



**Commercial Bus Inspection Manual  
January 2015**

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## Purpose:

This manual is used by Bus inspectors from the Michigan Department of Transportation (MDOT) to inspect commercial buses. MDOT may alter or change this manual at any time to conform to all Federal Code of Regulations adopted by the Motor Bus Transportation Safety act or other safety related items as MDOT deems necessary for safe operation. The Code of Federal Regulations can be found in the [Federal Motor Carrier Safety Regulations Handbook](#). Every attempt has been made to include all items found during a safety inspection, however, due to different body styles, some items may not be identified in this manual. Any defects or deficiencies found during the inspection should be repaired to meet or exceed Original Equipment Manufacturer (OEM) Standards. If the carrier operates in interstate commerce, under the requirements of the United States Department of Transportation Federal Highway Administration, this inspection shall serve as the carrier's annual inspection requirement under [CFR 396.17](#).

The results of all vehicle inspections are recorded on a vehicle examination report form in three (3) parts.

**Part 1 (Yellow):** If no defects or deficiencies are found, this part shall be maintained in the inspected vehicle and available for review upon demand of an authorized Federal, State or local official. If defects or deficiencies are found MDOT shall retain this part.

**Part 2 (Pink):** Shall be given to a company official upon completion of the inspection to be placed in the vehicle maintenance file.

If defects or deficiencies are found, the motor bus shall have failed the annual inspection requirement. **No bus shall be operated over the highways of this state unless the motor bus has passed an annual inspection within the previous 12 months.** After the repairs of all defects or deficiencies found, the carrier shall contact the department to arrange an inspection of the motor bus.

**Part 3 (White):** shall be retained by MDOT.

Upon passing an inspection, MDOT will affix onto the bus, a dated Michigan Safety Certification Decal.

### \*\*\*\*\*IMPORTANT NOTICE\*\*\*\*\*

**The certification decal should not be confused as evidence of meeting the March 1, deadline for motor bus registration renewal fees that are required. Fees are due before March 1 regardless of the date indicated on this decal.**

## Vehicle and carrier Documents:

Verify and check Registration and Regulatory documents for accuracy:

- a. Carrier Information and Authority in the Bus and Limo Regulatory Information System. (BLRIS) [CFR 392.9a](#)
- b. Vehicle Identification Number (VIN) is accurate to the vehicle and documents

Match the vehicle registration with the VIN plate and check the following. Reject if:

- a. VIN plate is missing, defaced or not securely fastened
- b. VIN is not in agreement with the license plate registration or manufacturer's statement of origin
- c. License Plate is improper to the vehicle

## Drivers Compartment:

Driver's Seat and Seat Belts. [CFR 393.93\(a\)](#). Reject if:

- a. Seat is loose or will not hold adjustments
- b. Seat belts are missing or damaged

Driver Controls. [CFR 393.209](#). Reject if:

- a. Steering wheel is loose or binds
- b. Steering wheel has a spoke cracked through or missing
- c. Steering wheel lash exceeds the following parameters:

Steering Wheel Diameter	Manual Steering System	Power Steering System
16" or less	2" +	4 ¼ " +
18"	2 ¼" +	4 ¾" +
19"	2 3/8"+	5" +
20"	2 ½ " +	5 ¼"+
21"	2 5/8"+	5 ½"+
22"	2 ¾"+	5 ¾"+

- d. Steering column is not securely fastened
- e. Telescopic steering column does not lock into position
- f. Tilt steering column does not lock in at least one position
- g. Power steering will not turn wheels through its full range (lock to lock) while vehicle is motionless and idling
- h. Horn does not operate properly [CFR 393.81](#)

Accelerator, Clutch and Brake pedal. [CFR 396.3\(a\)\(1\)](#). Reject if:

- a. Pedals stick, bind, or fail to return
- b. Power booster for hydraulic brake system fails to operate. (Pump brake pedal to exhaust power assist supply and start engine with foot on brake pedal checking for power boost operation)
- c. Power steering pump hydraulic brake assist fails to operate as designed
- d. Electric motor brake booster fails to activate when key is in off position or as designed.

