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OHIO CHURCH BUS

INSPECTION MANUAL

PREPARED BY:

OHIO STATE HIGHWAY PATROL

OFFICE OF LICENSING AND COMMERCIAL STANDARDS

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FOREWARD

This Ohio Church Bus Inspection Manual is developed to serve as a guide for inspectors, mechanics, and other persons responsible for ensuring the safe operation of Ohio's church buses.

Beginning in 1995, interstate church bus operations were required to comply with certain Federal Motor Carrier Safety Regulations. Most of these regulations were applied to intrastate church bus operations in August of 1999. Some exceptions were allowed until July 1, 2002. Currently all intrastate church bus operations must comply with the Public Utilities Commission of Ohio (PUCO) Safety Rules.

This inspection manual is being provided to detail the equipment requirements of the church bus. All Ohio church buses, interstate, intrastate or church buses engaged solely within the transportation of a single municipality or contiguous municipalities must comply with the equipment requirements of this manual.

Every effort has been made to update given inspection procedures in accordance with the development of new technologies. Please be aware that although every reasonable effort has been made to ensure the accuracy of this inspection manual, it is possible that errors may be discovered or specific information for individual components may be missing. Operators of church vehicles and inspection personnel should refer to the applicable Ohio Revised Code, Federal Motor Carrier Safety Regulations, PUCO Safety Rules, individual manufacturer's specifications, or appropriate service manuals for specific information.

Church bus inspections should not be limited to the items listed in this manual. All church buses must also comply with all applicable sections of the Ohio Revised Code/ Ohio Administrative Code.

All church buses are to be presented at the annual mandatory inspection without any defects.

Along with the inspection process, safe operation of the vehicles used to transport passengers rests with the drivers. Safe operation of the vehicles can be accomplished through proper training and properly licensed drivers.

This manual was prepared by the Ohio State Highway Patrol by the authority provide under Ohio Revised Code 4503.07.

INSPECTION OF CHURCH BUSES

The Ohio Bureau of Motor Vehicles Church Bus Inspection form BMV 4908 must be obtained from the Bureau of Motor Vehicles by the church bus owner. This form must be presented at time of inspection. This form, when completed by the Ohio State Highway Patrol indicating a passed inspection, must be presented when registering the church bus.

Certification is required from the Ohio State Highway Patrol stating that the bus involved is safe for operation in accordance with such standards as are prescribed by the Ohio State Highway Patrol if the bus meets either of the following:

A) It originally was designed by the manufacturer to transport 16 or more passengers, including the driver; or
B) It has a gross vehicle weight rating of 10,001 pounds or more.

Appointments for an inspection to secure this certification must be coordinated through the District LCS Unit.

The following Code of Federal Regulations (CFR), Ohio Revised Code (ORC), and Ohio Administrative Code (OAC) chapters establish equipment standards for motor vehicles:

CFR 49 Parts 393 Parts & Accessories Necessary for Safe Operations
OAC Chapter 4501:2-1 Random Motor Vehicle Inspection
OAC Chapter 4501-15 Ohio Vehicle Lighting
OAC Chapter 4901:2-5-2 Adoption of US Department of Transportation Safety Standards
ORC Chapter 4513 Traffic Laws - Equipment, Loads

Code of Federal Regulations (CFR) Web site:
www.fmcsa.dot.gov

Ohio Revised Code (ORC) and Ohio Administrative Code Web site:
www.statepatrol.ohio.gov

Public Utilities Commission of Ohio (PUCO) Web site:
www.PUCO.ohio.gov

INSPECTION SEQUENCE

A logical systematic inspection sequence should be used to inspect each bus to ensure a complete inspection. It is essential for all buses to be inspected using the same criteria. The inspector should check all components in one location before moving to the next. The following is a recommended inspection sequence:

Exterior
Interior
Engine Compartment
Undercarriage/Brakes
Complete BMV 4908, Church Bus Inspection certification form.

Following this sequence, the inspector should view the surrounding areas when checking a specific component, looking for such things as water and oil leaks, cracked or rusted-out sheet metal or frame members, crimped or damaged hoses or copper lines, cracked or missing glass, and other items.

CHURCH BUS INSPECTION CRITERIA

Body components

Door and door parts used as an entrance or exit shall not be missing or broken. Doors shall not sag so that they cannot be properly opened or closed.

No door shall be wired shut or otherwise secured in the closed position so that it cannot be readily opened.

All bolts or brackets securing body components to the frame shall not be loose, broken, or missing.

The hood shall be securely fastened.

Shall not be equipped with or permitted to have protruding objects or broken sharp edges of body or vehicle parts, which would be dangerous to any person coming into contact with same.

Brakes

Refer to Appendix A for inspection procedure.

All buses shall be equipped with brakes acting on all wheels. All brakes shall at all times be capable of operating.

All components in the braking system shall be properly maintained, properly secured and free of leaks, cracks, loose or broken parts.

The service brake chambers and spring brake chambers on each end of an axle must be the same.

All buses shall have:

- A service brake system so arranged that one application valve, when applied, shall operate all the service brakes; and

- Every bus shall be equipped with a signal that provides a warning to the driver when a failure occurs in the vehicle's service brake system.

Hydraulic brake systems

- A bus manufactured on or after July 1, 1973, and having service brakes activated by hydraulic fluid shall be equipped with a warning signal that performs as follows:

    - If Federal Motor Vehicle Safety Standard section 571.105 was applicable at the time the bus was manufactured, the warning signal shall conform to the requirements of that standard.

    - If Federal Motor Vehicle Safety Standard section 571.105 was not applicable to the bus at the time the bus was manufactured, the warning signal shall become operative, before or upon application of the brakes in the event of a hydraulic-type complete failure of a partial system. The signal shall be readily audible or visible to the driver.

Air brake systems

- A bus having service brakes activated by compressed air shall be equipped, and perform as follows:
- The bus shall have a low air pressure warning device that conforms to the following requirements:
- If Federal Motor Vehicle Safety Standard section 571.121, Effective January 1, 1975, was applicable to the vehicle at the time it was manufactured, the warning device shall conform to the requirements of that standard.
- Part of Federal Motor Vehicle Safety Standard 571.121 - S5.1.5 Warning signal. A signal, other than a pressure gauge, that gives a continuous warning to a person in the normal driving position when the ignition is in the ``on'' (``run'') position and the air pressure in the service reservoir system is below 60 psi. The signal shall be either visible within the driver's forward field of view, or both audible and visible.
- If Federal Motor Vehicle Safety Standard section 571.121 was not applicable to the vehicle at the time it was manufactured, the vehicle shall have a device that provides a readily audible or visible continuous warning to the driver whenever the pressure of the compressed air in the braking system is below a specified

pressure, which shall be at least one-half of the compressor governor cutout pressure.

- The bus shall have a pressure gauge which indicates to the driver the pressure in pounds per square inch available for braking.

