



# OHIO SCHOOL BUS INSPECTION MANUAL

## 2016



OHIO STATE HIGHWAY PATROL  
Licensing and Commercial Standards

[statepatrol.ohio.gov](http://statepatrol.ohio.gov)

**Revision Date: August/2016**

**ATTENTION SCHOOL ADMINISTRATORS:**  
This is a reference manual for your transportation personnel.

# CONTENTS

FOREWORD .....	6
SECTION A: ADMINISTRATIVE PROCEDURES.....	7
PROCEDURE FOR OBTAINING IDENTIFICATION NUMBERS .....	7
OBTAINING REGISTRATION AND IDENTIFICATION NUMBER .....	7
School Bus Registrations and Identification Number.....	7
CANCELLATION OF IDENTIFICATION NUMBER.....	8
PREPARING THE SCHOOL BUS FOR SALE/TRADE .....	8
DEFINITION OF A SCHOOL BUS.....	8
SCHOOL BUS TYPES .....	8
CHANGES IN SCHOOL BUS DESIGN OR EQUIPMENT .....	9
ANNUAL INSPECTION SCHEDULE AND BUS PREPARATION.....	9
INSPECTION PROCEDURE .....	10
Communication.....	10
Safety.....	10
DECAL VALIDATION AND PLACEMENT .....	11
OUT-OF-SERVICE NOTIFICATION.....	11
SPOT INSPECTIONS.....	11
CRASH INSPECTIONS.....	11
OTHER USES OF SCHOOL BUSES.....	11
SECTION B: SCHOOL BUS INSPECTION PROCEDURES .....	12
EXTERIOR.....	12
Bumpers and Attachments.....	12
School Bus Markings .....	12
Reflectorized Material .....	14
Emergency Door .....	14
Emergency Exit Window .....	15
Emergency Roof Exit.....	15
Body Sheet Metal and Paint .....	18
Glass and Mounting.....	18
Directional Signals.....	19

Back-up Lamps.....	19
Backing Warning Systems.....	20
Stop and Tail Lamps.....	20
Flashing Warning Signal Lamps (Student Pick-up Lamps).....	20
Clearance, Marker, Identification Lamps.....	21
White Strobe Light (Optional).....	21
Reflectors.....	21
Headlamp Assembly.....	21
<b>INTERIOR.....</b>	<b>22</b>
Service Door Assembly/Entrance/Handrails.....	22
Driver's Seat.....	22
Steering System.....	23
Clutch Operation.....	24
Instruments and Switches.....	24
Horns.....	25
Windshield Wipers/Washers.....	25
Defroster and Auxiliary Fans.....	25
Heaters.....	25
Mirrors.....	25
Sun Visor.....	26
Emergency Equipment.....	26
First Aid Kit.....	26
Cleanliness.....	27
Floor and Floor Covering.....	27
Ceiling.....	28
Seats.....	28
Emergency Exits.....	29
<b>ENGINE COMPARTMENT.....</b>	<b>31</b>
Hood Assemblies.....	31
Firewall.....	31
Engine/Drive Train Components.....	31
Fuel System.....	33

UNDERCARRIAGE/BRAKE .....	33
Frame.....	33
Batteries.....	33
Front Axle Assembly.....	34
Shock Absorbers (front and rear).....	35
Rear Axle Assembly / Differential .....	35
Springs, Torsion Bars and Torque Rods .....	36
Air Suspension.....	36
Brakes (Must comply with FMVSS 571.105 or 571.121.) .....	37
Exhaust System.....	42
Fuel Tank and Shield .....	43
Tires, Rims and Wheels.....	43
Body and Mounting Pads.....	44
Drive-line, Universal Joints .....	45
SCHOOL BUSES USED TO TRANSPORT SPECIAL-NEED PUPILS .....	45
Aisles.....	45
Fastening Devices .....	45
Heaters.....	45
Identification .....	45
Occupant Restraint – Wheelchairs.....	45
Power Lift.....	46
Regular Service Entrance.....	47
Seating Arrangements .....	47
Special Light.....	47
Special Service Entrance .....	47
Special Service Entrance Doors .....	47
Other.....	47
PROPANE FUEL SYSTEM .....	48
General .....	48
Tanks .....	48
Fuel Lines .....	49
Fueling Compartment .....	49

Relief Valve .....	49
Automatic Shut Off .....	49
Decals Stating "Powered by Propane" .....	49
Other.....	50
COMPRESSED NATURAL GAS (CNG).....	50
General .....	50
Fuel Cylinders.....	50
Fuel Lines .....	50
Decals .....	51
Manual Shut-Off Valve .....	51
Automatic Shut-Off.....	51
HYBRID.....	51
General .....	51
SCHOOL BUS INSPECTION REPORT (HP 32).....	52
Purpose .....	52
Use .....	52
The Form.....	52
Type of Inspection .....	53
School Bus Rating System.....	53
AIR BRAKE SYSTEMS CHECKS .....	54
Air Brake Supply Line/ Check and Inversion Valve Test Procedure .....	54
ABS SYSTEM TEST .....	55
AIR BRAKE SLACK ADJUSTMENT .....	55
DOCUMENT REVIEW.....	58

# FOREWORD

This Ohio School Bus Inspection Manual is developed to serve as a guide for inspectors, mechanics, and other persons responsible for ensuring the safe transportation of Ohio's school children and persons attending programs offered by community boards of mental health and county boards of developmental disabilities.

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. Inspection personnel should refer to the applicable Ohio School Bus Construction Standards, individual manufacturer's specifications, or appropriate service manuals for specific component information.

**All school buses are to be maintained without any defects. This is not only at inspections, but at any time school buses are used for pupil transportation. The school or company administrator is responsible for the school bus to be prepared and ready for the annual inspection as outlined in this manual.**

The following information may be found at [statepatrol.ohio.gov](http://statepatrol.ohio.gov) by clicking on Publications:

- The current Ohio School Bus Inspection Manual
- The Ohio School Bus Construction Standards

**Buses requiring a new bus inspection must meet the Ohio School Bus Construction Standards that apply to the bid purchase date or, if unknown, manufacture date of the bus.**

**All repairs must meet or exceed manufacturer specifications.**

## SECTION A: ADMINISTRATIVE PROCEDURES

### PROCEDURE FOR OBTAINING IDENTIFICATION NUMBERS

All buses must first pass inspection by the State Highway Patrol before the school bus is used for pupil transportation. Inspections will not be conducted at dealerships. Inspectors shall not inspect a bus until titled in the name of the private pupil Transportation Company or school. In-transit/dealer plates or temporary tags shall not be used to transport students.

**School Bus Owners:** When a school bus is newly acquired and ready to be inspected, contact your local Motor Vehicle Inspector for an inspection date. Assure the title is in the owner's name. It is the responsibility of the owner to assure their bus meets all the Ohio School Bus Construction Standards. The title and school bus will be presented to the inspector during the inspection. When the bus successfully passes the inspection and with current inspection decals affixed to the bus, the bus may be operated for 30 days. During the 30-day period, the bus may be operated without an ID number. A copy of the school bus inspection (HP-32) shall be carried on the bus until the ID number is issued. The school/company does not forward the new school bus addendum (Hp-32C) to the Office of Licensing and Commercial Standards (LCS).

### OBTAINING REGISTRATION AND IDENTIFICATION NUMBER

#### School Bus Registrations and Identification Number

School bus registrations are issued by the Ohio Bureau of Motor Vehicles. After a bus successfully passes a new inspection, the original HP-32C (School Bus Addendum) form shall be forwarded to the Ohio Bureau of Motor Vehicles (BMV) by mail or fax. The BMV will assign an identification number along with the registration. This is then returned to the owner of the bus and the assigned identification number will be affixed to the bus in compliance with the applicable School Bus Construction Standard for the appropriate year of the bus. The owner of the bus will receive a copy of the HP-32C form with the assigned identification number, handwritten, in the space provided along with the paper registration.

The Ohio State Highway Patrol form HP-32C shall be forwarded to the following address by mail or fax:

OHIO BUREAU OF MOTOR VEHICLES SPECIAL PLATES UNIT  
PO BOX 16521  
COLUMBUS, OHIO 43216  
Phone: (614) 752-7518 | Fax: (614) 995-4739

**Please allow 10 business days excluding mail time for processing.**

The bus identification number will be recorded on the top of the submitted school bus addendum form and returned to the school by mail or fax. This number shall then be displayed on the bus as required by Ohio School Construction Standards and Ohio Revised Code.

## CANCELLATION OF IDENTIFICATION NUMBER

- When a school bus is sold or removed from service, the following procedure is to be followed:
- Complete the Request for Cancellation of School Bus Identification Numbers form (BMV 4175) and mail to the Ohio Bureau of Motor Vehicles, Vehicle Information Services/Special Plates Unit, PO Box 16521, Columbus Ohio 43216-6521.
- The BMV 4175 May be obtained at the Ohio Bureau of Motor Vehicles website.

## PREPARING THE SCHOOL BUS FOR SALE/TRADE

- Remove the assigned identification numbers from front and rear of bus.
- Remove the owners name from both sides of bus.
- Remove inspection decals from both sides of bus.
- Remove the 8-way lights and stop arm if the bus will no longer be used as a school bus.

## DEFINITION OF A SCHOOL BUS

### Section 4511.01 (F) of the Ohio Revised Code

"School bus" means every bus designed for carrying more than nine passengers that is owned by a public, private, or governmental agency or institution of learning and operated for the transportation of children to or from a school session or a school function, or owned by a private person and operated for compensation for the transportation of children to or from a school session or a school function, provided "school bus" does not include a bus operated by a municipally owned transportation system, a mass transit company operating exclusively within the territorial limits of a municipal corporation, or within such limits and the territorial limits of municipal corporations immediately contiguous to such municipal corporation, nor a common passenger carrier certified by the public utilities commission unless such bus is devoted exclusively to the transportation of children to and from a school session or a school function, and "school bus" does not include a van or bus used by a licensed child day-care center or type A family day-care home to transport children from the child day-care center or type A family day-care home to a school if the van or bus does not have more than fifteen children in the van or bus at any time.

## SCHOOL BUS TYPES

**TYPE A SCHOOL BUS** is a conversion bus constructed utilizing a cutaway front- section vehicle with a left side driver's door. This definition shall include two classifications: Type A-I, with a Gross Vehicle Weight Rating (GVWR) of 14,500 pounds or less; and Type A-II, with a GVWR of 14,501 pounds or more.

**TYPE B SCHOOL BUS** is constructed utilizing a stripped chassis, with GVWR of more than 10,000 pounds, designed for carrying more than ten persons. Part of the engine is beneath and/or behind the windshield and beside the driver's seat. The entrance door is behind the front wheels.



**TYPE C SCHOOL BUS** is a body installed upon a flat-back cowl chassis with a GVWR of more than 10,000 pounds, designed for carrying more than ten persons. The entire engine is in front of the windshield and the entrance door is behind the front wheels. Type C school buses are referred to as “conventional” buses.

**TYPE D SCHOOL BUS** is a body installed upon a chassis, with the engine mounted in the front, mid ship, or rear, with a GVWR of more than 10,000 pounds, designed for carrying more than ten persons. The engine may be behind the windshield and beside the driver’s seat; it may be at the rear of the bus, behind the rear wheels; or mid ship between the front and rear axles. The entrance door is ahead of the front wheels. Type D school buses are referred to as “transit style” RE: for “rear-engine”, or FC for “forward control”.

### CHANGES IN SCHOOL BUS DESIGN OR EQUIPMENT

Any changes in design, equipment or additional equipment on a school bus by a school and/or company after receipt of the school bus must have prior approval in writing from the Director, Department of Public Safety, Division of Highway Patrol, Licensing and Commercial Standards section, 1970 W. Broad Street, 4th floor, Columbus, Ohio 43223. Schools and/or companies shall be responsible for any unauthorized items on the school bus.

### ANNUAL INSPECTION SCHEDULE AND BUS PREPARATION

It is requested that mechanics be present so that minor defects may be corrected at the time of inspection. This may eliminate re-inspection at a later date. Repairs made during the inspection process will not be carried as a re-inspection.

Before school buses are presented for inspection, the following procedures must be followed. If not, the school bus will not be inspected at the scheduled date and location.