Windshield. [CFR 393.60\(c\)](#) ,Reject if:

- a. Glass is other than approved safety glass
- b. Any non-transparent material obstructs or impairs driver's clear view of highway or any intersecting highway
- c. Stone chips larger than a 25 cent piece are present within the wiper sweep area on the driver's side
- d. Cracks extend above the height of the steering wheel or are more than 2" from the top or 1" from a side
- e. Any windshield defect that could damage a windshield wiper blade
- f. Any accessories are located more than 4" from the top of the wiper sweep area

Windshield wipers and washer operation. [CFR 393.78](#). Reject if:

- a. Windshield wipers do not operate as specified by the manufacturer or 45 cycles per minute
- b. Wiper blades are torn, smear or streak windshield
- c. Wipers do not clear windshield of washer fluid after 5 strokes
- d. Washers do not operate

Mirrors. [CFR 393.80](#), Reject if:

- a. There is not one at each side located to reflect to the driver a clear vision of the highway
- b. The glass is fogged, cracked or missing
- c. Missing a convex type mirror on right side

Heaters and defrosters. Reject if:

- a. Defroster and blower are not capable of working as designed
- b. Heater cores are leaking coolant
- c. Heaters do not conform to [CFR 393.77](#)

## **Brake Warning devices and gauges [CFR 393.51](#):**

### Hydraulic Brakes:

- a. A warning signal, audible or visible, fails to operate before or upon application of the brakes in the event of a complete failure of a partial system
- b. Inoperative antilock brake system on any vehicle built after March 1, 1999, unless equipped when manufactured at an earlier date. [CFR 393.55](#)

### Air Brakes:

- a. A warning signal, audible and visible, fails to operate continuously whenever the pressure of the compressed air is below a specified pressure, which must be at least one-half of the compressor governor cutout pressure
- b. The pressure gauge indicating the pounds per square inch (psi) or kilopascals (kPa) available for braking is missing, inoperative or inaccurate
- c. Antilock brakes are inoperative on any motor coach built after March 1, 1998, unless equipped when manufactured at an earlier date. [CFR 393.55\(c\)\(2\)](#)

### Hydraulic Brakes Applied or Assisted By Air or Vacuum:

- a. A warning signal, audible or visible, fails to operate continuously whenever the pressure or vacuum does not meet the requirements listed above

## **Emergency Equipment:**

### Fire Extinguisher. [CFR 393.95\(a\)](#), Reject if:

- a. Is not fully charged
- b. Not securely mounted in a location readily accessible
- c. Is not of the required size or class (one 5 B:C or two 4 B:C extinguishers)
- d. Not marked or labeled with its Underwriters Laboratories rating

### Reflective Triangles: [CFR 393.95\(f\)](#), Reject if:

- a. If there is not at least three operable reflectors
- b. They are not protected by enclosure in a box, rack, or other container specially designed and constructed for immediate use
- c. They are not of a type specified in CFR Part 393.95

## Passenger Compartment:

Lighting. [CFR 396.3\(1\)](#) Reject if:

- a. Step lights do not operate or bulb protection lens or lenses missing
- b. Aisle or under seat lighting does not operate if so equipped
- c. Restroom "low intensity" light inoperative
- d. Restroom emergency indicator inoperative, if so equipped

Flooring. [CFR 393.84](#), Reject if:

- a. Floor damage allowing road debris or exhaust to enter interior compartment
- b. Any carpet or molding could cause trip hazard
- c. Oil or grease accumulation on a traction surface
- d. Flooring or Step structure is not sufficient to support weight

Seating. [CFR 571.10](#) Reject if:

- a. Torn upholstery that exposes sharp metal or springs
- b. Seating is not securely attached
- c. Adjustment mechanisms are not operating properly
- d. Perform seating verification. (14 inches of lateral measurement is equal to one seat, allowing for 7 inches of leg room at corners per CFR 571.10.)