All buses shall have the braking system so constructed that in the event any brake line to any of the front wheels is broken, the driver can apply the brakes on the rear wheels despite such breakage.

Vacuum brake systems

- Every bus having service brakes activated by vacuum shall be equipped with:

  - A device that provides a readily audible or visible continuous warning to the driver whenever the vacuum in the bus supply reservoir is less than eight inches of mercury; and

  - A vacuum gauge which indicates to the driver the vacuum in inches of mercury available for braking.

Hydraulic brakes applied or assisted by air or vacuum

- A bus having a braking system in which hydraulically activated service brakes are applied or assisted by compressed air or vacuum shall be equipped with both a warning signal that conforms to the requirements of hydraulic and air brakes or the requirements for vacuum brakes.

The warning signals, devices and gauges required by this section shall be maintained in operative condition.

Parking brake system

- All buses manufactured on or after March 7, 1990, shall be equipped with a parking brake system adequate to hold the vehicle under any condition of loading.

- The parking brake system shall at all times be capable of being applied either by the driver's muscular effort, or by spring action, or by other energy, provided, that if such other energy is depended on for application of the parking brake, then an accumulation of such energy shall be isolated from any common source and used

exclusively for the operation of the parking brake.

- The parking brake system shall be held in the applied position by energy other than fluid pressure, air pressure, or electric energy.

Emergency brake system

- A bus manufactured on or after July 1, 1973, shall have an emergency brake system consisting of either:
    - Emergency features of the service brake system; or
    - A system separate from the service brake system. A control by which the driver applies the emergency brake system shall be located so that the driver can readily operate it when properly restrained by any seat belt assembly provided for the driver's use. The control for applying the emergency brake system may be combined with either the control for applying the service brake system or the control for applying the parking brake system. However, all three controls may not be combined.
    - The means used to apply the brakes may be located forward of the driver's seat as long as it can be operated manually by the driver when the driver is properly restrained by any seat belt assembly provided for use. Every bus shall meet this requirement or comply with the regulations in effect at the time of its manufacturer.

Brake tubing and brake hose

- All brake tubing and brake hoses shall:
    - Be free of leaks;
    - Be long and flexible enough to accommodate without damage all normal motions of the parts to which it is attached;
    - Be suitably secured against chafing, kinking, or other mechanical damage; and
    - Be installed in a manner that prevents it from contacting the vehicle's exhaust system or any other source of high temperatures.

All connections for air, vacuum, or hydraulic braking systems shall:

- Be properly connected;
- Be free of leaks, constrictions, or other defects;
- Have suitable provision in every detachable connection to afford reasonable assurance against accidental disconnection;
- Have the vacuum brake engine manifold connection at least three-eighths inch in diameter; and
- Contain no improper splices such as a splice made by sliding the hose ends over a piece of tubing and clamping the hose to the tube.

Reservoirs

- All air or vacuum braking systems shall be equipped with a reservoir(s) sufficient to ensure a full service brake application with the engine stopped without depleting the air pressure or vacuum below seventy per cent of that pressure or degree of vacuum indicated by the gauge immediately before the brake application is made. For the purpose of this section, a full service brake application is considered to be made when the service brake pedal is pushed to the limit of its travel.
- All reservoirs shall be secured and free of leaks.

Adjustment

All brakes shall be in proper adjustment for the size and type of brake and shall not exceed those specifications contained hereunder relating to "adjustment limit". (Dimensions are in inches.) The effective length of the slack adjuster on each end of an axle must be the same.

Clamp type brake chamber data

Type	Outside diameter	Adjustment limit
6	4-1/2	1-1/4

9	5-1/4	1-3/8
12	5-11/16	1-3/8
16	6-3/8	1-3/4
20	6-25/32	1-3/4
24	7-7/32	1-3/4
30	8-3/32	2
36	9	2-1/4

'Long stroke' clamp type brake chamber data

Type	Outside diameter	Adjustment limit
12	5-11/16	1.75
16	6-3/8	2.0
20	6-25/32	2.0
24	7-7/32	2.0
24*	7-7/32	2.5
30	8-3/32	2.5

* For 3" maximum stroke type 24 chambers.

Tie rod style piston brake chamber data

Size	Outside diameter	Adjustment limit
30	6-1/2 (165mm)	2.5 (64mm)

Bolt type brake chamber data

Type	Outside diameter	Adjustment limit
A	6-15/16	1-3/8
B	9-3/16	1-3/4
C	8-1/16	1-3/4
D	5-1/4	1-1/4
E	6-3/16	1-3/8
F	11	2-1/4
G	9-7/8	2

Rotochamber data

Type	Outside diameter	Adjustment limit
9	4-9/32	1-1/2
12	4-13/16	1-1/2
16	5-13/32	2

20	5-15/16	2
24	6-13/32	2
30	7-1/16	2-1/4
36	7-5/8	2-3/4
50	8-7/8	3

DD-3 brake chamber data

Type	Outside diameter	Adjustment limit
30*	8-1/8	2-1/4

This chamber has three airlines and is found on motor coaches.

Wedge brake - Combined movement of both brake shoe lining scribe marks shall not exceed one-eighth inch.

Bumpers

The front bumper shall not be missing, loosely attached, or protruding beyond the outside edges of the bus.

Rear-impact guard(s) (Rear Bumper)

- Every bus manufactured after December 31, 1952, in which the vertical distance between the rear bottom edge of the body (or the chassis assembly if the chassis is the rearmost part of the vehicle) and the ground is greater than thirty inches when the bus is empty, shall be equipped with a rear impact guard(s).

- If required, the rear-impact guard(s) shall be installed and maintained in such a manner that:

The vertical distance between the bottom of the guard(s) and the ground does not exceed thirty inches when the bus is empty;

The maximum lateral distance between the closest points between guards, if more than one is used, does not exceed twenty-four inches;

The outermost surfaces of the horizontal member of the guard are no more than eighteen inches from each side extremity of the bus; and

The impact guard(s) are no more than twenty-four inches forward of the rear extremity of the bus.

Construction and attachment of rear-impact guard(s).

- The rear-impact guard(s) shall be substantially constructed and attached by means of bolts, welding, or other comparable means.

Bus components and structures may be used to satisfy the requirements of this rule if the components and structures provide the rear end protection comparable to impact guard(s).

Defrosting devices

Every bus shall be equipped with a device or other means, not manually operated, capable, at all times, of producing sufficient heat and/or air-flow for preventing and/or removing obstructions such as ice, snow, or frost from the outside of the windshield and/or condensation from the inside of the windshield.

Driveshaft protection

Any driveshaft extending lengthways under the floor of the passenger compartment shall be protected by means of at least one guard or bracket at that end of the driveshaft which is provided with a sliding connection (spline or other such device) to prevent the whipping of the shaft in the event of failure of the connection or any of its component parts. A driveshaft contained within a torque tube shall not require any such protective device.

