

Body Glass

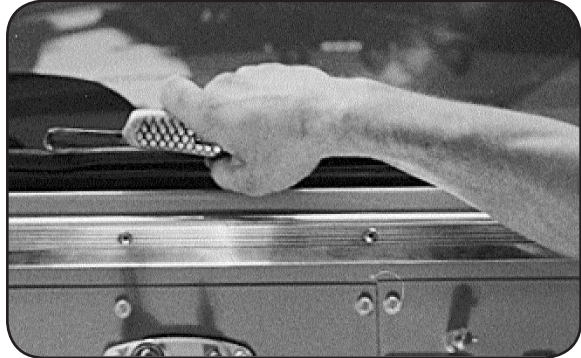
Glass replacement should meet standards in specification FMVSS 205 and 217.

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.

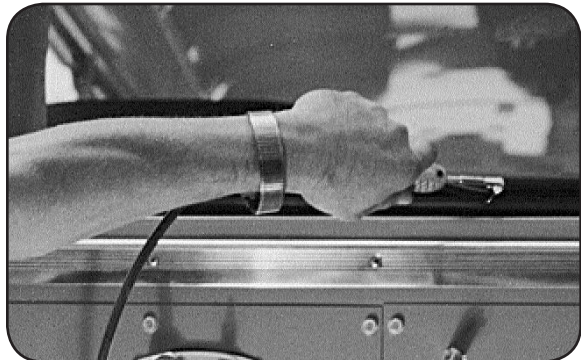
Windshield Glass Replacement

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.

1. Starting at a corner, push glass free of glazing rubber from inside of bus outward and remove.
2. Position new glass in glazing rubber.
3. Using installation tool, work glass into glazing rubber.
4. Seal glass to glazing rubber from outside of the bus with an adhesive sealant, such as Silastic 732 RTV Adhesive/Sealant.
5. Apply soapy solution to filler strip channel on glazing rubber to act as a lubricant for easier installation of filler strip.
6. Using filler strip tool, insert filler strip into channel on glazing rubber.



Using glazing tool to help work gasket around windshield

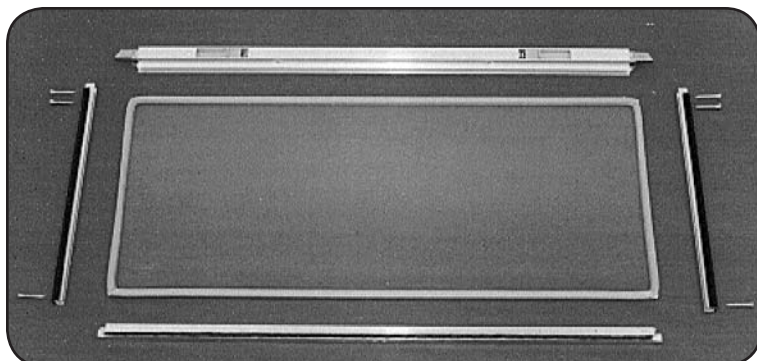
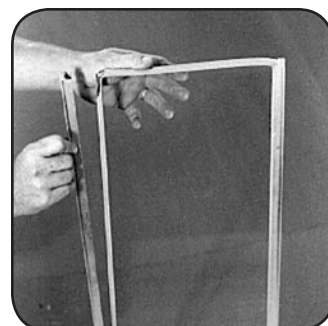
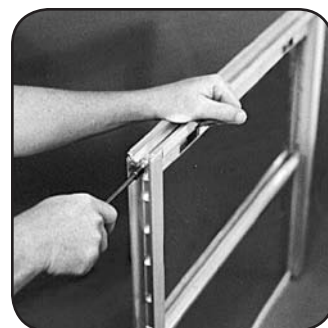
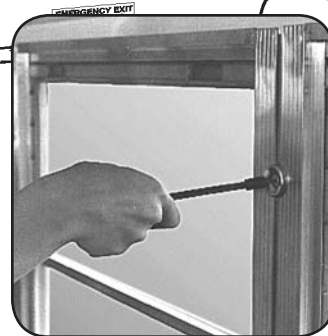
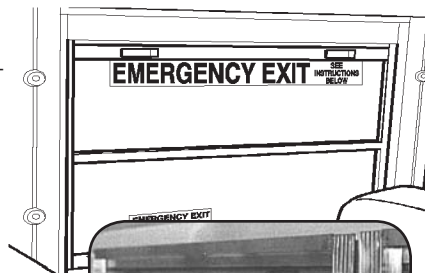


Applying the filler strip

Split Sash Window and Glass Replacement

The glass used in the Blue Bird bus meets FMVSS 205 and 217. When a glass is broken, it should be replaced with identical glass.