Emergency Exits. [CFR 393.62](#), Reject if:

- a. Location or operation decals are missing or defaced
- b. Exits will not operate properly
- c. Exits open too easily or will not stay shut
- d. Obstructions are present that would interfere with escape
- e. Minimum required emergency exits not in compliance:

Effective October 1, 2014: To increase passenger safety, the emergency exit requirements for modified vehicles will now require emergency exits located in the front and rear of the passenger compartment. **Effective October 1 2014: New Vehicles entering a fleet roster must comply with this emergency exit requirement before being put into service.**

A seating verification must be performed to determine the Emergency exit requirements for each vehicle. Each seating position is determined to be a minimum of 14 inches per [CFR 571.10 Designating Seating Positions](#).

\* See the [Emergency Exit](#) and [Seating Verification](#) Guidance Documents on the MDOT website. ([www.michigan.gov/busandlimo](http://www.michigan.gov/busandlimo))

Emergency Exit Requirements	
1-20 Passengers	1Left + 1Right + 1 Window , door or Roof Exit *Exits must be present at each end of passenger compartment.
21-40 Passengers	2L + 2R + 1 Rear Window or Roof Exit
41-60 Passengers	3L + 3R + 1 Rear Window or Roof Exit
61-80 Passengers	4L + 4R + 1 Rear Window or Roof Exit

Windows. Reject if:

- a. Separated, cracked or shattered glass is exposed to passengers
- b. Window tinting that exceeds specifications defined under the Michigan Vehicle Code being Public Act 300 for driver's windows
- c. Glazing is other than a type specified in [CFR 393.60](#)

Interior Miscellaneous. Reject if: [CFR 393.3](#)

- a. Loose ceiling or side panels are present
- b. Sharp moldings or other parts are present
- c. Loose interior accessories are present (T.V. monitors, glasses, lamps, etc.)

Standee Line. [CFR 393.90](#), (If layout allows standees) Reject if:

- a. Line is not present or not in a contrasting color
- b. Warning information sign is missing or defaced

Doors. [CFR 396.3\(a\)\(1\)](#) Reject if:

- a. Missing or unable to stay closed
- b. Door cannot operate properly
- c. Lock cannot be readily released ([See Emergency Exit Operation](#))

## **Exterior:**

Marking of Motor Vehicles. Reject if: [CFR 390.21](#)

- a. The legal name or single trade name of the motor carrier operating the motor vehicle is missing from either side of the vehicle
- b. The USDOT number is missing from either side of the vehicle
- c. Letters/Numbers are not contrasting sharply in color with background
- d. Not legible during daylight hours from 50'

Lighting. [CFR 393.11](#) Reject if any fail to operate or are dim or lack the proper color lens:

- a. Headlamps, hi and low beams
- b. Turn signal lamps
- c. Identification and clearance lamps for vehicles over 80" wide
- d. One back up lamp
- e. License plate lamp
- f. Tail lamps
- g. Side marker lamps
- h. Center marker lamps if over 30' in length
- i. Hazard warning flashing lamps
- j. Stop lamps including 3<sup>rd</sup> brake lamp if equipped

Reflectors. [CFR 393.11](#) Reject if missing or lack the proper color:

- a. Rear
- b. Front Side
- c. Rear side
- d. Center (if over 30' in length)
- e. Not marked with letters SAE or DOT

Tires. [CFR 393.75](#) Reject if:

- a. Any tire, other than a steering axle, with less than 2/32<sup>nd</sup> inches of tread when measured at any point on a major groove
- b. Any tire on a steering axle with less than 4/32 inch tread when measured at any point on a major tread groove
- c. Any part of ply, belt, or cord is exposed
- d. There is any bump, bulge or separation
- e. Tire is marked "not for highway use" or any similar designation
- f. Any other conditions or markings believed to render the tire as unsafe
- g. Front tire is retreaded, recapped or re-grooved
- h. Any tire has been re-grooved or recut below original tread design depth, except tires which are identified as having extra under tread rubber
- i. Tires used on same axle are not same size or type of construction (Mixed bias, belted, radial or snow)
- j. Tire is flat or has an audible leak
- k. Any tire carries a greater weight than is specified on the tire
- l. Any tire is not properly inflated

Wheels and Attachments. [CFR 393.205](#) Reject if:

- a. Wheels or rims are cracked or broken
- b. Stud or bolt holes are elongated
- c. Nuts or bolts are missing or loose
- d. No visible or measurable amount of lubricant showing in hub