Electrical system

The electrical wiring shall:

- Be systematically arranged and installed in a workmanlike manner. The presence

of bare, loose, dangling, chafing, or poorly connected wires is prohibited;

- Be so installed that connections are protected from weather, abrasion, road splash, grease, oil, fuel and chafing;

- Be grouped together, when possible, and protected by nonconductive tape, braid, or other covering capable of withstanding severe abrasion or shall be protected by being enclosed in a sheath or tube;

- Be properly supported in a manner to prevent chafing;

- Not be so located as to be likely to be charred, overheated, or enmeshed in moving parts;

- Not have terminals or splices located above the fuel tank except for the fuel sender wiring and terminal; and

- Be protected when passing through holes in metal by a grommet, or other means, or the wiring shall be encased in a protective covering.

Battery ground on a grounded electrical system shall be readily accessible.

Electrical contact surfaces shall be clean and free of oxide, paint, or other non-conductive coating.

The electrical current to all low tension circuits shall pass through overload protective devices except that this requirement shall not apply to battery-to-starting motor or battery-to-generator circuits, ignition and engine control circuits, horn circuits, electrically-operated fuel pump circuits, or electric brake circuits. Buses manufactured after June 30, 1953, shall have protective devices for electrical circuits arranged so that:

- The headlamp circuit or circuits shall not be affected by a short circuit in any other lighting circuits; or

- The protective device shall be an automatic reset overload circuit breaker if the headlight circuit is protected in common with other circuits.

Every storage battery, unless located in the engine compartment, shall be covered by a removable cover or enclosure.

- Removable covers, or enclosures shall be substantial and shall be securely latched or fastened.

The storage battery compartment and adjacent metal parts which might corrode by reason of battery leakage shall be painted or coated with an acid-resisting paint or coating and shall have openings to provide ample battery ventilation and drainage.

Whenever the cable to the starting motor passes through a metal compartment, the cable shall be protected against grounding by an acid and waterproof insulating bushing.

Whenever a battery and a fuel tank are both placed under the driver's seat, they shall be partitioned from each other, and each compartment shall be provided with an independent cover, ventilation, and drainage.

Emergency equipment

Every bus shall be equipped as follows:

- Fire extinguisher.
    - Every bus shall have at least one fire extinguisher that:

        Is properly filled;

        Is located so it is readily accessible inside the driver's and/or the passengers' compartment;

        Is securely mounted to the vehicle;

        Is designed, constructed, and maintained to permit visual determination of whether it is fully charged;

        Has an extinguishing agent that does not need protection from freezing;

        Does not use a vaporizing liquid that gives off vapors more toxic than substances shown as having a toxicity rating of five or six in the underwriters' laboratories "classification of comparative life hazard of gases and vapors"; and

Has an underwriters' laboratories rating of 5 B:C. Two fire extinguishers with an underwriters' laboratories rating of at least 4 B:C may replace one 5 B:C rated fire extinguisher.

- Reflective warning devices

  - Every bus shall be equipped with at least three bi-directional emergency reflective triangles that conform to the requirements of Federal Motor Vehicle Safety Standard section 571.125.

  - The reflective warning devices required by this section shall:

    Be maintained in good condition;

    Not have broken or missing pieces; and

    Be capable of being properly set up and remain standing under normal conditions.

Emergency exit requirements

Refer to Appendix B for inspection procedure.

A bus manufactured before September 1, 1973, having a seating capacity of more than eight persons shall have, in addition to the area provided by the windshield, adequate means of escape for passengers through windows. The adequacy of such means of escape shall be determined in accordance with the following standards:

For each seated passenger space provided, inclusive of the driver that shall be at least sixty-seven square inches of glazing if such glazing is not contained in a push-out window; or

At least sixty-seven square inches of free opening resulting from opening of a push-out type window.

No area shall be included in this minimum prescribed area unless:

- It will provide an unobstructed opening sufficient to contain an ellipse having a major axis of eighteen inches and a minor axis of thirteen inches; or

- An opening containing two hundred square inches formed by a rectangle thirteen inches by seventeen and three-fourths inches with corner arcs of six inch radius.

- The major axis of the ellipse and the long axis of the rectangle shall make an angle of not more than forty-five degrees with the surface on which the unladen bus stands.

- The area shall be measured either by removal of the glazing if not of the push-out type or of the movable sash if of the push-out type, and it shall be either glazed with laminated safety glass or comply with the requirements of push-out windows.

- No less than forty percent of such prescribed glazing or opening shall be on one side of any bus.

A bus manufactured on or after September 1, 1973, having a seating capacity of more than ten persons, inclusive of the driver, shall have emergency exits in conformity with Federal Motor Vehicle Safety Standard section 571.217.

A bus manufactured before September 1, 1973, may conform to the requirements of Federal Motor Vehicle Safety Standards section 571.217 instead of the prior requirements of emergency exit requirements. (See Appendix B)

Push-out window requirements

Every glazed opening in a bus manufactured before September 1, 1973, and having a seating capacity of more than eight persons, inclusive of the driver, if not glazed with laminated safety glass, shall have a frame or sash so designed, constructed, and maintained that it will yield outwardly to provide the required free opening.

On a bus manufactured on or after September 1, 1973, and having a seating capacity of more than ten persons, inclusive of the driver, each push-out window shall conform to Federal Motor Vehicle Safety Standard 217, 49 C.F.R. section 571.217.

Emergency windows shall not be obstructed by bars or other such means located either inside or outside such windows which would hinder the escape of occupants unless such bars or other such means are so constructed as to provide a clear opening.

Emergency exit markings

Window markings.

On a bus manufactured before September 1, 1973, each bus push-out window and any other bus escape window glazed with laminated safety glass shall be identified as such by clearly legible signs, lettering, or decaling.

Such marking shall include appropriate wording to indicate that it is an escape window and also the method to be used for obtaining emergency exit.

A bus manufactured on or after September 1, 1973, shall mark emergency exits to conform to Federal Motor Vehicle Safety Standard number 217, 49 C.F.R. section 571.217.

Door markings.

Each emergency door shall have such door clearly marked in letters at least one inch in height with the words:

- Emergency door; or
- Emergency exit.

The operating instructions necessary to unlatch or open the exit.

Exhaust systems

Every bus having a device capable of expelling harmful combustion fumes shall have a system to direct the discharge of such fumes.

Every exhaust system shall:

- Have no part located where its location would likely result in burning, charring, or damaging the electrical wiring, the fuel supply, or any combustible part of the bus;
- Not discharge to the atmosphere at a location immediately below the fuel tank or the fuel tank filler pipe;

- For gasoline engine powered buses, discharge to the atmosphere at or within six inches forward of the rearmost part of the bus;

- For other than gasoline engine powered buses, discharge to the atmosphere either:

  At or within fifteen inches forward of the rearmost part of the vehicle; or

  To the rear of all doors or windows designed to be open, except windows designed to be opened solely as emergency exits.

