**Section 443.APPENDIX B Battery or Batteries through Bumper, Front**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a) BATTERY OR | | | | | | |  | |
|  | BATTERIES | | | | | | PROCEDURE/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Battery may be mounted either in engine compartment or on outside of passenger/driver area. Battery shall be a nominal 12-volt type. It shall be of sufficient capacity to supply all electrical requirements but shall be rated not less than either 70-ampere hours at the 20-hour discharge rate of 105-minutes at the 25-ampere discharge rate. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Battery or batteries are not securely mounted; excessively corroded; of insufficient capacity. | |
|  | | | | | | |  | |
| b) BATTERY CABLES | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Check condition. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Cables are corroded or are not securely attached. | |
|  | | | | | | |  | |
| c) BATTERY CARRIER | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | When the battery is mounted outside the engine compartment it shall be welded or bolted in a closed, weather-tight, and vented compartment that is located and arranged so as to provide for convenient routine servicing. The battery compartment door, or cover, shall be secured by a manually operated latch or other fastener. A latch or fastener must be designed in such a fashion as to keep the door closed when in the latched position. Each electrical cable connecting the battery in this carrier to the body or chassis shall be one piece between the terminal connector and the first body or chassis terminal connector. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Battery carrier does not meet requirements. | |
|  | | | | | | |  | |
| d) BRAKES | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | *Every motor vehicle shall be equipped with two separate means of applying the brakes and they shall be so constructed that failure of any one part of the operating mechanism shall not leave the motor vehicle without brakes.* (Section 12-301(a) of the Illinois Vehicle Equipment Law) | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Brakes do not meet requirements. | |
|  | | | | | | |  | |
|  | | 1) Backing Plate | | | | |  | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Check condition. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Backing plate is in poor condition. | |
|  | | | | | | |  | |
|  | | 2) Drums/Discs | | | | |  | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Inspect drums and/or discs for cracks or for being worn or reworked beyond the manufacturer's minimum limits. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Worn or reworked beyond the manufacturer's minimum limits. | |
|  | | | | | | |  | |
|  | | 3) Emergency | | | | |  | |
|  | | | /Parking Brake | | | |  | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | *Emergency/parking brake system must apply brakes to at least two wheels.* (Section 12-301(a) of the Illinois Vehicle Equipment Law) | |
|  | | | | | | |  | |
|  | | AGENCY NOTE: | | | | | Micro brakes are not considered a separate means of braking and are not acceptable. | |
|  | | | | | | |  | |
|  | | | | | | | Procedures for testing: | |
|  | | | | | | |  | |
|  | | | | | | | 1) | Apply operating control fully. |
|  | | | | | | |  | |
|  | | | | | | | 2) | Check actuating mechanism for release. |
|  | | | | | | |  | |
|  | | | | | | | Brake Performance Test: | |
|  | | | | | | |  | |
|  | | | | | | | Using Drive-On Pad Type Tester: | |
|  | | | | | | |  | |
|  | | | | | | | 1) | Drive vehicle onto brake machine pads at 4-8 m.p.h. |
|  | | | | | | |  | |
|  | | | | | | | 2) | Apply emergency/parking brake to bring vehicle to a halt. Do not lock wheels. |
|  | | | | | | |  | |
|  | | | | | | | 3) | Note the braking forces registered by the brake machine. |
|  | | | | | | |  | |
|  | | | | | | | Using Roll-On Type Tester: | |
|  | | | | | | |  | |
|  | | | | | | | 1) | Position axle with emergency brake onto roller. |
|  | | | | | | |  | |
|  | | | | | | | 2) | Apply emergency brake but do not lock wheels. |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Emergency/parking brake does not meet requirements. | |
|  | | | | | | |  | |
|  | | | | | | | Procedures for testing: | |
|  | | | | | | |  | |
|  | | | | | | | 1) | Not equipped with emergency/parking brakes. Operating mechanism does not hold in the applied positon. |
|  | | | | | | |  | |
|  | | | | | | | 2) | Actuating mechanism does not fully release when release control is operated properly. |
|  | | | | | | |  | |
|  | | | | | | | Brake Performance Test: | |
|  | | | | | | |  | |
|  | | | | | | | Drive-On Tester: | |
|  | | | | | | |  | |
|  | | | | | | | Machine does not register a total braking force of at least 20% of vehicle empty weight. Braking forces at opposite wheels on same axle vary more than 20%. | |
|  | | | | | | |  | |
|  | | | | | | | Roll-On Tester: | |
|  | | | | | | |  | |
|  | | | | | | | Machine does not register a total braking force of at least 20% of vehicle empty weight. Braking forces at opposite wheels on same axle vary more than 20%. | |