Fuel Tank Filler and Cap. [CFR 393.65](#) thru [CFR 393.69](#) Reject if:

- a. Cap is not present
- b. Cap does not fit or seal is missing or damaged
- c. Fill pipe opening is located inside passenger or cargo compartment
- d. Fuel can spill onto exhaust or electrical system

Battery compartment. [CFR 393.30](#) Reject if:

- a. Battery cables are loose, worn or frayed
- b. Accessory feeds or power taps are not overload protected
- c. Battery is cracked or leaking
- d. Battery is not protected from terminals shorting out by excess movement (Hold Downs)
- e. Unsuitable insulated protection to electrical components

Engine Compartment. [CFR 398.7](#) Reject if:

- a. Oil, fuel or coolant lines or hoses are leaking or damaged
- b. Drive belts are cracked, frayed, oil soaked, or damaged
- c. Power steering system leaks ([CFR 393.209\(e\)](#))
- d. Throttle will not return properly or springs are missing and worn
- e. Motor mounts are broken or worn to allow excessive movement
- f. Master cylinder fluid level is less than  $\frac{3}{4}$  full
- g. Brake fluid reservoir is leaking or damaged
- h. Brake fluid is contaminated
- i. Any visual leaking from an electrical component such as an alternator, auxiliary heater, etc.
- j. Any electrical cable insulation that is chafed, frayed, damaged or burnt and causing bare cable to be exposed

Bumpers. Reject if:

- a. Bumper is not firmly attached to frame or chassis
- b. Bumper is not within 30 inches above a level ground
- c. Bumper is less than 18 inches from the widest part of the bus
- d. Bumper extends beyond the widest part of the vehicle

Body. [CFR 393.203](#) Reject if:

- a. Vehicle is not free of any deformations arising from a collision, crash or other impact, excepting minor dents and blemishes
- b. Structural integrity of the body panels including floor, sides and other portions of the outer shell are not sturdy, rigid and complete

### **Underbody:**

Suspension. [CFR 393.207](#) Reject if:

- a. Axle positioning part is cracked, broken, loose or missing
- b. Axle is not in proper alignment
- c. Leaf spring is cracked, broken, missing or shifted out of position
- d. Coil spring is cracked or broken
- e. Torsion bar or system is cracked or broken
- f. Air system is worn, damaged or leakage is greater than 3 psi in a 5 minute period
- g. Air is allowed into suspension system before at least 55 psi is in the braking system.
- h. Rubber Shear Spring (Mor/ryde) has a tear across the spring over 3" wide and more than 1/4" deep

Steering. [CFR 393.209](#) Reject if:

- a. Steering universal joints are worn, faulty or repaired by welding
- b. Steering gear box is loose or missing mounting bolts
- c. Steering gear box or mounting bracket is cracked
- d. Pitman arm on the steering gear is loose
- e. Power steering will not turn wheels through its full range (lock to lock) while vehicle is motionless and idling
- f. There is any movement under steering load of a stud nut
- g. Any motion, other than rotational, between any linkage member and its attachment point
- h. Loose clamp or clamp bolt on tie rod or drag link
- i. Linkage components are not secured with proper pins or devices
- j. Power steering leaks
- k. Any movement in a ball joint other than rotational while suspension is supported by a floor jack, hoist, or jack stand.

Brakes. [CFR 393.40](#) Reject if:

- a. Air or hydraulic leaks are present
- b. Any brake part is missing, excessively worn, loose or broken
- c. There is no braking action at any wheel
- d. Any brake hose or tubing that is leaking, restricted, deteriorated, insecurely fastened or retained, improperly joined or damaged
- e. Any brake hose or tubing contacts a wheel, tire, steering component or frame
- f. Brake lining is broken, not firmly attached to shoe, contaminated with oil, fluid or grease
- g. Brake drum is scored greater than .060 inches
- h. Brake drum that has a thickness less than the minimum stamped on the assembly or as stated by the manufacturer
- i. Brake drum that is broken or has a crack extending to an open edge
- j. Air drum brake lining thickness is less than 1/4 inches at shoe center
- k. Hydraulic or electric drum brake lining thickness is less than 1/16 inches at shoe center
- l. Disc brake lining is less than 1/8 inches at thinnest point
- m. There is a mismatch of air chamber sizes or slack adjuster lengths
- n. [Automatic Slack Adjusters](#) missing from a vehicle built after 10/20/1994
- o. Evidence of metal to metal contact to a rotor
- p. Evidence of rusted or discolored rotor surface or cracked to the edge
- q. Any wheel seal is leaking that shows evidence of contamination to the braking surfaces
- r. Any automatic slack adjuster is out of adjustment
- s. Brake chamber push rod travel exceeds the manufacturer's maximum stroke allowance as follows:

