. Apply pressure to glass from inside of bus to assure proper seal.

WARNING: When replacing broken or damaged glass, use extreme care at all times to prevent personal injury. Use proper replacement parts, tools, and personal protective equipment, such as gloves and safety goggles.

REAR VISION GLASS REPLACEMENT
1. Remove filler strip from channel in glazing rubber.
2. Apply pressure against glass from the outside of the bus starting at a corner and push glass and glazing rubber off of metal flange.
3. Remove glazing rubber from glass.
4. Put glazing rubber on new glass.
5. Apply a soapy solution to the flange on the bus body and to the filler strip channel on glazing rubber. This acts as a lubricant for easier installation. Wrap a cord around the glazing rubber and rest glass on bottom window flange from the inside of the bus body.
6. Apply pressure from the inside of the bus body to ensure glass is seated properly. Pull cord slowly and work glazing rubber onto the window flange.
7. Using filler strip tool, insert filler strip into channel on glazing rubber. Filler strip tool is available from your distributor.
8. Apply clear caulking around glass and window flange on the outside of bus body to ensure that no leaks occur.
WINDSHIELD WIPERS

WIPER ASSEMBLY REPLACEMENT
To replace wiper assembly (Figure 1, Blue Bird Product No. 0348144), loosen lock nut, remove screw, and pull wiper assembly loose from wiper arm. Replace the wiper assembly and use original screw and lock nut. Tighten lock nut securely, but do not tighten enough to compress the saddle. Blade must be free to move on axis (machine screw) and within the saddle. Threading the lock nut until flush with machine screw end will give a secure and serviceable installation.

WIPER REFILL REPLACEMENT
To remove wiper refills, follow the procedure outlined below.
1. Lift end clip with screwdriver as shown in Figure 2. This releases locking indentations (A in Figure 3) and allows end clip retainers (B) to be removed through blade claw.
2. Repeat procedure on opposite end of wiper.
3. New end clips (Figure 3) are provided with replacement Anco refills. To install, remove one clip and slide the refill through all claws until end clip locks into place.
4. Install second end clip, snap-locking devices A and B into place to secure refill.

LOWER SIDE PANEL REPAIR PROCEDURE
1. Remove the lower portion of the side panel by carefully drilling out the vertical rows of rivets on each side of the panel from the bottom of the floor line rub rail to the bottom of the skirt and the rivets attaching the bottom rub rail to the panel to be removed. Cut the panel not less than one inch below the floor line rub rail and remove.
2. Clean to bare metal the inch-wide section of panel left below the floor line rub rail and apply an inch-wide bead of Amicon two-component epoxy, TX-4009 or equivalent, following directions and recommendations of the adhesive manufacturer.
3. Insert the replacement panel between the rub rail and the original side panel far enough to ensure a minimum of 1/2 inch of the replacement panel is under the rub rail. Install Cherry SSPV 86 blind rivets (Blue Bird Product No. 0888222) on 3-1/2-inch centers through the rub rail lower flange and the new and old side panel.
4. Replace the vertical rows of rivets and the rivets attaching the bottom rub rail with the same type, size, and quantity of fasteners as was used in the original construction or with Cherry SSPV 86 blind rivets as necessary.
5. Allow the adhesive to cure the proper length of time (14 days at room temperature for the Amicon TX-4009) before returning the vehicle to service.
DRAIN HOLES

There are two drain holes located in each floor section: one on right side under window and one on left side under window. These holes should be cleared of all debris every three months to allow for water drainage.

WARNING LIGHT DOOR SWITCH ADJUSTMENT

Warning light door switches should be checked at least once a year to see that they are securely tightened and adjusted correctly.

Remove four screws securing cover. Adjust switches so that when the door is closed the switch button in depressed position should extend no more than 0.06 inches past the bezel surface as shown, but never flush with the bezel surface.

