Appendix A to Part 396 - Minimum Periodic Inspection Standards

A vehicle does not pass an inspection if it has one of the following defects or deficiencies:

1. ***Brake System.***

a. ***Service brakes.***

(1) Absence of braking action on any axle required to have brakes upon application of the service brakes (such as missing brakes or brake shoe(s) failing to move upon application of a wedge, S-cam, cam, or disc brake).

(2) Missing or broken mechanical components including: shoes, lining, pads, springs, anchor pins, spiders, cam rollers, push-rods, and air chamber mounting bolts.

(3) Loose brake components including air chambers, spiders, and cam shaft support brackets.

(4) Audible air leak at brake chamber (Example-ruptured diaphragm, loose chamber clamp, etc.).

(5) Readjustment limits.

(a) The maximum pushrod stroke must not be greater than the values given in the tables below and at § 393.47(e). Any brake stroke exceeding the readjustment limit will be rejected. Stroke must be measured with engine off and reservoir pressure of 80 to 90 psi with brakes fully applied.

Clamp-Type Brake Chambers

Type	Outside diameter	Brake readjustment limit: standard stroke chamber	Brake readjustment limit: long stroke chamber
6	41⁄2 in. (114 mm)	11⁄4 in. (31.8 mm)	
9	51⁄4 in. (133 mm)	13⁄8 in. (34.9 mm)	
12	511⁄16 in. (145 mm)	13⁄8 in. (34.9 mm)	13⁄4 in. (44.5 mm).
16	63⁄8 in. (162 mm)	13⁄4 in. (44.5 mm)	2 in. (50.8 mm).
20	625⁄32 in. (172 mm)	13⁄4 in. (44.5 mm)	2 in. (50.8 mm). 21⁄2 in. (63.5 mm).[1]
24	77⁄32 in. (184 mm)	13⁄4 in. (44.5 mm)	2 in. (50.8 mm). 21⁄2 in. (63.5 mm).[2]
30	83⁄32 in. (206 mm)	2 in. (50.8 mm)	21⁄2 in. (63.5 mm).

Type	Outside diameter	Brake readjustment limit: standard stroke chamber	Brake readjustment limit: long stroke chamber
36	9 in. (229 mm)	21⁄2 in. (63.5 mm)	

[1] For type 20 chambers with a 3-inch (76 mm) rated stroke.

[2] For type 24 chambers with a 3-inch (76 mm) rated stroke.

Bendix DD-3 Brake Chambers

Type	Outside diameter	Brake readjustment limit
30	81⁄8 in. (206 mm)	21⁄4 in. (57.2 mm).

Bolt-Type Brake Chambers

Type	Outside diameter	Brake readjustment limit
A	615⁄16 in. (176 mm)	13⁄8 in. (34.9 mm).
B	93⁄16 in. (234 mm)	13⁄4 in. (44.5mm).
C	81⁄16 in. (205 mm)	13⁄4 in. (44.5 mm).
D	51⁄4 in. (133 mm)	11⁄4 in. (31.8 mm).
E	63⁄16 in. (157 mm)	13⁄8 in. (34.9 mm).
F	11 in. (279 mm)	21⁄4 in. (57.2 mm).
G	97⁄8 in. (251 mm)	2 in. (50.8 mm).

Rotochamber-Type Brake Chambers

Type	Outside diameter	Brake readjustment limit
9	49⁄32 in. (109 mm)	11⁄2 in. (38.1 mm).
12	413⁄16 in. (122 mm)	11⁄2 in. (38.1 mm).
16	513⁄32 in. (138 mm)	2 in. (50.8 mm).
20	515⁄16 in. (151 mm)	2 in. (50.8 mm).
24	613⁄32 in. (163 mm)	2 in. (50.8 mm).
30	71⁄16 in. (180 mm)	21⁄4 in. (57.2 mm).
36	75⁄8 in. (194 mm)	23⁄4 in. (69.9 mm).

Type	Outside diameter	Brake readjustment limit
50	87⁄8 in. (226 mm)	3 in. (76.2 mm).

(b) For actuator types not listed in these tables, the pushrod stroke must not be greater than 80 percent of the rated stroke marked on the actuator by the actuator manufacturer, or greater than the readjustment limit marked on the actuator by the actuator manufacturer.

(6) Brake linings or pads.

(a) Lining or pad is not firmly attached to the shoe;

(b) Saturated with oil, grease, or brake fluid; or

(c) Non-steering axles: Lining with a thickness less than 1⁄4 inch at the shoe center for air drum brakes, 1⁄16 inch or less at the shoe center for hydraulic and electric drum brakes, and less than 1⁄8 inch for air disc brakes.