*DURING ANNUAL AND NEW INSPECTIONS, ANY OUT-OF-SERVICE DEFECT/VIOLATION WILL PROHIBIT THE ISSUANCE OF THE SAFETY DECAL.*

**All administrators are responsible for having buses ready for inspection.**

- Interior and exterior of the bus including undercarriage must be dry and clean with all inspection decals removed (do not clean immediately before inspection).
- Exterior of the engine must be clean.
- All components on the bus must be in working condition. Optional equipment, when installed, must work.
- Letter of approval for any equipment not permitted by construction standards or not on the approved option list must be presented to the inspecting officer.
- The Vehicle Identification Number of each vehicle shall appear clearly and indelibly upon either a part of the vehicle, other than the glazing, that is not designed to be removed except for repair or upon a separate plate or label that is permanently affixed to such a part.

- Each school bus shall be in compliance with this inspection manual, Ohio School Bus Construction Standards and Ohio Revised Code sections 4511.76 and 4513.02. All school buses shall meet all applicable State and Federal safety standards. Any defect/violation must be repaired prior to the issuance of an inspection decal. All defects/violations will be recorded at the time of inspection regardless if the defect/violation is repaired during the inspection.

**Non-OOS violations that are unable to be corrected immediately shall be repaired within fifteen (15) business days. School buses with un-corrected minor violations older than fifteen (15) business days shall be placed out of service. Upon completion of the repair of all non-OOS violations, a copy of the summary report shall be signed and dated by a designee of the bus facility. This signature shall signify that the repairs have been made. A copy of this summary report will then be faxed or e-mailed to the applicable local district LCS office.**

Any school bus owned by the school/company and still registered through the school bus program shall receive an inspection during the annual inspection. If a school bus is not presented for an annual inspection, the school bus will be entered as if the annual inspection was completed but documented as “not presented for inspection”.

## INSPECTION PROCEDURE

A logical inspection sequence must be used to inspect a bus with a minimum amount of lost time and steps. The inspector should check all components in one location before moving to the next to reduce retracing steps. It is imperative that all buses be inspected using the same criteria. A uniform inspection process should be developed and followed so that defects/violations can be readily identified. The same sequence should be followed to ensure an accurate and thorough inspection report.

### Communication

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Prior to beginning an inspection the inspector shall discuss with the facility personnel the method that will be employed to conduct the inspections. Topics should include what the inspector requires the operator of the bus to do and what hand or verbal commands will be given. It shall also be stressed that NO bus control be operated without first being requested to do so by the inspector. Any other topics that will contribute to the inspection and the safety of the inspector should be addressed.

### Safety

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Immediately after the bus is presented and before any portion of the inspection is performed, the rear wheels shall be chocked. Chocks shall be used in front of and to the rear of either side rear wheel assembly. The inspector shall not be under the bus while the engine is running. The only exception to this is if the inspector needs to check the exhaust system for leaks. Prior to the engine being started, the inspector will position himself/herself from under the bus and only go back under the bus after advising the operator of the bus of their intentions. After the exhaust system is checked, the inspection will continue only after the engine is turned off. Safety glasses and mechanics type gloves should be worn by the inspector to aid in the prevention of injuries during the inspection process.

## DECAL VALIDATION AND PLACEMENT

Decals are to be placed only on school buses that pass the annual inspection. The inspector will validate the decals by stamping out the month in which the annual inspection is conducted. One validation decal is to be placed on each side of the bus attached at the height of the owner name rail. Right side – in the area of the service door. Left side – as near as possible to the driver’s window but not to be placed on a removable panel. Decals are not transferable and will be removed when the school bus changes ownership. All school buses shall meet all applicable State and Federal safety standards prior to receiving an inspection decal. Decals are valid until the next scheduled annual inspection unless the bus fails a spot or special inspection.

## OUT-OF-SERVICE NOTIFICATION

School buses placed out of service may have an out-of-service decal affixed to the bus as an option to removing the inspection decal. The bus shall not be used for pupil transportation until the violations have been corrected. Upon the completion of the repairs, the out of service decal may be removed by the school. The decal will be attached to the summary report and presented to the Inspector at the next inspection.

## SPOT INSPECTIONS

A minimum of one spot inspection shall be conducted on each bus during the school year. The same procedure shall be used regarding the completion of the HP-32 as with the annual inspection.

## CRASH INSPECTIONS

All school buses involved in a crash shall be inspected as soon as possible. All school buses involved in any crash should be reported to the local Ohio State Highway Patrol inspection team or local OSHP LCS district office within two business days. If the crash results in disabling damage to the school bus, the inspection decals will be removed and the bus will require a re-inspection upon the completion of all repairs.

## OTHER USES OF SCHOOL BUSES

In July 1991, the Ohio Attorney General issued an opinion that privately owned school buses may be used for other purposes when not being used to transport students. Some examples are: hauling Christmas trees, transporting adults for hire, or leasing the bus for a special event, such as sports. However, when the school bus is being used for other purposes, it must abide by all regulations pertaining to that use. As an example, if the bus is going to be used to transport adults for hire, it would be required to be registered as a commercial motor vehicle and follow all applicable Federal and State Commercial Motor Vehicle Regulations. Use of the eight-way flashing lights is not permitted when the vehicle is not being used as a school bus.

If a school bus is operating under regulation by the Public Utilities Commission of Ohio (P.U.C.O.), the operation must comply with the applicable rules and regulations of the P.U.C.O. If involved in interstate operations, the operation must comply with all applicable rules and regulations of the Federal Motor Carrier Safety Administration.

## SECTION B: SCHOOL BUS INSPECTION PROCEDURES

### EXTERIOR

#### Bumpers and Attachments

- Shall be painted black. Bumper shall not be rusted, cut, broken or have protruding metal. Bumper shall not be altered. Shall be securely mounted.
- Buses manufactured after 07/01/1988 will have a front bumper at least three-sixteenths of an inch pressed steel, channel one-piece construction, and a minimum of eight inches in width after forming. Type A exemption, factory standard. (Applicable construction standards)
- Mud flaps must be installed that meet the appropriate construction standards.

#### Out-of-Service Violations

- **Missing or not securely mounted.**
- **Broken or protruding metal.**

#### School Bus Markings

*(See School Bus Inspection Manual Supplement)*

#### Identification Numbers

- Numbers shall be lettered with black paint or pre-cut decals.
- All numbers shall be not less than six inches high and each stroke shall be not less than 9/16 inches in width.
- Number on the front of the bus shall be displayed on the center of the bumper. If the bumper is manufactured with holes in the center for tow hooks, the I.D. number may be placed on the driver's side of the bumper. Black numbers shall be on a white or proper reflective background as construction standards dictate for the year of bus. If bumper is less than six inches in height or designed so numbers will not be legible, a plate may be permanently attached to the bumper.
- Number on the rear shall be on the body near the left tail light.
- As of 09/01/1998, the ID numbers must be placed on a reflective background.

#### School Bus

- "SCHOOL BUS" shall not be less than eight inches (8") high, located above windshield and above rear emergency door or exit (Section 4511.77 of the Ohio Revised Code).
- "SCHOOL BUS" must be placed on a reflective background after 12/01/2009.



### Stop

- "STOP" shall not be less than ten inches (10) high, centered on rear of bus or rear emergency door (Section 4511.77 of the Ohio Revised Code).

### Emergency Door

- Markings to indicate emergency doors shall appear outside and inside designated opening in letters two inches (2") high. The inside marking shall be on the frame or directly above the door or on the top edge of the window glass. The outside marking shall be at one of the following locations:
  - Top of the door.
  - Directly above the door.
  - Top edge of door glass.
  - Centered on the metal portion of the door directly above the required STOP.
  - Only allowed if markings maintain their required size for both STOP and emergency door.
  - Emergency exit shall be used on rear emergency window required for rear engine school buses and be displayed at the top of or above the emergency window exit.



### Ownership Markings

- School district/company or school at least five inches in height. The lettering shall be block lettering with a 9/16 inch brush stroke.
- When required, county of operation at least three inches in height. The lettering shall be block lettering with a 9/16 inch brush stroke.
- Ownership of vehicle, two inches at service door. (Optional)
- District assigned bus numbers shall be approximately five inches (5") in height and placed:
  - On body near the entrance door;
  - On body near the right lower tail light;
  - On left side in area of driver's window;
  - On the front area visible from the front of the bus.
- Route number bracket and inserts may be mounted on entrance side of bus, but will not be mounted or displayed in any window.
- School Safety Zone Decal shall be displayed to the left of the service door just above the seat level rub rail. Shall be placed as close as possible to the service door as the bus design will allow.
- No other markings, lettering, symbols, bumper stickers, window decals or decorations are authorized on or in the school bus except the School Safety Zone decal and authorized optional decals and lettering. (School bus company logo on mud flaps permitted, no advertisement.)

**Out-of-Service Violations**

- "SCHOOL BUS" lettering front or rear not in compliance.
- "STOP" lettering (rear door) not in compliance.
- Required reflective markings on the rear of the bus missing.
- Extended STOP sign improperly marked or faded (As outlined in the Construction Standards).
- Rear or side emergency door not marked.
- Emergency window not marked.

**Reflectorized Material**

- All reflective material must not be faded, peeling, cracking, separating and/or lifting.
- Reflective tape must be installed along the sides of the bus at the floor line. The marking is required on buses bid or manufactured on or after December 1, 2008

**Out-of-Service Violations**

- Cracked, peeled or faded material.

**Emergency Door**

*(See School Bus Inspection Manual Supplement)*

- Shall open to minimum width (90 degrees) without catching or binding.
- A device which produces a continuous warning sound shall be installed in the driver's compartment and at the emergency door on all buses and be activated after the door or handle is slightly moved. Buses bid after 09/01/1998 require the dome lights to activate with the warning sound on emergency door.
- Rubber seals or gasket required around doors shall be in good condition.
- No item such as brooms, shovels, etc., shall be permitted in the emergency opening.
- Door stop (strap) shall be in good condition. (Buses manufactured before 05/02/1994)
- Emergency doors shall have a positive door opening device to hold door in the open position. (On buses manufactured on or after 05/02/1994).
- The door shall be outlined with reflective material as required by FMVSS 571.217 (On buses manufactured on or after 05/02/1994). Shall be yellow in color.

**Out-of-Service Violations**

- Door or positive locking device inoperable.
- Unable to be opened completely.
- Obstructions reducing size of opening (FMVSS standard).
- Not marked inside and outside (Includes reflective markings if required).
- Locking devices except approved systems that also prevent the engine from starting.
- Any continuous audible warning device inoperative.
- Rubber seal not sealed from water and air infiltration.
- Missing or illegible instructions.

## Emergency Exit Window

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- Emergency window shall bear words "EMERGENCY EXIT" in letters at least two inches high inside the window and in a color contrasting the background. (Applies to buses bid after 01/01/1990).
- Emergency exit windows shall have reflective outlining on the exterior as required by FMVSS 571.217 (On buses manufactured on or after 05/02/1994). Shall be yellow in color
- No item such as brooms, shovels, etc., shall be permitted in the emergency window opening.

### Out-of-Service Violations

- Inoperative.
- Unable to be opened completely.
- Any continuous warning devices in excess of 25% of the windows inoperative.
- Not marked inside and out (Includes reflective markings if required).
- ANY window missing operating instructions (Instructions must be clearly visible and the wording must be present in its entirety).
- Obstructions reducing size of opening (Seat backs excluded if opening meets FMVSS standards and School Bus Construction Standards).

## Emergency Roof Exit

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- Emergency roof exits shall have reflective outlining as required by FMVSS 571.217 (On buses manufactured on or after 05/02/1994). May be white/silver, red or yellow in color.

### Out-of-Service Violations

- Inoperative.
- Unable to be opened completely.
- Any continuous warning device inoperative.
- Improperly marked or not marked inside and out (Includes reflective markings if required).
- Missing operating instructions.
- Obstructions reducing size of opening.

### EXCERPT: Emergency Exit Requirements and Federal Motor Vehicle Safety Standard 571.217

All school buses bid or if not bid, manufactured after December 1, 2008 shall be equipped with:

- Seating Capacity from 1 to 45 – one roof exit
- Seating Capacity from 46 and above – two roof exits
- In addition to the above required roof exits, shall meet Federal Motor Vehicle Safety Standards for emergency exits as noted below.

**S5.2.3 School buses.** Except as provided in S5.2.3.4, each school bus shall comply with S5.2.3.1 through S5.2.3.3.

**S5.2.3.1.** Each school bus shall be equipped with the exits specified in either S5.2.3.1 (a) or S5.2.3.1 (b), chosen at the option of the manufacturer.