- Be securely fastened to the bus;

- Not be temporarily repaired with wrap or patches; and

- Not have any leak or discharge at a point forward of the discharge locations.

The exhaust system may use hangers which permit required movement due to expansion and contraction caused by heat of the exhaust and relative motion between engine and chassis of the vehicle.

Floors

All flooring shall:

- Be substantially constructed;

- Be free of unnecessary holes and openings;

- Be maintained so as to minimize the entrance of fumes, exhaust gases, or fire; and

- Not be permeated with oil or other substances likely to cause injury to persons using the floor as a traction surface.

Frames

Frames shall not be cracked, loose, sagging or broken.

Bolts or brackets securing the body to the frame shall not be loose, broken, or missing.

Frame rail flanges between the axles shall not be bent, cut or notched, except as specified by the manufacturer.

All repairs to any frame member shall be done in a workmanlike manner and contain no cracked or broken repairs.

Fuel systems

The rules in this section apply to systems for containing and supplying fuel for the operation of a bus and for the operation of auxiliary equipment installed on, or used in connection with a bus.

Location of fuel system

Each fuel system shall be located on the bus so that:

- No part of the system extends beyond the widest part of the bus;
- No part of a fuel tank is forward of the front axle;
- Fuel spilled vertically from a fuel tank while it is being filled will not contact any part of the exhaust or electrical systems, except the fuel level indicator assembly;
- Fill pipe openings are located outside the vehicle's passenger compartment and its cargo compartment; and
- No part of the fuel system of a bus manufactured on or after January 1, 1973, is located within or above the passenger compartment.

Fuel tank installation

Each fuel tank shall be securely attached to the bus in a workmanlike manner.

The fuel system shall not supply fuel by gravity or siphon feed directly to the carburetor or injector.

If the fuel system includes a selection control valve which is operable by the driver to regulate the flow of fuel from two or more fuel tanks, the valve shall be installed so that either:

The driver may operate the control valve while watching the roadway without leaving the driver's seat; or

The driver shall stop the bus and leave the driver's seat in order to operate the control valve.

Fuel tank certification and markings.

Each liquid fuel tank shall be legibly and permanently marked by the manufacturer with the following minimum information:

- The month and year of manufacture;
- The manufacturer's name on tanks manufactured on and after July 1, 1988, and a means of identifying the facility at which the tank was manufactured; and
- A certificate that it conforms to the rules in section 49 C.F.R. section 393.67.

Fuel lines

A fuel line not completely enclosed in a protective housing shall not extend more than two inches below the fuel tank or its sump.

Diesel fuel crossover, return, and withdrawal lines which extend below the bottom of the tank or sump shall be protected against damage from impact.

Every fuel line shall be:

- Long enough and flexible enough to accommodate normal movements of the parts to which it is attached without incurring damage; and
- Secured against chafing, kinking, or other causes of mechanical damage.

Excess flow valve

When pressure devices are used to force fuel from a fuel tank, a device which prevents

the flow of fuel from the fuel tank if the fuel feed line is broken shall be installed in the fuel system.

Glass

Glazing material used in windshields, windows, and doors on a bus manufactured on or after December 25, 1968, shall at a minimum meet the requirements of Federal Motor Vehicle Safety Standard number 205, 49 C.F.R. section 571.205 in effect on the date of manufacture of the bus. The glazing material shall be marked in accordance with Federal Motor Vehicle Safety Standard number 205, 49 C.F.R. section 571.205, S6.

Every bus shall be equipped with a windshield.

Every windshield or portion of a multi-piece windshield shall be mounted using the full periphery of the glazing material.

Every windshield shall be free of discoloration or damage except as follows:

- Coloring or tinting of windshields and the windows to the immediate right and left of the driver is allowed, provided the parallel luminous transmittance through the colored or tinted glazing is not less than seventy percent of the light at normal incidence in those portions of the windshield or windows which are marked as having a parallel luminous transmittance of not less than seventy percent.

- A strip of sunscreening applied along the top edge of the windshield so long as such material is transparent, is in compliance with Federal Motor Vehicle Safety Standard number 205, (49 C.F.R. section 571.205), or other applicable federal standards and does not extend downward beyond five inches from the top of the windshield. The transmittance of not less than seventy percent does not apply to other windows on the bus.

Antennas, transponders, and similar devices shall not be mounted more than six inches below the upper edge of the windshield. These devices shall be located outside the area swept by the windshield wipers, and outside the driver's sight lines to the road and highway signs and signals.

Decals and stickers required under federal or state laws may be placed at the bottom or sides of the windshield provided such decals or stickers do not extend more the four and one-half inches from the bottom of the windshield and are located outside the area swept by the windshield wipers, and outside the driver's sight lines to the road and highway signs or signals.

Heaters

Every heater on a bus shall be capable, at all times, of providing a reasonable amount of heat and comply with the following requirements:

Heater specifications

Every heater shall be so located or protected as to prevent contact therewith by occupants, unless the surface temperature of the protecting grilles or of any exposed portions of the heaters, inclusive of exhaust stacks, pipes, or conduits shall be lower than would cause contact burns.

Adequate protection shall be afforded against igniting parts of the vehicle or burning occupants by direct radiation.

Effective guards shall be provided for the protection of passengers or occupants against injury by fans, belts, or any other moving part.

Every heater and every heater enclosure shall be securely fastened to the vehicle in a substantial manner so as to provide against relative motion within the vehicle during normal usage or in the event the vehicle overturns.

Hoses for all hot water and steam heater systems shall be specifically designed and constructed for that purpose.

All electrical conductors employed in or leading to any heater shall be secured against dangling, chafing, and rubbing and shall have suitable protection against any other condition likely to produce short or open circuits.

Every fuel tank for heaters of the combustion type shall be located outside of and lower than the passenger space.

Gravity or siphon feed is prohibited for heaters using liquid fuels.

Heaters using liquid fuels shall be equipped with automatic means for shutting off the fuel or for reducing such flow of fuel to the smallest practicable magnitude, in the event of overturn of the vehicle.

Heaters using liquefied petroleum gas as fuel shall have the fuel line equipped with automatic means at the source of supply for shutting off the fuel in the event of separation, breakage, or disconnection of any of the fuel lines between the supply source

and the heater.

The installation and use of the following types of heaters is prohibited:

Exhaust heaters. Any type of exhaust heater in which the engine exhaust gases are conducted into or through any space occupied by persons or any heater which conducts engine compartment air into any such space.

Unenclosed flame heaters. Any type of heater employing a flame which is not fully enclosed.

Heaters permitting fuel leakage. Any type of heater from the burner of which there could be spillage or leakage of fuel upon the tilting or overturning of the vehicle in which it is mounted.

Heaters permitting air contamination.

Any heater taking air, heated or to be heated, from the engine compartment or from direct contact with any portion of the exhaust system.