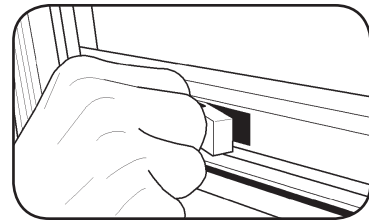
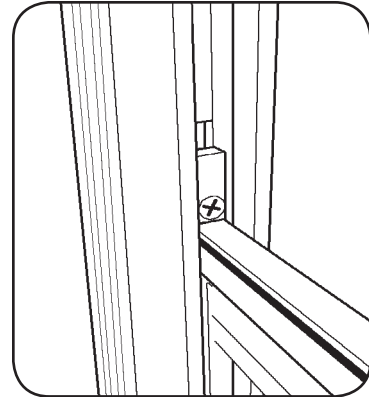
1. Remove four screws securing window frame to bow.
2. Pull window to inside of body and remove.
3. Remove six screws (three on each side of window) holding assembly together.
4. On bottom glass, simply pull aluminum channel off top and bottom of glass.
5. To remove glass from top part of window, remove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



Window Latch Replacement

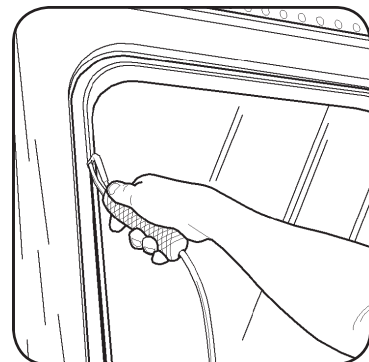
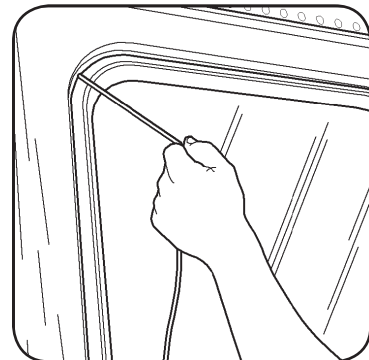
1. Remove screw and block located in side channel directly above stationary glass.
2. Lower sliding sash so that latch enters notch covered by block removed in Step 1.
3. With latch in large notch, push finger holes outward until inside edge is exposed. Pull latch out of finger hole opening.
4. Finger 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.

Lubricate latches and sliding seal of top window with silicon spray every 30 days. See decal on driver's window.



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, push glass and glazing rubber off 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.
6. Wrap a cord around the glazing rubber and rest the glass on the bottom window flange from the inside of the bus body. See Figure 6.
7. 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.
8. Using a filler strip tool, insert the filler strip into the channel on the glazing rubber. The filler strip tool is available from your dealer. See Figure 7.
9. Apply clear caulking around glass and window flange on the outside of bus body to ensure that no leaks occur.

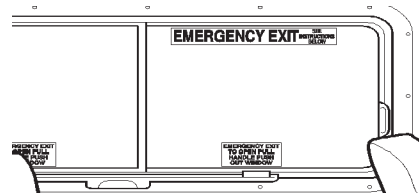


Transit Sliding Window Removal

1. Remove screws in outside aluminum extrusion.
2. Loosen sealer between window frame with putty knife.

CAUTION Do not pry window frame from body without loosening sealer. Unless sealer is loosened, window frame will be bent.

