



MINI-BIRD

Owner's Manual



BLUE BIRD

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INTRODUCTION

Thank you for selecting the Blue Bird Mini-Bird. This body/chassis combination is the result of developments in mass transportation which have been ongoing since 1927. The design and construction of the Mini-Bird 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 Mini-Bird in top operating condition and help extend its service life.

Your Mini-Bird may have some or all 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 Mini-Bird 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 Mini-Bird is larger than a typical automobile. Acceleration will likely be slower than that of a car or truck. 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, fuses, 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.

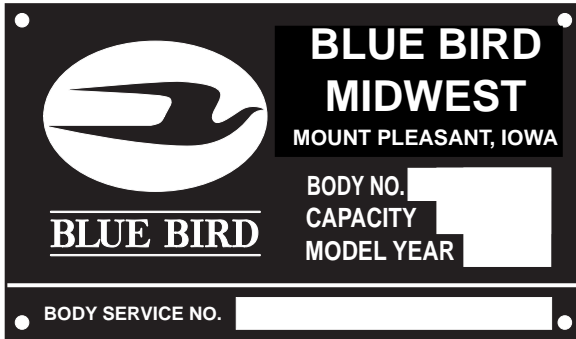
If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, and/or Blue Bird Corporation.

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:

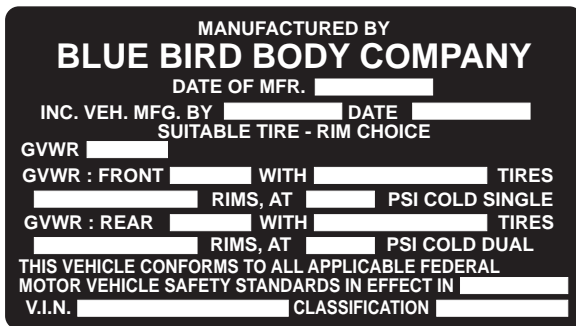
**NHTSA
U.S. Department of Transportation
Washington, DC 20590**

BODY IDENTIFICATION

The **Body Serial Number Plate** and **Body Service Number Plate** are located above the windshield on the right side of the unit. Refer to the data on these plates for registration purposes or for replacement part information.



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.



INSPECTION

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?
- Check tire pressure and treads. Are the lug nuts in place?
- 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.
- Check pressure on fire extinguisher.
- Are the windshield and windows around the driver's area clean?
- Are the mirrors clean and adjusted?

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.

QUARTERLY INSPECTION

- 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 seal and lubricate with rubber lubricant.
- All rear and side emergency door latch slide bars to be lubricated with light grease to reduce friction.
- Tighten all body tie-down bolts to 38 foot-pounds torque at 1,000 miles, 2,000 miles, and quarterly thereafter.
- Grease emergency door hinges.

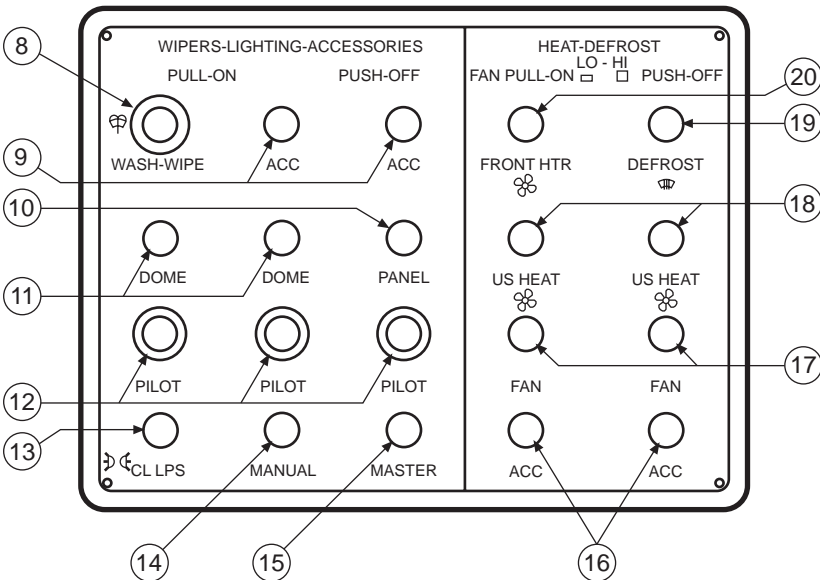
YEARLY INSPECTION

- Complete Quarterly Inspection.
- 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.
- Thoroughly clean all front heater cores.
- Bleed all air from heaters.
- Tighten all heater hose clamps.
- Wash underseat heater core filter(s).

Note: These checklists are suggested. They do not replace or supersede local or state required driver inspection procedure.

SWITCH PANEL

1. Chassis fuse compartment
2. Headlight switch
3. Dash lights dimmer switch
4. Air conditioner controls (optional)
5. Fresh air control
6. Heater coolant flow control valve
7. Driver's air control
8. Windshield wiper switch (1 standard, 2 optional)
9. Accessory switches (optional)
10. Switch panel dimmer switch
11. Body dome lights
12. Pilot lights
13. Body clearance lights
14. Warning light manual switch (optional)
15. Warning light master switch (optional)
16. Accessory switches (optional)
17. Auxiliary fan switch (optional)
18. Underseat heater fan switch (optional)
19. Defroster fan switch
20. Front heater fan switch

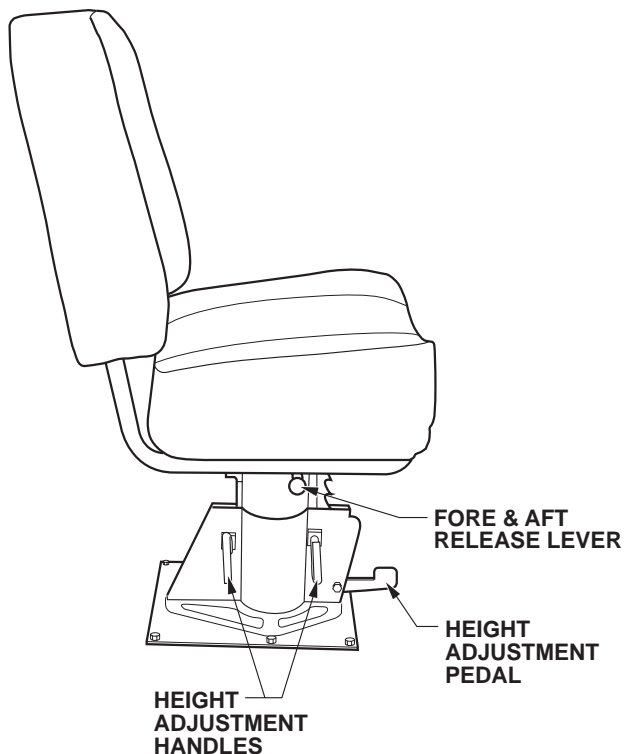


SEATS AND SEAT BELTS

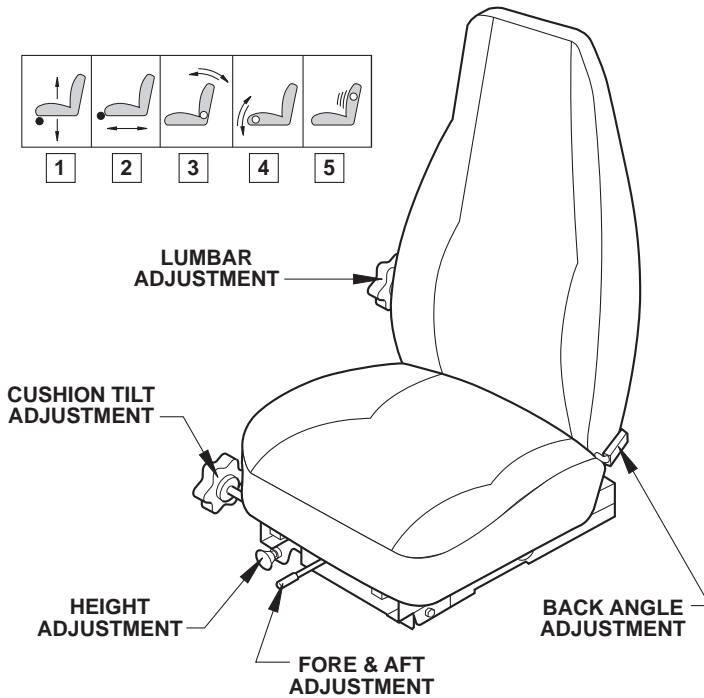
DRIVER'S SEAT (Standard)

The driver's seat may be adjusted fore and aft by pushing forward on 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 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 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 of the seat 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.

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.

SEAT 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 the cushion two or three inches and pull forward to remove.

Installation

1. Place the rear edge of the cushion down on the base portion of the seat frame. Lifting the forward edge two or 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.