SPARE TIRE LOCATION AND REMOVAL

If your unit is equipped with a spare tire compartment, use the following procedure to remove and replace spare:

1. Unlatch the tire compartment door and secure in the open position with the chain and hook.
2. Pull out the rack.
3. Remove the wheel hold down clamp and lift off the wheel.

Reverse the procedure above to replace the wheel.

WARNING: At all times stay away from beneath tire.

WARNING: When changing tires, do not lift the vehicle by the bumper. Bumpers are designed to protect the vehicle and occupants during a collision, not to support the vehicle’s weight.
WHEELCHAIR LIFTS

For the Conventional, Blue Bird supplies lifts from Braun and from Collins. Each vendor provides its own publication for information on maintenance, lubrication, troubleshooting, and other important items that are imperative to the smooth operation and safety of wheelchair lifts. These publications are supplied with vendor maintenance documents per order.

At left is the wiring diagram of the buzzer circuits for the wheelchair lift door. The buzzer indicates whether the door is unlatched, opened part of the way, or opened completely (at which time buzzer does not sound).

BODY TIE-DOWN

Tighten the tie-down clamp bolts and the body shear bolts at 1,000-2,000 miles and every three months thereafter.

Shear bolts should be tightened to between 22 and 28 foot-pounds of torque and body tie-down bolts should be tightened to between 37 and 41 foot-pounds. The two shear bolts are located under the body at the rear of the chassis near the rear bumper. Tie-down clamp bolts are located at the front floor, on brackets around the radiator, and at the chassis firewall.

The body is mounted with pads of high-durometer rubber between the floor and chassis frame rails. The rubber absorbs shock, deadens sound, and maintains tension on the tie-down clamps. Be sure the pads are in place when tightening down the tie-down clamps.

WARNING: Failure to follow the procedures for tightening bolts, either by not tightening on schedule or by not conforming to the torque poundages, could lead to separation of the body and chassis, causing risk of personal injury or death.
KEEPING YOUR VEHICLE LOOKING NEW

WASHING YOUR VEHICLE
The best way to preserve your vehicle’s finish is to keep it clean by washing frequently. Wash the vehicle in lukewarm or cold water. Do not use hot water or wash in the direct rays of the sun. Do not use strong soap or chemical detergents. All cleaning agents should be promptly flushed from the surface and not allowed to dry on the finish.

CAUTION: Pressure washing may cause damage to finish. Pre-test pressure washer on similar surface before applying pressure and chemicals to your vehicle. Pressure washers using recirculated water should filter the water to remove abrasive grit.

POLISHING AND WAXING YOUR VEHICLE
Polishing with nonabrasive wax is recommended to remove accumulated residue and eliminate any “weathered” appearance.

FOREIGN MATERIAL DEPOSITS
Calcium chloride and other salts, ice-melting agents, road oil and tar, tree sap, bird droppings, chemicals from industrial chimneys, and other foreign matter may damage vehicle finishes if allowed to remain on painted surfaces. Prompt washing may not completely remove all of these deposits. Additional cleaners may be needed. When using chemical cleaners developed for this purpose, be certain they are safe for use on painted surfaces.

FINISH DAMAGE
Any stone chips, fractures, or deep scratches in the finish should be repaired promptly. Exposed metal will corrode quickly and may develop into a major repair expense.

FLOORS AND FLOOR COVERING
It is imperative that the interior of the bus be kept clean, and floor covering is an important part of this maintenance. Regular cleaning and care will prolong the life of floor covering and improve the general appearance.

Floor coverings should be swept daily and mopped weekly with a mild detergent and water. Do not use floor sweeping compounds. Be sure to remove dirt, pencils, paper, and any other debris that may cause the emergency door to seal improperly. Do not use harsh detergents or excessive amounts of water. Do not use a water hose to wash out the bus; deterioration and damage to the wood floor could occur.

WARNING: Petroleum products, such as oil and grease, quickly deteriorate the floor covering. These types of products should be removed from the surface as soon as possible.