3. Pry out using screwdriver.
4. Reverse procedure for installation.

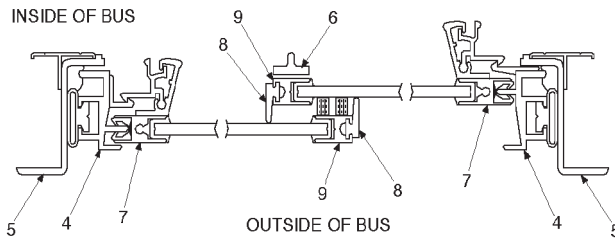


Transit Window Glass Replacement

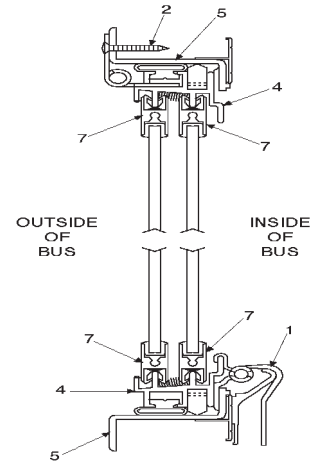
On push out windows, when hinge screws are removed and interior latch released, window sash may be removed from frame.

1. Release window lever (1) located inside the bus at the bottom of each push-out window.
2. Remove hinge screws (2) on outside of body.
3. Lift and pull window out of section.
4. To remove stationary transit sliding window, remove all screws between inner frame (4) and outer frame (5).
5. Lift and pull window out of section.
6. Remove four screws and take out vertical brace (6) located in the center of the window.
7. Remove two window stops (one on each side of the top of window).
8. Slide glass to the center of the window. Spread apart the inner frame (4) just enough to lift glass frame (7) out.
9. To remove glass from frame, slide rubber seal (8) out of vertical rail (9) exposing two screws. Window glass is removable after screws are removed. Remove glass.
10. To replace glass, slip glazing vinyl seal around glass and slide into frame.
11. Reassemble by reversing procedure.

Transit Sliding Window

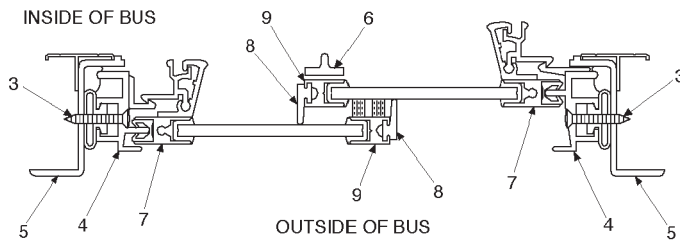


HORIZONTAL SECTION THRU
TRANSIT SLIDING WINDOW PUSH OUT WINDOW

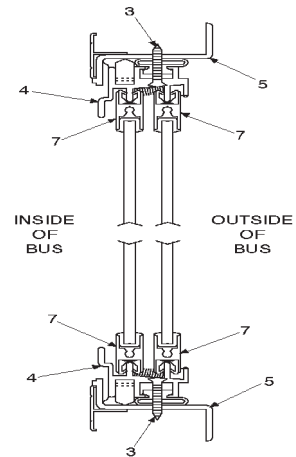


VERTICAL SECTION THRU
TRANSIT SLIDING
PUSH OUT WINDOW

Pushout Transit Sliding Window



HORIZONTAL SECTION THRU
TRANSIT SLIDING WINDOW



VERTICAL SECTION
THRU TRANSIT
SLIDING WINDOW

Outward Opening Entrance Door

The outward opening door panels are hung in a prefabricated framework before mounting into the body construction. The doors are suspended from sealed ball bearings located at the upper corners of the door. These components are accessible only from inside the body.

The bronze bearings at the lower corners of the door assembly are not weight bearing, but serve to hold the bottom of the assembly in position. These bronze bearing are permanently lubricated and should require little maintenance during the service life of the door assembly, which exceeds 300,000 cycles.