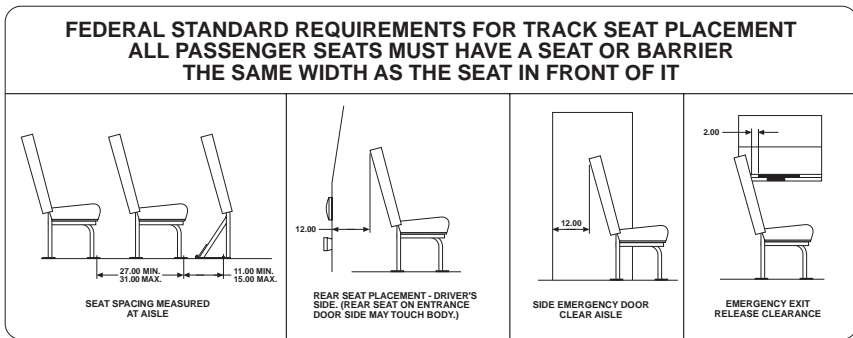
Installation

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 with 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 below gives these rules and is installed on the interior body panel above the windshield.



All passenger seats must have a seat or barrier in front 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.

Left and right front fender mounted convex crossview and left and right front fender-mounted convex rearview mirrors are required equipment on all Micro-Bird (Type "A") and Mini-Bird (Type "B") buses.

INTERIOR MIRRORS

Inside rearview mirrors 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 MIRRORS

Outside rearview mirrors are adjustable by turning from side to side and by sliding the adapter from side to side and by sliding the adapter bracket on slots. Adjust mirror to provide view of roadway to rear of bus. Retighten all bolts after adjusting mirrors.

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.

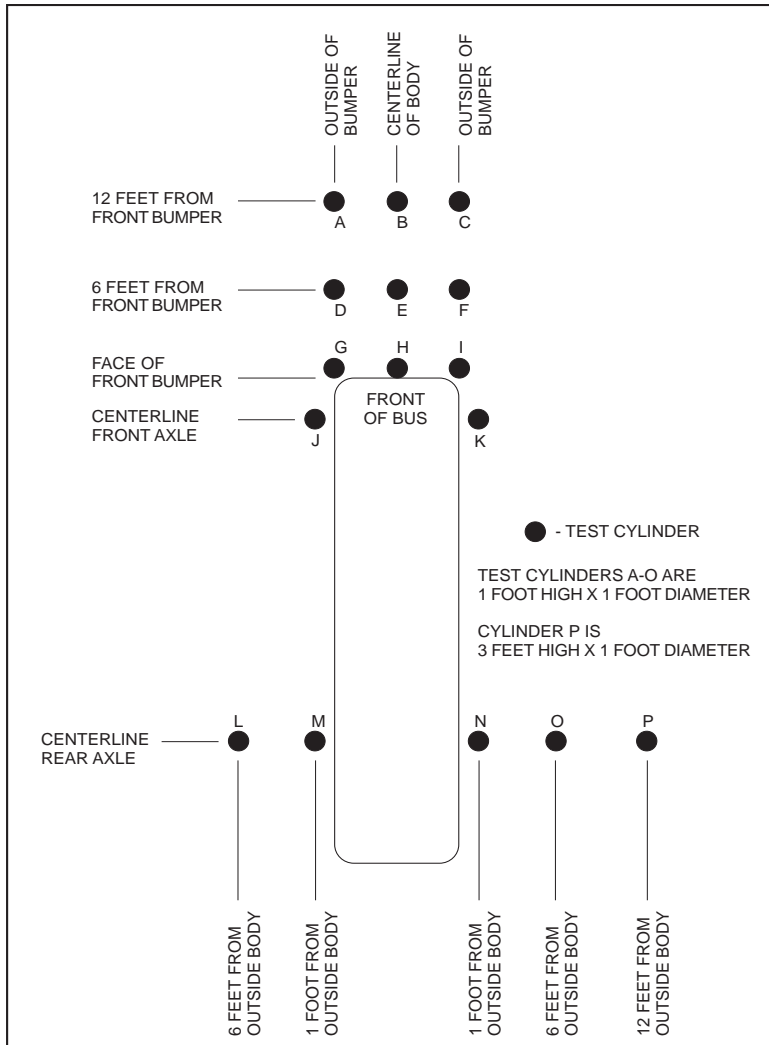
EXTERIOR REARVIEW

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 (10 by 10 inches in Canada). 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.**

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.

NORMAL CURRENT USAGE

STANDARD EQUIPMENT

Constant Load

| Item No. | Items | Current (Amps) |
|------------------------------|--------------|-----------------------|
| Cluster Lamps | 6 | 4.14 |
| Clearance Lamps | 4 | 2.76 |
| Intermediate Side Marker | 2 | 1.38 |
| Tail Lamp* | 2 | 1.18 |
| Ignition | 1 | 2.50 |
| Instrument Panel | | 1.00 |
| Headlamps (Dual Low Beam) | 2 | 8.40 |
| Parking Lamps | 2 | 1.18 |
| 90-FC & MB Heater** | 1 | 27.00 |
| 90-Conv. Heater** | 1 | 31.50 |

Intermittent Load

| Item No. | Items | Current (Amps) |
|-------------------|--------------|-----------------------|
| Stepwell | 1 | 0.44 |
| Stop Lamp* | 2 | 4.20 |
| Dome Lamps (each) | Varies | 0.58 ea. |
| Back-up Lamps | 2 | 4.20 |
| Electric Wipers | 2 | 8.00 |

* Combined Stop and Tail Lamp

** Use Applicable Heater

OPTIONAL EQUIPMENT

NOTE: To figure current draw, add constant load and 35% 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.

Constant Load

| Item | Option Number | Current (Amps) |
|-------------------------|----------------------|-----------------------|
| Auxiliary Fan | 0525 | 3.00 |
| | 0531 | 6.00 |
| | 0532, 0546 | 3.00 |
| Exhaust Fan | 0552 | 2.00 |
| Heater | 1145 | 31.5 |
| | 1154 | 9.00 |
| | 1230 | 2.50 |
| | 1325, 1330 | 4.50 |
| | 1336, 1342 | 9.00 |
| | 1416 | 6.75 |
| Heater Pump | 1416 | 6.75 |
| Clearance | 1576 | 2.16 |
| Light | 1581 | 1.08 |
| | 1591 | 0.54 |
| Cluster Light | 1642 | 1.62 |
| Door Light | 1878-01 | 0.59 |
| | 1878-02 | 1.18 |
| | 1878-03 | 1.77 |
| P.A. System | 2525, 6404 | 0.40 |
| Radio | 2532, 2535 | 0.60 |
| Radio and P.A. | 2534, 6506 | 1.00 |
| Destination Sign | 3050, 3052, 3053 | 4.06 |
| Destination Sign (Roll) | 6165 | 4.06 |
| School Bus Sign | 3064 | 4.06 |

Intermittent Load

| Item | Option Number | Current (Amps) |
|--------------------------|------------------------|-----------------------|
| Directional Lights | 1686, 1697, 1701, | |
| | 1719, 1723, 1727, 1731 | 2.10 |
| | 1740 | 0.27 |
| | 1790, 1788 | 4.20 |
| | 1820 | 0.27 |
| Dome Lights (**Per Lamp) | 1825, 1828, 1831**, | |
| | 1832**, 1840 | 0.58 |
| 7-Inch Stop Lights | 6723 | 4.79 |
| | 1940, 6728 | 4.20 |
| Warning Lights | 1987, 1990, 1992, | |
| | 2013, 2016, 2017 | 12.50 |
| Solenoid Switch | 2130, 2131 | 0.75 |
| Buzzer (Emergency Door) | 3000 | 0.50 |
| Dot Buzzer | 3002-01 | 1.00 |
| | 3002-02 | 1.50 |
| | 3002-03 | 2.00 |
| Buzzer (Emergency Door) | 3005 | 0.50 |
| Emergency Door | 3020 | 0.94 |
| Pilot Light and Buzzer | 3025 | 0.94 |
| Chime System | 3040 | 1.00 |
| Stop Arm w/Lights | 3135, 3143, 3146, | |
| | 3155, 3148, 3162 | 1.80 |
| Stop Arms Dual w/Lights | 3159, 3149 | 3.60 |
| Pushout Windows w/Buzzer | 3343 | 0.50 |
| Sanders | 4015, 4475 | 1.50 |
| 56-Inch Wheelchair Lift | 0467 | 48.00 |
| 35-Inch Wheelchair Lift | 0469 | 48.00 |
| 42-Inch Wheelchair Lift | 0465, 0466 | 90.00 |

CIRCUIT CONNECTIONS

Hot Wire—Connect Blue Bird 8-gauge black wire to battery connector on chassis without option B3M and to 100-amp electrical connection on chassis with option B3M.

