

(A) Cracking which extends to the fabric,

(B) Groove cracks or wear extending to the fabric, or

(C) Evidence of ply, tread, or sidewall separation;

(vii) If the tire is siped by cutting the tread surface without removing rubber, the tire cord material shall not be damaged as a result of the siping process, and no sipe shall be deeper than the original or retread groove depth.

(b) *Siped regroovable tires.* No person shall sell, offer for sale, or introduce for sale or deliver for introduction into interstate commerce a regroovable tire that has been siped by cutting the tread surface without removing rubber if the tire cord material is damaged as a result of the siping process, or if the tire is siped deeper than the original or retread groove depth.

[39 FR 15039, Apr. 30, 1974, as amended at 42 FR 21613, Apr. 28, 1977]

#### § 569.9 Labeling of regroovable tires.

(a) *Regroovable tires.* After August 30, 1969, each tire designed and constructed for regrooving shall be labeled on both sidewalls with the word "Regroovable" molded on or into the tire in raised or recessed letters 0.025 to 0.040 inch. The word "Regroovable" shall be in letters 0.38 to 0.50 inch in height and not less than 4 inches and not more than 6 inches in length. The lettering shall be located in the sidewall of the tire between the maximum section width and the bead in an area which will not be obstructed by the rim flange.

[34 FR 1150, Jan. 24, 1969; 34 FR 1830, Feb. 7, 1969]

## PART 570—VEHICLE IN USE INSPECTION STANDARDS

### Subpart A—Vehicles With GVWR of 10,000 Pounds or Less

Sec.

570.1 Scope.

570.2 Purpose.

570.3 Applicability.

570.4 Definitions.

570.5 Service brake system.

570.6 Brake power unit.

570.7 Steering systems.

570.8 Suspension systems.

570.9 Tires.

570.10 Wheel assemblies.

### Subpart B—Vehicles With GVWR of More Than 10,000 Pounds

570.51 Scope.

570.52 Purpose.

570.53 Applicability.

570.54 Definitions.

570.55 Hydraulic brake system.

570.56 Vacuum brake assist unit and vacuum brake system.

570.57 Air brake system and air-over-hydraulic brake subsystem.

570.58 Electric brake system.

570.59 Service brake system.

570.60 Steering system.

570.61 Suspension system.

570.62 Tires.

570.63 Wheel assemblies.

AUTHORITY: Secs. 103, 108, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1397, 1407); delegation of authority at 49 CFR 1.50.

### Subpart A—Vehicles With GVWR of 10,000 Pounds or Less

SOURCE: 38 FR 23950, Sept. 5, 1973, unless otherwise noted.

#### § 570.1 Scope.

This part specifies standards and procedures for inspection of hydraulic service brake systems, steering and suspension systems, and tire and wheel assemblies of motor vehicles in use.

#### § 570.2 Purpose.

The purpose of this part is to establish criteria for the inspection of motor vehicles by State inspection systems, in order to reduce death and injuries attributable to failure or inadequate performance of motor vehicle systems.

#### § 570.3 Applicability.

This part does not in itself impose requirements on any person. It is intended to be implemented by States through the highway safety program standards issued under the Highway Safety Act (23 U.S.C. 402) with respect to inspection of motor vehicles with gross vehicle weight rating of 10,000 pounds or less, except motorcycles or trailers.

#### § 570.4 Definitions.

Unless otherwise indicated, all terms used in this part that are defined in 49 CFR part 571, Motor Vehicle Safety

## § 570.5

## 49 CFR Ch. V (10–1–23 Edition)

Standards, are used as defined in that part.

### § 570.5 Service brake system.

Unless otherwise noted, the force to be applied during inspection procedures to power-assisted and full-power brake systems is 25 lb, and to all other systems, 50 lb.

(a) *Failure indicator.* The brake system failure indicator lamp, if part of a vehicle's original equipment, shall be operable. (This lamp is required by Federal Motor Vehicle Safety Standard No. 105, 49 CFR 571.105, on every new passenger car manufactured on or after January 1, 1968, and on other types of motor vehicles manufactured on or after September 1, 1975.)

(1) *Inspection procedure.* Apply the parking brake and turn the ignition to start, or verify lamp operation by other means indicated by the vehicle manufacturer that the brake system failure indicator lamp is operable.