|  | | | | | | |  | |
|  | | 4) Emergency Brake | | | | |  | |
|  | | | Ratchet (Pedal or Level | | | |  | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Must be in proper adjustment. If vehicle was manufactured with a warning light, it must be visible when emergency brake is activated. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Emergency brake ratchet or warning light do not meet requirements. | |
|  | | | | | | |  | |
|  | | 5) Pedal Clearance | | | | |  | |
|  | | | (Service Brakes) | | | |  | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Minimum 1½ inch clearance with pedal fully depressed. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Pedal clearance does not meet requirements. | |
|  | | | | | | |  | |
|  | | 6) Power Systems | | | | |  | |
|  | | | | | | |  | |
|  | | | | A) Air | | |  | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | i) Air Pressure | | |
|  | | | | | | |  | |
|  | | | | | | | With air system fully charged (compressor governor "cut-out") run engine at low idle. Make one full (maximum) brake application and immediately record reservoir air pressure. | |
|  | | | | | | |  | |
|  | | | | | | | Apply and release brakes until pressure indicated on the air gauge is at least 10 psi (i.e., pounds per square inch) below governor "cut-in" pressure. Run engine at high idle and determine seconds required to raise reservoir pressure from recorded pressure. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Time required to raise air pressure from recorded to cut-out is more than 30 seconds. Air gauge is missing or does not operate. | |
|  | | | | | | |  | |
|  | | | | | | ii) Low Pressure Warning Device | | |
|  | | | | | | |  | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Complete the following steps to evaluate low pressure warning device. | |
|  | | | | | | |  | |
|  | | | | | | | 1) | Before starting the engine, apply brakes and release until low air pressure warning device functions. |
|  | | | | | | |  | |
|  | | | | | | | 2) | Start the engine. |
|  | | | | | | |  | |
|  | | | | | | | 3) | Apply service brakes and release until air compressor is activated. |
|  | | | | | | |  | |
|  | | | | | | | 4) | Continue to run engine until compressor cut-out pressure is reached. |
|  | | | | | | |  | |
|  | | | | | | | 5) | Record compressor cut-out pressure. |
|  | | | | | | |  | |
|  | | | | | | | 6) | Shut engine off. |
|  | | | | | | |  | |
|  | | | | | | | Determine if low pressure warning device is missing or inoperative. | |
|  | | | | | | |  | |
|  | | | | | | | If located in the driver's forward field of view, the warning device can be a visual device only. If not located in the driver's front view, the device must be both audible and visible. For buses manufactured before September 1, 1974, the device can be either audible or visible. | |
|  | | | | | | |  | |
|  | | | | | | | Record the reading found on the pressure gauge at which the low pressure warning device functions. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Missing or inoperative low pressure warning device. Device does not meet requirements. | |
|  | | | | | | |  | |
|  | | | | | | | Low pressure warning device does not operate at 55 psi or one half cut-out pressure, whichever is less. | |
|  | | | | | | |  | |
|  | | | | B) Electric/ | | | | |
|  | | | | | Hydraulic | | | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Turn key to "off" position. Depress service brake pedal. Electric hydraulic pump must come "on" (listen). | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Electric pump does not operate properly or is absent. | |
|  | | | | | | |  | |
|  | | | | C) Hydraulic | | | | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Inspect booster belt(s), supports, tubes, hoses, connections and general condition. Clean reservoir and cover as necessary and check master cylinder fluid level. Do not contaminate fluid. | |
|  | | | | | | |  | |
|  | | | | | | | Turn key to "on" position. Warning signal must come on (look/listen). Depress brake pedal lightly. Start engine. Pedal must move down slightly (feel). Warning signal must go "off" (look/listen). | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Belt is slack or worn; tube or hose is damaged; any part leaks or is cracked; master cylinder fluid is below manufacturer's recommended capacity. | |
|  | | | | | | |  | |
|  | | | | | | | Either booster or warning signal does not operate properly. | |
|  | | | | | | |  | |
|  | | | | D) Vacuum/ | | | | |
|  | | | | | Hydraulic | | | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Inspect tank(s), chambers, hoses, tubes, connectors, clamps, and booster air cleaner. | |
|  | | | | | | |  | |
|  | | | | | | | Inspect supports and attachments. | |
|  | | | | | | |  | |
|  | | | | | | | With engine off, repeatedly apply service brakes until vacuum is depleted, with medium pressure on brake pedal, start engine; release brake and operate engine until maximum vacuum is established; stop engine; apply service brakes hard. | |
|  | | | | | | |  | |