- (a) One rear emergency door that opens outward and is hinged on the right side (either side in the case of a bus with a GVWR of 10,000 pounds or less), and the additional exits, if any, specified by Table 1.
- (b) One emergency door on the vehicle's left side that is hinged on its forward side and meets the requirements of S5.2.3.2 (a), and a push-out rear window that provides a minimum opening clearance 41 centimeters high and 122 centimeters wide and meets the requirements of S5.2.3.2 (c), and the additional exits, if any, specified by Table 2.

**TABLE 1**

Seating Capacity	Additional Exits Required*
<b>1-45</b>	None.
<b>46-62</b>	1 left side exit door or 2 windows.
<b>63-70</b>	1 left side exit door or 2 windows, and 1 roof exit.
<b>71 and above.</b>	1 left side exit door or 2 exit windows, and 1 roof exit, and any combination of door, roof, or window such that the total capacity credit specified in Table 3 for these exits, plus 70, is greater than the seating capacity of the bus.

\*Side emergency exit doors must meet the requirements of S5.2.3.2 (a), emergency roof exits must meet the requirements of .2.3.2(b), emergency window exits must meet the requirements of S5.2.3.2(c).

**TABLE 2**

Seating Capacity	Additional Exits Required*
<b>1-57</b>	None.
<b>58-74</b>	1 right side exit door or 2 windows.
<b>75-82</b>	1 right side exit door or 2 windows, and 1 roof exit.
<b>83 and above.</b>	1 right side exit door or 2 windows, and 1 roof exit, and any combination of door, roof, or windows such that the total capacity credit specified in Table 3 for these exits plus 82 is greater than the capacity of the bus.

\*Side emergency exit doors must meet the requirements of S5.2.3.2 (a), emergency roof exits must meet the requirements of S5.2.3.2 (b), emergency window exits must meet the requirements of S5.2.3.2(c).

**TABLE 3**

Exit Type	Capacity Credit
<b>Side Door</b>	16
<b>Window</b>	8
<b>Roof Exit</b>	8

- (c) The area of an opening equipped with a wheelchair lift may be credited toward the required additional exits if it meets the requirements of paragraphs (a) or (b) of S5.2.3.1 and if the lift folds or stows in such a manner that the area is available for use by persons not needing the lift. With the lift in the folded or stowed position, such opening is considered a side emergency exit door.



**S5.2.3.2** All emergency exits required by S5.2.3.1 (a) and S5.2.3.1 (b) shall meet the following criteria:

- (a) Side emergency exit doors.
  - (1) Each side emergency exit door shall be hinged on its forward side.
  - (2) The first side emergency exit door installed pursuant to Table 1 shall be located on the left side of the bus and as near as practicable to the mid-point of the passenger compartment. A second side emergency exit door installed pursuant to Table 1 shall be located on the right side of the bus. In the case of a bus equipped with three side emergency door exits pursuant to Table 1, the third shall be located on the left side of the bus.
  - (3) The first side emergency exit door installed pursuant to Table 2 shall be located on the right side of the bus. A second side emergency door exit installed pursuant to Table 2 shall be located on the left side of the bus. In the case of a bus equipped with three side emergency door exits pursuant to Table 2, the third shall be located on the right side of the bus.
  - (4) No two side emergency exit doors shall be located, in whole or in part, within the same post and roof bow panel space.
- (b) Emergency roof exit.
  - (1) Each emergency roof exit shall be hinged on its forward side, and shall be operable from both inside and outside the vehicle.
  - (2) In a bus equipped with a single emergency roof exit, the exit shall be located as near as practicable to the midpoint of the passenger compartment.
  - (3) In a bus equipped with two emergency roof exits, one shall be located as near as practicable to a point equidistant between the midpoint of the passenger compartment and the foremost limit of the passenger compartment and the other shall be located as near as practicable to a point equidistant between the midpoint of the passenger compartment and the rearmost point of the passenger compartment.
  - (4) In a bus equipped with three or more emergency roof exits, the roof exits shall be installed so that, to the extent practicable, the longitudinal distance between each pair of adjacent roof exits is the same and equal to the distance from the foremost point of the passenger compartment to the foremost roof exit and to the distance from the rearmost point of that compartment to the rearmost roof exit.
  - (5) Except as provided in paragraph (b) (6) of this section, each emergency roof exit shall be installed with its longitudinal centerline coinciding with a longitudinal vertical plane passing through the longitudinal centerline of the school bus.
  - (6) In a bus equipped with two or more emergency roof exits, for each roof exit offset from the longitudinal vertical plane specified in paragraph (b)(5) of this section, there shall be another roof exit offset from that plane an equal distance to the other side.
- (c) Emergency exit windows. A bus equipped with emergency exit windows shall have an even number of such windows, not counting the push-out rear window required by S5.2.3.1 (b). Any side emergency exit windows shall be evenly divided between the right and left sides of the bus. School buses shall not be equipped with horizontally-sliding emergency exit windows. Further, except for

buses equipped with rear push-out emergency exit windows in accordance with S5.2.3.1 (b), school buses shall not be equipped with both sliding and push-out emergency exit windows.

**S5.2.3.3** The engine starting system of a bus shall not operate if any emergency exit is locked from either inside or outside the bus. For purposes of this requirement, "locked" means that the release mechanism cannot be activated and the exit opened by a person at the exit without a special device such as a key or special information such as a combination.

**S5.2.3.4** Each school bus manufactured before September 1, 1994 may, at the manufacturer's option, comply with either S5.2.3.4 (a) or S5.2.3.4 (b) instead of S5.2.3.1 through S5.2.3.3.

- (a) Each bus shall be equipped with one rear emergency door that opens outward and is hinged on the right side (either side in the case of a bus with a GVWR of 4,536 kilograms or less); or
- (b) Each bus shall be equipped with one emergency door on the vehicle's left side that is hinged on its forward side and meets the requirements of S5.2.3.2 (a), and a push-out rear window that provides a minimum opening clearance 41 centimeters high and 122 centimeters wide and meets the requirements of S5.2.3.2 (c).

## Body Sheet Metal and Paint

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- Body panels and rub rails shall conform to the normal contour of the school bus body.
- Body sheet metal shall have no holes due to rust or damage. All holes are to be repaired by use of panels, covering plate or body putty depending upon type and amount of damage. All repairs must maintain the structural integrity of the bus.
- Holes cut or drilled for installation of equipment shall be utilized for that purpose or covered.
- Normal usage and age of bus shall be taken into consideration with regards to paint condition.
- Hoods requiring refinishing shall be painted with non-reflective National School Bus Yellow
- Or flat black paint.

### Out-of-Service Violations

- **Body damage that could affect the structural integrity of the bus and or cause sharp edges or projections in the body panels.**
- **Interior or exterior rust holes.**
- **Any holes that allow air infiltration into passenger compartment (Except Manufacturer's ventilation passages).**

## Glass and Mounting

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- Frames around glass shall be secure.
- Cracks in the windows shall not be over one (1) inch in length.
- Windows must be operational.
- Glass shall be free of chips or cracks that could create a hazard or impair the driver's vision.
  - Example: Windshield wiper blade scratches.
  - Judgment of the inspector shall determine approval.

- Windshield, original or replacement, may have a sun screen strip at top that meets manufacturer's specifications. (AS1 line)
- Windshield shall be securely mounted.
- Discoloration on windshield/windows shall not be more than one and one-half inch and shall not obstruct driver's view to mirrors or roadway.
- Buses must have tempered or laminated glass in windows behind the driver. The glass for the service door and driver's side window must be laminated AS1 or AS2. The glass must be marked and meet FMVSS standard 571.205 for glazing. Effective 11/1/2006, all glass must meet appropriate construction standards that apply to the year of manufacture of the bus.

#### **Out-of-Service Violations**

- **Improperly secured or mounted.**
- **Any defect over one inch in length (No chips or cracks in service door).**
- **Chips or cracks that could create a hazard or impairs the driver's vision.**
- **Discoloration shall not obstruct driver's view to mirrors or roadway.**
- **Improper glass for its location (tempered/laminated).**

### Directional Signals

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- Shall be operative and securely mounted (front, rear and side body).
- Shall be amber in color and may be with or without arrows.
- Lens shall not be cracked or broken.
- Shall flash not less than 60 or more than 120 times per minute with the engine operating under normal conditions.
- Turn signals shall be self-canceling.
- Shall be visible from five hundred feet distance on a clear day.
- Four-way emergency hazard switch shall be installed with the directional signals and shall operate on all units.

#### **Out-of-Service Violations**

- **Front and/or Rear inoperative.**
- **Any lens missing.**

### Back-up Lamps

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- The lamps shall be controlled by an automatic switch on the reverse gear on school buses manufactured after 01/01/2006.
- If controlled by a manual switch, an indicator light is required when back-up lights are in use.
- Backing lights shall be mounted on the rear of bus no higher than the stoplights.
- Additional backing lights may be mounted in compliance with guidelines established under "optional equipment".

**Out-of-Service Violations**

- 50% or more inoperative.
- Inoperative audible back up alarm.

**Backing Warning Systems**

- Audible electric warning device shall be required on buses bid after 07/01/1988. (107 decibels or more).
- Optional flashing "backing" light box shall be located on the left rear side of bus as high as possible under the left rear window. If installed, the optional light shall be mounted in contact with the bus body panel.

**Out-of-Service Violations**

- Inoperative audible back up alarm.

**Stop and Tail Lamps**

- Two small combination stop/tail lamps are required.
- Two additional 7-inch round or optional shaped stop/tail lamps are required.
- Tail lamps to be operated in connection with head lamp switch.
- Stop lamps must be operative with brake pedal.
- Red lens not to be cracked, broken or discolored.
- Must be visible from five hundred feet to the rear on a clear day.
- White lamp shall illuminate registration number and may be combined with the tail light.

**Out-of-Service Violations**

- Greater than 25% of tail lamps inoperative.
- Greater than 25% brake lights inoperative.
- Greater than 50 % of an LED assembly inoperative.

**Flashing Warning Signal Lamps (Student Pick-up Lamps)**

- Stop Signal Arm is required on buses manufactured after 05/01/1979.
- Yellow flashers are required on buses manufactured after 04/01/1978.
- With the master switch on (when required), service door closed and engine running, activate the sequence switch. The amber lights shall start to flash.
- Open the door, the amber lights shall stop flashing and red lights and stop signal arm shall be activated automatically.
- Close the door and all the warning devices shall deactivate.
- Turn off the master control switch, if installed.
- Turn on the override (fail-safe) switch (shall be red in color or older buses out lined in red).
- The red lights and stop arm shall once again be activated. On buses manufactured on or after 09/01/1998 shall activate with the ignition switch in any position.

- The stop arm, when activated, shall extend to 90 degrees from the body of the bus. The stop arm lights shall flash on an alternating pattern.

#### **Out-of-Service Violations**

- Any lamp (amber or red) or system is inoperative.
- Inoperative 8-Way System (Must work both through the sequence switch and the over-ride or fail-safe switch.
- Master pilot light inoperative.
- Any air leak at the diaphragm when the stop arm is actuated by air pressure.

### Clearance, Marker, Identification Lamps

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- Shall operate properly. Faded, cracked or discolored lenses shall be replaced.

#### **Out-of-Service Violations**

- None.

### White Strobe Light (Optional)

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- Strobe light, if installed, must be mounted on rear third of school bus roof and centered.
- Strobe light must have separate and independent manually operated control switch.
- Strobe light must be white in color when illuminated.
- Strobe light must project a flashing beam signal throughout 360 degrees on the horizontal plane passing through the center of the light source.
- The flash rate when observed from a fixed position shall be between 60 and 240 flashes per minute

#### **Out-of-Service Violations**

- None.

### Reflectors

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- Reflectors shall be properly mounted. Faded, cracked or discolored reflectors shall be replaced.

#### **Out-of-Service Violations**

- None.

### Headlamp Assembly

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- Two headlamps required with upper and lower beams. Four headlamps are permissible.
- Headlights shall be properly aimed. No broken or cracked lens.
- Parking lights shall be wired to operate on the headlamp switch.

#### **Out-of-Service Violations**

- Any high or low beam headlamp inoperative.