(b) *Brake system integrity.* The brake system shall demonstrate integrity as indicated by no perceptible decrease in pedal height under a 125 pound force applied to the brake pedal or by no illumination of the brake system failure indicator lamp. The brake system shall withstand the application of force to the pedal without failure of any line or other part.

(1) *Inspection procedures.* With the engine running on vehicles equipped with power brake systems, and the ignition turned to “on” in other vehicles, apply a force of 125 pounds to the brake pedal and hold for 10 seconds. Note any decrease in pedal height, and whether the lamp illuminates.

(c) *Brake pedal reserve.* When the brake pedal is fully depressed, the distance that the pedal has traveled from its free position shall be not greater than 80 percent of the total distance from its free position to the floorboard or other object that restricts pedal travel.

(1) *Inspection procedure.* Measure the distance (A) from the free pedal position to the floorboard or other object that restricts brake pedal travel. Depress the brake pedal, and with the force applied measure the distance (B) from the depressed pedal position to

the floorboard or other object that restricts pedal travel.

Determine the percentage as

$$[(A - B)/A] \times 100.$$

The engine must be operating when power-assisted brakes are checked. The pedal reserve check is not required for vehicles equipped with full power (central hydraulic) brake systems, or to vehicles with brake systems designed to operate with greater than 80 percent pedal travel.

(d) *Service brake performance.* Compliance with one of the following performance criteria will satisfy the requirements of this section. Verify that tire inflation pressure is within the limits recommended by 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 20 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 left to right brake force variance.

(2) *Road test.* The service brake system shall stop the vehicle in a distance of 25 feet or less from a speed of 20 miles per hour 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 one 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 miles per hour and the vehicle shall be brought to a stop as specified. Measure the distance required to stop.

(e) *Brake hoses and assemblies.* Brake hoses shall not be mounted so as to contact the vehicle body or chassis. Hoses shall not be cracked, chafed, or flattened. Protective devices, such as “rub rings,” shall not be considered part of the hose or tubing.

(1) *Inspection procedure.* Examine visually, inspecting front brake hoses through all wheel positions from full left to full right for conditions indicated.

NOTE: To inspect for paragraphs (f), (g), and (h) of this section, remove at a minimum one front wheel and one rear wheel.

(f) *Disc and drum condition.* If the drum is embossed with a maximum safe diameter dimension or the rotor is embossed with a minimum safety thickness dimension, the drum or disc shall be within the appropriate specifications. These dimensions will 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, the drums and discs shall be within the manufacturer's specifications.

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

(g) *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 rivet heads, or 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. 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 conditions indicated, and measure height of rubbing surface of lining over rivet heads. Measure bonded lining thickness over shoe surface at the thinnest point on the lining or pad.

(h) *Structural and mechanical parts.* Backing plates 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.

[38 FR 23950, Sept. 5, 1973; 38 FR 25685, Sept. 14, 1973, as amended at 39 FR 12868, Apr. 9, 1974; 39 FR 17321, May 15, 1974]

#### § 570.6 Brake power unit.

(a) Vacuum hoses shall not be collapsed, abraded, broken, improperly mounted, or audibly leaking. With residual vacuum exhausted and a constant 25 pound force on the brake pedal, the pedal shall fall slightly when the engine is started, demonstrating integrity of the power assist system. This test is not applicable to vehicles equipped with full power brake system as the service brake performance test shall be considered adequate test of system performance.

(1) *Inspection procedure.* With engine running, examine hoses visually and aurally for conditions indicated. Stop engine and apply service brakes several times to destroy vacuum in system. Depress brake pedal with 25 pounds of force and while maintaining that force, start the engine. If brake pedal does not fall slightly under force when the engine starts, there is a malfunction in the power assist system.

#### § 570.7 Steering systems.

(a) *System play.* Lash or free play in the steering system shall not exceed values shown in Table 1.

(1) *Inspection procedure.* With the engine on and the wheels in the straight ahead position, turn the steering wheel in one direction until there is a perceptible movement of a front 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 1—STEERING SYSTEM FREE PLAY VALUES

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

(b) *Linkage play.* Free play in the steering linkage shall not exceed one-quarter of an inch.