Any heater taking air in ducts from the outside atmosphere to be conveyed through the engine compartment unless said ducts are so constructed and installed as to prevent contamination of the air so conveyed by exhaust or engine compartment gases.

Solid fuel heaters. Any stove or other heater employing solid fuel.

Portable heaters shall not be used in any space normally occupied by persons.

Horns

Every bus shall be equipped with a horn and actuating elements which shall be in such condition as to give an adequate and reliable warning signal.

The horn shall be capable of emitting sound audible, under normal conditions, for a distance of not less than two hundred feet.

The device for operating the horn shall be located so it may be easily controlled by the driver.

Lighting requirements/Reflectors

All exterior lighting devices shall be:

Electric;

Permanently and securely mounted except as provided;

Visible as to be capable of being seen at all distances between five hundred feet and fifty feet under clear atmospheric conditions during the time lamps are required to be lighted; and

Steadily burning except turn signals, stop lamps when used as turn signals, vehicular hazard warning flashing lamps or warning lamps on school buses when used as such.

Combination of lighting devices and reflectors.

Except as provided below, two or more lighting devices and reflectors, whether or not required by these rules, may be combined optically if:

- Each required lighting device and reflector conforms to the applicable rules in this chapter; and

- Neither the mounting nor the use of a non-required lighting device or reflector impairs the effectiveness of a required lighting device or reflector or causes that device or reflector to be inconsistent with the applicable rules in 49 C.F.R. part 393.

Prohibited combinations.

A turn signal shall not be combined optically with either a head lamp or other lighting device or combination of lighting devices that produces a greater intensity of light than the turn signal lamp;

A turn signal shall not be combined optically with a stop lamp unless the stop lamp function is always deactivated when the turn signal function is activated; or

A clearance lamp shall not be combined optically with a tail lamp or identification lamp.

Headlamps

Each bus shall be equipped with a headlighting system located at the front and composed of at least two headlamps, not including fog or other auxiliary lamps, with an equal number on each side of the vehicle.

Headlamps shall be white in color.

The height of the center point of the headlights shall be not less than twenty-two inches or more than fifty-four inches above the road surface.

Headlamps shall be constructed and installed so as to provide adequate and reliable illumination.

Each headlamp shall be mounted so that the beams are readily adjustable, both vertically and horizontally, and the mounting shall be such that the aim is not readily disturbed by ordinary conditions or service.

Each headlighting system shall provide an upper and lower distribution of light, selectable at the driver's will.

Turn signals

Every bus shall be equipped with a directional signaling system capable of clearly indicating an intention to turn, or move, to either the right or left.

Every directional signaling system shall be visible from both the front and the rear.

Every bus shall be equipped with a signaling system that, in addition to signaling turning movements, shall have a switch or combination of switches that will cause the two front turn signals and the two rear turn signals, with the ignition on or off, to flash simultaneously as a vehicular traffic hazard warning.

Front turn signals

- Each bus shall be equipped with at least two turn signals at or near the front, located and equally distributed on each side of the vertical center-line at the same height and as far apart as practicable.

- Front turn signals, while being operated as a turn signal, shall be amber in color.

- Front turn signals so constructed (double-faced) and located as to be visible from the front or the back of the bus shall have the front-facing lens amber in color and the rear-facing lens red in color.

- The height of the center point of each front turn signal shall be not less than fifteen inches or more than eighty-three inches above the road surface.

Rear turn signals

- Each bus shall be equipped, at the rear, with at least two turn signals, red or amber in color, located and equally distributed on each side of the vertical center-line at the same height and as far apart as practicable.

- If the lighting device used as a rear turn signal is amber in color, the lighting device shall have no other function than that of a turn signal or vehicular hazard warning flashing lamps.

- The height of the center point of each rear turn signal shall be not less than fifteen inches or more than eighty-three inches above the road surface.

Vehicular hazard warning flashing lamps

- Every bus shall be equipped with a signaling system that, in addition to signaling turning movements, shall have a switch or combination of switches that will cause the two front turn signals and the two rear turn signals to flash simultaneously as a vehicular traffic hazard warning.

- The vehicular traffic hazard warning flashing lamps shall be capable of flashing simultaneously with the ignition of the vehicle on or off.

- The front vehicular traffic hazard warning flashing lamps shall be amber in color when operated as the vehicular traffic hazard warning flashing lamps.

- The rear vehicular traffic hazard warning flashing lamps shall be either amber or red in color.

Identification lamps

For the purposes of those provisions within this rule applying to buses having a specific minimum width, overall bus width measurements are to be made from a point on one side or end of a commercial motor vehicle to the same point on the opposite side or end of the vehicle. The

following shall be excluded from the measured width of commercial motor vehicles, as applicable: rear view mirrors, turn signal lamps, handholds for cab entry/egress, splash and spray suppressant devices, load induced tire bulge; and all non-property carrying devices, or components thereof that do not extend more than 3 inches beyond each side of the vehicle.

Front identification lamps

Each bus eighty inches or more in overall width shall be equipped with three identification lamps, amber in color, mounted with the center lamp on the vertical centerline on the front of the bus.

All three identification lamps shall be on the same level and as close to the top of the bus as practicable with lamp centers spaced not less than six inches or more than twelve inches apart.

Rear identification lamps

Each bus eighty inches or more in overall width shall be equipped with three identification lamps, red in color, mounted with the center lamp as close a practicable to the vertical centerline on the rear of the bus.

All three identification lamps shall be on the same level and as close to the top of the bus as practicable with lamp centers spaced not less than six inches or more than twelve inches apart.

Clearance lamps

For the purposes of those provisions within this rule applying to buses having a specific minimum width, overall bus width measurements are to be made from a point on one side or end of a commercial motor vehicle to the same point on the opposite side or end of the vehicle. The following shall be excluded from the measured width of commercial motor vehicles, as applicable: rear view mirrors, turn signal lamps, handholds for cab entry/egress, splash and spray suppressant devices, load induced tire bulge; and all non-property carrying devices, or components thereof that do not extend more than 3 inches beyond each side of the vehicle.

Front clearance lamps

Each bus eighty inches or more in overall width shall be equipped with two clearance lamps, amber in color, mounted one on each side of the vertical centerline to indicate overall width. The front clearance lamps shall be on the same level and as high as practicable.

Rear clearance lamps

Each bus eighty inches or more in overall width shall be equipped with two clearance lamps, red in color, mounted one on each side of the vertical centerline to indicate overall width. The rear clearance lamps shall be on the same level and as high as practicable.

Side marker lamps

Front side marker lamps

- Each bus shall be equipped with two side marker lamps, amber in color, mounted one on each side and located as far to the front as practicable. Front side marker lamps shall not be located less than fifteen inches above the road surface.