Continuous care must be exercised in the stepwell area, where foreign objects can create a safety hazard. Soil and debris must not be allowed to accumulate, as this not only creates a hazard for passengers but also hinders door operation and door sweeps. Ensure that screws for floor trims and aisle trims are seated tightly, so as not to loosen and create a safety hazard.
SCHEDULED MAINTENANCE

MONTHLY OR 1,000 MILES
- Grease safety barrier latch on Braun wheelchair lift.
- Lubricate roof hatch weatherseals and lock mechanisms.
- Inspect all emergency equipment mounting fasteners.
- Lubricate window latches and slides.
- Lubricate hinge pin on entrance doors.
- Lubricate pivot points on outward opening door.
- Check/adjust roller bracket and control rod bracket on jackknife door.
- Check/adjust air pressure in power jackknife door.
- Inspect outer fasteners and lubricate electric stop arms.
- Inspect seat frames for secure attachment to the floor and wall.
- Inspect front heater air filter. Clean if necessary.
- Check and adjust all mirrors as required.
- Lubricate rear emergency door positive hold open hinge.
- Tighten all body tie-down bolts at first 1,000 miles and 2,000 miles, and quarterly thereafter.

3 MONTHS OR 5,000 MILES
- Inspect mounting bolts on body tie-down.
- Inspect mounting fasteners and upholstery on seats.
- Lubricate bridge plate hinge and pivot on Collins wheelchair lift.
- Clean and lubricate fold cam slot, platform cam slots and handrail V-block on Collins wheelchair lift.
- Check fluid level in Collins wheelchair lift.
- Lubricate hinge and latch mechanisms on access doors.
- Check internal fasteners on electric stop arms.
- Lubricate entrance door vandal lock.
- Inspect heater valves to verify proper function.
- Inspect fire extinguisher to see if fully charged.
- Check first aid kits to see if fully equipped.
- Oil all hinges and window latches for ease of operation.
- Lubricate all window channels with silicone or graphite.
- There is one drain hole in each floor section under windows. Be sure hole is clear of debris so any water may escape.
- Clean all rubber door seals and lubricate with rubber lubricant.
- All rear and side emergency door latch slide bars should be lubricated with light grease to reduce friction.
- Tighten all body tie-down bolts.
- Clean heater air filter.
3 MONTHS OR 24,000 MILES
- Check for loose or disconnected electrical connections and damaged wiring.

6 MONTHS OR 6,000 MILES
- Lubricate entrance door vandal lock.
- Check/adjust emergency door vandal lock.
- Lubricate lock mechanism and door hinge on emergency door.
- Inspect destination sign for proper operation.
- Lubricate hinges and roller gears on destination signs.
- Check/adjust curtain on destination signs.
- Lubricate all working part joints on driver’s seat using lithium-based grease (aerosol).
- Check/adjust door control rod on manual entrance doors.

12 MONTHS OR 12,000 MILES
- Check cylinder chains, hoses, and wires on the Braun Wheelchair lift.
- Check heater hoses, motor wheels, and fans on heaters.
- Clean heater cores.
- Tighten heater hose clamps.
- Check heater panels and housing.
- Complete Quarterly Maintenance Checklist.
- Remove all seat cushions, thoroughly clean with upholstery cleaner, and reinstall on a rotating basis.
- Adjust door control rod and closing mechanism to entrance doors.
- Bleed all air from heaters.
- Wash underseat heater core filter(s).

These checklists are suggested. They do not replace or supersede local or state required driver inspection procedure, nor do they necessarily address issues pertaining to the chassis. For chassis-related maintenance information, see the manual supplied by your chassis manufacturer.
# QUICK REFERENCE MAINTENANCE CHARTS

**NOTE:** For engine service, operation, and maintenance, see the Engine Operator’s Manual supplied in the owner’s packet provided with this vehicle. For chassis-related service and maintenance information, see the chassis manufacturer’s manual.