(1) *Inspection procedure.* Elevate the front end of the vehicle to load the ball joints. Insure that wheel bearings are correctly adjusted. Grasp the front and rear of a tire and attempt to turn the

## § 570.8

## 49 CFR Ch. V (10–1–23 Edition)

tire and wheel assembly left and right. If the free movement at the front or rear tread of the tire exceeds one-quarter inch there is excessive steering linkage play.

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

(1) *Inspection procedure.* Turn off steering wheel through the limit of travel in both directions. Feel for binding or jamming in the steering gear mechanism.

(d) *Alignment.* Toe-in and toe-out measurements shall not be greater than 1.5 times the value listed in the

vehicle manufacturer's service specification for alignment setting.

(1) *Inspection procedure.* Verify that toe-in or toe-out is not greater than 1.5 times the values listed in the vehicle manufacturer's service specification for alignment settings as measured by a bar-type scuff gauge or other toe-in measuring device. Values to convert toe-in readings in inches to scuff gauge readings in ft/mi side-slip for different wheel sizes are provided in Table I. Tire diameters used in computing scuff gauge readings are based on the average maximum tire dimensions of grown tires in service for typical wheel and tire assemblies.

TABLE I—TOE-IN SETTINGS FROM VEHICLE MFR'S SERVICE SPECIFICATIONS

Wheel size (inches)	Nominal tire di- ameter (inches)	Readings in feet per mile sideslip								
		1/16 in	1/8 in	3/16 in	1/4 in	5/16 in	3/8 in	7/16 in	1/2 in	9/16 in
13 .....	25.2	13.1	26.2	39.3	52.4	65.5	78.6	91.7	104.8	117.9
14 .....	26.4	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.0	112.5
15 .....	28.5	11.5	23.0	34.5	46.0	57.5	69.0	80.5	92.0	103.5
16 .....	35.6	9.3	18.6	27.9	37.2	46.5	55.8	65.1	74.4	83.7

(e) *Power steering system.* The power steering system shall not have cracked or slipping belts, or insufficient fluid in the reservoir.

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

[38 FR 23950, Sept. 5, 1973, as amended at 39 FR 12868, Apr. 9, 1974]

## § 570.8 Suspension systems.

(a) *Suspension condition.* Ball joint seals shall not be cut or cracked. Structural parts shall not be bent or damaged. Stabilizer bars shall be connected. Springs shall not be broken, or extended above the vehicle manufacturer's design height. Spacers, if installed, shall be installed on both front springs, both rear springs, or on all four springs. Shock absorber mountings, shackles, and U-bolts shall be securely attached. Rubber bushings shall not be cracked, extruded out from or missing from suspension joints. Radius rods shall not be missing or damaged.

(1) *Inspection procedure.* Examine front and rear end suspension parts for conditions indicated.

(b) *Shock absorber condition.* There shall be no oil on the shock absorber housing attributable to leakage by the seal, and the vehicle shall not continue free rocking motion for more than two cycles.

(1) *Inspection procedure.* Examine shock absorbers for oil leaking from within, then with vehicle on a level surface, push down on one end of vehicle and release. Note number of cycles of free rocking motion. Repeat procedure at other end of vehicle.

[38 FR 23950, Sept. 5, 1973, as amended at 44 FR 68470, Nov. 29, 1979]

## § 570.9 Tires.

(a) *Tread depth.* The tread on each tire shall be not less than two thirty-seconds of an inch deep.

(1) *Inspection procedure.* Passenger car tires have tread depth indicators that become exposed when tread depth is less than two thirty-seconds of an inch. Inspect for indicators in any two adjacent major grooves at three locations spaced approximately equally around the outside of the tire. For vehicles other than passenger cars, it may be

necessary to measure tread depth with a tread gauge.

(b) *Type*. Vehicle shall be equipped with tires on the same axle that are matched in tire size designation, construction, and profile.

(1) *Inspection procedures*. Examine visually. A major mismatch in tire size designation, construction, and profile between tires on the same axle, or a major deviation from the size as recommended by the manufacturer (e.g., as indicated on the glove box placard on 1968 and later passenger cars) are causes for rejection.

(c) *General condition*. Tires shall be free from chunking, bumps, knots, or bulges evidencing cord, ply, or tread separation from the casing or other adjacent materials.