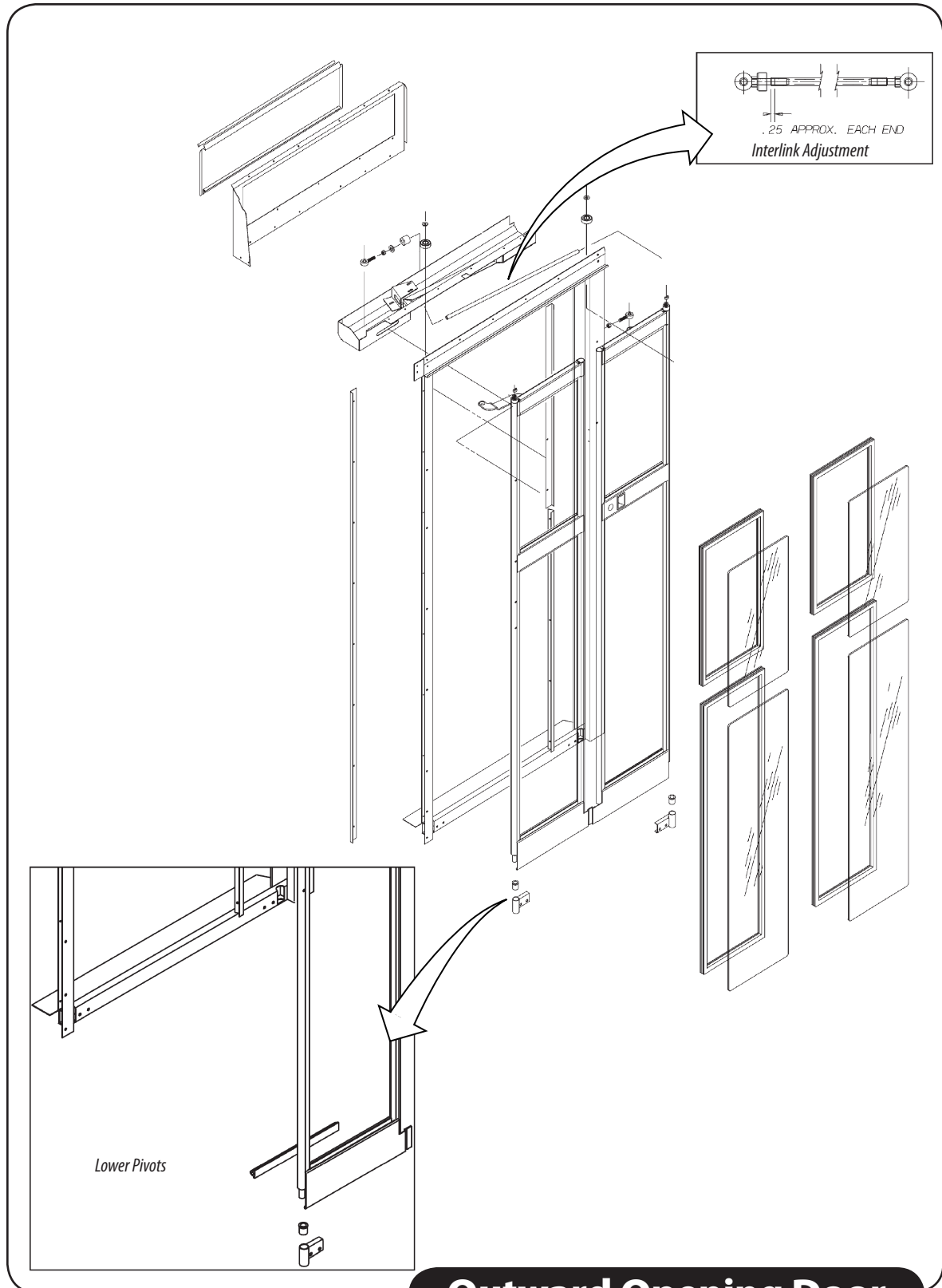
The interlink between the door panels is installed as a single assembly in the door header, and is adjustable for maintaining proper opening/closing tension.

Interlink Adjustment

The mechanical link between the doors (the interlink rod) should be adjusted so that the rearward door closes and seats first. One of the spherical bearing, rod end connectors has a right-hand thread; the other has a left-hand thread. This allows for length adjustment by simply turning the interlink rod. The forward door panel then closes with an overlap to the rear of the bus, helping to reduce the intrusion of outside air while the bus is in motion. The forward door pivots across the centerline of a cam, thus locking the rear door panel in position.

When properly adjusted, the door should begin to require more energy to close as the trailing edge of the front door panel gets to within 2 or 3 inches of the closed position. When the mechanism is properly adjusted, you should only be able to push the door open by pressing on the forward door panel from the inside. The rearward panel should be locked into position and will not move until the forward panel moves.