## INTERIOR

### Service Door Assembly/Entrance/Handrails

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- No broken or cracked glass permitted in the entrance door.
- Door shall fit properly and open freely.
- Weather stripping shall be in good condition. Must not be cracked, broken and shall seal the opening.
- Door shall be outward opening split type on all buses (Bid after 9/01/1998). \* Exception – Sedan type door on certain type "A" buses.
- Manual control handle shall be operative.
  - The manual control handle shall be equipped with a safety latch to prevent accidental opening which will also lock in the over-center position when door is fully open.
- Step well lamp shall light automatically when marker lights are on and the service door is open.
- Step well area shall be reasonably free from rust and corrosion. If the step well area has been weakened to the extent that a hazard exists it must be repaired/replaced.
- Shall be equipped with a securely fastened handrail. School buses manufactured after 07/01/1988 shall be equipped with handrail on both sides of the interior step well area.
- Handrail Inspection Procedure - From outside the school bus entrance door the inspector shall drop the nut end of the handrail inspection tool (1/2" nut measuring 3/4" across the flats, tied to a 1/8" diameter nylon or cotton string 36" in length with a single overhand knot) into the crevice formed where the lower end of the handrail is attached to the lower area of the step well. The tool shall then be pulled toward the outside of the school bus through the crevice while the inspector is standing outside the bus service entrance on the ground. The vehicle will be rejected if the tool gets caught, the nut separates from the drawstring, or the drawstring material breaks. If the tool pulls freely through the crevice without catching in the handrail, the vehicle will not be rejected.
- Service door keyed lock shall operate properly if installed and should not lock without use of a key.
- Handrails shall be free of any obstructions or items which interfere with the use of the handrail.

### Out-of-Service Violations

- **Inoperative.**
- **Unable to be opened to maximum opening.**
- **Will not close securely or prevent exhaust fumes from entering the cabin.**
- **Interior stepwell light inoperative.**
- **Any air leak in the controls of an air operated service door.**
- **Fails the handrail inspection procedure.**

### Driver's Seat

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- The base of the seat must be securely attached to metal floor.
- The adjustable seat shall be secure in any position, no movement.
- No broken tubing or protruding pieces of metal around the seat.

- An operational driver’s locking type retractor seat belt and upper torso restraint system required. Locking retractor belt shall be equipped with protective boot of sufficient strength to keep belt retracted and off floor (On buses bid on or after 01/01/1990).
- Covers, cushions, or back supports must be approved by local school officials. The outside cover shall be of fire retardant material (clearly marked) and be securely attached to the seat.
- All upholstery shall meet FMVSS 571.302 (Flammability).

**Out-of-Service Violations**

- **Driver’s seat is not secure.**
- **Inoperative seat belt assembly.**

**Steering System**

- Grasp steering wheel and pull upward. Shaft shall not have excessive movement per manufacturer’s specifications.
- Check steering lash by turning steering wheel left and then right until resistance is met. This may indicate loose universal joints or excessive play in gear box.

**MAXIMUM LASH ALLOWED**

	Manual System	Power 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"

**Out-of-Service Violations**

- **Steering Wheel free play – when any of the values meet or exceed as detailed in the School Bus Inspection Manual.**
- **Steering Column:**
  - Any absence or looseness of U-bolts or positioning part(s).
  - Any obviously welded repair of a universal joint.
  - Steering wheel not properly secured.
- **Any cracks or obvious repairs on the front axle beam and all steering components:**
- **Steering Gear Box:**
  - Any mounting bolt(s) loose or missing.
  - Any crack(s) in gearbox or mounting brackets.
  - Any obvious welded repair.
- **Pitman Arm:**
  - Any looseness of the pitman arm on the steering gear output shaft.
  - Any obvious welded repair.
- **Power steering auxiliary power assist cylinder loose.**

- **Ball and Socket Joints:**
  - Any movement under steering load of a stud nut.
  - Any motion, other than rotational, between any linkage member and its attachment point of more than 1/8 inch measured with hand pressure only.
  - Any obvious welded repair.
- **Tie Rods and Drag Links:**
  - Loose clamp or clamp bolt on tie rods or drag links.
  - Any looseness in any threaded joint.
- **Nuts – Any loose or missing on tie rods, pitman arm, drag link, steering arm, or tie rod.**
- **Any modification or other condition that interferes with free movement of any steering component.**

## Clutch Operation

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- Pedal linkage shall be free of obstructions.
- Clutch shall engage and disengage as designed by the manufacturer.
- Pedal blocks or adjustable pedals, if used, shall be installed by manufacturer after 01/01/1991.

### Out-of-Service Violations

- **Does not operate as designed by the manufacture.**

## Instruments and Switches

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### Dashboard Instrument Panel

- All gauges shall be operative and clearly visible to driver in a seated position.
- Unused gauges shall be painted black.
- Indicator lights are required to show operation of turn signals and the four-way hazard flashers. Master pilot light to show that the eight-way warning system is operable.
- Dashboard instruments shall be illuminated.

### Control Panel Switches

- All switches shall be marked.
- Any unused switch must be removed or painted black without markings.
- A red colored or red outlined emergency override switch shall be installed.
- This shall be the only red colored or red outlined switch on the switch panel. (Effective 12/1/2008)
- Shall have a red or green master pilot as determined by year manufactured.

### Out-of-Service Violations

- **Master pilot light inoperative.**



## Horns

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Horns shall be operative, and capable of emitting a complex sound that is audible, under normal conditions from a distance of not less than two hundred feet. The horn button must be located in the center of the steering wheel and clearly marked as such.

### Out-of-Service Violations

- **Horn button not located as OEM (center of steering wheel).**
- **Either high or low note inoperative.**

## Windshield Wipers/Washers

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- Must be operative.
- Wiper blades that could damage windshield or do not wipe the windshield clean shall be replaced.
- Windshield washers are required to operate properly.
- Windshield wipers shall be controlled with one switch. Switch shall provide multi-speed operation and shall incorporate an intermittent position. (Effective 9/1/1998)

### Out-of-Service Violations

- **Either windshield wiper or washer inoperative.**
- **Either windshield wiper missing.**
- **Either windshield wiper with damaged parts that render them ineffective.**

## Defroster and Auxiliary Fans

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- A defroster system is required.
- Two adjustable auxiliary fans operated on separate switches are required (on Type A school buses only one fan required).
- All fans shall work at all selected speeds.

### Out-of-Service Violations

- **Windshield defroster not functioning at all.**

## Heaters

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- Check heaters one at a time with waterlines open. All heaters shall operate properly.
- Heater cores shall be clean with no leaks or obstructions to block flow of air or hit heater fan.

### Out-of-Service Violations

- **Coolant leak into the interior of the bus.**

## Mirrors

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*Refer to applicable year of the Ohio School Bus Construction Standards for mirror requirements.*

- Driver shall have an unobstructed view of all exterior and interior mirrors.
- All mirrors shall be fully adjustable and securely mounted to reduce vibration.

- All exterior rear view mirrors shall be heated after 07/01/1988. After 01/01/1990, all exterior mirrors shall be heated.
- No cracks, breaks, or discoloration that causes view obstructions are permitted as viewed from the driver's seated position.

#### **Out-of-Service Violations**

- **Not in compliance with Construction Standards and FMVSS.**
- **Cracks, breaks or discoloration as determined by the inspector which cause view obstructions.**

### Sun Visor

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- Sun visor shall be adjustable and transparent.
- A right side sun visor which is at least six inches by sixteen inches (6" x 16") in size is optional.
- Sun visor shall not interfere with driver's vision of rear view mirror.

#### **Out-of-Service Violations**

- **Sun visor that interferes with the driver's vision of the rearview mirror**

### Emergency Equipment

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- Emergency equipment shall be securely located outside the passenger area and readily accessible to the driver. The equipment shall not interfere with passengers or the operation of the vehicle.
- Six 30-minute fuses and three triangle reflectors with weighted stands are required on all school buses.
- A dry chemical type fire extinguisher at least five pounds in capacity is required with a visible gauge and a rating of 10 B.C. prior to 04/01/1978, 20 B.C. to the date of 09/01/1998 and 40 B.C. after 09/01/1998
- Fire extinguisher must have classification and annual inspection tag.
- Visible gauge must show whether extinguisher is pressurized.

#### **Out-of-Service Violations**

- **Fire extinguisher not securely mounted.**
- **Fire extinguisher missing.**
- **Fire extinguisher with improper rating and/or classification.**
- **Fire extinguisher not completely charged.**

### First Aid Kit

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- First aid kit shall be securely mounted and be easily accessible to the driver.
- The interior of the case shall be clean.
- All contents in the kit must meet the following requirements:
  - Minimum requirements for less than 50 passengers (16 unit kit).
  - Minimum requirements for 50 or more passengers (24 unit kit).

- Body fluid cleanup kit. Aerosol cans are not to be included as part of this kit. Other contents shall meet requirements of applicable Ohio School Bus Construction Standards. The body fluid clean-up kit shall be easily accessible to the driver in the area of the first aid kit, and shall be securely mounted in a plastic or metal container. The kit shall contain the following:
  - Effective chlorine absorbent deodorant.
  - Effective germicidal detergent (if detergent contains alcohol, no more than one fluid ounce is permitted in a single use disposable container).
  - Disposal bag (Single use disposable).
  - Scraper (Single use disposable).
  - Effective protective gloves (Minimum of one pair) (Single use disposable).
  - Effective hand rinse. If hand rinse contains alcohol, no more than one half fluid ounce is permitted in a single use disposable container.
  - Individually wrapped antiseptic towelettes are acceptable in place of hand rinse.

#### **Out-of-Service Violations**

- **First aid kit and body fluid kit not securely mounted.**
- **First aid or body fluid kits missing.**

### Cleanliness

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- Seat assignment markings are permitted, but shall not cover emergency exit markings.
- All trash containers must be secured and shall not obstruct any aisle way to any entrance or exit and shall not interfere with any handrail.
- No flammable fluids, poisons or aerosol cans are permitted inside the school bus.
- All buses shall be kept clean inside and out.
- Only items necessary for the operation of the school bus (route slips, schedules, limited cleaning supplies, etc.) may be stored/carried on the bus. No oils, fuels or anti-freeze.

#### **Out-of-Service Violations**

- **Loose items, garbage, decorations or any other item that could cause a distraction to the driver or cause injury to the occupants.**
- **Brooms, scrapers, garbage cans not secured or stored in the proper manner.**
- **Any unauthorized items that could cause a distraction to the driver and compromise the safe operation of the bus.**
- **Pressurized containers or aerosols.**
- **Flammable cleaning materials. (Alcohol, turpentine, gasoline).**
- **Name brand cleaning products allowed as well as personal use size hand sanitizer.**

### Floor and Floor Covering

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- Shall be sound in construction and meet applicable Ohio School Bus Construction Standards.

- Brake and clutch boots shall not be worn. If the size of the opening is larger than required for component, such as emergency brake or gear shift, boot shall be used to prevent dirt or contaminants from entering the passenger compartment.
- Spot floor covering is permitted where needed to cover worn areas. One piece floor covering is not required to run full length of the bus. Loose pieces of carpet or other covering shall not be permitted.
- Floor covering shall cover all floor base except where inspection plates are used and exposed.

#### **Out-of-Service Violations**

- **Bumps or waves that could create a trip hazard (plywood needs to be solid).**
- **Unsecured trim strips that have sharp edges or create a trip hazard.**
- **Unsecured aisle trim that have sharp edges or create a trip hazard.**
- **Unsecured stairwell treads (No trip points).**

### Ceiling

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- No protruding objects are permitted that may cause injury (includes radio speakers).
- No book racks or hangers allowed.

#### **Out-of-Service Violations**

- **Protruding objects that may cause injuries.**

### Seats

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#### Passenger Seats and Stanchions

- Seat backs and cushions shall be firmly attached to the frame, and must be checked to make sure they are secure.
- Metal seat frames - seat covering shall have no sharp edges protruding.
- Any kit designed to repair seats equal to or better than original equipment is acceptable. Tape shall not be used as a seat repair.
- Seat frame shall be securely fastened to the floor and/or side mounting rail. Some foot pads may have an extra hole without a fastener.
- Ensure that the bottom seat cushion is secured.
- All types of buses bid after 01/01/1991 shall have a full barrier on both sides that is compliant with FMVSS 571.222.
- Stanchions shall be padded to within at least three inches of the bus ceiling and floor.
- On Type "A" buses, wheelchair positions and fastening devices are not permitted immediately adjacent to the lift entrance in order to have easy access in case of emergency.
- Safety belts are required for all seating positions on school buses with a GVWR of 10,000 lbs. or less.