Stop—Cut Chevrolet or GMC 16-gauge white wire at stop light switch. Connect Blue Bird 14-gauge green wire with white stripe to Chevrolet or GMC 16-gauge white wire on side of cut that goes to stop light switch. Tape other end.

Tail—Connect Blue Bird 14-gauge green wire with black stripe to Chevrolet or GMC 16-gauge brown.

Back Up Lamp—Connect Blue Bird 14-gauge light blue wire with black stripe to Chevrolet or GMC 16-gauge light green.

RH Directional—Connect Blue Bird red 14-gauge wire to Chevrolet or GMC 16-gauge dark green.

LH Directional—Connect Blue Bird 14-gauge dark blue wire to Chevrolet or GMC 16-gauge yellow.

Circuits operated by ignition switch—Connect Blue Bird wire to fuse panel accessory terminal. Use terminal BB #0957175 and natural connector BB #0957167.

Switch Panel Illumination—Connect Blue Bird wire to fuse panel at terminal marked "LPS". Use terminal BB #0957175 and dark gray connector BB #1562164.

Instructions, Chassis Wiring P-30 Chevrolet and GMC 1992 MBCC (#1557560) BBC

BODY WIRING IS IDENTIFIED WITH COLORS AND NUMBERS

| | | |
|-------|-------------------------|-----|
| 4 GA | BLACK/RED WITHOUT SAE | 11 |
| 4 GA | BLACK/WHITE WITHOUT SAE | 12 |
| 4 GA | BLK /SAE STAMP | 13 |
| 6 GA | BLACK | 14 |
| 6 GA | RED | 15 |
| 6 GA | WHITE | 17 |
| 8 GA | BLACK | 21 |
| 8 GA | RED | 22 |
| 10 GA | BLACK | 23 |
| 10 GA | BLACK/YELLOW | 24 |
| 10 GA | RED | 25 |
| 10 GA | YELLOW | 27 |
| 10 GA | YELLOW/BLACK | 31 |
| 14 GA | BLACK | 32 |
| 14 GA | BLACK/YELLOW | 33 |
| 14 GA | BLUE/BLACK | 34 |
| 14 GA | BROWN | 35 |
| 14 GA | BROWN/TAN | 37 |
| 14 GA | BROWN/WHITE | 41 |
| 14 GA | GREEN | 42 |
| 14 GA | GREEN/BLACK | 43 |
| 14 GA | GREEN/WHITE | 44 |
| 14 GA | LIGHT BLUE | 45 |
| 14 GA | ORANGE/BLACK | 47 |
| 14 GA | ORANGE/BROWN | 51 |
| 14 GA | PURPLE | 52 |
| 14 GA | RED | 53 |
| 14 GA | RED/WHITE | 54 |
| 14 GA | TAN/BLACK | 55 |
| 14 GA | WHITE | 57 |
| 14 GA | WHITE/BLACK | 71 |
| 14 GA | WHITE/ORANGE | 72 |
| 14 GA | YELLOW | 73 |
| 14 GA | YYLLOW/BLACK | 74 |
| 14 GA | YELLOW/GREEN | 75 |
| 16 GA | BLACK | 111 |
| 16 GA | BLACK/WHITE | 112 |
| 16 GA | BROWN | 113 |
| 16 GA | BROWN/ORANGE | 114 |
| 16 GA | GRAY | 115 |
| 16 GA | GREEN/BLACK | 117 |
| 16 GA | LIGHT BLUE | 121 |
| 16 GA | ORANGE | 122 |
| 16 GA | PINK | 123 |
| 16 GA | RED/BLACK | 124 |
| 16 GA | TAN | 125 |
| 16 GA | TAN/ORANGE | 127 |
| 16 GA | WHITE/GREEN | 131 |

LIGHT BULB DATA

| Lamp Description | Trade Name | Trade No. | Color | Bulb No. |
|------------------|------------|-----------|-------|----------|
|------------------|------------|-----------|-------|----------|