1. With the doors open, loosen the jam nut at the forward end of the interlink rod. The jam nut on the rearward end of the interlink assembly is to hold the bumper in position and is located inside the access panel over the door.
2. Turn the interlink tube until, by trial and error, the door mechanism operates properly.
3. Tighten the jam nut securely.



Manual Door Control

Manual Door Control Arm Removal

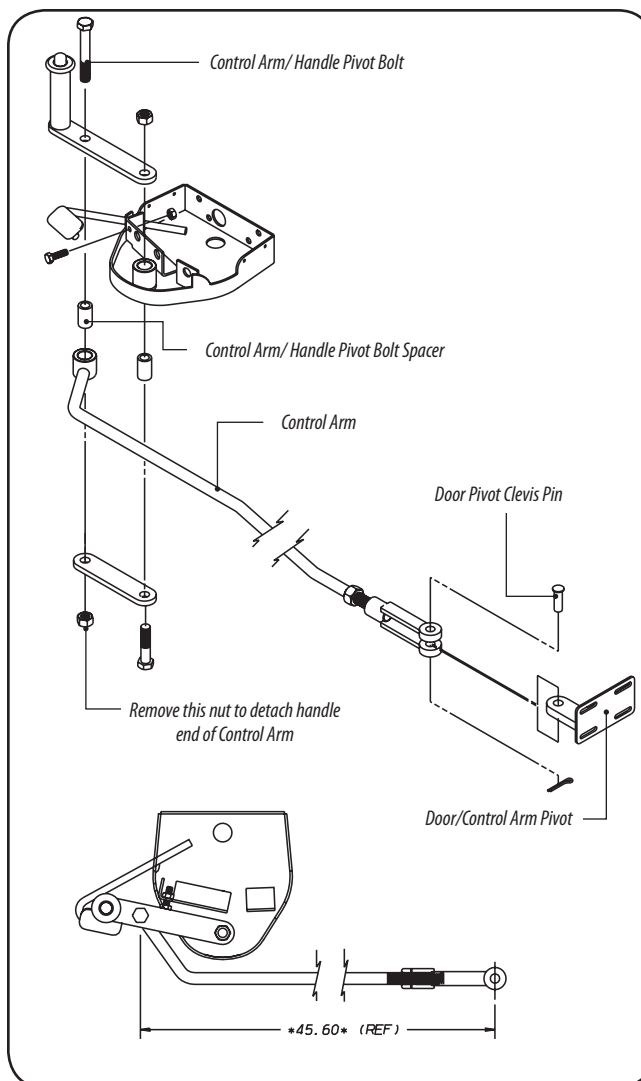
The manual door control rod does not need to be removed to adjust or remove the door panel assemblies. However, the clevis pin must be removed when removing the door panels.

1. Remove the cotter pin and clevis pin securing the control arm to the door.
2. If the control arm is in the way of your work, remove it by removing the pivot bolt, nut, and spacer from the handle.

Manual Door Control Reinstallation

If the length of the manual control rod assembly is moved, the nominal length for outward opening doors should be set to 45.60 inches (115.82 cm). Then adjust to close with proper tension. When the door operates satisfactorily, tighten all hardware securely.

1. If necessary, install the door/control arm pivot. Snug up so it will not move. Do not tighten securely at this time.
2. With the doors in the closed position, pre-assemble the control arm to the approximate length required.
3. Attach the clevis to the door pivot and insert the clevis pin. Do not install the cotter pin at this time.
4. Assemble the opposite end of the control arm to the handle and tighten the locknut securely.
7. By trial and error, adjust the length of the rod assembly by removing the clevis pin and turning the clevis. Adjust the rod assembly length so that the control assembly handle passes through the center of the control assembly's cam action as the doors reach the fully open position.
8. When the door opening mechanism operates properly, tighten all hardware securely. Install the cotter pin into the clevis pin. Tighten the jam nut at the clevis in the rod assembly.