Intermediate side marker lamps

- Each bus, with an overall length greater than thirty feet, shall be equipped with two side marker lamps, amber in color, mounted one on each side, at or near the midpoint between the front and rear side marker lamps. Intermediate side marker lamps shall not be located less than fifteen inches above the road surface.

Rear side marker lamps

- Each bus shall be equipped with two side marker lamps, red in color, mounted one on each side and located as far to the rear as practicable. Rear side marker lamps shall not be located less than fifteen inches above the road surface.

Reflectors

Front side reflectors

- Each bus shall be equipped with two reflectors, amber in color, mounted one on each side as far to the front as practicable. Front side reflectors shall not be located less than fifteen inches or more than sixty inches above the road surface.

Intermediate side reflectors

- Each bus, with an overall length greater than thirty feet, shall be equipped with two side reflectors, amber in color, mounted one on each side, at or near the

midpoint between the front and rear side reflectors. Intermediate side reflectors shall not be located less than fifteen inches or more than sixty inches above the road surface.

Rear side reflectors

- Each bus shall be equipped with two side reflectors, red in color, mounted one on each side and located as far to the rear as practicable. Rear side reflectors shall not be located less than fifteen inches or more than sixty inches above the road surface.

Rear reflectors

- Each bus shall be equipped with two reflectors, red in color, mounted one on each side of the vertical centerline as far apart as practicable. The rear reflectors shall be on the same level and located not less than fifteen inches or more than sixty inches above the road surface.

Tail lamps

Each bus shall be equipped with at least two tail lamps, red in color, mounted and equally distributed, on each side of the vertical centerline, at the rear of the bus.

The tail lamps shall be located as far apart as practicable and at the same level but not less than fifteen inches or more than seventy-two inches above the road surface.

Stop lamps

Each bus shall be equipped with at least two stop lamps, red in color, mounted and equally distributed, on each side of the vertical centerline, at the rear of the bus.

The stop lamps shall be located as far apart as practicable and at the same level but not less than fifteen inches or more than seventy-two inches above the road surface.

The stop lamps shall be actuated upon application of the bus service brakes.

License plate lamp

Each bus shall be equipped with at least one license plate lamp, white in color, located at

the rear license plate.

The license plate lamp shall illuminate the license plate.

The license plate lamp shall be illuminated when the bus headlamps are illuminated.

Back-up lamp

Each bus shall be equipped with at least one back-up lamp, white in color, located on the rear of the bus.

The back-up lamp shall operate when the bus is in reverse gear.

Marking of buses

Buses required to comply with the rules and regulations of the Federal Motor Carrier Administration or the Public Utilities Commission of Ohio shall display their company name on both sides of the bus:

In addition to the company name, intrastate motor carriers of passengers shall display, on both sides of the vehicle, the city and state in which the carrier maintains its principal place of business or in which the commercial motor vehicle is customarily based and the company's unique vehicle identification number;

In addition to the company name, interstate motor carriers of passengers shall display, on both sides of the bus, the motor carrier identification number issued by the Federal Motor Carrier Safety Administration, preceded by the letters "USDOT".

Mirrors

Rear View Mirrors

Every bus shall be equipped with two rear-vision mirrors, one at each side, firmly attached to the outside of the bus, free of cracks or discoloration and so located as to reflect to the driver a view of the highway to the rear, along both sides of the bus. All rear-vision mirrors must be easily adjustable and must be capable of holding, during normal operations, any adjustment.

All rear-vision mirrors and their replacements shall meet, as a minimum, the

requirements of Federal Motor Vehicle Safety Standard section 571.111. Mirrors installed on a bus manufactured prior to January 1, 1981, may be continued in service, provided that if the mirrors are replaced they shall be replaced with mirrors meeting, as a minimum, the requirements of Federal Motor Vehicle Safety Standard section 571.111.

Cross-Over Mirror

Shall be equipped with a seven-inch mirror to view the front area of the bus.

This mirror shall provide a clear view of the area directly in front of the bus.

Seat belt assemblies

Buses manufactured on or after January 1, 1965, shall be equipped with a lap belt or a lap and torso belt seat belt assembly for the driver and front seat passenger/s.

The seat belt assemblies shall be maintained as install at the time of original manufacturer.

Seats

Aisle seats are prohibited. No bus shall be equipped with aisle seats unless such seats are so designed and installed as to automatically fold and leave a clear aisle when they are unoccupied.

Every seat shall be securely fastened to the vehicle except this shall not apply to a custom-built bus with flooring and/or seating so designed and installed as to prevent to self-movement of the seating during normal operations of the bus.

Adjustable seats shall be movable throughout the entire range of their adjustment and shall lock in the desired position.

Seat cushions or backrests shall be present, in good condition, and securely attached.

Any kit designed to repair seats equal to or better than original equipment is acceptable. Tape shall not be used as a seat repair.

If seats were originally equipped with headrests, the headrests shall not be missing, damaged or not securely attached.

Driver's seat

Driver's seat shall be securely fastened to the vehicle.

If adjustable, the seat shall be movable throughout the entire range of its adjustment and shall lock in the desired position.

Spare fuses

Every bus shall have at least one spare fuse or other overload protective device, if the devices used are not of a reset type, for each kind and size used.

Speedometers

Every bus shall be equipped with a speedometer indicating vehicle speed in miles per hour.

Every speedometer shall be operative with reasonable accuracy.

Standee line or bar

Except as provided below, every bus which is designed and constructed with grab handles, straps, or bars so as to allow standees, shall be plainly marked with a line of contrasting color at least two inches wide or equipped with some other means so as to indicate to any person that he/she is prohibited from occupying a space forward of a perpendicular plane drawn through the rear of the driver's seat perpendicular to the longitudinal axis of the bus.

Every bus which is designed and constructed with grab handles, straps, or bars so as to allow standees, shall have clearly posted at or near the front, a sign with letters at least one-half inch high stating that it is a violation of the federal motor carrier safety regulations for a bus to be operated with persons occupying the prohibited area.

Exception:

- The requirements of a standee line or bar shall not apply to any level of the bus other than that level in which the driver is located.

- This section shall not prohibit any seated person from occupying permanent seats

located in the prohibited area provided such seats are so located that person sitting therein will not interfere with the driver's safe operation of the bus.

Steering systems

All bus steering system components shall be securely mounted, not leaking, not cracked or broken.

Steering system components shall not contain any welded repairs, modifications or other conditions that interfere with free movement of any steering component.

The steering wheel shall be securely attached and operate freely through the limit of travel in both directions.

The steering wheel shall not have any spokes cracked through or missing.

The steering column shall be securely fastened.

Steering column U-bolts or other positioning parts shall not be loose or missing.

The steering universal joints shall not be worn, faulty or obviously repaired by welding.

The steering gear box shall not have loose or missing mounting bolts or cracks in the gear box or mounting brackets.

The pitman arm on the steering gear output shaft shall not be loose on the steering gear output shaft.