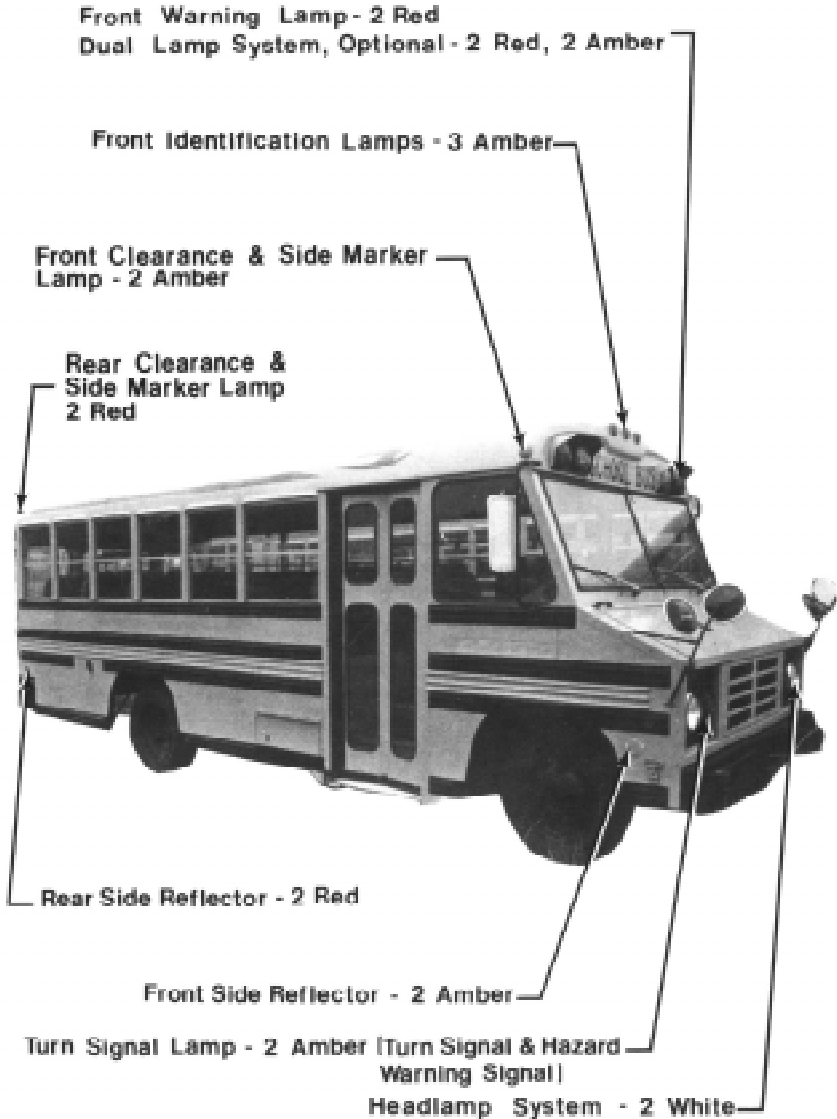
INTERIOR LIGHTS

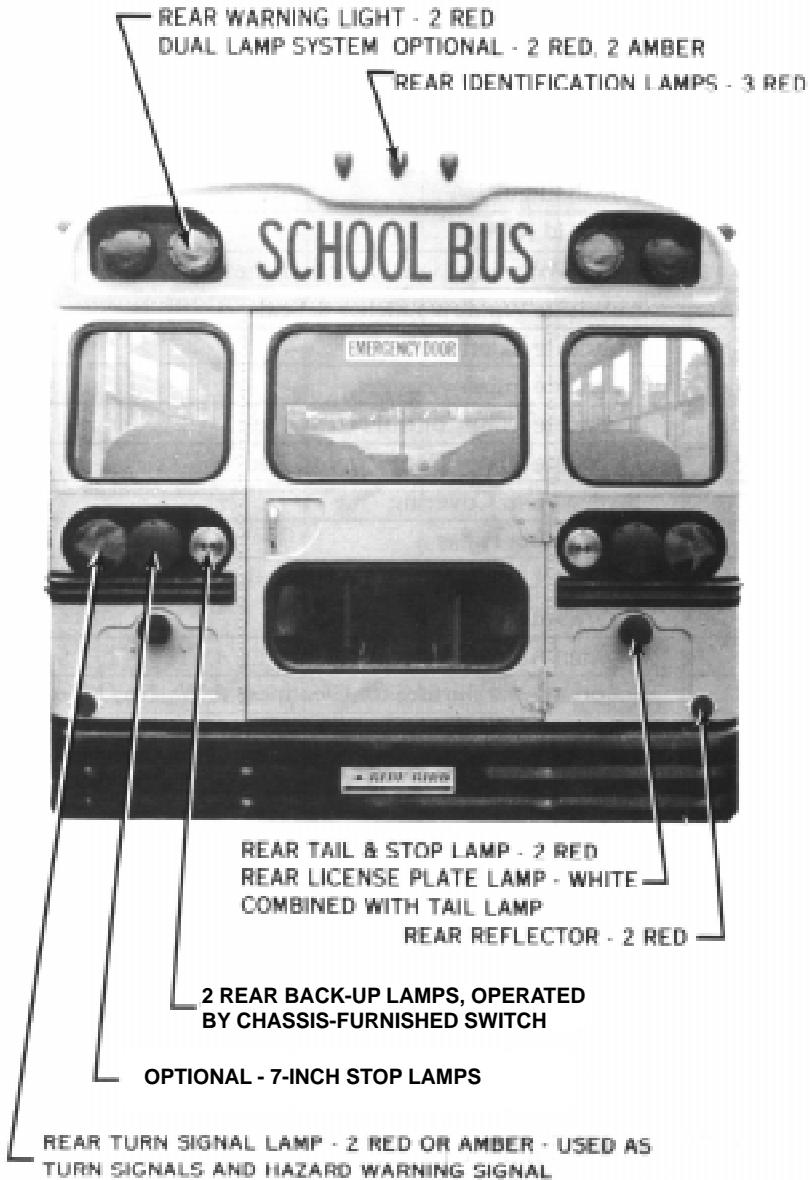
| | | | | |
|--------------------------|-------------|------------|------------|----|
| Dome | Weldon | 8005 | (Standard) | 89 |
| | Weldon | 8010 | (Deluxe) | 93 |
| Stepwell | Arrow | 35 | | 67 |
| Emerg. Door Light | Weldon | 8025 | | 67 |
| Switch Panel Pilots | Cole Hersee | PL19 | | 53 |
| | Dial | 41204-1211 | | 68 |
| Switch Panel Illuminator | | 2007367 | | 53 |

EXTERIOR LIGHTS

| | | | | |
|------------------|-------------|---------------|------------------|------|
| Directional | KD | 772-9105 | | 1156 |
| | Weldon | 1010 Series | Red & Amber | |
| | | | Plain & w/ Arrow | 1156 |
| | Signal Stat | 1604 | | 1156 |
| Warning Light | Weldon | 1020 Series | Red & Amber | 4636 |
| Cluster & Marker | Weldon | 5050 | Amber & Red | 904 |
| | Peterson | 122 | Amber & Red | 194 |
| Side Directional | Peterson | 122 | | 194 |
| | Arrow | 059-9900021CP | | 1073 |
| Stop/Tail/Tag | Dominion | 70-6128-71 | | 1157 |
| | Signal Stat | 2103 | | 1157 |
| Back-Up | KD | 854-5301 | | 1156 |
| | Weldon | 7-1010-1 | | 1156 |
| Stop | Weldon | 1010 | Red | 1156 |
| | Arrow | 438 | | 1157 |
| | Signal Stat | 1605 | | 1156 |
| | KD | 772-9105 | | 1156 |

VISIBILITY EQUIPMENT REQUIRED BY FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS)





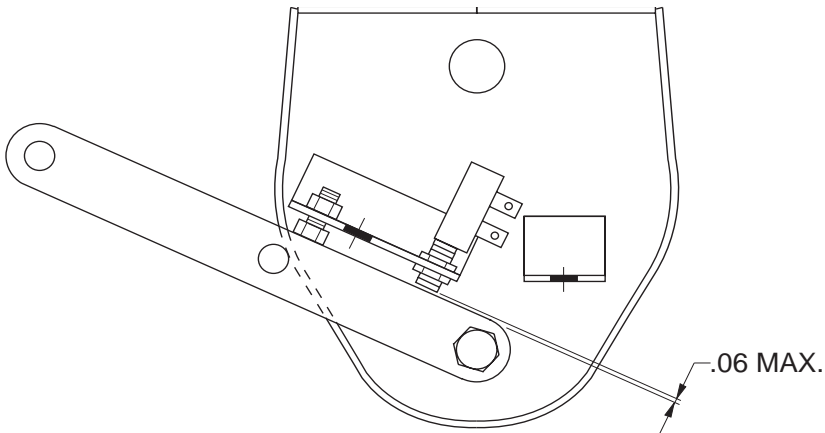
CIRCUIT BREAKERS

Blue Bird buses use circuit breakers instead of fuses. The circuit breakers, located behind the switch panel, are a quick-resetting type. The advantage of this circuit safety device is that no replacement (as with fuses) is required. 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.

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 bezel surface.



DOORS

DOOR CONTROL MAINTENANCE AND ADJUSTMENT

Continuing Maintenance Requirements

1. Keep working parts of control tightened.
2. Lubricate all working parts periodically, including hinges and overhead controls (See *Lubrication – Windows, Hinges, and Locks*).
3. Repair or replace worn seals.

4. Maintain proper door opening and closing adjustment (adjustment should be done annually).

***Jackknife Door—Standard or Deluxe Cleveland Control
(If So Equipped)***

1. Remove 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 (Figure 1).
 - 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 (Figure 2).
 - 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.



Figure 1



Figure 2

4. Perform these adjustments and maintenance to keep the door operating easily. The top of door should be approximately 3/8 inch 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 attaching front door panel to front hinge. Holes in hinge are slotted, to allow door to be adjusted vertically.
 - b. Assure 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 adjusting the rubber nosing.
- c. The rear upper corner of the rear door panel should not drag on rubber door stop on the header. For 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. This will reduce friction when 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 surfaces are 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.

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.

To maximize visibility, the doors are 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 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 a rotary motion type. It is connected to a lever off the front door.

DESTINATION SIGNS

Hinged Sign Front—mounted on outside of front roof cap with internal control for changing sign. Periodically lubricate hinges and lever assembly.

Hinged Sign Rear—mounted on outside of rear roof cap, manually changed from outside. Periodically lubricate hinges.

One Station Lighted Curtain—replace bulbs as needed. To tighten curtain loosen bolts, pull curtain tight, retighten bolts.

Roller Destination Sign with Lighted Curtain—replace bulbs as needed. Periodically grease roller gears and hinges on interior door.

Two Station Sign—front lighted, sign material masonite with lettering on both sides. Lubricate interior door hinge.

Lighted “School Bus” Sign—Back lighted yellow plexiglass sign. Replace bulbs as needed. Lubricate interior door hinge.

FLOOR COVERING

Proper maintenance of the floor covering is essential for long service. The covering should be swept daily, if possible, to avoid dirt from being ground into its surface.

Do not use sweeping compounds, as this may cause the covering to deteriorate.

Do not let substances build up, such as road salt. Mop the floor as frequently as you think is necessary (at least once a week if possible). Use a mild detergent with water and rinse thoroughly.

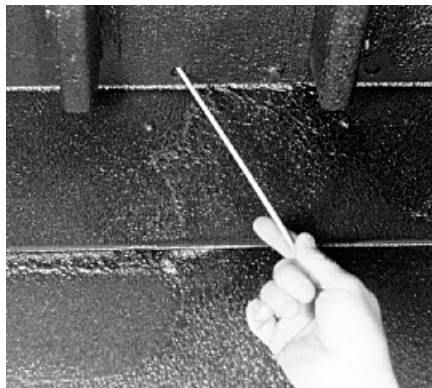
Do not use solvent-type cleaners. Mop up any excess water as soon as possible, because standing water may cause the covering to separate from the sub-floor. If separation does occur, and “bubbles” appear, cut the material to gain access to the underside. Clean the underside of the covering and sub-floor where separated and re-bond with a good-quality contact cement.

LUBRICATION—WINDOWS, HINGES, AND LOCKS

1. Lubricate latches and sliding seal of top window with silicone every 30 days.
2. Entrance door, emergency door and all exterior hinges should be lubricated every 30 days with a lightweight oil.
3. Inside hinges and door control hardware should be lubricated quarterly with a light weight oil.
4. A heavy grease should be used on the upper door control every 90 days.
5. Luggage compartment latches should be lubricated every 30 days with a silicone type grease.
6. Luggage compartment lock cylinders should be lubricated with a graphite lubricant every 30 days.
7. Lubricate the positive hold open hinge on the rear emergency door with the door closed using a low temp grease per ASTM 4950 GC-LB Grade 2 -60° to 350°F monthly. (If so equipped)
8. A heavy grease should be used on the emergency door hinges every 90 days.

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.



STOP ARMS

Stop arms are required on Blue Bird 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.

On 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.

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.

STOP SIGNS AND CROSSING ARM TROUBLESHOOTING

To troubleshoot electric stop signs or crossing arms, it is important first to understand how they are installed. This can be done one of two ways:

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 2.5, 5, or 6 pound extinguisher. Check quarterly to make sure it is fully charged.

