

(iii) In vacuum systems stopping the engine will serve as the required means, the system remaining evacuated as indicated by the vacuum gauge.

[33 FR 19735, Dec. 25, 1968, as amended at 53 FR 49400, Dec. 7, 1988]

§ 393.51 Warning devices and gauges.

(a) *General.* In the manner and to the extent specified in paragraphs (b), (c), (d), and (e) of this section, a bus, truck, or truck tractor must be equipped with a signal that provides a warning to the driver when a failure occurs in the vehicle's service brake system.

(b) *Hydraulic brakes.* A vehicle manufactured on or after July 1, 1973, and having service brakes activated by hydraulic fluid must be equipped with a warning signal that performs as follows:

(1) If Federal Motor Vehicle Safety Standard No. 105 (§571.105 of this title) was applicable to the vehicle at the time it was manufactured, the warning signal must conform to the requirements of that standard.

(2) If Federal Motor Vehicle Safety Standard No. 105 (§571.105) was not applicable to the vehicle at the time it was manufactured, the warning signal must become operative, before or upon application of the brakes in the event of a hydraulic-type complete failure of a partial system. The signal must be readily audible or visible to the driver.

(c) *Air brakes.* A vehicle (regardless of the date it was manufactured) having service brakes activated by compressed air (air-mechanical brakes) or a vehicle towing a vehicle having service brakes activated by compressed air (air-mechanical brakes) must be equipped, and perform, as follows:

(1) The vehicle must have a low air pressure warning device that conforms to the requirements of either paragraph (c)(1) (i) or (ii) of this section.

(i) If Federal Motor Vehicle Safety Standard No. 121 (§571.121 of this title) was applicable to the vehicle at the time it was manufactured, the warning device must conform to the requirements of that standard.

(ii) If Federal Motor Vehicle Safety Standard No. 121 (§571.121) was not applicable to the vehicle at the time it was manufactured, the vehicle must have a device that provides a readily

audible or visible continuous warning to the driver whenever the pressure of the compressed air in the braking system is below a specified pressure, which must be at least one-half of the compressor governor cutout pressure.

(2) The vehicle must have a pressure gauge which indicates to the driver the pressure in pounds per square inch available for braking.

(d) *Vacuum brakes.* A vehicle (regardless of the date it was manufactured) having service brakes activated by vacuum or a vehicle towing a vehicle having service brakes activated by vacuum must be equipped with—

(1) A device that provides a readily audible or visible continuous warning to the driver whenever the vacuum in the vehicle's supply reservoir is less than 8 inches of mercury; and

(2) A vacuum gauge which indicates to the driver the vacuum in inches of mercury available for braking.

(e) *Hydraulic brakes applied or assisted by air or vacuum.* A vehicle having a braking system in which hydraulically activated service brakes are applied or assisted by compressed air or vacuum must be equipped with both a warning signal that conforms to the requirements of paragraph (b) of this section and a warning device that conforms to the requirements of either paragraph (c) or paragraph (d) of this section.

(f) *Maintenance.* The warning signals, devices, and gauges required by this section must be maintained in operative condition.

[37 FR 5251, Mar. 11, 1972, as amended at 53 FR 49400, Dec. 7, 1988]

§ 393.52 Brake performance.

(a) Upon application of its service brakes, a motor vehicle or combination of motor vehicles must under any condition of loading in which it is found on a public highway, be capable of—

(1) Developing a braking force at least equal to the percentage of its gross weight specified in the table in paragraph (d) of this section;

(2) Decelerating to a stop from 20 miles per hour at not less than the rate specified in the table in paragraph (d) of this section; and

(3) Stopping from 20 miles per hour in a distance, measured from the point at which movement of the service brake