Ball and socket joints

There shall not be any movement, under steering load, of a stud nut.

There shall not be any motion, other than rotational, between any linkage member and its attachment point of more than one-eighth inch measured with hand pressure only.

There shall not be loose or missing nuts on tie rods, pitman arm, drag link, steering arm, or tie rod arm.

Steering wheel lash shall not exceed the following parameters:

Steering wheel diameter	Manual steering system	Power steering system
16" or less	2"+	4 1/2"+
18"	2 1/4"+	4 3/4"+
20"	2 1/2"+	5 1/4"+
22"	2 3/4"+	5 3/4"+

Power steering systems:

All components of the power system shall be in operating condition;

No parts shall be loose, broken or missing;

Belts shall not be frayed, cracked or slipping;

Shall not leak; and

Shall have sufficient fluid in the reservoir.

Suspension systems

No axle positioning part shall be cracked, broken, loose or missing.

Axles shall be in proper alignment.

No leaf spring shall be cracked, broken, or missing or shifted out of position.

No coil spring shall be cracked or broken.

No torsion bar or torsion bar suspension shall be cracked or broken.

King Pin Inspection Converted School Buses Only

Eliminate all wheel bearing play by applying service brakes.

With front end lifted, grasp tire at top and bottom and attempt to move in and out to detect looseness. (A pry bar may be necessary).

Measure the movement at the top or bottom of the tire at the outer circumference.

Reject vehicle if movement is in excess of manufacturer's specifications (normally 1/4").

Air suspension

The air pressure regulator valve shall not allow air into the suspension system until at least 55 pounds per square inch (psi) is in the braking system.

The vehicle shall be level (not tilting to the left or right).

Air leakage shall not be greater than 3 psi in a five-minute time period when the vehicle's air pressure gauge shows normal operating pressure (between 90 and 100 psi).

Air suspension components shall be capable of maintaining air pressure.

Television receivers

Any bus equipped with a television viewer(s), screen(s) or other means of visually receiving a television broadcast or a video system capable of playing visual recordings shall:

- Have the viewer(s) or screen(s) located in the bus at a point to the rear of the back of the driver's seat if such viewer(s) or screen(s) are in the same compartment as the driver;
- Shall be so located as not to be visible to the driver, while he/she is driving the bus.
- This section does not apply to vehicular closed-circuit video systems designed and used for the safe operation of the bus.

Tires

Tires shall not have:

- Body ply or belt material exposed through the tread or sidewall;
- Any tread or sidewall separation;
- Be flat, under-inflated or have an audible leak;
- Any cut(s) to the extent that the ply or belt material is exposed; or
- The steering axle shall not be equipped with any tire that is regrooved, recapped or retreaded.

Steering axle tires shall have a tread depth of at least four thirty-seconds of an inch when measured at any major tread groove. Measurements shall not be made where tie bars, humps, or fillets are located.

Non-steering axle tires shall have a tread depth of at least two thirty-seconds of an inch when measured at any major tread groove. Measurements shall not be made where tie bars, humps, or fillets are located.

Wheels

Wheels or rims shall not:

Be cracked or broken;

Have stud or bolt holes elongated (out of round); or

Have missing or loose nuts or bolts.

Windshield wipers and Washers

Every bus shall be equipped with at least two automatically-operating windshield wiper blades, one on each side of the centerline of the windshield, for cleaning rain, snow, or other moisture from the windshield. Windshield wiper blades shall be in such condition

as to provide clear vision for the driver, unless one such blade is so arranged as to clean an area of the windshield extending to within one inch of the limit of vision through the windshield at each side.

Every bus manufactured after June 30, 1953, which depends upon vacuum to operate the windshield wipers, shall be so constructed that the operation of the wipers will not be materially impaired by change in the intake manifold pressure.

Every Bus manufactured after December 25, 1968, must have a windshield washing system.

Other

All other vehicle components not otherwise specifically mentioned in this rule shall:

Be in proper working condition; and

Not be loose, broken, missing or otherwise defective.

School Bus not used for school purpose

Any church bus that previously was registered as a school bus and is registered under section 4503.07 of the Revised Code may retain the paint color prescribed for school buses by section 4511.77 of the Revised Code if the bus complies with all of the following:

The words "school bus" required by section 4511.77 of the Revised Code are covered or obliterated and the bus is marked on the front and rear with the words "church bus" painted in black lettering not less than ten inches in height;

The automatically extended stop warning sign required by section 4511.75 of the Revised Code is removed and the word "stop" required by section 4511.77 of the Revised Code is covered or obliterated;

The flashing red and amber lights required by section 4511.771 of the Revised Code are covered or removed;

The inspection decal required by section 4511.761 of the Revised Code is covered or removed;

The identification number assigned under section 4511.764 of the Revised Code and marked in black lettering on the front and rear of the bus is covered or obliterated.

Additional Regulations

For additional information on rules and regulations regulating the operation of a church bus contact:

The Public Utilities Commission of Ohio

180 E. Broad Street

Columbus, Ohio 43215-3793

800 – 686- 7826

www.PUCO.ohio.gov

Reference manual:

Motor Carrier Safety Rules Handbook

Appendix A

AIR BRAKE SLACK ADJUSTMENT

SAFETY FIRST – Bus wheels shall be chocked.

Position yourself away from the brakes when the service brakes are applied. Brake chambers may explode, especially upon brake applications.

First, ensure that the air system is between 90 and 100 psi.

Measuring push rod travel is basically a four step process

(1) Note size and type of air chamber.

(2) With brakes released, service and emergency, mark push rods.

(3) Measure distance of push rod travel (stroke) with service brakes applied.

(4) Compare measurement to the table under air brakes.

Brake linings or pads.

(1) Linings may be checked through drum inspection slots.

(2) Lining or pad should be firmly attached to the shoe.

(3) Not saturated with oil, grease, or brake fluid.

(4) Minimum lining thickness:

(5) Non-steering axle.

(a) Drum - 1/4 inch

(b) Disc - 1/8 inch

(6) Steering axle

(a) Drum - 3/16 inch

(b) Disc - 1/8 inch

(7) Type “A” bus under 10,000 GVWR.

(a) Drum - 2/32 inch

(b) Disc - 2/32 inch

Brake drums or rotors.

(1) Any external cracks that open when brakes are applied (Do not confuse short hairline internal check cracks with flexural cracks).

(2) Any portion of the drum or rotor missing or in danger of falling away.

Appendix B

Emergency Exit Inspection Procedures

Emergency Exits on Church Buses

APPICABILITY

These standards for emergency exits apply to church buses and not to buses used only to transport students to and from school (school buses). The applicability of these standards depends on the USE of the bus and not how it is designed or marked. If vehicles originally manufactured as school buses are utilized in private or for-hire interstate commerce (and thus subject to the FMCSRs), they must have the required exits, even if that requires retrofitting the vehicle.