[Bolt Type Brake Chamber Data](#)

Type	Effective Area (square Inch)	Outside Diameter (Inches)	Maximum Stroke (Inches)
A	12	6 15/16	1 3/8
B	24	9 3/16	1 3/4
C	16	8 1/16	1 3/4
D	6	5 1/4	1 1/4
E	9	6 3/16	1 3/8
F	36	11	2 1/4
G	30	9 7/8	2

Rotochamber Data

Type	Effective Area (square Inch)	Outside Diameter (Inches)	Maximum Stroke (Inches)
9	9	4 9/32	1 ½
12	12	4 13/16	1 ½
16	16	5 13/32	2
20	20	5 15/16	2
24	24	6 13/32	2
30	30	7 1/16	2 ¼
36	36	7 5/8	2 ¾
50	50	8 7/8	3

DD-3 Clamp Chamber Data

Type	Effective Area (square Inch)	Outside Diameter (Inches)	Maximum Stroke (Inches)
30	N/A	8 1/8	2 1/4

Clamp Type Brake Chamber Data

Type	Effective Area ( Square Inches)	Outside Diameter (Inches)	Maximum Stroke (Inches)
6	6	4 ½	1 ¼
9	9	5 ¼	1 3/8
12	12	5 11/16	1 3/8
16	16	6 3/8	1 ¾
20	20	6 25/32	1 ¾
24	24	7 7/32	1 ¾ *
30	30	8 3/32	2
36	36	9	2 1/4
*2 inches for long stroke design			

Frame and cross members. [CFR 393.201](#) Reject if:

- a. Frame is cracked, loose, sagging or broken
- b. Holes have been drilled in the top or bottom rail flanges, except as specified by the manufacturer
- c. Frame components are missing, cracked, rusted, broken, loose or in deteriorated condition
- d. Body support components are missing, cracked, rusted, broken, loose or in deteriorated condition

Drive Shaft. [CFR 393.89](#) Reject if:

- a. Universal joints, Slip joints, or carrier bearings show excessive wear
- b. Shaft safety guard(s) is missing or ineffective

Exhaust System. [CFR 393.83](#) Reject if:

- a. Any part of the system is temporarily repaired with wrap or patches
- b. There are holes, cracks, loose or leaking seams
- c. A muffler cutout or similar device is present
- d. Any part of the system passes through the passenger compartment
- e. System is not securely fastened with proper clamps and hangers
- f. Exposed system does not have adequate heat shields to protect electrical wiring, fuel supply, suspension components or other combustible parts of the vehicle from damage
- g. Exhaust discharges immediately below the fuel tank or fuel filler pipe
- h. Exhaust discharges at or more than 6 inches forward of the rearmost part of a bus powered by a gasoline engine
- i. Exhaust discharges at or more than 15 inches forward of the rearmost part of the bus or to the rear of all doors or windows designed to be opened, except emergency exits, on a bus powered by fuels other than gasoline

Fuel System. [CFR 393.65](#) thru [CFR 393.69](#) Reject if:

- a. There is fuel leakage at any point in any system
- b. Any part of the fuel system is not securely fastened
- c. Any fuel tank or line not specifically designed or manufactured in accordance with FMCSA 393 Subpart E
- d. Any fuel line is contacting high temperature surfaces or moving parts
- e. Fuel tank or line intrudes into or above any driver or passenger compartment
- f. Any part of the fuel tank is forward of the front axle
- g. Any part of the system extends beyond the widest part of the bus