(d) Steering axles: Lining with a thickness less than 1⁄4 inch at the shoe center for drum brakes, less than 1⁄8 inch for air disc brakes and 1⁄16 inch or less for hydraulic disc and electric brakes.

(7) Missing brake on any axle required to have brakes.

(8) Mismatch across any power unit steering axle of:

(a) Air chamber sizes.

(b) Slack adjuster length.

Wedge Brake Data - Movement of the scribe mark on the lining shall not exceed 1/16 inch.

b. ***Parking Brake System.*** No brakes on the vehicle or combination are applied upon actuation of the parking brake control, including driveline hand controlled parking brakes.

c. ***Brake Drums or Rotors.***

(1) With any external crack or cracks that open upon brake application (do not confuse short hairline heat check cracks with flexural cracks).

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

d. ***Brake Hose.***

(1) Hose with any damage extending through the outer reinforcement ply. (Rubber impregnated fabric cover is not a reinforcement ply). (Thermoplastic nylon may have braid reinforcement or color difference between cover and inner tube. Exposure of second color is cause for rejection.

(2) Bulge or swelling when air pressure is applied.

(3) Any audible leaks.

(4) Two hoses improperly joined (such as a splice made by sliding the hose ends over a piece of tubing and clamping the hose to the tube).

(5) Air hose cracked, broken or crimped.

e. ***Brake Tubing.***

(1) Any audible leak.

(2) Tubing cracked, damaged by heat, broken or crimped.

f. ***Low Pressure Warning Device*** missing, inoperative, or does not operate at 55 psi and below, or 1⁄2 the governor cut-out pressure, whichever is less.

g. ***Tractor Protection Valve.*** Inoperable or missing tractor protection valve(s) on power unit.

h. ***Air Compressor.***

(1) Compressor drive belts in condition of impending or probable failure.

(2) Loose compressor mounting bolts.

(3) Cracked, broken or loose pulley.

(4) Cracked or broken mounting brackets, braces or adapters.

i. ***Electric Brakes.***

(1) Absence of braking action on any wheel required to have brakes.

(2) Missing or inoperable breakaway braking device.

j. ***Hydraulic Brakes. (Including Power Assist Over Hydraulic and Engine Drive Hydraulic Booster).***

(1) Master cylinder less than 1⁄4 full.

(2) No pedal reserve with engine running except by pumping pedal.

(3) Power assist unit fails to operate.

(4) Seeping or swelling brake hose(s) under application of pressure.

(5) Missing or inoperative check valve.

(6) Has any visually observed leaking hydraulic fluid in the brake system.

(7) Has hydraulic hose(s) abraded (chafed) through outer cover-to-fabric layer.

(8) Fluid lines or connections leaking, restricted, crimped, cracked or broken.

(9) Brake failure or low fluid warning light on and/or inoperative.

k. ***Vacuum Systems.*** Any vacuum system which:

(1) Has insufficient vacuum reserve to permit one full brake application after engine is shut off.

(2) Has vacuum hose(s) or line(s) restricted, abraded (chafed) through outer cover to cord ply, crimped, cracked, broken or has collapse of vacuum hose(s) when vacuum is applied.

(3) Lacks an operative low-vacuum warning device as required.

l. Antilock Brake System[1 2 3]

(1) Missing ABS malfunction indicator components (*i.e.,* bulb, wiring, etc.).

(2) ABS malfunction indicator that does not illuminate when power is first applied to the ABS controller (ECU) during initial power up.

(3) ABS malfunction indicator that stays illuminated while power is continuously applied to the ABS controller (ECU).

(4) ABS malfunction indicator lamp on a trailer or dolly does not cycle when electrical power is applied

(a) only to the vehicle's constant ABS power circuit, or

(b) only to the vehicle's stop lamp circuit.

(5) With its brakes released and its ignition switch in the normal run position, power unit does not provide continuous electrical power to the ABS on any air-braked vehicle it is equipped to tow.

(6) Other missing or inoperative ABS components.

1 Power units manufactured after March 1, 2001, have two ABS malfunction indicators, one for the power unit and one for the units that they tow. Both malfunction indicators are required to be fully functional.

2 Air-braked vehicles: Subsections (1)-(6) of this section are applicable to tractors with air brakes built on or after March 1, 1997, and all other vehicles with air brakes built on or after March 1, 1998.