### Out-of-Service Violations

- Ineffective padding on passenger seats (if disputed, inspector may request seat cover be removed to aid inspection). Foam that is split and/or does not cover the seat frame in its entirety.
- Seat Frames-with modifications, rust, busted bolts, broken welds.
- Seats not secure to floor and/or side wall.
- Seat backs not secure to seat frame.
- Seatbelts improperly attached and/or inoperative.
- In excess of 20% seat covers with tears or cuts that expose the seat foam.
- In excess of 20% of the seat bottoms not secured.
- Driver's seat is not secure.
- Inoperative seat belt assembly.
- Barrier/seat back foam that is split and/or does not adequately cover the frame in its entirety.

## Emergency Exits

### Emergency Door

- A device which produces a continuous warning sound shall be installed in the driver's compartment on all buses and at the emergency door on buses manufactured after 1996 (FMVSS requirement) and be activated after the door or handle is slightly moved. Buses bid after 09/01/1990 require the dome lights to activate with the warning sound on emergency door. (Back up lights are also optional to illuminate.)
- Operation instructions for opening of door shall be lettered or decaled on inside of emergency door.
- No permanent or temporary obstruction shall be present so as to reduce the emergency door opening.
- Inside latch shall be protected against accidental opening. It is not mandatory to have a guard over the handle if latch is designed to protect against accidental opening.
- A separate interior handle shall be provided for the purpose of pulling the door closed from the inside. Handle guard may be used as interior handle.
- No locking devices are permitted on emergency door except locking systems that prevent the engine from starting, when in a locked position.

### Out-of-Service Violations

- Door or positive locking device inoperable.
- Unable to be opened completely.
- Any continuous warning device inoperative.
- Obstructions reducing size of opening (FMVSS standard).
- Not marked inside and outside (Includes reflective markings, if required).
- Locking devices except approved systems that also prevent the engine from starting.

## Emergency Windows

- Emergency windows shall be operative without excessive force.
- A device which produces a continuous warning sound located in the driver's compartment shall sound when emergency window is opened. All buses bid after 09/01/1998 shall have the interior dome lights activate along with the audio warning device.
- Handle or handles shall be permanently installed.
- Weather stripping around emergency window exit shall not be loose, cracked and must seal the body opening as designed by the manufacturer.
- Child seats shall not block the emergency exit opening.
- Operating instructions shall be lettered or decalated at the emergency window in compliance with FMVSS 571.217.

### Out-of-Service Violations

- **Inoperative.**
- **Unable to be opened completely.**
- **Twenty five percent or more of any continuous warning device inoperative.**
- **Not marked inside and out (Includes reflective markings, if required).**
- **ANY window missing operating instructions.**
- **Obstructions reducing size of opening. (Seat backs excluded if opening meets FMVSS standards and School Bus Construction Standards.)**

## Emergency Roof Exit

- Shall open to maximum width without catching or binding.
- A device which produces a continuous warning sound located in the driver's compartment shall sound when the hatch is open to the escape position (Buses bid after 07/01/1988). All buses bid after 09/01/1998 shall have the interior dome lights activate along with the audio warning device.
- Operation instructions for opening of hatch shall be lettered or decalated on the inside of the hatch.

### Out-of-Service Violations

- **Inoperative.**
- **Unable to be opened completely.**
- **Any continuous warning device inoperative.**
- **Improperly marked or not marked inside and out. (Includes reflective markings, if required.)**
- **Any window missing operating instructions.**
- **Obstructions reducing size of opening.**

## ENGINE COMPARTMENT

### Hood Assemblies

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- Hood assemblies should operate properly.
- When equipped with a hinge spring or bar and latch assembly, the hood shall stay in the raised position.
- No frayed, broken or damaged components on hood assemblies.
- Grille color should be maintained as manufactured. Chrome or corrosion resistant materials are permitted. All rear engine grilles shall be national school bus yellow. Hoods requiring refinishing shall be painted with non-reflective National School Bus Yellow or flat black paint.

#### Out-of-Service Violations

- **Safety latch is broken, and hood will not lock into the open position.**

### Firewall

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- Holes through the firewall are permitted so wiring and various body components may enter the passenger compartment. Unused holes shall be plugged.
- If diameter of hole or opening is larger than required for the component or wiring, fire resistant material such as plastic putty, grommets, or metal shall be used to prevent air, or contaminants from entering the passenger compartment.

#### Out-of-Service Violations

- **Unused holes not plugged.**
- **Cracks in the firewall.**

### Engine/Drive Train Components

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- Engine running and water lines open.
- Engine shall not have any visible fluid leaks to include fuel, oil, coolant and transmission fluid.

#### Out-of-Service Violations

- **Any fluid leaks dripping or pooling onto the ground.**

### Belts

- Shall be adjusted to the proper tension according to manufacturer's specifications.

#### Out-of-Service Violations

- **Cracks, frays, chocking and tears.**

### Accessory mounting brackets.

- Compressor, alternator, etc. shall be secure.

#### Out-of-Service Violations

- **Unsecure cracks or breaks.**

### Radiator

- Shall be securely mounted.
- Radiator cap shall be present and fit properly.

#### Out-of-Service Violations

- **Leaks.**
- **Unsecure.**

### Exhaust Manifolds

- Shall be no cracks or leaks.

#### Out-of-Service Violations

- **Leaks.**

### Engine and transmission mounts

- Shall be secure and in good condition.

#### Out-of-Service Violations

- **Any defect in mounts, engine and or transmission.**
- **Missing bolts/nuts securing mounts in engine and or transmission.**

### Hoses

- No leaks permitted.

#### Out-of-Service Violations

- **Pooling onto ground.**
- **Leaking into the interior of the bus.**

### Wiring

- Insulation shall not be cracked, worn, chaffing, or frayed.
- Electrical tape may be used to protect wiring where insulation has worn.
- Grommets or appropriate material shall be used to protect wires when passing through the firewall or chassis unless protected by a fibrous loom.
- Wiring shall have no loose connections such as terminals or junctions.
- All wiring shall be secured to chassis components.
- No missing bolts/fasteners or components as manufactured.

#### Out-of-Service Violations

- **Missing insulation.**
- **When passing through body members, additional protection in the form of grommets or an appropriate type of material is not present.**
- **Charred, burnt, chaffed or damaged wires.**
- **Any wiring not OEM must be protected by fuse, circuit breaker or equivalent protection device.**



## Fuel System

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- Fuel pump, fuel lines and filter system - no leaks, check with engine running.
- Exhaust system shall be insulated from fuel tank and fuel tank connections on gasoline engines.
- Fittings securely connected.
- Air cleaner:
  - Securely fastened.
  - Inspect for air filter element.

### Out-of-Service Violations

- Any leak in any part of fuel system.
- Fuel cap loose, missing or defective.
- Fuel tanks damaged.
- Fuel tanks not properly mounted.
- Fuel tanks fail to meet FMVSS 571.301.

## UNDERCARRIAGE/BRAKE

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### Frame

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- No cracked, broken, loose, sagging frame members or separation from the main frame.

### Out-of-Service Violations

- Loose or missing cross members, bolts, body tie downs or body pads.
- Any cracked, loose, sagging, or broken frame side rail permitting shifting of the body onto moving parts or other condition indicating an imminent collapse of the frame.
- Any cracked, loose or broken frame member adversely affecting support of functional components such as steering gear, engine, transmission, body parts, or suspension.
- One inch or longer crack in side rail bottom flange.
- Metal floor, including stairwell, not solid (no holes caused by rust or damage.)
- Cracks one and one-half inches or longer in frame side rail web which is directed towards the bottom flange.
- Any condition that caused the body or frame to be in contact with a tire or any part of the wheel assemblies.
- Any frame modification/repair not certified/approved by the frame manufacturer.
- Any floor support rusted through at any location.
- Any floor support cracked at a body mount location.

### Batteries

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- Batteries shall be securely mounted.
- Terminals and connections must be clean and free of corrosion.

**Out-of-Service Violations**

- Batteries not securely mounted per manufactures specifications.
- Objects in battery area that may contact the battery terminals and cause a short in the system.

**Front Axle Assembly****Springs (front & rear)****Out-of-Service Violations**

- Broken cracked or missing leafs.
- Missing or broken shackle bolts.

**Kingpins**

- Kingpins will be checked randomly per fleet age and size.
- 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.

**Out-of-Service Violations**

- Movement is in excess of manufacturer's specifications (Normally  $\frac{1}{4}$ ").

**Steering Gear Box**

- Shall have no leaks.
- Shall be securely mounted. No welding on steering system permitted.
- No changes shall be made in the steering mechanism unless approved by manufacturer.

**Out-of-Service Violations**

- Any mounting bolt(s) loose or missing.
- Any crack(s) in gearbox or mounting brackets.
- Any obvious welded repair.
- Dripping fluid leaks.
- Pitman arm — any looseness of the pitman arm on the steering output shaft.
- Any obvious welded repair.
- Power steering auxiliary assist cylinder loose.

**Tie Rod Ends, Crossbar, and Drag Links**

- Looseness at the steering linkage pivot points can be visually detected during movement of the vehicle steering wheel during a dry park test.
- Apply vertical hand pressure at tie rod and drag link sockets to check for movement.
- Vehicle will be rejected if any movement is found in the joint. (Refer to manufacturer specifications.)
- Check crossbar for structural damage and crossbar clamps for secure mounting.

**Out-of-Service Violations**

- Any movement under steering load of a stud nut.
- Any motion, other than rotational, between any linkage member and its attachment point of more than 1/8 inch measured with hand pressure.
- Any obvious welded repair.
- Loose clamp or clamp bolt on tie rods or drag links.
- Any looseness in any threaded joint
- Any loose or missing nuts on tie rods, pitman arm, drag link, steering arm, or tie rod.
- Any modification or other condition that interferes with free movement of any steering component.

**Steering and Suspension (Type A & B Buses)**

- Checking these components is rather detailed and proper adjustment will be left to the local mechanic, however, any indication of excessive wear should warrant further checking of the complete assembly by a mechanic.
- Steering wheel free play and steering column.

**Out-of-Service Violations**

- When any of the values meet or exceed as detailed in the School Bus Inspection Manual.
- Steering Column:
  - Any absence or looseness of U-bolts or positioning part(s).
  - Any obviously welded repair of a universal joint.
  - Steering wheel not properly secured.

**Shock Absorbers (front and rear)**

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- Shock absorbers must be properly mounted to the frame and axle.
- Seals shall not leak.

**Out-of-Service Violations**

- Improperly mounted to the frame and axle.
- Shocks shall not be leaking fluid onto ground or other components.

**Rear Axle Assembly / Differential**

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**Axle and housing**

- No oil leaks.
- No cracks in housing.
- Check for oil leaks. If questionable, due to apparent oil leaks, level shall be checked.

**Out-of-Service Violations**

- Any fluid leak from either component that is on a brake or dripping onto the ground.

## Springs, Torsion Bars and Torque Rods

- Visually inspect for broken leaf springs, coil springs, torque rod, or torsion bar damage.
- Inspect spring shackles, bushings, "U" bolts, spring center bolts, and remaining suspension members.

### Out-of-Service Violations

- **Spring Assembly:**
  - Any broken leaf in a leaf spring assembly.
  - Any broken main leaf in a leaf spring.
  - One or more leaves displaced in a manner that could result in contact with a tire, rim, brake component or frame.
  - Coil Spring broken.
  - Rubber spring missing.
- Broken torsion bar spring in torsion bar suspension.
- Any leaf or portion of any leaf in any spring assembly that is missing or separated.
- Shackles and/or "U" bolts are worn or loose or spring center bolt is broken or sheared.
- Any U-bolt or other spring to axle clamp bolt cracked, broken, loose or missing.
- Any spring hanger or other axle positioning part cracked, broken, loose, or missing resulting in shifting of an axle from its normal position.
- Springs, torque rods, torsion bars or other suspension components are broken or shifted.

## Air Suspension

- With the entire system drained of air following the manufacturer's recommended procedures, start the engine and observe the air pressure at which air begins to flow into the suspension system and lift the vehicle.
- With the system fully charged, inspect for any audible leakage at the bellows, connections or hoses.