## BODY COMPONENT MAINTENANCE CHART

<table>
<thead>
<tr>
<th>Operation</th>
<th>Service Intervals*</th>
<th>Months / Miles, whichever occurs first</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTWARD OPENING DOOR</td>
<td></td>
<td>General Instructions</td>
</tr>
<tr>
<td>Adjust Door Linkage Rod</td>
<td>As Required</td>
<td>Adjust door linkage rod for proper open/closed position.</td>
</tr>
<tr>
<td>JACKKNIFE DOOR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjust Door Control Rod</td>
<td>●</td>
<td>Adjust door control rod for proper open and closed position. See page 28 and 29.</td>
</tr>
<tr>
<td>Adjust Roller Bracket</td>
<td>●</td>
<td>Adjust roller bracket for easier door operation. See page 28 and 29.</td>
</tr>
<tr>
<td>Adjust Control Rod Bracket</td>
<td>●</td>
<td>Adjust bracket to prevent pivot pin binding. See page 28 and 29.</td>
</tr>
<tr>
<td>Lubricate Hinge Pin</td>
<td>●</td>
<td>Lubricate each hinge lug. See page 28 and 29. Use LPS No. 1 lubricant.</td>
</tr>
<tr>
<td>POWER JACKKNIFE DOOR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubricate Hinge</td>
<td>●</td>
<td>Lubricate hinge pin. Use LPS No. 1 lubricant.</td>
</tr>
<tr>
<td>Adjust Air Pressure</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>AIR STOP ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td></td>
<td>No lubrication required.</td>
</tr>
<tr>
<td>Adjustment</td>
<td>As Required</td>
<td>Adjust air pressure for proper opening and closing of stop arm.</td>
</tr>
<tr>
<td>ELECTRIC STOP ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>●</td>
<td>Lubricate breakaway hinge at four (4) pivot points. Use Tri-Flow™ (DuPont) lubricant.</td>
</tr>
<tr>
<td>Inspect Outer Fasteners</td>
<td>●</td>
<td>Check outer fasteners for tightness.</td>
</tr>
<tr>
<td>Inspect Internal Fasteners</td>
<td>●</td>
<td>Check inner fasteners for tightness.</td>
</tr>
<tr>
<td>SECURITY LOCKS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubricate Entrance Door</td>
<td>●</td>
<td>Lubricate bushing and shaft in center at base of lock handle. See page 30. Use Apply™ lubricant.</td>
</tr>
<tr>
<td>Lubricate Entrance Door Key Lock</td>
<td>●</td>
<td>Spray lubricant into key lock. Use Apply™ lubricant.</td>
</tr>
<tr>
<td>Lubricate Sliding Bolt</td>
<td>●</td>
<td>Lubricate sliding bolt mechanism. Use LPS No. 1 lubricant.</td>
</tr>
<tr>
<td>Inspect and Adjust Emergency Door</td>
<td>●</td>
<td>No lubrication and adjustment required.</td>
</tr>
<tr>
<td>BUS BODY CARE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wash</td>
<td>As Required</td>
<td>See page 51.</td>
</tr>
<tr>
<td>EMERGENCY EXITS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubricate Lock Mechanisms</td>
<td>●</td>
<td>Spray lubricant into lock mechanism. Use Silicon spray.</td>
</tr>
<tr>
<td>Lubricate Roof Hatch</td>
<td>●</td>
<td>Spray silicon lubricant into lock mechanism. Work lock handle back and forth to ensure smooth operation. See page 37. Use Silicon spray.</td>
</tr>
<tr>
<td>Lubricate Door Hinge</td>
<td>●</td>
<td>Spray lubricant into hinge lugs. Use LPS No. 1.</td>
</tr>
<tr>
<td>Lubricate Rear Emergency Door Positive Hold Open Hinge</td>
<td>●</td>
<td>Grease with door closed. Use low temp grease per ASTM D4985 GC-LB Grade 2. 40° F to 350° F. One fitting per hinge.</td>
</tr>
<tr>
<td>EMERGENCY EQUIPMENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspect All Mounting Fasteners</td>
<td>●</td>
<td>Inspect all emergency equipment mounting bracket fasteners to ensure tightness.</td>
</tr>
<tr>
<td>DESTINATION SIGNS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubricate Hinges</td>
<td>●</td>
<td>Lubricate all hinge lugs. Use lightweight lubricating oil.</td>
</tr>
<tr>
<td>Lubricate Roller Gears</td>
<td>●</td>
<td>Lubricate roller gears where required. Use lightweight grease such as White Lube.</td>
</tr>
<tr>
<td>Check and Adjust Curtain</td>
<td>●</td>
<td>See page 7.</td>
</tr>
<tr>
<td>Replace Bulb</td>
<td>As Required</td>
<td></td>
</tr>
<tr>
<td>WINDOWS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubricate Latch</td>
<td>●</td>
<td>Spray lubricant into window latch mechanism. Use Silicon spray.</td>
</tr>
<tr>
<td>Lubricate Window Slides</td>
<td>●</td>
<td>Spray lubricant into sliding frame of window. Use Silicon spray.</td>
</tr>
</tbody>
</table>