3 Hydraulic-braked vehicles: Subsections (1)-(3) of this section are applicable to vehicles over 10,000 lbs. GVWR with hydraulic brakes built on or after September 1, 1999. Subsection (6) of this section is applicable to vehicles over 10,000 lbs. with hydraulic brakes built on or after March 1, 1999.

m. Automatic Brake Adjusters

(1) Failure to maintain a brake within the brake stroke limit specified by the vehicle manufacturer.

(2) Any automatic brake adjuster that has been replaced with a manual adjuster.

(3) Damaged, loose, or missing components.

(4) Any brake that is found to be out of adjustment on initial inspection must be evaluated to determine why the automatic brake adjuster is not functioning properly and the problem must be corrected in order for the vehicle to pass the inspection. It is not acceptable to manually adjust automatic brake adjusters without first correcting the underlying problem. For example, there may be other components within the braking system that are distressed or out of specification (*i.e.,* broken welds, loose mounting hardware, cracked brake drums, worn bushings, etc.) that would require immediate attention.

2. ***Coupling devices.***

a. ***Fifth Wheels.***

(1) Mounting to frame.

(a) Any fasteners missing or ineffective.

(b) Any movement between mounting components.

(c) Any mounting angle iron cracked or broken.

(2) Mounting plates and pivot brackets.

(a) Any fasteners missing or ineffective.

(b) Any welds or parent metal cracked.

(c) More than 3⁄8 inch horizontal movement between pivot bracket pin and bracket.

(d) Pivot bracket pin missing or not secured.

(3) Sliders.

(a) Any latching fasteners missing or ineffective.

(b) Any fore or aft stop missing or not securely attached.

(c) Movement more than 3⁄8 inch between slider bracket and slider base.

(d) Any slider component cracked in parent metal or weld.

(4) Lower coupler.

(a) Horizontal movement between the upper and lower fifth wheel halves exceeds 1⁄2 inch.

(b) Operating handle not in closed or locked position.

(c) Kingpin not properly engaged.

(d) Separation between upper and lower coupler allowing light to show through from side to side.

(e) Cracks in the fifth wheel plate.

Exceptions: Cracks in fifth wheel approach ramps and casting shrinkage cracks in the ribs of the body of a cast fifth wheel.

(f) Locking mechanism parts missing, broken, or deformed to the extent the kingpin is not securely held.

b. ***Pintle Hooks.***

(1) Mounting to frame.

(a) Any missing or ineffective fasteners (a fastener is not considered missing if there is an empty hole in the device but no corresponding hole in the frame or vice versa).

(b) Mounting surface cracks extending from point of attachment (e.g., cracks in the frame at mounting bolt holes).

(c) Loose mounting.

(d) Frame cross member providing pintle hook attachment cracked.

(2) Integrity.

(a) Cracks anywhere in pintle hook assembly.

(b) Any welded repairs to the pintle hook.

(c) Any part of the horn section reduced by more than 20%.

(d) Latch insecure.

c. ***Drawbar/Towbar Eye.***

(1) Mounting.

(a) Any cracks in attachment welds.

(b) Any missing or ineffective fasteners.

(2) Integrity.

(a) Any cracks.

(b) Any part of the eye reduced by more than 20%.

d. ***Drawbar/Towbar Tongue.***

(1) Slider (power or manual).

(a) Ineffective latching mechanism

(b) Missing or ineffective stop.

(c) Movement of more than 1⁄4 inch between slider and housing.

(d) Any leaking, air or hydraulic cylinders, hoses, or chambers (other than slight oil weeping normal with hydraulic seals).

(2) Integrity.

(a) Any cracks.

(b) Movement of 1⁄4 inch between subframe and drawbar at point of attachment.

e. ***Safety Devices.***

(1) Safety devices missing.

(2) Unattached or incapable of secure attachment.

(3) Chains and hooks.

(a) Worn to the extent of a measurable reduction in link cross section.

(b) Improper repairs including welding, wire, small bolts, rope and tape.

(4) Cable.

(a) Kinked or broken cable strands.

(b) Improper clamps or clamping.

f. ***Saddle-Mounts.***

(1) Method of attachment.

(a) Any missing or ineffective fasteners.

(b) Loose mountings.

(c) Any cracks or breaks in a stress or load bearing member.

(d) Horizontal movement between upper and lower saddle-mount halves exceeds 1⁄4 inch.

3. ***Exhaust System.***

a. Any exhaust system determined to be leaking at a point forward of or directly below the driver/sleeper compartment.

b. A bus exhaust system leaking or discharging to the atmosphere:

(1) Gasoline powered - excess of 6 inches forward of the rearmost part of the bus.