***CAUTION: INSPECTOR SHOULD NOT USE A CREEPER OR OTHERWISE LIE UNDERNEATH THE VEHICLE DURING INSPECTION BECAUSE THERE MAY NOT BE SUFFICIENT ROOM WHEN AIR IS DRAINED FROM THE BELLOWS. VEHICLE SHALL BE PROPERLY JACKED OR POSITIONED OVER A PIT.***

### Out-of-Service Violations

- Air begins to flow into the suspension system below 55 p.s.i.
- Deflated.
- Any air leak.

## Brakes (Must comply with FMVSS 571.105 or 571.121.)

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### Pedal

- Pedal blocks or adjustable pedals, if used, shall be installed only by manufacturer on buses bid after 01/01/1991.

### Brake Lines

- No cuts or breaks in the line.
- No lines shall be in contact with the exhaust system or chassis components.
- No evidence of leaks, crimping, rust or excessive wear.
- No frayed lines or rubbing against other components.

### Brake Hoses

- No hose with any damage extending through the outer reinforcement ply. Thermoplastic nylon may have braid reinforcement or color difference between cover and inner tube. Exposure of second color is cause for rejection.
- No bulge or swelling when pressure is applied.
- No audible or visible leaks.
- No improper joints (such as a splice made by sliding the hose ends over a piece of tubing and clamping the hose to the tube).
- No brake lines or hoses that are broken or crimped.

### Brake Linings or Pads (see School Bus Inspection Manual Supplement)

- Linings may be checked through drum inspection slots.
- Lining or pad should be firmly attached to the shoe.
- Not saturated with oil, grease, or brake fluid.

#### *Minimum Lining Thickness:*

##### **Non-steering axle**

- (a) Drum - 1/4 inch
- (b) Disc - 1/8 inch

##### **Steering axle**

- (a) Drum - 3/16 inch
- (b) Disc - 1/8 inch

##### **Type "A" bus 10,000 GVWR or less**

- (a) Drum - 2/32 inch
- (b) Disc - 2/32 inch

### Brake Drums or Rotors

- Any external cracks that open when brakes are applied (Do not confuse short hairline internal check cracks with flexural cracks).
- Any portion of the drum or rotor missing or in danger of falling away.

### Hydraulic, Vacuum Assist, or Hydraulic Assist

- Should be able to maintain brake pedal height under moderate foot force (40-60 pounds) for one minute without pumping.
- With vehicle in stopped position and brake pedal depressed under moderate foot force (40-60 pounds) there should be a minimum of one-third of the total available pedal travel (manufacturer's specification) remaining on non-powered systems.
- Inspect calipers for leakage, loose support key, retaining screw, or torn dust boots.
- Electric hydraulic brake assist motor must be heard when brake pedal is depressed with the engine off.
- Hydraulic brake systems shall have visible and audible warning signal to indicate loss of pressure (Buses bid after 01/01/1988).
- Check for any fluid leaks on wheel cylinders, master cylinders, hydrovac, and hose connections on buses using vacuum assisted brakes. Check for brake fluid around the brake booster - between the booster and firewall.
- If bus is equipped with air or vacuum assist, it shall have a visible warning signal and gauge to indicate any loss of air or vacuum. Buzzer shall be installed in combination with the gauge and warning signal on air operated brake systems. Buzzer must be loud enough to be heard over engine noise.

### Air Brake

- Air brake adjustment cannot be checked by feel of the pedal.
- Check for air leaks from reservoirs, chambers, valves, connections and lines.
  - Start engine and build to full pressure until air compressor cuts out, stop engine, check for one minute; without a brake application, there should not be a pressure drop on gauge or audible leaks.
  - Start engine and build to full pressure until air compressor cuts out, stop engine, make a brake application and hold down for one minute; there should not be a pressure drop on gauge or audible leaks.
- Quick release valve, when installed, shall be operative.
- Visible and audible warning system shall activate prior to the air pressure gauge dropping below 60 p.s.i. The audible warning must be loud enough to be heard over engine noise.
- Check all moisture ejection valves for leaks and proper operation. This valve is not required if the bus is equipped with an air dryer.
- Check air dryer and after cooler for leaks and proper operation. Buses manufactured after 07/01/1988 shall be equipped with an air dryer.

- A manufactured discharge of air during brake checks is acceptable.
- All buses shall be inspected to ensure that the slack adjusters are in proper adjustment. The effective length of the slack adjuster on each end of an axle must be the same.
- The service brake chambers and spring brake chambers on each end of an axle must be the same.
- All air tanks shall be securely mounted.
- Drain valve shall operate with hand pressure.
- Safety and check valves shall be operative. A random sample of buses, a minimum of twenty percent of the total bus fleet, shall be inspected to ensure that air supply components are operating properly.
- Moisture ejectors required unless equipped with air dryer system. Alcohol evaporators are permitted. Air dryer systems are required after 07/01/1988.
- Check air compressor for frayed, chunking or loose belts, loose mounting bolts, cracked or loose pulley or mounting brackets and braces, and excessive oil leaking from compressor.
- Air pressure build-up time. Fully charge the system to governed cut out. Pump the service brake pedal to lower the system air pressure to below 80 p.s.i. using the dash gauges. With the engine operating at the manufacturer's maximum recommended governed speed, time from the time the air pressure gauges passes 85 p.s.i. to the time it passes 100 p.s.i. The time should not exceed 40 seconds. If the school contests the results, contact the manufacturer for the systems build up time per Federal Motor Vehicle Safety Standards 571.121 S5.1.1. If the system fails the manufacturer's build up time, repairs are needed.

### Parking Brake

- The parking brake shall hold the vehicle on any grade on which it is operated, under all conditions of loading, and on a surface free from snow, ice, or loose material. With the exception of vehicles equipped with drive shaft parking brakes. Spot check — apply and put in gear with engine at idle; vehicle should not move.
- Any bus bid after 09/01/1998 will have a red indicator light.
- Buses with air brakes may have the parking brake set automatically below 40 p.s.i. It shall not set higher than 40 p.s.i.
- If parking brake pop off valve does not set automatically, test the spring brake. With the gauges at zero, start the bus; place the bus in gear at idle. The spring brake shall hold the school bus in place without the pop off valve pulled setting the parking brake.

### Parking Brake Assembly on Drive Shaft

- Check brake lining to ensure not covered in grease and is intact.
- Assembly shall be properly mounted with no loose bolts or nuts.
- The parking brake shall hold the vehicle on any grade on which it is operated, under all conditions of loading, on a surface free from snow, ice, or loose material.

### Out-of-Service Violations

*ANY defective brake on the vehicle. A defective brake includes any brake that meets one of the following:*

- General (See School Bus Inspection Manual Supplement):
  - Absence of effective braking action upon application of the service brakes (Such as brake linings failing to move or contacting braking surface upon application).
  - Missing or broken mechanical components including: shoes; linings; pads; springs; anchor pins; cam rollers; pushrods, and air chamber mounting bolts.
  - Loose brake components including air chambers and cam shaft support brackets.
  - Brake linings or pads which are: cracked, missing or loose; oil seepage into or out of the brake lining/drum interface area; any lining below manufacturer's recommended thickness.



Out-of-Service  
Portion of lining missing that exposes a fastening device.



Out-of-Service  
Cracks or voids that exceed 1/16" in width.  
Cracks that exceed 1-1/2" in length.

- Air Brakes:
  - Any audible air leak in any part of the air system (examples – air doors, air operated stop signs, air suspensions).
  - Any visible loss of air pressure by the air gauges.
  - Inoperative air gauges.
  - Mismatched air chamber sizes and brake adjuster length.
  - Any brake outside the brake adjustment limit. (A brake found at the adjustment limit is not a violation.)
  - Low pressure warning device missing, inoperative or does not operate at 55 p.s.i. and below (Both audible and visual must work with engine running).
  - Any damage to a hose extending through the outer reinforcement ply.
  - Bulge/swelling of any air brake line at any time.



- Any hose improperly joined or spliced.
- Air compressor:
  - Loose compressor mounting bolts.
  - Cracked, broken or loose pulley.
  - Cracked or broken mounting brackets, braces or adapter.
- Air Reservoir (Tanks):
  - Not properly secured; separated from its original attachment points.
  - Any inoperative drain valve.
  - If tanks drained, any inoperative safety component (check valve, double check valve, and inversion valve). No air lost as described in the School Bus Inspection Manual during test.

**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

**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

**'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.		

**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

**TIE ROD STYLE PISTON BRAKE CHAMBER DATA**

Type	Outside Diameter	Adjustment Limit
30	6-1/2 (165mm)	2.5 (64mm)

**DD-3 BRAKE CHAMBER DATA**

Type	Outside Diameter	Adjustment Limit
30*	8-1/8	2-1/4
*This chamber has three air lines and is found on motor coaches.		

**Hydraulic Brakes**

- Any fluid leak in the hydraulic system.
- Power assist motor inoperable.
- No pedal reserve with engine running (manufacturer specification).
- Master Cylinder less than  $\frac{1}{4}$  full.
- Swelling brake hose under application of pressure.
- Hose abraded (chafed) through outer cover-to-fabric layer.
- Fluid lines or connections restricted, crimped, cracked, or broken.
- Brake failure light/low fluid warning light on and/or inoperative.
- **Parking Brake**
  - Inoperative.
  - Will not hold vehicle when applied with engine running at idle and in low gear (Do not test drive shaft parking brake in this matter).
  - Parking brake assembly on drive shaft to be free of grease and properly mounted with no loose bolts or nuts.
  - Any wheel equipped with an inoperative parking brake.
  - Spring brakes do not set before complete loss of air pressure (air brake).
- **Brake Drums or Rotors (Discs)**
  - Drums with any external crack or cracks that open upon brake application.
  - Any portion of the drum or rotor (discs) missing or in danger of falling away.

**Exhaust System**

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- When checking exhaust system, do not stop flow of exhaust through the pipe by placing an obstruction in the tailpipe.
- Exhaust system shall be in good condition including hangers and clamps. No holes, cracks, splits or gaps permitted in system that would allow exhaust gases to escape.
- Allow engine to reach normal operating temperature to seal the O-ring on the manifold pipe before checking the system.
- One  $\frac{1}{8}$ " drainage hole may (not required) be drilled in the bottom of the muffler.
- Tail pipe diameter shall not be reduced in size when leaving the muffler.
- On rear discharge exhaust, the tail pipe shall extend to the edge of the bumper but not more than one inch beyond bumper. The tailpipe may pass through the bumper.
- Optional left side exit must be at least three inches (3") and not more than eighteen inches (18") in front of the rear wheel and bent downward at a 45 degree angle six inches (6") from the end of the pipe. Tail pipe shall extend to edge of body.
- No more than 2 feet of flexible pipe for gas and diesel engines is permitted to replace OEM application.
- No part of the exhaust system shall be so located as would be likely to result in burning, charring or damaging the electrical wiring, the fuel supply, or any combustible part of the bus.

**Out-of-Service Violations**

- Leaking.
- System not securely attached by hangers/clamps
- Exhaust systems on diesel fueled buses that do not discharge at or within 15 inches of the rearmost part of the bus.
- Exhaust systems on gasoline fueled buses that do not discharge at or within 6 inches of the rearmost part of the bus.
- Exhaust system discharges directly below any emergency window and does not meet construction standards for the placement of a rear discharge.
- Parts of the system located which would likely result in burning, charring or damaging the electrical wiring, fuel supply or any combustible part of the bus.
- Diesel particulate filter not securely mounted.

**Fuel Tank and Shield**

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- Tank shall not be rusted or damaged.
- No leaks.
- Securely mounted.
- Fuel cap required with gasket in good condition.
- Filler hose shall be in good condition.
- Tank shall be shielded when any part of the exhaust system is adjacent to the tank on gasoline, propane or natural gas powered buses. No shield is required on diesel powered buses.

**Out-of-Service Violations**

- Leaks.
- Not properly mounted.
- Fuel tank or shield damaged.