Marking of Emergency Exits

All emergency exits Must be marked with:

1. Clearly legible signs indicating exit and method of open.

2. The words emergency door and emergency exit in letters at least 1 inch high.

Emergency Exit Formula

Title 49 CFR 393.61 establishes the emergency exit requirements for buses subject to the FMCSR (Federal Motor Carrier Safety Regulations). Ohio Church Buses are subject to FMCSR.

Pre-1973:

Buses manufactured before September 1, 1973, must either comply with the post 1973 standards below or have the following:

- Unobstructed emergency openings through a window must total in square inches at least 67 times the number of designated seating positions including the driver (This total does not include any doors); and

- At least 40% of these openings must be on each side of the bus; and

- Each exit must be at least a 13 inch by 17 ¾ inch rectangle or an 18 inch by 13 inch ellipse; and

- Glazing in each window must be laminated safety glass or in a push out window.

Post- 1973:

Church buses manufactured after September 1, 1973, must comply with either "Method 1" or "Method 2" for calculation of emergency exits.

"Method 1"

Federal Motor Vehicle Safety Standard 571.217 for other-than-school buses.

- Unobstructed emergency openings must total in square inches at least 67 times the number of designated seating positions on the bus;

- At least 40% of these openings must be on each side of the bus:

- No one emergency exit can account for more than 536 square inches of the total exit space;

- These must be side exits and one rear exit (door, roof, or window); and

- Emergency windows shall have latches and be of the size as designated in Federal Motor Vehicle Safety Standards 571.217.

A "Method 1" worksheet on next page.

An example in completing the worksheet is provided on page after worksheet.

Method 1" Worksheet for determining compliance with the bus exit space requirements (for buses manufactured after 09/01/73)

I. Calculate total emergency exit space required:

A. Number of mfg. designated seating positions, including the driver _____

B. Multiply by 67 sq in per seat. X 67 sq in.

C. Equals total emergency exit space required. = _____sq in.

II. Calculate minimum 40% required for each side:

A. Total exit space required (from line IC) _____

B. Multiply by 40% X .4

C. Equals exit space required on EACH SIDE of bus =_____sq in.

III. Calculate existing exit space on bus:

A. Left Side

_____ Doors x 536 sq in for each side. _____ sq in.

+ _____ exit windows x * (Max 536) for each + _____ sq in.

**left subtotal =_____ sq in.

B. Right Side:

One front entry door 536 sq in.

+ _____ exit windows x * _____ (Max 536) for each +_____sq in.

**right subtotal = _____sq in.

C. Rear/Roof exits:

Rear exit door/window (if any, enter 536) _____sq in.

_____ roof hatches x *_____ (Max 536) for each _____sq in.

Rear/roof total subtotal = _____sq in.

D. TOTAL EXIT SPACE PROVIDED (Add three subtotals) = _____sq in.

III D must be equal to or greater than IC

*Enter actual size of unobstructed exit when fully opened, maximum 536.

**Must be greater or equal to line IIC

Method 1 Worksheet

Method 1" Worksheet for determining compliance with the bus exit space requirements (for buses manufactured after 09/01/73)

I. Calculate total emergency exit space required:

A. Number of mfg. designated seating positions, including the driver 66

B. Multiply by 67 sq in per seat X 67 sq in.

C. Equals total emergency exit space required = 4422 sq in.

II. Calculate minimum 40% required for each side:

A. Total exit space required (from line IC) 4422 sq in.

B. Multiply by 40% X .4

C. Equals exit space required on EACH SIDE of bus = 1769 sq in.

III. Calculate existing exit space on bus:

A. Left Side:

0 Doors x 536 sq in for each 0 sq in.

+ 4 exit windows x * 463 (Max 536) for each + 1852 sq in.

**left subtotal = 1852 sq in.

B. Right Side:

One front entry door 536 sq in.

+ 4 exit windows x * 463 (Max 536) for each + 1852 sq in.

**right total = 2388 sq in.

C. Rear/Roof exits:

Rear exit door/window (if any, enter 536) 536 sq in.

+ 0 roof hatches x *_____(Max 536) for each + 0 sq in.

Rear/roof total subtotal = 536 sq in.

D. TOTAL EXIT SPACE PROVIDED (Add three subtotals) = 4776 sq in.

This bus is in compliance

III D must be equal to or greater than IC

*Enter actual size of unobstructed exit when fully opened, maximum 536.

**Must be greater or equal to line IIC

Example of Method 1

Method 2 uses the Federal Motor Vehicle Safety Standard 571.217 for school bus emergency exit requirements.

These sections require utilization of either of the following options:

Option A – Vehicle manufactured as a school bus with a rear emergency door: One rear emergency door, opening outward and hinged on the rights side, plus any additional exits required by Table 1 below.

Table 1

Seating Capacity	Additional Exits Required
1 – 45	None
46-62	1 left exit door or 2 exit windows**
63-70	1 left exit door or 2 exit windows** and 1 roof exit
71 and above	1 left exit door or 2 exit windows** and 1 roof exit and any combination or door***, roof, or windows such that the total capacity credit**** plus 70 is greater that the seating capacity of the bus.

- The manufacturer's seating capacity for a vehicle originally built as a school bus may be reduced by 1/3 when used as a church bus.

** When emergency windows are used, there must be an even number of them, not counting the rear window, and they must be evenly distributed on both sides. They must have proper releases and dimensions, and must be push out or vertical sliding. (If the church bus is dually registered as a school bus, vertical sliding emergency windows are not allowed on an Ohio school bus.)

*** The first side emergency door per Table 1 shall be located near the left-middle of the bus. A second emergency exit door per Table 1 shall be located on the right side. If three emergency exit doors are installed per Table 1, the third shall be on the left side.

**** Capacity credits: Side door 16; Window 8; roof Exit 8

Option B – Vehicle manufactured as a school bus with left side emergency door and rear push-out window: One emergency door on the left side, opening out and hinged on forward side, plus a push-out rear window, plus any additional exits required by Table 2 below.

Table 2

Seating Capacity	Additional Exits Required
1-57	None
58-74	1 right exit door or 2 exit windows**
75-82	1 right exit door or 2 exit windows** and 1 roof exit
83 and above	1 right exit door or 2 exit windows** and 1 roof exit, and any combinations of door***, roof, or windows such that the total capacity credit**** plus 82 is greater than the seating capacity of the bus.

- The manufacturer's seating capacity for a vehicle originally built as a school bus may be reduced by 1/3 when used as a church bus.

** When emergency windows are used, there must be an even number of them, not counting the rear window, and they must be evenly distributed on both sides. They must have proper releases and dimensions, and must be push out or vertical sliding (If the church bus is dually registered as a school bus, vertical sliding emergency windows are not allowed on an Ohio school bus.)

*** If three emergency exit doors are installed per Table 2, the third shall be on the left side.

**** Capacity credits: Side door 16; Window 8; roof Exit 8