FIRST AID KIT

The first aid kit is mounted above the windshield on the right hand side of the bus body. Size and contents of first aid kits may vary because of different state specifications. The kit should be inspected quarterly 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 make sure they are tight. Check fire axe and crowbar monthly to see that they are easily accessible and unobstructed.

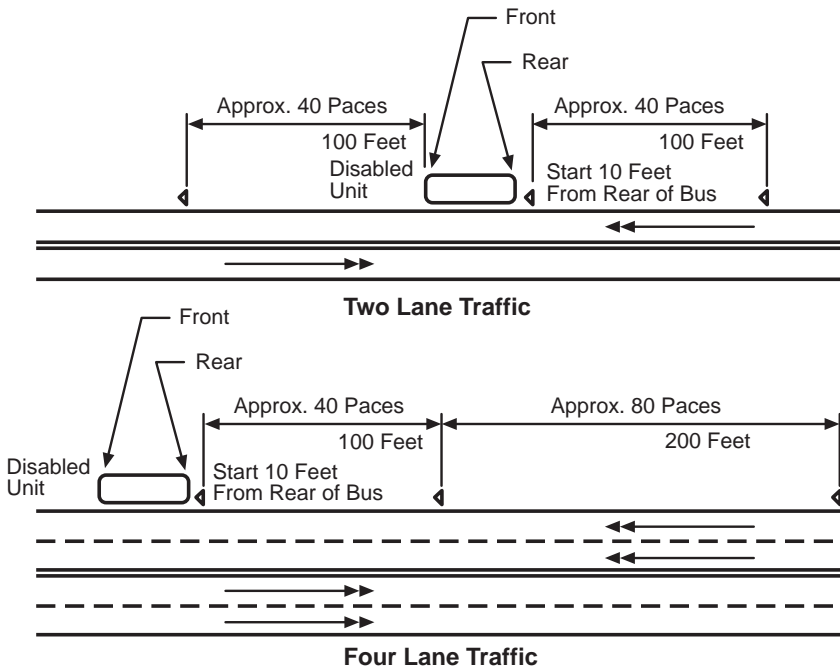
FLARE KIT

If your bus is equipped with a flare kit, check to see that its contents 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 quarterly or as required by local code to ensure proper operation.

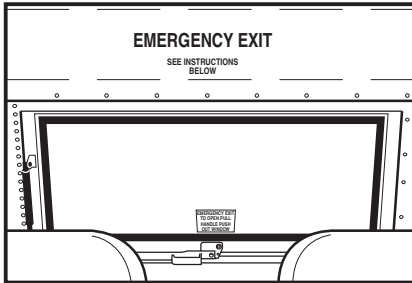
Recommended Warning Device Positioning



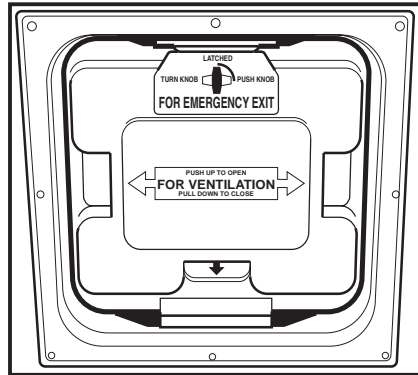
EMERGENCY EXITS

Emergency exits are clearly identified by the words “Emergency Exit”. Operating instructions are written close to each exit. Some units are equipped with an audible alarm device signifying an emergency exit is open. If when turning the ignition switch on, a buzzer sounds, 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”. All emergency

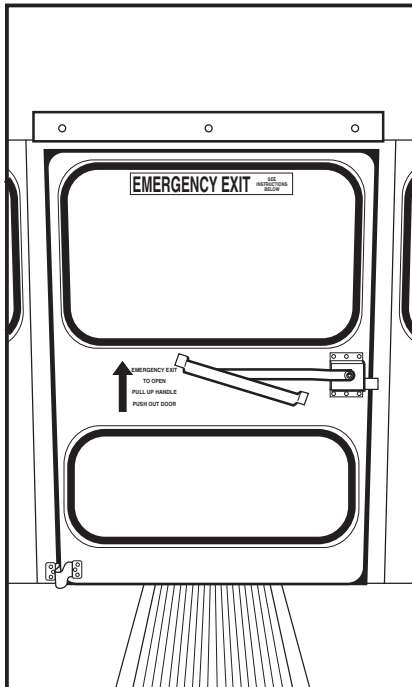
exits should be inspected and operated daily to ensure they are labeled and operate properly per the instructions provided.



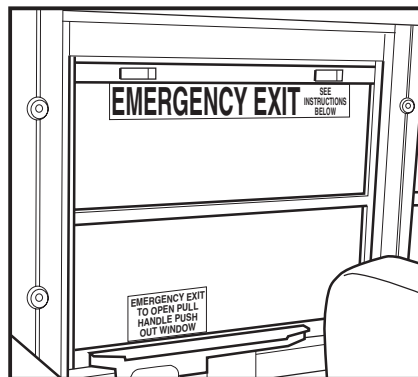
Rear Emergency Window



Roof Hatch



Rear Emergency Door



Split Sash Pushout Window

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.

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.** Turn temperature control on dash counterclockwise. 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. Adjust outlet temperatures with temperature control on dash, turning counterclockwise for high and clockwise for low. Other controls adjust fresh air inlet and driver's footwarmer outlet.

DEFROSTING

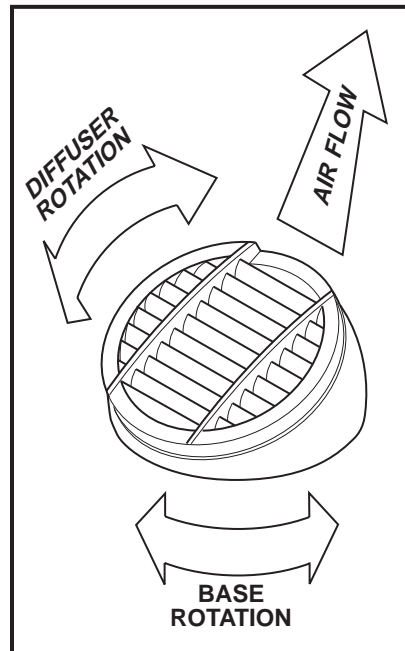
Windshield fogging and frosting is caused by warm, humid air coming into contact with a colder windshield, which causes the moisture in the air to condense and even freeze if the windshield is cold enough. The warmer the windshield, the less moisture will condense. During initial warm-up, the controls 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.

As passengers are loaded onto the bus, the moisture content of the air inside the bus increases. This moisture content can be lowered by opening the heater air inlet. 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 all defroster blowers at high speed. 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 best be determined by experience.

DIFFUSER ADJUSTMENT

Adjust air distribution from defroster and heater outlets by rotating the diffusers as shown. Note that the wedge-shaped base rotates separately for increased maneuverability.



HEATER CORE SERVICE

Front Heater Core Removal

1. Remove clamps securing hoses to core tubes (Figure 1).
2. Remove core inspection plate to reveal end of core slide assembly (Figure 2).
3. Remove screws attaching core slide assembly to heater housing. Pull core and slide forward (Figure 3).
4. The slide assembly is easily removed from the core by spreading the side channels slightly and lifting the assembly over the inlet and outlet tubes.
5. Service the core as required (clean and /or repair), and put it back in place afterwards by reversing the above steps.



Figure 1



Figure 2



Figure 3

HEATER BLOWER MOTOR SERVICE

1. Remove filler strips and upper and lower grille retainers (Figure 1).
2. Lift out grille. Remove the exposed wall-side fasteners (Figure 1).
3. Remove forward angle and floor fasteners and lift cover assembly off heater (Figures 1 and 2).
4. To service passenger compartment blower, remove the four screws attaching fan housing to heater housing. Cut wires to remove motor and splice in new motor when replacing (Figure 3).
5. To service defrost/driver's blowers, remove screws from motor mounting plates and lifting out as shown in Figure 4. Cutting and splicing wires is required for motor replacement.