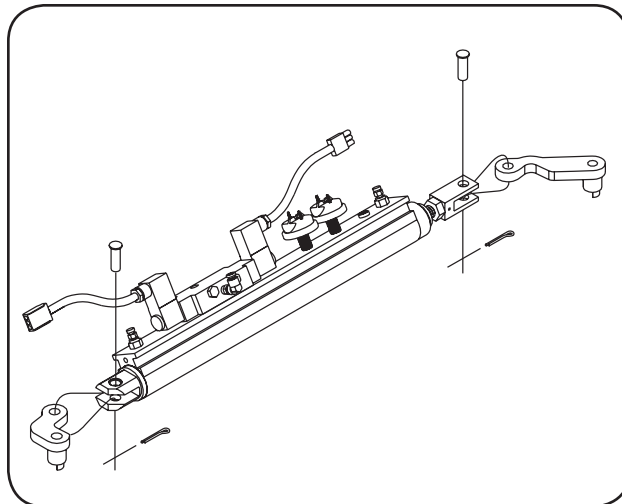


Pneumatic Door Opener

The pneumatically operated outward opening door operates similarly to the manual door described above but uses an air cylinder mechanism located inside the door header to actuate the door.

Pneumatic Door Opener Removal

1. Remove the cotter pins and clevis pins from each end of the actuator.
2. Disconnect the electrical connectors.
3. Remove the pneumatic tubing. Identify the tubing as you remove it and replace it in the same positions.
4. Carefully remove the actuator from the compartment.



Pneumatic Door Opener Reinstallation

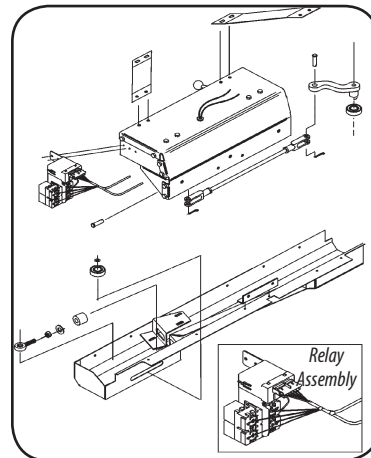
Installation of the pneumatic door actuator is accomplished in the reverse order of the removal instructions, above.

An air flow control valve located at each end of the actuator assembly allows adjustment of the speed of the door operation. Properly operating doors should cycle open or close in 3 seconds. If the doors do not operate properly, refer to "Adjustment of Outward Opening Door Mechanism", above.

Electric Door Opener

Electric Door Opener Removal

1. Remove hardware holding access panel over the door assembly.
2. Remove the nut and capscrew assembly from 10 places.
3. Disconnect electrical connectors at the relay assembly.
4. Remove the clevis pin from forward door lever.
5. Remove the clevis pin from rearward door lever.
6. Remove the actuator assembly.



Electric Door Opener Reinstallation

Install the electrically operated door actuator in the reverse order of the removal instructions above.

1. Pre-install the relay assembly on the actuator housing.
2. Preset the length of the actuator rod assembly to 18.50 inches (46.99 cm). Be sure the clevis pinholes are properly oriented.
3. Install the actuator assembly by installing bolt and locknut in 10 places. Tighten securely.
4. Install the actuator rod assembly clevis to the lever on the electrically operated actuator.
5. Install the actuator rod clevis to the forward door operating lever.
6. Check for proper operation of the actuator. It may be necessary to adjust the length of the actuator rod assembly so the door will stop before the motor crosses center.
7. If necessary, install the emergency release lever.
8. Move the open position stop to its rearmost position to prevent the motor driven actuator from rotating too far rearward.
9. After adjusting for proper operation, position cam on the rotating shaft to operate limit switch when the door is in the open position.



Door Panels

Door Panels Removal

If so equipped, optional safety equipment attached to the door panel's assembly must be disconnected and/or removed before continuing. Access to the door mechanism is provided over the door opening, inside the bus.

1. Remove the access panel cover or header.
2. If equipped with pneumatic door actuator, refer to Removal of Optional Pneumatic Door Opener above.
3. If equipped with electrically operated door actuator, disconnect the actuator rod clevis from the front door operating lever.
4. Remove Allen head machine screws and lock nuts from spherical bearing (at each end of the connector link).
5. Remove the connecting link.
6. Remove the nut, lock washer and flat washer from the bearing at the top outside corners of the door panels.
7. Support the door panels and remove two carriage bolts from the lower outside corner of each door panel.
8. Lift the door panel and slide the bottom, with bracket and bronze bushing attached, away from the stepwell. Some manipulation of the rearward door panel may be necessary to remove the door lever from the header.
9. Lower the door panel until it clears the header.
10. Set the door panel aside and remove the forward door panel in the same manner.
11. Remove the sealed ball bearings from the outside corners of the door header.
12. Remove the flanged bronze bearing and bracket from the bottom of each door panel.