*Service intervals to be performed on a continuing basis.

Example: 1/3,000 means every month or every 3,000 miles.
## BODY COMPONENT MAINTENANCE CHART

<table>
<thead>
<tr>
<th>Operation</th>
<th>Service Intervals*</th>
<th>Months / Miles, whichever occurs first</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1/3,000 3/5,000 3/24,000 6/6,000 6/10,000 12/12,000 12/24,000 24/24,000</td>
<td></td>
</tr>
<tr>
<td><strong>HEATERS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check Heater Hoses</td>
<td>●</td>
<td>Check hoses for kinks, cracks, or other visible signs of damage. See page 41.</td>
</tr>
<tr>
<td>Clean Heater Coil &amp; RH Front Heater Air Filter</td>
<td>●</td>
<td>Keep air flow passage free of dust and dirt by clearing with compressed air or vacuum and a soft bristle brush. Straighten damaged fins with a fin comb. See page 42.</td>
</tr>
<tr>
<td>Check Motor Wheels &amp; Fans</td>
<td>●</td>
<td>Check wheels and fans for obstructions or damage by running each fan alone, then listening and feeling for irregularity. Replace damaged wheels or fans to prevent vibratory damage.</td>
</tr>
<tr>
<td>Check Heater Panels &amp; Housing</td>
<td>●</td>
<td>Fasteners which connect and retain structural and access panels should be checked and tightened as necessary.</td>
</tr>
<tr>
<td>Tighten Heater Hose Clamps</td>
<td>First 1,000 Miles and Annually Thereafter</td>
<td>Heater hose clamps are located at the underseat heater coil, behind the access door in the heater hose covering immediately forward of the left front wheellohousing and under the floor near right front and driver’s heaters.</td>
</tr>
<tr>
<td><strong>BODY MOUNTING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspect Mounting Bolts</td>
<td>●</td>
<td>See page 50.</td>
</tr>
<tr>
<td><strong>MIRRORS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjust Mirrors</td>
<td>As required</td>
<td>Loosen adjusting nuts, make adjustment, then retighten nuts.</td>
</tr>
<tr>
<td><strong>SEATS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspect Mounting Fasteners</td>
<td>●</td>
<td>Tighten fasteners if required.</td>
</tr>
<tr>
<td>Inspect Cushion Attachments</td>
<td>Weekly</td>
<td>Tighten with Phillips-head screwdriver, if required.</td>
</tr>
<tr>
<td>Inspect Upholstery</td>
<td>●</td>
<td>Inspect for cuts, tears, wear, and soiled areas.</td>
</tr>
<tr>
<td>Lubricate Driver’s Seat</td>
<td>●</td>
<td>Apply lubricant to all working part joints. Use Aerosol Lithium base grease.</td>
</tr>
<tr>
<td>Inspect Seat Belts</td>
<td>Weekly</td>
<td>Inspect for torn or frayed areas.</td>
</tr>
<tr>
<td>Inspect Seat Belt Buckles</td>
<td>Weekly</td>
<td>Inspect for adjustability and proper operation.</td>
</tr>
<tr>
<td>Lubricate Seat Belt Buckles</td>
<td>As Required</td>
<td>Lubricate buckles to ensure ease of operation. Use Graphite-type lubricant.</td>
</tr>
<tr>
<td>Clean Seat Belt Webbing</td>
<td>As Required</td>
<td>Clean using warm water and detergent solution.</td>
</tr>
</tbody>
</table>