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

(d) *Damage*. Tire cords or belting materials shall not be exposed, either to the naked eye or when cuts or abrasions on the tire are probed.

(1) *Inspection procedures*. Examine visually for conditions indicated, using a blunt instrument if necessary to probe cuts or abrasions.

[38 FR 23950, Sept. 5, 1973, as amended at 39 FR 12868, Apr. 9, 1974; 39 FR 19781, June 4, 1974]

#### § 570.10 Wheel assemblies.

(a) *Wheel integrity*. A tire rim, wheel disc, or spider shall have no visible cracks, elongated bolt holes, or indication of repair by welding.

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

(b) *Deformation*. The lateral and radial runout of each rim bead area shall not exceed one-eighth of an inch of total indicated runout.

(1) *Inspection procedure*. Using a runout indicator gauge, and a suitable stand, measure lateral and radial runout of rim bead through one full wheel revolution and note runout in excess of one-eighth of an inch.

(c) *Mounting*. All wheel nuts and bolts shall be in place and tight.

(1) *Inspection procedure*. Check wheel retention for conditions indicated.

[38 FR 23950, Sept. 5, 1973, as amended at 39 FR 12868, Apr. 9, 1974]

### Subpart B—Vehicles With GVWR of More Than 10,000 Pounds

SOURCE: 39 FR 26027, July 16, 1974, unless otherwise noted.

#### § 570.51 Scope.

This part specifies standards and procedures for the inspection of brake, steering and suspension systems, and tire and wheel assemblies, of motor vehicles in use with a gross vehicle weight rating of more than 10,000 pounds.

#### § 570.52 Purpose.

The purpose of this part is to establish criteria for the inspection of motor vehicles through State inspection programs, in order to reduce deaths and injuries attributable to failure or inadequate performance of the motor vehicle systems covered by this part.

#### § 570.53 Applicability.

This part does not in itself impose requirements on any person. It is intended to be implemented by States through the highway safety program standards issued under the Highway Safety Act (23 U.S.C. 402) with respect to inspection of motor vehicles with gross vehicle weight rating greater than 10,000 pounds, except mobile structure trailers.

[39 FR 28980, Aug. 13, 1974]

#### § 570.54 Definitions.

Unless otherwise indicated, all terms used in this part that are defined in part 571 of this chapter, Motor Vehicle Safety Standards, are used as defined in that part.

*Air-over-hydraulic brake subsystem* means a subsystem of the air brake that uses compressed air to transmit a force from the driver control to a hydraulic brake system to actuate the service brakes.

*Electric brake system* means a system that uses electric current to actuate the service brake.

*Vacuum brake system* means a system that uses a vacuum and atmospheric pressure for transmitting a force from the driver control to the service brake, but does not include a system that uses

## § 570.55

vacuum only to assist the driver in applying muscular force to hydraulic or mechanical components.

### § 570.55 Hydraulic brake system.

The following requirements apply to vehicles with hydraulic brake systems.

(a) *Brake system failure indicator.* The hydraulic brake system failure indicator lamp, if part of a vehicle's original equipment, shall be operable.

(1) *Inspection procedure.* Apply the parking brake and turn the ignition to start to verify that the brake system failure indicator lamp is operable, or verify by other means recommended by the vehicle manufacturer.

(b) *Brake system integrity.* The hydraulic brake system shall demonstrate integrity as indicated by no perceptible decrease in pedal height under a 125-pound force applied to the brake pedal and by no illumination of the brake system failure indicator lamp. The brake system shall withstand the application of force to the pedal without failure of any tube, hose or other part.

(1) *Inspection procedure.* With the engine running in vehicles equipped with power brake systems and the ignition turned to "on" in other vehicles, apply a force of 125 pounds to the brake pedal and hold for 10 seconds. Note any additional decrease in pedal height after the initial decrease, and whether the brake system failure indicator lamp illuminates.

(c) *Brake pedal reserve.* When the brake pedal is depressed with a force of 50 pounds, the distance that the pedal has traveled from its free position shall be not greater than 80 percent of the total distance from its free position to the floorboard or other object that restricts pedal travel. The brake pedal reserve test is not required for vehicles with brake systems designed by the original vehicle, manufacturer to operate with greater than 80 percent pedal travel.