Door Panels Reinstallation

Installation of the outward opening door panels is accomplished, in the reverse order of the removal instructions above.

1. Install the sealed ball bearings at two places in the header, at the outside corners.
2. Install the bronze bearings and brackets at the bottom outside corner of each door panel.
3. Install the rearmost door panel first. Some manipulation may be necessary to install the rear door panel control lever into the header.
4. Support the door panel and install the lower door pivot bracket and bronze bearing.
5. Install two carriage bolts to secure the pivot assembly in the stepwell.
6. Install the upper spacer.
7. Install the upper pivot through the upper support bearing. Install flat washer. Wipe pivot threads clean and coat the bottom 3 to 5 threads with Loctite™. Install lock washer and nut to hang door panel in frame. Torque to 30 ft-lbs (3.38 Nm).
8. Install forward door panel bronze bearing and bottom pivot bracket onto the door panel.
13. Install the upper pivot through the sealed ball bearing.
14. Lift and support the door panel while installing two carriage bolts to secure the bottom pivot to the stepwell. Install the flat washer. Wipe top pivot threads clean and apply Loctite™ to the bottom 3 to 5 threads. Install lock washer and nut. Torque to 30 ft-lbs (3.38 Nm).



Door Panel Glass Replacement

With the old glass and the rubber gasket removed, clean the inside edges of the door panel opening. Using a new rubber gasket of the proper size:

1. Install a new rubber gasket onto the new glass.
2. Place a sash cord, or other suitable string, around the outside groove of the glass assembly.
3. Pull the string tight to make sure it seats fully into the groove. Leave the ends of the sash cord hanging down from bottom corners of new glass assembly. Do not lubricate the new gasket material.
4. Install the glass assembly into the door panel, from the inside, placing the bottom groove of the rubber gasket properly straddling the bottom of the opening in the door panel. Be sure the ends of the sash cord are on the outside of the door panel, protruding from the lower corners of the opening.
5. From the inside of the door assembly, press and hold the glass assembly securely into the hole.
6. From the outside of the door assembly, carefully pull the sash cord, causing the outer edge of the gasket to pop into place.

Stop Arms

Federal Motor Vehicle Safety Standard 131 requires all school buses in the United States to be equipped with a Stop Arm. The specific requirements for the blade, lights, lettering and reflectivity of the Stop Arms vary from state to state. Blue Bird provides Stop Arms as kits to match requirements for each state from which the school bus was ordered. Stop arms are available as either electric or air-operated.

Usually, the Stop Arm is located on the left side of the bus, at the front under the driver's window. In some cases, there is another Stop Arm on the left, toward the rear of the bus.

The driver most commonly controls Stop Arms manually via a switch. Some states require that Stop Arms be operated in concert with the Warning Lights when the bus is preparing to stop. Some states allow the lights to be on while the Stop Arm is retracted. In such case, the electronic controls are wired into the lighting system, and operation is automatic when the driver activates the warning light switch. In these cases, the driver will be alerted by an audible signal.

Air Operated Stop Arm

For pneumatically operated (air pressure) Stop Arms, the electric control switch operates an air valve solenoid which controls the flow of air to operate the Stop Arm. The air-operated system is dependant on the air brake system for pressure to operate.

The air stop arm may require periodic air pressure adjustment. The air regulator is accessible from the electrical panel located under the driver's window at the outside of the bus. To adjust the air pressure, remove the wire retaining clip and pull downward on the red lock ring. Turn the knob counterclockwise to decrease the airflow, and then slowly increase the air pressure until the Stop Arm is fully extended. Push the red lock ring upward and install the wire retaining clip.

Electric Stop Arm

Stop Arms may also be electrically operated. There may be a discrete switch for the driver, or the system may be wired into the warning light circuit.

Stop Arm Maintenance

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