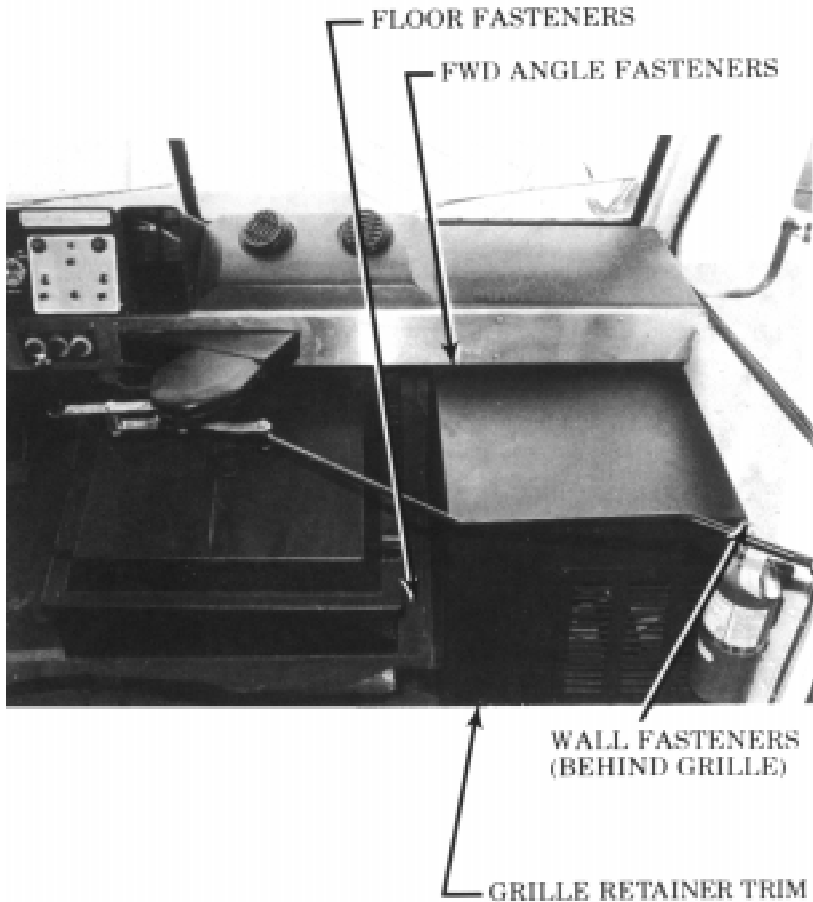


Figure 1

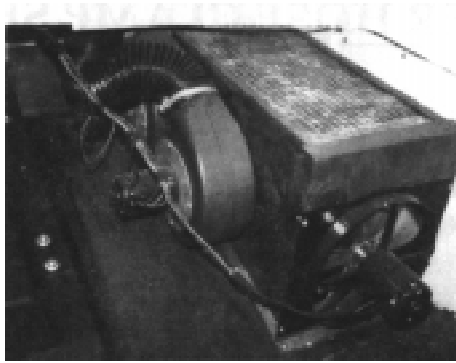


Figure 2



Figure 3

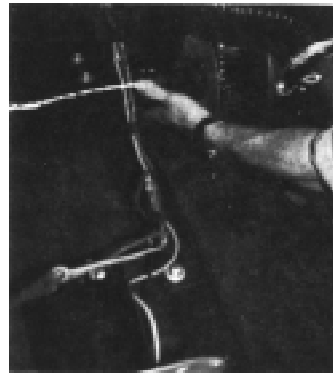
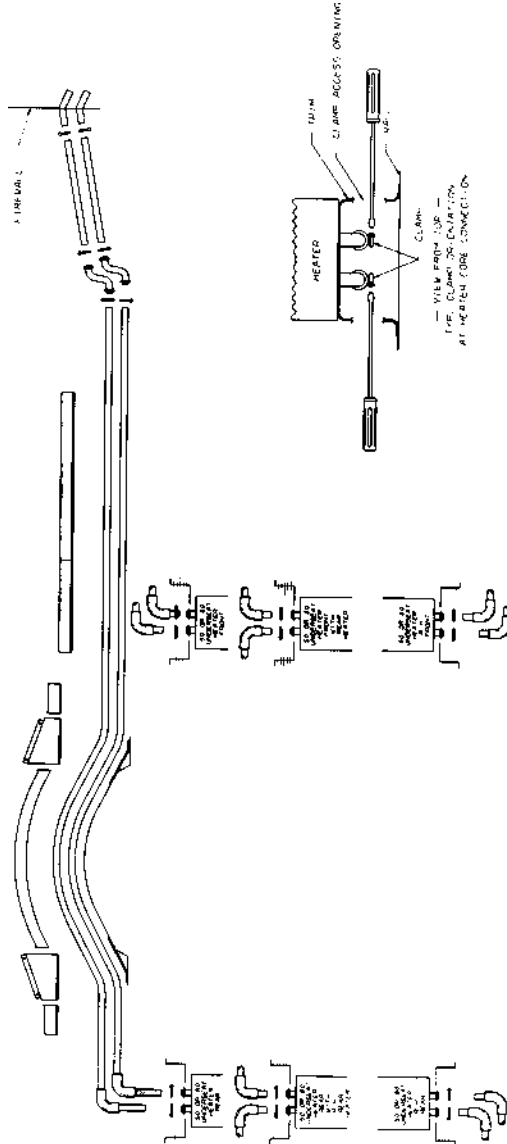


Figure 4

HEATER HOSE CLAMP SERVICE

Tighten heater hose clamps after first 1,000 and 2,000 miles, and annually thereafter.

Heater hose clamps are located at underseat heater core and under the transition covers at the left front side of the driver's area.



ANTIFREEZE

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

HEATER AND HEATER CONNECTIONS WATER CAPACITY CHART

NOTE: Water capacity of heaters includes tubing within heater enclosure.

| Description | Capacity (Quarts) |
|---------------------------------|--------------------------|
| 90 Front Heater | 3.50 |
| 50 Underseat Heater | 1.56 |
| 80 Underseat Heater | 2.34 |
| 1 Foot of Connecting Line | 0.17 |

Example: Model 2103 with a 50 underseat heater located in overhang.

| | |
|--|-------|
| 90 Std. Front Heater | 3.50 |
| 50 Underseat Heater | 1.56 |
| 46 Feet of Heater Pipe with 0.17 Quarts per Foot | 7.82 |
| Body Water Circuit Capacity | 12.88 |

NOTE: Total capacity of complete system in this example is 12.88 quarts, plus capacity of engine and radiator. Refer to chassis manufacturer operating manual for engine and radiator capacity.

INSTRUCTIONS FOR COMPLETELY FILLING COOLING SYSTEM HEATER BLEEDING

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.

CAUTION: Extreme care must be used when removing radiator cap. As coolant becomes hot, pressure is built 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. Slowly vent off pressure before removing radiator cap.

PROCEDURE

1. With the engine off, shut engine heater return gate valve in engine compartment. Close temperature control on dash by turning clockwise.
2. Fill cooling system completely, including recovery 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 by turning temperature control on dash counterclockwise. Turn on heater water pump if equipped.
4. Using a suitable container to catch coolant, run engine between 2,000 and 3,000 rpm. Loosen bleeder valve located in heater hose return line. 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.
5. When all the air has been purged from the heater system, open gate valve in heater hose return line.
6. Run engine between 2,000 and 3,000 rpm until thermostats open. To assist in de-aerating the entire cooling system, accelerate the engine a few times before and after thermostats open.
Note: Thermostats have opened when upper radiator tank and radiator hose become hot.
7. Refill cooling system including radiator and coolant recovery tank.

WARNING: Never idle engine in closed areas. Never sit in a parked or stopped vehicle for any extended amount 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.

GLASS REPLACEMENT

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.

The following instructions are for replacing glass in the side split sash window, rear and rear side vision, entrance door, and windshield.

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

SPLIT SASH

1. Remove four screws securing window frame to bow (Figure 1).
2. Pull window to inside of body and remove (Figure 2).
3. Remove six screws (three on each side of window) holding main assembly together (Figure 3).
4. On bottom part of window, simply pull aluminum channel off top and bottom of glass (Figure 4).
5. To remove glass from top part of the window, remove six screws holding frame around glass (Figure 5).
6. Reassemble window by reversing above procedure.
7. Apply weather seal caulking around window frame on outside of body, to prevent leaking.



Figure 1



Figure 2



Figure 3

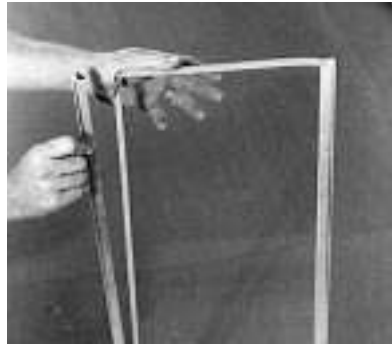


Figure 4

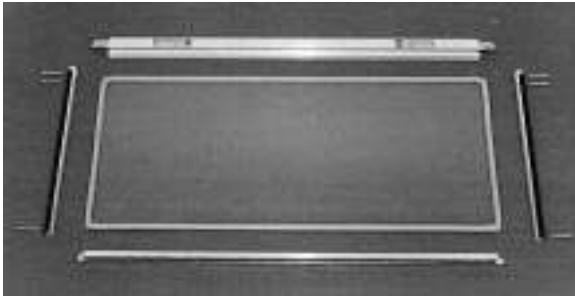
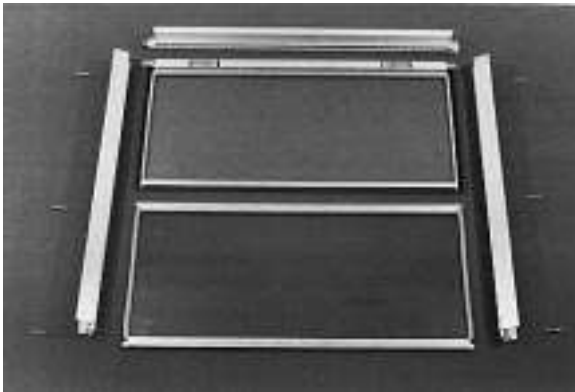


Figure 5



**Figure 6—Window shown
with frame disassembled**

REAR VISION

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 around glass.
4. Replace glass and put glazing rubber on new glass.
5. Apply soapy solution to the flange on the bus body and to the filler strip channel on the 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 bus body. Pull cord slowly and work glazing rubber onto the window flange (Figure 7).
6. Apply pressure from the inside of 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 (Figure 8). 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.