(1) *Inspection procedure.* Measure the distance (i) from the free pedal position to the floor board or other object that restricts brake pedal travel. Depress the brake pedal, and with the force applied measure the distance (ii) from the depressed pedal position to the floor board or other object that restricts

## 49 CFR Ch. V (10–1–23 Edition)

pedal travel. Determine the pedal travel percentage as

$$[(A - B) / A] \times 100$$

The engine must be operating when power-assisted brakes are checked.

(d) *Brake hoses, master cylinder, tubes and tube assemblies.* Hydraulic brake hoses shall not be mounted so as to contact the vehicle body or chassis. Hoses shall not be cracked, chafed, or flattened. Brake tubes shall not be flattened or restricted. Brake hoses and tubes shall be attached or supported to prevent damage by vibration or abrasion. Master cylinder shall not show signs of leakage. Hose or tube protective rings or devices shall not be considered part of the hose or tubing.

(1) *Inspection procedure.* Examine visually brake master cylinder, hoses and tubes, including front brake hoses, through all wheel positions from full left turn to full right turn for conditions indicated.

[39 FR 26027, July 16, 1974, as amended at 40 FR 5160, Feb. 4, 1975]

### § 570.56 Vacuum brake assist unit and vacuum brake system.

The following requirements apply to vehicles with vacuum brake assist units and vacuum brake systems.

(a) *Vacuum brake assist unit integrity.* The vacuum brake assist unit shall demonstrate integrity as indicated by a decrease in pedal height when the engine is started and a constant 50-pound force is maintained on the pedal.

(1) *Inspection procedure.* Stop the engine and apply service brake several times to destroy vacuum in system. Depress the brake pedal with 50 pounds of force and while maintaining that force, start the engine. If the brake pedal does not move slightly under force when the engine starts, there is a malfunction in the power assist unit.

(b) *Low-vacuum indicator.* If the vehicle has a low-vacuum indicator, the indicator activation level shall not be less than 8 inches of mercury.

(1) *Inspection procedure.* Run the engine to evacuate the system fully. Shut off the engine and slowly reduce the vacuum in the system by moderate brake applications until the vehicle

vacuum gauge reads 8 inches of mercury. Observe the functioning of the low-vacuum indicator.

(c) *Vacuum brake system integrity.* (1) The vacuum brake system shall demonstrate integrity by meeting the following requirements:

(i) The vacuum brake system shall provide vacuum reserve to permit one service brake application with a brake pedal force of 50 pounds after the engine is turned off without actuating the low vacuum indicator.

(ii) Trailer vacuum brakes shall operate in conjunction with the truck or truck tractor brake pedal.

(2) *Inspection procedure.* (i) Check the trailer vacuum system by coupling trailer(s) to truck or truck tractor and opening trailer shutoff valves. Start the engine and after allowing approximately 1 minute to build up the vacuum, apply and release the brake pedal. In the case of trailer brakes equipped with brake chamber rods, observe the chamber rod movement. Run the engine to re-establish maximum vacuum, then shut off the engine and apply the brakes with a 50-pound force on the brake pedal. Note the brake application and check for low-vacuum indicator activation.

(ii) For a combination vehicle equipped with breakaway protection and no reservoir on the towing vehicle supply line, close the supply line shutoff valve and disconnect the supply line. Apply a 50-pound force to the brake pedal on the towing vehicle and release. Trailer brakes should remain in the applied position.

(d) *Vacuum system hoses, tubes and connections.* Vacuum hoses, tubes and connections shall be in place and properly supported. Vacuum hoses shall not be collapsed, cracked or abraded.

(1) *Inspection procedure.* With the engine running, examine hoses and tubes for the conditions indicated and note broken or missing clamps.

**§ 570.57 Air brake system and air-over-hydraulic brake subsystem.**

The following requirements apply to vehicles with air brake and air-over-hydraulic brake systems. Trailer(s) must be coupled to a truck or truck-tractor for the purpose of this inspection, except as noted.

(a) *Air brake system integrity.* The air brake system shall demonstrate integrity by meeting the following requirements:

(1) With the vehicle in a stationary position, compressed air reserve shall be sufficient to permit one full service brake application, after the engine is stopped and with the system fully charged, without lowering reservoir pressure more than 20 percent below the initial reading.