## WHEELCHAIR LIFT MAINTENANCE CHART

<table>
<thead>
<tr>
<th>Operation</th>
<th>Service Intervals*</th>
<th>Months / Miles, whichever occurs first</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MONTHS</td>
<td>MILES</td>
</tr>
<tr>
<td><strong>BRAUN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grease/Safety Barrier Latch</td>
<td>1</td>
<td>1,000</td>
</tr>
<tr>
<td>Lube Hinges and Pins</td>
<td>1 or 100 cycles</td>
<td>1,000</td>
</tr>
<tr>
<td>Check Cylinder Chains, Hoses, and Wires</td>
<td>12</td>
<td>12,000</td>
</tr>
<tr>
<td><strong>COLLINS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lube Bridge Plate Hinge and Pivot Points</td>
<td>3 or 600 cycles</td>
<td>5,000</td>
</tr>
<tr>
<td>Clean and Lube Fold Cam Slot, Platform Cam Slots, and Handrail V-Block</td>
<td>3 or 600 cycles</td>
<td>5,000</td>
</tr>
<tr>
<td>Check Fluid Level</td>
<td>3 or 600 cycles</td>
<td>5,000</td>
</tr>
</tbody>
</table>

*Service intervals to be performed on a continuing basis. Example: 1/3,000 means every month or every 3,000 miles. **General instructions**
<table>
<thead>
<tr>
<th>Fraction of an inch</th>
<th>Decimal</th>
<th>Millimeters</th>
<th>Fraction of an inch</th>
<th>Decimal</th>
<th>Millimeters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/64</td>
<td>0.0156</td>
<td>0.396</td>
<td>33/64</td>
<td>0.5156</td>
<td>13.096</td>
</tr>
<tr>
<td>1/32</td>
<td>0.0312</td>
<td>0.793</td>
<td>17/32</td>
<td>0.5312</td>
<td>13.493</td>
</tr>
<tr>
<td>1/16</td>
<td>0.0625</td>
<td>1.587</td>
<td>9/16</td>
<td>0.5625</td>
<td>14.287</td>
</tr>
<tr>
<td>3/32</td>
<td>0.0937</td>
<td>2.381</td>
<td>19/32</td>
<td>0.5937</td>
<td>15.081</td>
</tr>
<tr>
<td>1/8</td>
<td>0.1250</td>
<td>3.175</td>
<td>5/8</td>
<td>0.6250</td>
<td>15.875</td>
</tr>
<tr>
<td>5/32</td>
<td>0.1562</td>
<td>3.968</td>
<td>21/32</td>
<td>0.6562</td>
<td>16.668</td>
</tr>
<tr>
<td>1/4</td>
<td>0.1875</td>
<td>4.762</td>
<td>11/16</td>
<td>0.6875</td>
<td>17.462</td>
</tr>
<tr>
<td>7/32</td>
<td>0.2187</td>
<td>5.556</td>
<td>45/64</td>
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**Note:** 1 liter of water has a mass of 1 kilogram, and a volume of 1,000 cubic centimeters.
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