**Tires, Rims and Wheels**

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- Tires shall have a tread depth of not less than  $\frac{4}{32}$  inch for steering axle and not less than  $\frac{2}{32}$  inch for rear tires, measured anywhere on any major groove. No bus shall be operated on any tire that has body ply or belt material exposed through the tread or sidewall or has any tread or sidewall separation. All valve stems shall be capped.
- No retreads, recapped, regrooved, patched or plugged tires are permitted on the steering axle. No regrooved tires allowed on a bus.
- All lugs shall be present & properly tightened.
- Tires shall be properly inflated. Refer to tire manufacture recommended inflation pressure.
- Tires rated as a snow tire only are not permitted on steering axle.
- Rims and wheels shall be black and/or natural iron gray in color and shall not be bent or twisted. Color of wheels to be uniform per bus.

- All tires per axle shall be the same size (height and design). Buses bid prior to 07/01/1988 may have bias-ply or radial tires. No mixing of bias-ply and radial tires permitted.
  - Buses bid prior to 07/01/1988 may have tubeless radial tires on the steering axle and tube radial tires on the rear axle in order to upgrade steering axle rims.
  - Buses bid after 07/01/1988 shall have tubeless radial tires
- Load rating of tires shall meet or exceed manufacture's rating.

### Out-of-Service Violations

- **General:**
  - Front tires – below 4/32 inch when measured in any two adjacent major tire groves at any location on the tire.
  - Rear tires – below 2/32 inch when measured in any two adjacent major tread grooves at 3 separate locations on tire.
  - Tire is flat or has a noticeable leak.
  - Mounted or inflated so that it comes into contact with any part of the vehicle.
  - Visually observable bump, bulge or knot apparently related to tread or sidewall separation.
  - Weight carried exceeds tire load limit.
  - Any foreign object puncturing the tire.
  - Rear inner tire valve stems must be accessible.
- **Front Tires:**
  - Any part of the breaker strip or casing ply showing in the tread.
  - When sidewall is cut, worn, or damaged to the extent that the plycord is exposed.
  - Labeled "Not for Highway Use" or carrying other markings which would exclude use on steering axles.
  - Retreaded, recapped or re-grooved tires.
  - Is at or below 75% of the maximum inflation pressure marked on the tire.
- **Rear Tires:**
  - Bias Ply – when more than one ply is exposed in the tread area or sidewall or when the exposed area of the top ply exceeds 2 square inches
  - Radial Ply – when two or more plies are exposed in the tread area or damaged cords are evident in the sidewall or when the exposed area exceeds 2 square inches in the sidewall.
  - 75% or more of the tread width loose or missing in excess of 12 inches in circumference.
  - Re-grooved tire in use.
  - Has 50% or less of the maximum inflation pressure marked on the tire sidewall.

### Body and Mounting Pads

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- Body shall be securely fastened (J-Bolts, or spring clamps).
- Mounting pads or insulating material shall be held in place between floor sills and chassis frame and must be of good quality.

### Out-of-Service Violations

- Any loose or missing body tie-down or body pad (isolator).

### Drive-line, Universal Joints

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- No evidence of misalignment or unusual noises.
- There shall be a drive shaft guard for each section of drive shaft.

### Out-of-Service Violations

- Missing drive shaft guards.
- Carrier bearings or universal joints with play in excess of manufacturer's specifications.

## SCHOOL BUSES USED TO TRANSPORT SPECIAL-NEED PUPILS

### Aisles

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- All aisles leading from the wheelchair area to an emergency door and the lift shall be of sufficient width, minimum of thirty inches, to permit passage of maximum size wheelchair.

### Fastening Devices

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- Wheelchair securing devices shall be provided and attached to the floor or walls or both to enable securing of wheelchairs in the vehicle. The devices must be of the types that require human intervention to unlatch or disengage. Restraint devices for wheelchairs, car seats, care chairs, etc. shall be installed according to restraint manufacturer's instructions.
- Additional fastening devices may be needed to restrain the student due to the many different chair configurations. Devices not in use shall be stored or secured.
- All buses equipped with attachment points securement devices and/or wheelchair securement systems shall also be equipped with a durable webbing cutter having a full width hand-grip and protected blade. The cutter must be appropriately stored in the driver's compartment to the left of the driver.

### Heaters

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- An additional heater(s) may be installed in the rear portion of the bus behind the wheel well. Auxiliary fuel-fired heaters are permitted.

### Identification

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- Buses with wheelchair lifts used for transporting physically handicapped children may display universal handicap symbols located below the window line. Such emblems shall be white on blue, shall not exceed twelve inches in size, and may be reflective.

### Occupant Restraint – Wheelchairs

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- A system of positive occupant restraint shall be provided that secures the occupant.

- The lap belt shall be attached to the vehicle or to the wheelchair securing fastening devices.
- The upper torso restraint shall be provided and attached to the vehicle and/or the wheelchair securing fastening devices on vehicles manufactured after 09/01/1998.

## Power Lift

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- Lift shall be confined within the perimeter of the school bus body when not extended and shall not be attached to the exterior of the bus. Lift shall be securely mounted with no missing or loose fasteners. No hydraulic leaks.
- When the lift platform is in the fully up position, it shall be locked in position mechanically by means other than a support lug on the door on buses bid after 07/01/1988.
- Controls shall be provided that enable the operator to activate the lift mechanism from inside and outside of the bus.
- Lift travel shall allow the lift platform to rest securely on the ground.
- All edges of the platform shall be designed to restrain wheelchair and operator's feet from becoming entangled during the raising and lowering process. Protective shields shall be in place and operable.
- Platform shall be fitted on both sides with full-width shields which extend above the floor line of the lift platform. The bus or platform shall be designed to prevent the wheel chair from rolling off the rear of the platform.
- A restraining device shall be affixed to the outer edge (curb end) of the platform that will prohibit the wheelchair from rolling off the platform when the lift is in any position other than fully extended to ground level.
- A self-adjusting skid-resistant plate shall be installed on the outer edge of the platform to minimize the incline from the lift platform to the ground level. This plate, if so designed, may also suffice as the restraining device explained in paragraph (G) (7) of this rule. The lift platform must be skid-resistant.
- A current interruption device shall be installed between the power source and lift motor if electrical power is used.
- Rapid descent of lift is not acceptable.
- An actuating switch shall be installed in the circuit to prevent the lift mechanism from operating when doors are closed.
- Lift structure must have adequate padding and barriers for passengers' protection.
- All lifts installed after 07/01/2005 shall meet FMVSS 403/404 (interlock systems).

### Out-of-Service Violations

- **Not securely mounted with no loose bolts/nuts.**
- **Hydraulic leaks.**
- **When lift platform is in the up position, it does not lock into place (Lift platform shall not rest against lift door).**

- A restraining device that is affixed to the outer edge (curb end) of the platform that will prohibit the wheelchair from rolling off the platform when the lift is in any position other than fully extended to ground level not working properly.
- Installations after 07/01/2005 which fail to have operational interlock systems as required by FMVSS 571.403/404.
- Wheelchair mounting track shall be secure in the floor.

### Regular Service Entrance

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- An additional fold out step may be provided which will allow for the step level to be no more than six inches to ground level.

### Seating Arrangements

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- Flexibility in seat spacing to accommodate special devices shall be permitted due to the constant changing of passenger requirements.
- Effective 03/01/1994, there shall be no passenger seats installed directly across the aisle way from the lift mechanism.
- No mobile seating devices shall be secured which blocks access to the lift door or emergency exit on buses manufactured on or after 09/01/1998.

### Special Light

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- Lights shall be placed inside the bus to sufficiently illuminate lift area and shall be activated when the door is open.

### Special Service Entrance

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- A head bumper pad shall be installed above lift door and or on lift frame.

### Special Service Entrance Doors

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- All doors shall have positive fastening devices to hold doors in the open position and door bumpers to prevent door-to-body contact.
- All doors shall have weather seals that are in good condition.
- On buses bid after 07/01/1988, doors shall be equipped with a device that will actuate a green flashing visible signal located in the driver's compartment when the door is open and ignition is in "on" position.

### **Out-of-Service Violations**

- **Inoperative green flashing visible signal which indicates lift door is open when required by construction standards.**

### Other

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- All school buses which transport special need pupils shall be equipped with two-way communication devices.

- Battery box and fuel tank may be relocated by the manufacturer to provide equal weight distribution to compensate for power lift weight.
- Evacuation (fire) blanket must be secured in the rear of the bus in a container labeled as a fire (evacuation) blanket.

#### Out-of-Service Violations

- **Bus designed for the transport of pupils with special needs without an operational electronic communication system.**

## PROPANE FUEL SYSTEM

Our inspection procedure focus is on safety rather than installation procedure for the conversion. The inspecting officer should point out and require corrections in installations that are safety related.

### General

- **The system shall be maintained to the manufacturer's specifications.**
- All school buses equipped with dual fuel carburetor equipment using liquefied petroleum or natural gas shall be operated in the L.P.G., natural gas and gasoline mode.
- All devices used in the propane system subject to container pressure shall have a design pressure of at least 250 p.s.i. The inspecting officer should visually check for markings (except carburetor).
- Visually check for grommets around all electrical wiring and control cables passing through metal.
- Visually check for fusing of wiring under dashboard.
- Visually check fittings for signs of wear, leaking, tightness or undo stress (Oil residue around fitting often indicates leaks. Use soap leak detector to check if necessary).

### Tanks

- Visually check the manual 80% liquid level gauge and float gauge. Require replacement if not working properly. Liquid level gauge should open and close using finger pressure – check using gloves.
- Check data plate on tank. Tanks shall be marked. Markings shall be on a metal name plate attached to the container so located as to remain visible after the container is installed. The data plate shall include:
  - Service for which the container is designed. (Liquefied petroleum gas or Propane)
  - Name and address of container supplier or trade name of container
  - Water capacity of container in pounds or US gallons.
  - Design pressure in p.s.i.
  - The wording, "This container shall not contain a product having a vapor pressure in excess of p.s.i. at 100 degrees F."
  - Outside service area in square feet.
  - Relief valve of 312 p.s.i. working pressure after 03/23/1981.



- Visually check tank mounting for looseness, signs of movement, bolts, nuts, brackets, and corrosion.
- Visually check road clearance of tank, it should not be lower than step well.
- Check for shield if tank or any of its fixed parts are within six (6) inches of exhaust system. The brackets and bolts are not to be considered a part of the tank. Exhaust system shall not be supported by tank bracket. The shield may be closer than six (6) inches.
- Check relief vent piping. Must be mounted securely enough to withstand 312 p.s.i. discharge (Top vent is permissible).

## Fuel Lines

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- Check fuel lines for security, strain, wear, rubbing, vibration and grommets or bulkhead fittings.
- Check fuel line routing.
- Fuel lines shall be secured at approximately two foot intervals.
- Fuel lines routed through structural members shall be protected by grommets or bulkhead fittings. Bulkhead fittings are preferred.
- Fuel lines shall be stainless steel, wire braid reinforced and labeled at 10 foot intervals either Liquefied Petroleum Gas or Propane Gas, 350 p.s.i. working pressure, 1750 p.s.i. burst pressure.
- Automatic lock-off solenoid valve should be checked by converting from one fuel to the other with the dashboard mounted while the engine is running.
- Hydrostatic relief valve must be installed in fuel line between tank and fuel filter lock off.

## Fueling Compartment

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- Remote fill type shall be securely locked by key.
- Direct fill shall be securely locked - key not necessary.
- Fuel inlet line fitting shall have a cap covering.

## Relief Valve

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- Relief valve should be located on same side of bus as the fuel supply tank. The vent line should be no longer than two feet and discharged towards the ground at a 45 degree angle away from the bus.
  - **Note:** Due to different type vent installations the inspecting officer must be flexible – safety is the key. A 45-degree angle is preferred for the relief valve vent.

## Automatic Shut Off

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- Check for operation-designed to prevent flow of gasoline when the ignition is in the off position or the bus is operating on propane.

## Decals Stating “Powered by Propane”

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- Decals shall be affixed to school bus body within two inches (2”) of the fueling opening or on fueling opening door, under hood, and on rear bumper, curb side. Black lettering shall state “POWERED BY PROPANE”, with a green background.

## Other

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- Make a visual check to make sure the lock-off valve has not been omitted on the gasoline supply line. (Dual fuel only)
- Make sure the electronic solenoid is not wired direct. It is required to pass through a fuse.
- Visually check for gasoline leaks at the carburetor.

## COMPRESSED NATURAL GAS (CNG)

The focus of our inspection procedure is on safety rather than installation procedure for the conversion. The inspecting officer should point out and require corrections in installations that are safety related.