|  | | | | | | | With brakes still applied, start engine; after one minute of running engine, check "Low Vacuum" indicator. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Any component is restricted, collapsed, scraped, cracked, loose, or broken. Booster air cleaner is clogged. | |
|  | | | | | | |  | |
|  | | | | | | | Any support or attachment is broken. Any connecting line or other component is not attached or supported so as to prevent damage from scraping or rubbing. | |
|  | | | | | | |  | |
|  | | | | | | | Foot pedal does not fall away from foot when engine is started; insufficient vacuum reserve to permit one full service brake application after engine is off without actuating "low vacuum" indicator; valve or diaphragm leaking. | |
|  | | | | | | |  | |
|  | | 7) Service Brakes | | | | | | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | *Must be equipped with service brakes on all wheels*. (Section 12-301(a)(5) of the Illinois Vehicle Equipment Law) | |
|  | | | | | | |  | |
|  | | | | | | | Must be equipped with a "split system" on service brakes. (49 CFR 571.105) | |
|  | | | | | | |  | |
|  | | | | | | | Power-assisted service brakes are required. (49 CFR 571.105) | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Service brakes do not meet requirements. | |
|  | | | | | | |  | |
|  | | | | A) Brake | | | | |
|  | | | | | Inspection | | | |
|  | | | | | Report | | | |
|  | | | | | | | PROCEDURSE/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Verify Brake Inspection Report for following (refer to Section 443.Illustration C for example of form): | |
|  | | | | | | |  | |
|  | | | | | | | i) | Vehicle Identification Number (VIN), make and year must correspond to the bus presented for inspection. |
|  | | | | | | |  | |
|  | | | | | | | ii) | Brake Inspection Report must indicate the date and mileage at the time the brake inspection was performed. If date is more than one year prior to time of inspection or mileage has exceeded 10,000 miles, a brake inspection must be performed. |
|  | | | | | | |  | |
|  | | | | | | | iii) | The form must be completed with all required information. No blank lines are acceptable. |
|  | | | | | | |  | |
|  | | | | | | | Exception: If the bus has operated less than 10,000 miles and less than 12 months have passed since the bus was manufactured, a Brake Inspection report is not required. Write "Less than 10,000 miles and less than one year old" in the Remarks Section on the Vehicle Inspection Report. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Absent, invalid, or incomplete brake inspection report. | |
|  | | | | | | |  | |
|  | | | | B) Brake | | | | |
|  | | | | | Performance | | | |
|  | | | | | Test | | | |
|  | | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Using Drive-On Pad Type Brake Tester: | |
|  | | | | | | |  | |
|  | | | | | | | Check vehicle's stopping ability before testing. | |
|  | | | | | | |  | |
|  | | | | | | | Drive vehicle onto brake machine pads at 4-8 m.p.h. | |
|  | | | | | | |  | |
|  | | | | | | | Apply service brakes to bring vehicle to a halt. Do not lock wheels. | |
|  | | | | | | |  | |
|  | | | | | | | Note the braking forces registered by the brake machine. | |
|  | | | | | | |  | |
|  | | | | | | | Using Roll-On Type Tester: | |
|  | | | | | | |  | |
|  | | | | | | | When using roller-type tester each axle must be tested separately. Transmission must be in neutral when testing brakes on any drive axle. | |
|  | | | | | | |  | |
|  | | | | | | | Drive front axle onto rollers. Start roller motor. Apply service brakes but do not lock wheels. | |
|  | | | | | | |  | |
|  | | | | | | | Repeat the above steps for each axle. | |
|  | | | | | | |  | |
|  | | | | | | | The total braking force on a vehicle must be determined by adding the result of the test on each axle. | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Drive-On Tester: | |
|  | | | | | | |  | |
|  | | | | | | | Machine does not register a total braking force of at least 60% of the vehicle empty weight. | |
|  | | | | | | |  | |
|  | | | | | | | Computerized tester does not register a total braking force of at least 45% of the vehicle empty weight. | |
|  | | | | | | |  | |
|  | | | | | | | Braking forces at opposite wheels on same axle vary more than 20%. | |
|  | | | | | | |  | |
|  | | | | | | | Roll-On Tester: | |
|  | | | | | | |  | |
|  | | | | | | | Machine does not register a total braking force of at least 60% of the vehicle empty weight. | |
|  | | | | | | |  | |
|  | | | | | | | Braking force at opposite wheels on same axle vary more than 20%. | |
| e) BUMPER, FRONT | | | | | | |  | |
|  |  | | | | | | PROCEDURES/SPECIFICATIONS: | |
|  | | | | | | |  | |
|  | | | | | | | Manufacturer's standard for vehicle or an equivalent bumper which meets or exceeds manufacturer's standards. Black color is not required. | |
|  | | | | | | |  | |
|  | | | | | | | (See CROSSING CONTROL ARE in SECTOIN 443.APPENDIX C for requirements.) | |
|  | | | | | | |  | |
|  | | | | | | | REJECT VEHICLE IF: | |
|  | | | | | | |  | |
|  | | | | | | | Bumper must be solidly attached, and free from damage or sharp edges. | |

(Source: Amended at 22 Ill. Reg. 15371, effective August 7, 1998)