Figure 7



Figure 8

ENTRANCE DOOR

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. Replace glass and put glazing rubber on new glass.
4. Wrap a cord around the glazing rubber and rest glass on the bottom flange from the inside of 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.

WINDSHIELD

The windshield is two-piece flat. The installation procedure is as follows:

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.
5. Seal glass to glazing rubber from outside 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.

WINDSHIELD WIPERS

WIPER ASSEMBLY REPLACEMENT

To replace wiper assembly (Figure 1, Blue Bird Part 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.

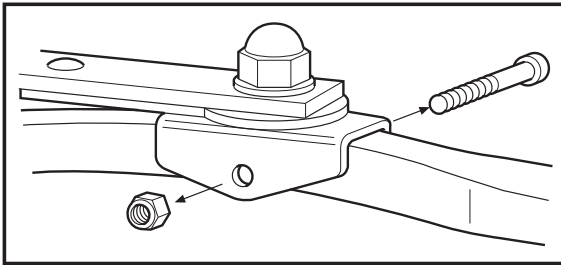


Figure 1

WIPER REFILL REPLACEMENT

To remove wiper refills, follow the procedure outlined below.

1. Lift end clip with screwdriver as shown in Figure 3. This releases locking indentations (A in Figure 4) 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 4) are provided with replacement Anco refills. To install, remove one clip and slide the refill through all claws until end clip locks into place.

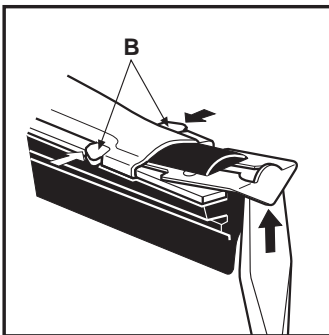


Figure 3

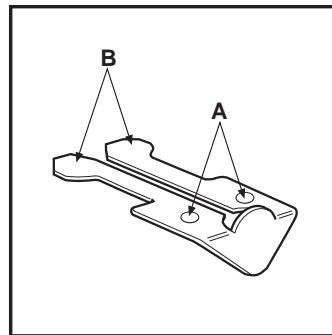


Figure 4

4. Install second end clip, and snap-lock devices A and B into place to secure refill.

WINDSHIELD WIPER MOTOR REMOVAL

The following information gives step-by-step procedures for removing the right-hand and left-hand electric wiper motors.

RIGHT SIDE WIPER MOTOR

1. Remove wiper arm and blade from the bus.
2. Remove the rubber cover, the pivot shaft nut, and the two attaching screws from the outside of the bus.
3. The wiper motor assembly is accessible from under the dash, above the engine cover and next to the heater. Lower the wiper motor assembly to clear the pivot shaft rotate to miss the dash reinforcements, and withdraw the motor assembly. A 3/8-inch thick spacer on the pivot shaft should come out with the wiper motor assembly.
4. Service the necessary components of the removed wiper motor assembly.
5. To replace the wiper motor assembly, reverse the above procedure. Be sure to align the 3/8-inch spacer before replacing the attaching screws through the windshield panel.

LEFT SIDE WIPER MOTOR

1. Remove the wiper arm and blade from the bus.
2. Remove the rubber cover, the pivot shaft nut, and the two attaching screws from the outside of the bus.
3. Remove the instrument panel cover for access to the wiper motor assembly.
4. Lower the wiper motor assembly to clear the pivot shaft and lift up to service. A 3/8-inch thick spacer on the pivot shaft should come out with the wiper motor assembly.
5. Service the necessary components of the removed wiper motor assembly.
6. To replace the wiper motor assembly, reverse the above procedure. Be sure to align the 3/8-inch spacer before replacing the attaching screws through the windshield panel.

WET ARM WINDSHIELD WIPER

The wet arm windshield wiper is a feature of the Mini-Bird bus body. The spray nozzle is now located on the wiper arm instead of the cowl. This allows water to be sprayed onto the windshield more evenly. The nozzles are adjustable so the spray flow may be directed in a desired position.

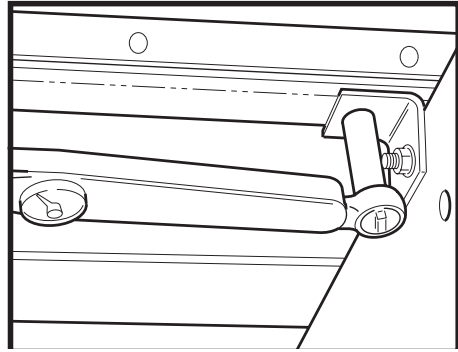
BODY MOUNTING BOLTS

Tighten the tie down clamp bolts and the two body shear bolts at 1,000-2,000 miles and quarterly thereafter.

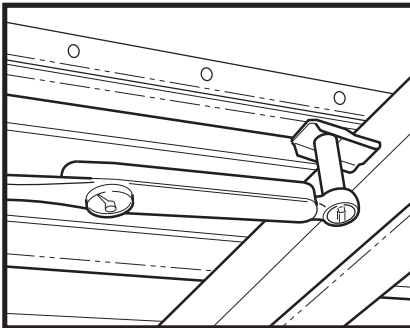
Shear bolts and tie-down clamp bolts should be tightened to 37-41 foot-pounds of torque. The two shear bolts are located under the body at the rear of the chassis near the bumper. Tie down clamp bolts are located at front floor, on brackets around the radiator and at the chassis firewall.

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 tie down bolts.

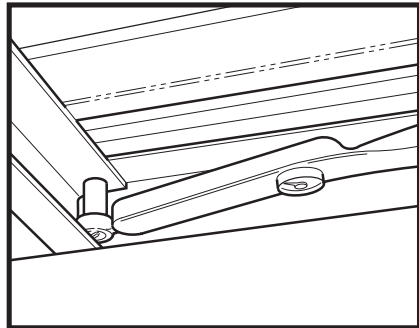
WARNING: Failure to follow the procedures for tightening bolts—either by failure to tighten on schedule or by failure to conform to the torque poundages—could cause a danger of separation of the body and chassis, which could lead to personal injury or death.



Tie-Down Angles

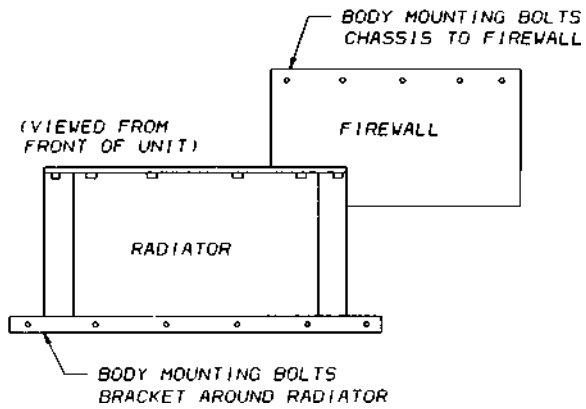
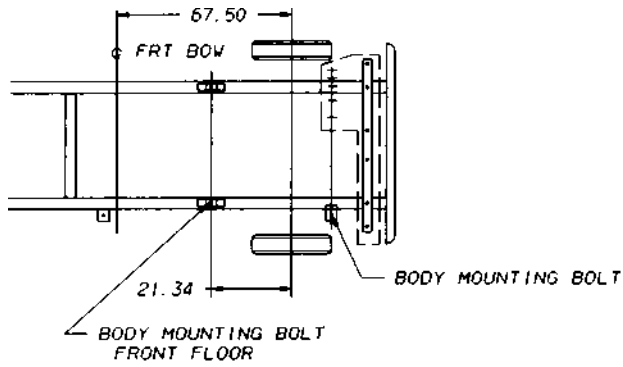


Tie-Down Clamp Bolts



Mounting Bolts at Rear
Near Bumper

See Next Page Also



JACKING INSTRUCTIONS

See the manual provided by the chassis manufacturer for proper instructions and procedures for lifting the front of the vehicle.