(2) The air brake system compressor shall increase the air pressure in the reservoir(s) from the level developed after the test prescribed in § 570.57(a)(1) to the initial pressure noted before the full brake application, with the engine running at the manufacturer's maximum recommended number of revolutions per minute with the compressor governor in the cut-off position, in not more than 30 seconds for vehicles manufactured prior to March 1, 1975. For vehicles, manufactured on or after March 1, 1975, the time allowed for air pressure buildup shall not exceed 45 seconds.

(3) The warning device (visual or audible) connected to the brake system air pressure source shall be activated when air pressure is lowered to an activating level that is not less than 50 psi. For vehicles manufactured to conform to Federal Motor Vehicle Safety Standard No. 121, the low-pressure indicator shall be activated when air pressure is lowered to an activating level that is not less than 60 psi.

(4) The governor cut-in pressure shall be not lower than 80 psi, and the cut-out pressure shall be not higher than 135 psi, unless other values are recommended by the vehicle manufacturer.

(5) Air brake pressure shall not drop more than 2 psi in 1 minute for single vehicles or more than 3 psi in 1 minute for combination vehicles, with the engine stopped and service brakes released. There may be an additional 1 psi drop per minute for each additional towed vehicle.

(6) With the reservoir(s) fully charged, air pressure shall not drop more than 3 psi in 1 minute for single vehicles or more than 4 psi in 1 minute for combination vehicles, with the engine stopped and service brakes fully

**§ 570.57**

**49 CFR Ch. V (10–1–23 Edition)**

applied. There may be an additional 1 psi drop per minute for each additional towed vehicle.

(7) The compressor drive belt shall not be badly worn or frayed and belt-tension shall be sufficient to prevent slippage.

*Inspection procedure.* With the air system charged, open the drain cocks in the service and supply reservoir on the truck or truck-tractor. Note the pressure at which the visual or audible warning device connected to the low-pressure indicator is activated. Close the drain cocks, and, with the trailer(s) uncoupled, check air pressure buildup at the manufacturer's recommended engine speed. Observe the time required to raise the air pressure from 85 to 100 psi. Continue running the engine until the governor cuts out and note the pressure. Reduce engine speed to idle, couple the trailer(s), if applicable, and make a series of brake applications. Note the pressure at which the governor cuts in. Increased engine speed to fast idle and charge the system to its governed pressure. Stop the engine and record the pressure drop in psi per minute with brakes released and with brakes fully applied.

(b) *Air brake system hoses, tubes and connections.* Air system tubes, hoses and connections shall not be restricted, cracked or improperly supported, and the air hose shall not be abraded.

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

(c) *Air-over-hydraulic brake subsystem integrity.* The air-over-hydraulic brake subsystem shall demonstrate integrity by meeting the following requirements:

(1) The air brake system compressor shall increase the air pressure in the reservoir(s) from the level developed after the test prescribed in § 570.57(a)(1) to the initial pressure noted before the full brake application, with the engine running at the manufacturer's recommended number of revolutions per minute and the compressor governor in the cut-out position, in not more than 30 seconds for vehicles manufactured prior to March 1, 1975. For vehicles manufactured on or after March 1, 1975, the time for air pressure build up shall not exceed 45 seconds.

(2) The warning device (visual or audible) connected to the brake system air pressure source shall be activated when the air pressure is lowered to not less than 50 psi.

(3) The governor cut-in pressure shall be not lower than 80 psi, and the cut-out pressure shall not be higher than 135 psi, unless other values are recommended by the vehicle manufacturer.

(4) Air brake pressure shall not drop more than 2 psi in 1 minute for single vehicles or more than 3 psi in 1 minute for combination vehicles, with the engine stopped and service brakes released. Allow a 1-psi drop per minute for each additional towed vehicle.

(5) With the reservoir(s) fully charged, air pressure shall not drop more than 3 psi in 1 minute for single vehicles or more than 4 psi in 1 minute for combination vehicles, with the engine stopped and service brakes fully applied. Allow a 1-psi pressure drop in 1 minute for each additional towed vehicle.

(6) The compressor drive belt shall not be badly worn or frayed and belt tension shall be sufficient to prevent slippage.