(2) Other than gasoline powered - in excess of 15 inches forward of the rearmost part of the bus.

(3) Other than gasoline powered - forward of a door or window designed to be opened. (exception: Emergency exits).

c. No part of the exhaust system of any motor vehicle 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 motor vehicle.

4. ***Fuel System.***

a. A fuel system with a visable leak at any point.

b. A fuel tank filler cap missing.

c. A fuel tank not securely attached to the motor vehicle by reason of loose, broken or missing mounting bolts or brackets (some fuel tanks use springs or rubber bushings to permit movement).

5. ***Lighting Devices.*** All lighting devices and reflectors required by part 393 shall be operable.

6. ***Safe Loading.***

a. Part(s) of vehicle or condition of loading such that the spare tire or any part of the load or dunnage can fall onto the roadway.

b. Protection Against Shifting Cargo - Any vehicle without a front-end structure or equivalent device as required.

c. Container securement devices on intermodal equipment - All devices used to secure an intermodal container to a chassis, including rails or support frames, tiedown bolsters, locking pins, clevises, clamps, and hooks that are cracked, broken, loose, or missing.

7. ***Steering Mechanism.***

a. ***Steering Wheel Free Play (on vehicles equipped with power steering the engine must be running).***

Steering wheel diameter	Manual steering system	Power steering system
16″	2″	41⁄2″
18″	21⁄4″	43⁄4″
20″	21⁄2″	51⁄4″
22″	23⁄4″	53⁄4″

b. ***Steering Column.***

(1) Any absence or looseness of U-bolt(s) or positioning part(s).

(2) Worn, faulty or obviously repair welded universal joint(s).

(3) Steering wheel not properly secured.

c. ***Front Axle Beam and All Steering Components Other Than Steering Column.***

(1) Any crack(s).

(2) Any obvious welded repair(s).

d. ***Steering Gear Box.***

(1) Any mounting bolt(s) loose or missing.

(2) Any crack(s) in gear box or mounting brackets.

e. ***Pitman Arm.*** Any looseness of the pitman arm on the steering gear output shaft.

f. ***Power Steering.*** Auxiliary power assist cylinder loose.

g. ***Ball and Socket Joints.***

(1) Any movement under steering load of a stud nut.

(2) Any motion, other than rotational, between any linkage member and its attachment point of more than 1⁄4 inch.

h. ***Tie Rods and Drag Links.***

(1) Loose clamp(s) or clamp bolt(s) on tie rods or drag links.

(2) Any looseness in any threaded joint.

i. ***Nuts.*** Nut(s) loose or missing on tie rods, pitman arm, drag link, steering arm or tie rod arm.

j. ***Steering System.*** Any modification or other condition that interferes with free movement of any steering component.

8. ***Suspension.***

a. Any U-bolt(s), spring hanger(s), or other axle positioning part(s) cracked, broken, loose or missing resulting in shifting of an axle from its normal position. (After a turn, lateral axle displacement is normal with some suspensions. Forward or rearward operation in a straight line will cause the axle to return to alignment).

b. ***Spring Assembly.***

(1) Any leaves in a leaf spring assembly broken or missing.

(2) Any broken main leaf in a leaf spring assembly. (Includes assembly with more than one main spring).

(3) Coil spring broken.

(4) Rubber spring missing.

(5) One or more leaves displaced in a manner that could result in contact with a tire, rim, brake drum or frame.

(6) Broken torsion bar spring in a torsion bar suspension.

(7) Deflated air suspension, i.e., system failure, leak, etc.

c. ***Torque, Radius or Tracking Components.*** Any part of a torque, radius or tracking component assembly or any part used for attaching the same to the vehicle frame or axle that is cracked, loose, broken or missing. (Does not apply to loose bushings in torque or track rods.)

9. ***Frame.***

a. ***Frame Members.***

(1) Any cracked, broken, loose, or sagging frame member.

(2) Any loose or missing fasteners including fasteners attaching functional component such as engine, transmission, steering gear, suspension, body parts, and fifth wheel.

b. ***Tire and Wheel Clearance.*** Any condition, including loading, that causes the body or frame to be in contact with a tire or any part of the wheel assemblies.

c.

(1) ***Adjustable Axle Assemblies (Sliding Subframes).*** Adjustable axle assembly with locking pins missing or not engaged.

10. ***Tires.***

a. Any tire on any steering axle of a power unit.

(1) With less than 4⁄32 inch tread when measured at any point on a major tread groove.

(2) Has body ply or belt material exposed through the tread or sidewall.