1. Park vehicle on flat, level concrete or comparable surface capable of supporting jacking device.
2. Apply parking brakes.
3. Place chocks at front and rear of tires opposite wheels to be lifted first.
4. Use jacks and jackstands or blocks of sufficient capacity to support the vehicle. Following the jack manufacturer's recommended procedure, place jack securely under axle at spring or suspension beam and lift to required height for servicing. Be sure any locking device on the jack is in place and operating, and solidly support the vehicle under the main frame rails with jackstands or blocks before working under or around the vehicle.
5. After service is complete, reverse above procedure.

CAUTION: Bumpers provided on Blue Bird buses are designed to protect the vehicle and occupants from front and rear collisions. They are not designed for lifting and/or towing of the vehicle. Blue Bird does not recommend lifting or towing the vehicle by the bumpers.

WARNING: Never idle engine in closed areas. Never sit in a parked or stopped vehicle for any extended amount 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.

KEEPING YOUR VEHICLE LOOKING NEW

WASHING YOUR VEHICLE

The best way to preserve your vehicle's finish is to keep it clean by frequent washings. 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 non-abrasive 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.

PREVENTIVE MAINTENANCE CHECKLIST

| Page Ref. | Item | First 1,000 Miles | Daily | Monthly | Quarterly | Annually |
|-----------|---|-------------------|-------|---------|-----------|----------|
| 37 | Check fire extinguisher to see if fully charged | | | | • | |
| 37 | Check first aid kit | | | | • | |
| 29 | Adjust warning light door switches | | | | | • |
| 33 | Lubricate window latches and seal | | | • | | |
| 33 | Lubricate exterior hinges | | | • | | |
| 33 | Lubricate interior hinges | | | • | | |
| 29-31 | Lubricate door control hardware | | | | • | |
| 29-31 | Lubricate upper door control rod | | | | • | |
| 32 | Sweep floor covering | | • | | | |
| 33 | Clear drain holes | | | | • | |
| -- | Clean all rubber door seals and lubricate with rubber lubricant | | | | • | |

| Page Ref. | Item | First 1,000 Miles | Daily | Monthly | Quarterly | Annually |
|-----------|---|-------------------|-------|---------|-----------|----------|
| 45 | Tighten all heater hose clamps | • | | | | • |
| 54-55 | Tighten tie-down clamp bolts and two body shear bolts | • | | | | |
| 57 | Inspect outer surface for cleanness and wash as needed | | | | | |
| 57 | Check under floor and underside structures for de-icing chemical buildup, keeping these areas free of chemical deposits | | • | | | |
| 27-28 | Check all lights and signals | | • | | | |
| -- | Check for component part damage, loose screws, rivets, etc., and have corrected immediately | | • | | | |
| 9 | Check brakes before each run | | • | | | |
| 39 | Check all emergency exits for operation and labels | | • | | | |
| 18-20 | Check all mirror adjustments | | • | | | |
| 33 | Lubricate all rear and side emergency door latch slide bars with light grease to reduce friction | | | | • | |
| 29-31 | Adjust entrance door | | | | | • |

METRIC CONVERSION

LENGTH

1 inch (in) = 2.54 centimeters (cm)

1 foot (ft) = 12 inches (in) = 30.5 centimeters (cm)

1 mile (mi) = 5,280 feet (ft) = 1.609 kilometers (km)

1 centimeter (cm) = 10 millimeters (mm) = 0.01 meter (m) = 0.394 inches (in)

1 meter (m) = 100 centimeters (cm) = 3.28 feet (ft)

1 kilometer (km) = 1,000 meters (m) = 0.62 mile (mi)

WEIGHT/MASS

1 pound (lb) = 16 ounces (oz)

1 pound is equivalent to 0.45 kilogram (kg).

1 kilogram (kg) = 1,000 grams (g)

1 kilogram is equivalent to 2.2 pounds (lb).

AREA

1 square foot (ft²) = 144 square inches (in²) = 0.0929 square meter (m²)

1 square meter (m²) = 10,000 square centimeters (cm²) = 10.76 square feet (ft²)

VOLUME

1 quart (qt) = 2 pints (pt) = 0.25 gallon (G) = 0.946 liter (L)

1 liter (L) = 1,000 milliliters (mL) = 1,000 cubic centimeters (cm³, cc) =

1.057 quarts (qt)

Note: 1 liter of water has a mass of 1 kilogram, and a volume of 1,000 cubic centimeters.

TORQUE

1 foot-pound (ft-lb) = 1.355 newton-meters (N·m)

1 newton meter (N·m) = 0.738 foot-pound (ft-lb)

PRESSURE

1 pound per square inch (psi) = 6.895 kilopascals (kPa)

1 kilopascal (kPa) = 0.145 pound per square inch (psi)

TEMPERATURE

To convert from degrees Fahrenheit (°F) to Celsius (°C), subtract 32, then multiply by 5/9.

To convert from Celsius to Fahrenheit, multiply by 9/5, then add 32.

Freezing point of water: 32°F (0°C)

Boiling point of water: 212°F (100°C)

Average room temperature: 68°F (20°C)

FRACTIONS/DECIMALS/MILLIMETERS

Conversion between fractions of an inch, their decimal equivalents, and millimeters.

| Fraction of an inch | Decimal | Milli- meters | Fraction of an inch | Decimal | Milli- meters |
|--------------------------------|----------------|--------------------------|--------------------------------|----------------|--------------------------|
| 1/64 | 0.0156 | 0.396 | 33/64 | 0.5156 | 13.096 |
| 1/32 | 0.0312 | 0.793 | 17/32 | 0.5312 | 13.493 |
| 3/64 | 0.0468 | 1.190 | 35/64 | 0.5468 | 13.890 |
| 1/16 | 0.0625 | 1.587 | 9/16 | 0.5625 | 14.287 |
| 5/64 | 0.0781 | 1.984 | 37/64 | 0.5781 | 14.684 |
| 3/32 | 0.0937 | 2.381 | 19/32 | 0.5937 | 15.081 |
| 7/64 | 0.1093 | 2.778 | 39/64 | 0.6093 | 15.478 |
| 1/8 | 0.1250 | 3.175 | 5/8 | 0.6250 | 15.875 |
| 9/64 | 0.1406 | 3.571 | 41/64 | 0.6406 | 16.271 |
| 5/32 | 0.1562 | 3.968 | 21/32 | 0.6562 | 16.668 |
| 11/64 | 0.1718 | 4.365 | 43/64 | 0.6718 | 17.065 |
| 3/16 | 0.1875 | 4.762 | 11/16 | 0.6875 | 17.462 |
| 13/64 | 0.2031 | 5.159 | 45/64 | 0.7031 | 17.859 |
| 7/32 | 0.2187 | 5.556 | 23/32 | 0.7187 | 18.256 |
| 15/64 | 0.2343 | 5.953 | 47/64 | 0.7343 | 18.653 |
| 1/4 | 0.2500 | 6.350 | 3/4 | 0.7500 | 19.050 |
| 17/64 | 0.2656 | 6.746 | 49/64 | 0.7656 | 19.446 |
| 9/32 | 0.2812 | 7.143 | 25/32 | 0.7812 | 19.843 |
| 19/64 | 0.2968 | 7.540 | 51/64 | 0.7968 | 20.240 |
| 5/16 | 0.3125 | 7.937 | 13/16 | 0.8125 | 20.637 |
| 21/64 | 0.3281 | 8.334 | 53/64 | 0.8281 | 21.034 |
| 11/32 | 0.3437 | 8.731 | 27/32 | 0.8437 | 21.431 |
| 23/64 | 0.3593 | 9.128 | 55/64 | 0.8593 | 21.828 |
| 3/8 | 0.3750 | 9.525 | 7/8 | 0.8750 | 22.225 |
| 25/64 | 0.3906 | 9.921 | 57/64 | 0.8906 | 22.621 |
| 13/32 | 0.4062 | 10.318 | 29/32 | 0.9062 | 23.018 |
| 27/64 | 0.4218 | 10.715 | 59/64 | 0.9218 | 23.415 |
| 7/16 | 0.4375 | 11.112 | 15/16 | 0.9375 | 23.812 |
| 29/64 | 0.4531 | 11.509 | 61/64 | 0.9531 | 24.209 |
| 15/32 | 0.4687 | 11.906 | 31/32 | 0.9687 | 24.606 |
| 31/64 | 0.4843 | 12.303 | 63/64 | 0.9843 | 25.003 |
| 1/2 | 0.5000 | 12.700 | 1 | 1.0000 | 25.400 |

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