## General

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- The system shall be maintained to the manufacturer's specifications.
- All school buses equipped with dual fuel equipment shall be operated in both the natural gas and gasoline mode during inspection.
- All devices used in the CNG system shall meet the appropriate ratings.
- The CNG system consists of high pressure equipment: storage cylinders or tanks, fuel lines, regulator(s), solenoids, mixer, check valve, switches or levers, and fuel gauge.
- School bus is to have appropriate signs or decals inside and outside to identify operation by natural gas.
- Equipment is to be securely mounted and appropriately protected.

## Fuel Cylinders

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- Visually check for:
  - Protective paint coating.
  - Mountings for looseness, signs of movement, and corrosion.
  - Looseness or wear of bolts and brackets.
  - Proper label "CNG USE ONLY"; or "FOR CNG ONLY" (decals or stencil).
  - DOT markings (2400 p.s.i.).
  - Valve guards or expanded steel grating.
  - Minimum of four inches (4") clearance from tail pipe.
  - Minimum of eight (8") clearance from muffler or manifold exhaust.
  - Clearance: cylinder shall not hang below the center line of the drive shaft.

## Fuel Lines

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- Visually check for:
  - Signs of movement, vibration, looseness, wear, corrosion or stress.
  - Grommets around the fuel lines where passing through frame.
  - Mountings with rubberized clamps at no more than twenty four inch (24") intervals.
  - Check all fittings with soap and water solution or electronic natural gas detector.

## Decals

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- Decals stating "Powered by Compressed Natural Gas", with black lettering on a white background, shall be affixed to the school bus body within two inches (2") of the fueling opening or on fueling opening door, under the hood, and on rear bumper curb side.
- Cylinder I.D. data.
- Instructions for mechanics in engine compartment.

## Manual Shut-Off Valve

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- Visually check for easy identification and access.

## Automatic Shut-Off

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- Engine should be started and solenoids checked by converting from one fuel to the other.

### Out-of-Service Violations

- **Any leak of propane or CNG.**
- **Liquid level gage inoperative.**
- **Missing decals signifying propane or CNG.**

## HYBRID

Our inspection procedure should focus on safety rather than installation procedure for the conversion. The inspecting officer should point out and require corrections in installations that are safety related.

- No inspection will occur if the unit is plugged into a charging unit or located in a moist or wet environment.
- The inspector needs to be aware of the volts, amps and kilowatts this system contains whether or not it is plugged into a charging unit.
- Before the inspection starts, ensure:
  - The driver interface panel switch is in the off position.
  - The service disconnect switch in the battery box is in the off position.
  - The service disconnect switch in each battery pack is in the off position.

## General

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- **The system shall be maintained to the manufacturer's specifications.**
- All school buses equipped with dual fuel equipment shall be operated in both the diesel and electric mode during inspection.
- All high voltage cables shall be orange colored and isolated from the chassis.
- All high voltage components shall have warning labels.
- There shall be a service disconnect switch on each battery pack.
- The hybrid system shall have an on/off switch within the driver's reach.
- The hybrid system turns off when the key is turned off.

- All battery packs shall be installed in a heavy duty crash protection cage.
- The vehicle must continue to be operable even when the hybrid system is off.
- Grommets on the bottom of the Control Electronics Unit (CEU) shall be in place and in good shape.
- All wires shall be properly insulated as they pass through any metal surrounding.
- Ensure that all panel lights are operational and functioning correctly. The lights must be color specific: Green – ready, Yellow – charging, Amber – system fault.
- Check the hybrid system coolant level in the reservoir under the hood. Inspect the hose connections for leaks or damage.
- The charge cable and its connector must be inspected for damage.
- Inspect the pins of the bus side receptacle for damage or foreign material.

### Out-of-Service Violations

- **Panel lights not working.**
- **System shut off switch not working.**
- **Batteries not properly secured.**
- **Coolant leaks in the hybrid system.**
- **Rubber grommets on the CEU missing or in need of replacement.**
- **Emergency shut off switches not properly marked.**
- **High voltage component warning labels.**

## SCHOOL BUS INSPECTION REPORT (HP 32)

### Purpose

- To record the results of an inspection of the physical condition of school buses used to transport students to and from school and school related activities.

### Use

- If the computerized school bus inspection application is not available, a paper HP32 will be completed. The inspection information will then be entered into the computerized inspection program as soon as possible.

### The Form

- Check only the items that fail to meet the Ohio School Bus Construction Standards, inspection items listed in this manual and violations of other state/federal rules and regulations.
  - **DATE** — Date of inspection.
  - **SCHOOL** — School and/or company name of bus inspected.
  - **ID NUMBER** — Five-digit number assigned by the Bureau of Motor Vehicles.
  - **DISTRICT** — District where the bus is assigned.
  - **LOCAL BUS #** — Number assigned by local school district.
  - **MILEAGE** — Current odometer reading.

- **R** — Check this box if odometer was replaced.
- **CHASSIS, BODY, LETTERING, REAR, and FRONT** — Check only items that need correction or repair.
- Describe in comments section the violation of any item checked.

## Type of Inspection

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- Check the appropriate type of inspection.
  - **Annual** — School bus inspections scheduled by the inspection team - buses are prepared for inspection and free of defects.
  - **Spot** — Unannounced inspection completed after the annual inspection. All school buses shall receive a minimum of one spot inspection during each school year. Shaded areas on the form indicate items that must be checked during a spot inspection.
  - **Re-Inspection** — Inspection completed when a school bus has failed a previous inspection.
  - **New** — Inspection completed after a school bus is purchased and before it is put into service.
    - If new inspection, check caption stating: "School bus has passed inspection and may be operated for 30 days without displaying an identification number."
  - **Crash** — Inspection completed for any bus involved in any type of crash.
  - **Special** — Inspection completed for reasons other than listed above (e.g., school bus involved in a complaint, unusual incident, etc.).
  - **Not Presented** — Annual inspection decal is expired.
- **RECALLS** — Check if all recalls were completed prior to inspection.
- Bus displays valid inspection decal and permitted to transport children. Check with "Yes" or "No."
- **INSPECTED BY** — Signature and unit number of officer/inspector conducting original inspection.

## School Bus Rating System

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- Check the appropriate overall rating of the bus prior to any repairs.
  - **No Defects**
  - **Non Out-of-Service Defects (Non OOS)**
    - *Non OOS defects are those violations listed in the Ohio School Bus Inspection Manual that are not listed specifically in the Out-of-Service criteria.*
    - *Non OOS violations that are unable to be corrected immediately shall be repaired within fifteen (15) days. School buses with un-corrected minor violations older than fifteen (15) days shall be placed Out-of-Service.*
  - **Out-of-Service Defects**
    - *Out-of-Service violations are those violations listed in the Ohio School Bus Inspection Manual that will place the bus immediately out of service. These violations and classification of OUT OF SERVICE will make it illegal to operate the bus for pupil transportation.*
  - **Not Presented for Inspection**
    - Used if a school bus is owned, but not presented for any inspection.

- **Disposition**
  - If directly entered into the computerized school bus inspection program, the paper HP-32 will not be completed. A copy of the School Bus Inspection Summary Report will be supplied to the school system's superintendent or the private owner or designee. Summary Report may be issued electronically, by e-mail or paper.
  - All new school buses will be inspected using the paper HP-32 and follow the disposition below.
  - One copy of the HP 32 will be retained by the inspector until an ID number is assigned, then enter the new inspection into the computerized school bus inspection program.
  - **The new school bus addendum shall be entered into the computerized school bus program by the inspector or the district commercial enforcement commander's designee.**
  - A second copy will be given to the school system's superintendent or the private owner or designee upon completion of the inspection. This form shall serve notice if the bus can or cannot be used to transport children. Once the bus has passed the inspection, this copy will be carried in the bus while in operation until identification number is assigned by the Bureau of Motor Vehicles. (Valid for only 30 days.)
  - Enter the HP32 information directly onto the template and print copies as needed. If the computer is not available, a hand-written HP-32 is permitted.

## AIR BRAKE SYSTEMS CHECKS

### Air Brake Supply Line/ Check and Inversion Valve Test Procedure

1. Chock wheels start engine and charge system to governor cutout, around 120 p.s.i.
2. Shut off engine and push in yellow button to release parking brake; gauges will drop a small amount. Check air gauges; if either indicates a continued loss of pressure, check system for leaks. If any leaks, repair and restart test.
3. Apply and hold service brakes by fully depressing brake pedal and again check for pressure tightness by watching both gauges. If any leaks, repair and restart test.
4. Release service brakes.
5. With the inspector watching the gauges, an assistant locates the wet tank (normally the first tank downstream from the air compressor) petcock and opens it to drain the tank pressure. (CHECK VALVE TEST). **Note:** *newer buses' air brake systems may not have a conventional type wet tank to drain.*
6. When the wet tank is drained, if either gauge indicates a pressure drop, stop the test, make repairs and restart test.
7. Locate and drain the primary reservoir. (Rear brakes).
8. The primary gauge will drop to zero.
9. Secondary gauge may or may not follow the primary gauge as it drops, depending on type of air brake system. If the secondary gauge drops, it shall stop no lower than 70 p.s.i. If it continues below 70 p.s.i., stop the test, make repairs and restart the test. (SUPPLY LINE/ DOUBLE CHECK VALVE TEST)

10. If the check valves are okay, check the operation of the inversion (SR-1, spring brake modulating) valve by applying and releasing the foot valve (primary reservoir empty). The front and rear brakes should apply and release as the service brake pedal is applied and released. The rear brakes are being applied by air exhausting from the spring brake chamber through the spring brake inversion valve.
11. If the rear brakes do not apply, stop the test, make repairs, restart test. (INVERSION VALVE TEST).  
**Note:** *Pressure will drop in the secondary reservoir each time the brakes are applied and released. With continued brake valve cycling, the yellow button on the dash may pop out and the parking brakes will apply automatically.*
12. On some vehicles built after 03/01/1998, there are two control lines going to the rear axle relay valve from the foot valve. One comes from the primary circuit and one comes from the secondary circuit of the foot valve. There is also an internal or an external double check valve at the relay.  
**Note:** *Secondary service line pressure may leak out of the primary service port, or reservoir drain if open, at control line pressures up to 20 p.s.i. when the primary signal is not present. While performing the above inspections, if air starts leaking from the drained primary reservoir above 20 p.s.i., stop the test, make repairs, and restart test. (REAR BRAKE RELAY DOUBLE CHECK VALVE TEST). Close the primary tank petcock.*
13. Start engine and charge the system.
14. Open the secondary tank (front brakes) petcock and drain to zero pressure. The primary gauge may or may not follow the secondary gauge as it drops depending on type of air brake system. If the primary gauge drops, it shall stop no lower than 70 p.s.i. If it continues below 70 p.s.i., stop the test, make repairs and restart the test. (SUPPLY LINE/ DOUBLE CHECK VALVE TEST).

**Note:** *There are exceptions to the above testing procedure. If any doubt, contact the manufacturer of the brake system for proper testing procedures.*

## ABS SYSTEM TEST

- Ignition switch in the "off" position and air system charged.
- Depress foot brake and hold.
- Turn ignition switch to "on" but do not start bus.
- Listen for the "chuff", there should be a single, sharp "chuff" of air pressure from each modulator.

## 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 p.s.i. and 100 p.s.i.

- o **Measuring push rod travel is 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 appropriate table below:

**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

**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

**'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.

**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

**TIE ROD STYLE PISTON BRAKE CHAMBER DATA**

Type	Outside Diameter	Adjustment Limit
30	6-1/2 (165mm)	2.5 (64mm)

**DD-3 BRAKE CHAMBER DATA**

Type	Outside Diameter	Adjustment Limit
30*	8-1/8	2-1/4

\*This chamber has three air lines and is found on motor coaches.

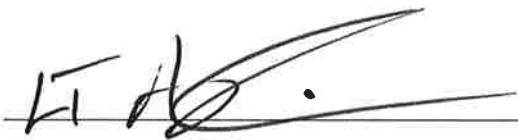


Signed: 

**Captain David R. Allwine, Commander**

Ohio State Highway Patrol


Licensing and Commercial Standards

Signed: 

**Lieutenant Aaron J. Reimer, Commander**

Ohio State Highway Patrol

Licensing and Commercial Standards

Signed: 

**Robert F. Harmon, Director Pupil Transportation**

Ohio Department of Education

Fiscal Services/Pupil Transportation Section

# DOCUMENT REVIEW

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