(3) Has any tread or sidewall separation.

(4) Has a cut where the ply or belt material is exposed.

(5) Labeled “Not for Highway Use” or displaying other marking which would exclude use on steering axle.

(6) A tube-type radial tire without radial tube stem markings. These markings include a red band around the tube stem, the word “radial” embossed in metal stems, or the word “radial” molded in rubber stems.

(7) Mixing bias and radial tires on the same axle.

(8) Tire flap protrudes through valve slot in rim and touches stem.

(9) Regrooved tire except motor vehicles used solely in urban or suburban service (see exception in § 393.75(e).

(10) Boot, blowout patch or other ply repair.

(11) Weight carried exceeds tire load limit. This includes overloaded tire resulting from low air pressure.

(12) Tire is flat or has noticeable (e.g., can be heard or felt) leak.

(13) Any bus equipped with recapped or retreaded tire(s).

(14) So mounted or inflated that it comes in contact with any part of the vehicle.

b. All tires other than those found on the steering axle of a power unit:

(1) Weight carried exceeds tire load limit. This includes overloaded tire resulting from low air pressure.

(2) Tire is flat or has noticeable (e.g., can be heard or felt) leak.

(3) Has body ply or belt material exposed through the tread or sidewall.

(4) Has any tread or sidewall separation.

(5) Has a cut where ply or belt material is exposed.

(6) So mounted or inflated that it comes in contact with any part of the vehicle. (This includes a tire that contacts its mate.)

(7) Is marked “Not for highway use” or otherwise marked and having like meaning.

(8) With less than 2⁄32 inch tread when measured at any point on a major tread groove.

c. Installation of speed-restricted tires unless specifically designated by motor carrier.

11. ***Wheels and Rims.***

a. ***Lock or Side Ring.*** Bent, broken, cracked, improperly seated, sprung or mismatched ring(s).

b. ***Wheels and rims.*** Cracked or broken or has elongated bolt holes.

c. ***Fasteners (both spoke and disc wheels).*** Any loose, missing, broken, cracked, stripped or otherwise ineffective fasteners.

d. ***Welds.***

(1) Any cracks in welds attaching disc wheel disc to rim.

(2) Any crack in welds attaching tubeless demountable rim to adapter.

(3) Any welded repair on aluminum wheel(s) on a steering axle.

(4) Any welded repair other than disc to rim attachment on steel disc wheel(s) mounted on the steering axle.

12. ***Windshield Glazing.*** (Not including a 2 inch border at the top, a 1 inch border at each side and the area below the topmost portion of the steering wheel.) Any crack, discoloration or vision reducing matter except:

(1) coloring or tinting applied at time of manufacture;

(2) any crack not over 1⁄4 inch wide, if not intersected by any other crack;

(3) any damaged area not more than 3⁄4 inch in diameter, if not closer than 3 inches to any other such damaged area;

(4) labels, stickers, decalcomania, etc. (see § 393.60 for exceptions).

13. ***Windshield Wipers.*** Any power unit that has an inoperative wiper, or missing or damaged parts that render it ineffective.

14. Motorcoach Seats

a. Any passenger seat that is not securely fastened to the vehicle structure.

b. [Reserved]

15. Rear Impact Guard

a. Trailers and semitrailers with a GVWR of 4,536 kg (10,001 lbs.) or more, manufactured on or after January 26, 1998 (see exceptions in § 393.86(a)(1)).

1. Missing guard.

2. Guard is not securely attached to trailer, including broken or missing fasteners, any welds or parent metal cracked, or other damage that compromises secure attachment of the guard.

3. Guard horizontal member does not extend to within 100 mm (4 inches) of each, or extends beyond either, side extremity of the vehicle.

4. Guard horizontal member is more than 560 mm (22 inches) above the ground.

5. Guard horizontal member is more than 305 mm (12 inches) forward of the rear extremity of the vehicle.

6. Guard horizontal member does not have a cross sectional vertical height of at least 100 mm (4 inches) across its entire width.

b. Commercial motor vehicles manufactured after December 31, 1952 (except trailers and semitrailers manufactured on or after January 26, 1998) (see exceptions in § 393.86(b)(1) and § 393.86(b)(3)).

1. Missing guard.

2. Guard is not securely attached to trailer by bolts, welding, or other comparable means.

3. Guard horizontal member is more than 762 mm (30 inches) above the ground.

4. Guard horizontal member does not extend to within 457 mm (18 inches) of each side extremity of the vehicle.

5. Guard horizontal member is more than 610 mm (24 inches) forward of the rear extremity of the vehicle.