*Inspection procedure.* With the air system charged, open the drain cocks in the service and supply reservoir on the truck or truck-tractor. Note the pressure at which the visual or audible warning device connected to the low pressure indicator is activated. Close the drain cocks and, with the trailers uncoupled, check air pressure buildup at the manufacturer's recommended engine speed. Observe the time required to raise the air pressure from 85 to 100 psi. Continue running the engine until the governor cuts out and note the pressure. Reduce engine speed to idle, couple trailers, and make a series of brake applications. Note the pressure at which the governor cuts in. Increase engine speed to fast idle and charge the system to its governed pressure. Stop the engine and record the pressure drop in psi per minute with brakes released and with brakes fully applied.



(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.

[39 FR 26027, July 16, 1974, as amended at 40 FR 5160, Feb. 4, 1975; 41 FR 13924, Apr. 1, 1976]

**§ 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.

## § 570.60

(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

## 49 CFR Ch. V (10–1–23 Edition)

(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.

**§ 570.61 Suspension system.**

(a) *Suspension condition.* Ball joint seals shall not be cut or cracked, other than superficial surface cracks. Ball joints and kingpins shall not be bent or damaged. Stabilizer bars shall be connected. Springs shall not be broken and coil springs shall not be extended by spacers. Shock absorber mountings, shackles, and U-bolts shall be securely attached. Rubber bushings shall not be cracked, extruded out from or missing from suspension joints. Radius rods shall not be missing or damaged.

(1) *Inspection procedure.* Examine front and rear end suspension parts for the conditions indicated.

(b) *Shock absorber condition.* There shall be no oil on the shock absorber housings attributable to leakage by the seal.

(1) *Inspection procedure.* Examine shock absorbers for oil leakage from within.

**§ 570.62 Tires.**

(a) *Tread depth.* The tread shall be not less than four thirty-seconds of an inch deep on each front tire of any vehicle other than a trailer and not less than two thirty-seconds of an inch on all other tires.

(1) *Inspection procedure.* For tires with treadwear indicators, check for indicators in any two adjacent major grooves at three locations spaced approximately 120° apart around the circumference of the tire. For tires without treadwear indicators, measure the tread depth with a suitable gauge or scale in two adjacent major grooves at 3 locations spaced approximately 120° apart around the circumference of the tire at the area of greatest wear.

(b) *Type.* Vehicles should be equipped with tires on the same axle that are matched in construction and tire size designation, and dual tires shall be matched for overall diameter within one-half inch.

(1) *Inspection procedure.* Examine visually. A mismatch in size and construction between tires on the same axle, or a major deviation from the size recommended by the vehicle or tire manufacturer, is a cause for rejection. On a dual-tire arrangement the diameter of one of the duals must be within one-half inch of the other as measured

by a gauge block inserted between the tire and a caliper.

(c) *General condition.* Tires shall be free from chunking, bumps, knots, or bulges evidencing cord, ply or tread separation from the casing.

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

(d) *Damage.* Tire cords or belting materials shall not be exposed, either to the naked eye or when cuts on the tire are probed. Reinforcement repairs to the cord body are allowable on tires other than front-mounted tires.

(1) *Inspection procedure.* Examine visually for the conditions indicated, using a blunt instrument if necessary to probe cuts and abrasions.

(e) *Special purpose tires.* Tires marked "Not For Highway Use" or "Farm Use Only" or other such restrictions shall not be used on any motor vehicles operating on public highways.

(1) *Inspection procedure.* Examine visually for tires labeled with specific restrictions.

**§ 570.63 Wheel assemblies.**

(a) *Wheel integrity.* A tire rim, wheel disc or spider shall have no visible cracks, elongated bolt holes, or indications of in-service repair by welding.

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

(b) *Cast wheels.* Cast wheels shall not be cracked or show evidence of excessive wear in the clamp area.

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

(c) *Mounting.* All wheel nuts shall be in place and tight.

(1) *Inspection procedure.* Check wheel retention for the conditions indicated.

**PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS**

**Subpart A—General**

Sec.

571.1 Scope.

571.3 Definitions.

571.4 Explanation of usage.

571.5 Matter incorporated by reference.

571.7 Applicability.

571.8 Effective date.

571.9 Separability.

571.10 Designation of seating positions.