

(d) *Air-over-hydraulic brake subsystem hoses, master cylinder, tubes and connections.* System tubes, hoses and connections shall not be cracked or improperly supported, the air and hydraulic hoses shall not be abraded and the master cylinder shall not show signs of leakage.

(1) *Inspection procedure.* Stop the engine and examine air and hydraulic brake hoses, brake master cylinder, tubes and connections visually for conditions specified.

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**§ 570.58 Electric brake system.**

(a) *Electric brake system integrity.* The average brake amperage value shall be not more than 20 percent above, and not less than 30 percent below, the brake manufacturer's maximum current rating. In progressing from zero to maximum, the ammeter indication shall show no fluctuation evidencing a short circuit or other interruption of current.

(1) *Inspection procedure.* Insert a low range (0 to 25 amperes for most 2- and 4-brake systems and 0 to 40 amperes for a 6-brake system) d.c. ammeter into the brake circuit between the controller and the brakes. With the controller in the "off" position, the ammeter should read zero. Gradually apply the controller to the "full on" position for a brief period (not to exceed 1 minute) and observe the maximum ammeter reading. Gradually return the controller to "full off" and observe return to zero amperes. Divide the maximum ammeter reading by the number of brakes and determine the brake amperage value.

(b) *Electric brake wiring condition.* Electric brake wiring shall not be frayed. Wiring clips or brackets shall not be broken or missing. Terminal connections shall be clean. Conductor wire gauge shall not be below the brake manufacturer's minimum recommendation.

(1) *Inspection procedure.* Examine visually for conditions specified.

**§ 570.59 Service brake system.**

(a) *Service brake performance.* Compliance with any one of the following performance criteria will satisfy the re-

quirements of this section. Verify that tire inflation pressure is within the limits recommended by the vehicle manufacturer before conducting either of the following tests.

(1) *Roller-type or drive-on platform tests.* The force applied by the brake on a front wheel or a rear wheel shall not differ by more than 25 percent from the force applied by the brake on the other front wheel or the other rear wheel respectively.

(i) *Inspection procedure.* The vehicle shall be tested on a drive-on platform, or a roller-type brake analyzer with the capability of measuring equalization. The test shall be conducted in accordance with the test equipment manufacturer's specifications. Note the brake force variance.

(2) *Road test.* The service brake system shall stop single unit vehicles, except truck-tractors, in a distance of not more than 35 feet, or combination vehicles and truck-tractors in a distance of not more than 40 feet, from a speed of 20 mph, without leaving a 12-foot-wide lane.

(i) *Inspection procedure.* The road test shall be conducted on a level (not to exceed plus or minus 1 percent grade), dry, smooth, hard-surfaced road that is free from loose material, oil or grease. The service brakes shall be applied at a vehicle speed of 20 mph and the vehicle shall be brought to a stop as specified. Measure the distance required to stop.

NOTE: Inspect for paragraphs (b), (c) and (d) of this section on vehicles equipped with brake inspection ports or access openings, and when removal of wheel is not required.

(b) *Disc and drum condition.* If the drum is embossed with a maximum safe diameter dimension or the rotor is embossed with a minimum safe thickness dimension, the drum or disc shall be within the appropriate specifications. These dimensions will generally be found on motor vehicles manufactured since January 1, 1971, and may be found on vehicles manufactured for several years prior to that time. If the drums and discs are not embossed, they shall be within the manufacturer's specifications.

(1) *Inspection procedure.* Examine visually for the condition indicated, measuring as necessary.

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(c) *Friction materials.* On each brake, the thickness of the lining or pad shall not be less than one thirty-second of an inch over the fastener, or one-sixteenth of an inch over the brake shoe on bonded linings or pads. Brake linings and pads shall not have cracks or breaks that extend to rivet holes except minor cracks that do not impair attachment. The wire in wire-backed lining shall not be visible on the friction surface. Drum brake linings shall be securely attached to brake shoes. Disc brake pads shall be securely attached to shoe plates.

(1) *Inspection procedure.* Examine visually for the conditions indicated, and measure the height of the rubbing surface of the lining over the fastener heads. Measure bonded lining thickness over the surface at the thinnest point on the lining or pad.

(d) *Structural and mechanical parts.* Backing plates, brake spiders and caliper assemblies shall not be deformed or cracked. System parts shall not be broken, misaligned, missing, binding, or show evidence of severe wear. Automatic adjusters and other parts shall be assembled and installed correctly.

(1) *Inspection procedure.* Examine visually for conditions indicated.

**§ 570.60 Steering system.**

(a) *System play.* Lash or free play in the steering system shall not exceed the values shown in Table 2.

(1) *Inspection procedure.* With the engine on and the steering axle wheels in the straight ahead position, turn the steering wheel in one direction until there is a perceptible movement of the wheel. If a point on the steering wheel rim moves more than the value shown in Table 1 before perceptible return movement of the wheel under observation, there is excessive lash or free play in the steering system.

**TABLE 2—STEERING WHEEL FREE PLAY VALUES**

Steering wheel diameter (inches)	Lash (inches)
16 or less .....	2
18 .....	2¼
20 .....	2½
22 .....	2¾

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(b) *Linkage play.* Free play in the steering linkage shall not exceed the values shown in Table 3.

(1) *Inspection procedure.* Elevate the front end of the vehicle to load the ball joints, if the vehicle is so equipped. Insure that wheel bearings are correctly adjusted. Grasp the front and rear of a tire and attempt to turn the tire and wheel assemble left and right. If the free movement at the front or rear tread of the tire exceeds the applicable value shown in Table 3, there is excessive steering linkage play.

**TABLE 3—FRONT WHEEL STEERING LINKAGE FREE PLAY**

Nominal bead diameter or rim size (inches)	Play (inches)
16 or less .....	¼
16.01 through 18.00 .....	⅜
18.01 or more .....	½

(c) *Free turning.* Steering wheels shall turn freely through the limit of travel in both directions.

(1) *Inspection procedure.* With the engine running on a vehicle with power steering, or the steerable wheels elevated on a vehicle without power steering, turn the steering wheel through the limit of travel in both directions. Feel for binding or jamming in the steering gear mechanism.

(d) *Alignment.* Toe-in or toe-out condition shall not be greater than 1.5 times the values listed in the vehicle manufacturer's service specification for alignment setting.

(1) *Inspection procedure.* Drive the vehicle over a sideslip indicator or measure with a tread gauge, and verify that the toe-in or toe-out is not greater than 1.5 times the values listed in the vehicle manufacturer's service specification.

(e) *Power steering system.* The power steering system shall not have cracked, frayed or slipping belts, chafed or abraded hoses, show signs of leakage or have insufficient fluid in the reservoir.

(1) *Inspection procedure.* Examine fluid reservoir, hoses and pump belts for the conditions indicated.

**NOTE:** Inspection of the suspension system must not precede the service brake performance test.