Extract taken from: In-service certification (WoF and CoF) > Heavy PSVs > Brakes

8 Brakes

8-1 Service brake, parking brake and heavy vehicle emergency brake

> See also the **NZ heavy vehicle brake test protocol**

Reasons for rejection

Mandatory equipment

Service brake

1. Refer to **heavy vehicle pages**.

Parking brake

2. Refer to **heavy vehicle pages**.

Emergency brakes

3. Refer to **heavy vehicle pages**.

4. The emergency brake of a heavy PSV first registered in New Zealand on or after 10 February 1978 that is combined with the service brake or with a parking brake that acts on the transmission does not meet the requirements of Table 8-1-8.

Hoses and other flexible tubing

5. Refer to **heavy vehicle pages**.

Compressed air brake systems

6. Refer to **heavy vehicle pages**.

7. An air-braked heavy PSV first registered in New Zealand **before 10 February 1978** is not fitted with either:

a) a visual low pressure warning device fitted to the service brake reservoirs that is clearly visible from the driver's normal driving position, or

b) an air pressure gauge that indicates the pressure in a brake reservoir (Note 1).

8. An air-braked heavy PSV first registered in New Zealand **on or after 10 February 1978** is not fitted with an air pressure gauge that indicates the pressure in a brake reservoir (Note 1).

9. The service brake reservoirs of an air-braked heavy PSV first registered in New Zealand **on or after 10 February 1978** are not fitted with a low pressure warning device that is clearly visible and/or audible from the driver's normal driving position.

Vacuum brake systems

10. A heavy PSV with more than 9 seating positions that uses a vacuum to boost the force supplied by the driver to apply the brakes and is fitted with a vacuum reservoir, is not fitted with both of the following:

- an audible warning device
- a vacuum gauge.

Hydraulic brake systems

11. A heavy PSV first registered in New Zealand **on or after 1 September 1954** with brakes that are operated by pump-generated hydraulic pressure is not fitted with both of the following:

- an audible warning device
- a visible warning lamp or a suitable pressure gauge that is able to indicate both the maximum and minimum pressures being used.

Permitted equipment

12. Refer to **heavy vehicle pages**.

Prohibited equipment

13. Refer to **heavy vehicle pages**.

Condition

14. Refer to **heavy vehicle pages**.

Performance

Service brake

15. Refer to **heavy vehicle pages**.

Parking brake

16. Refer to **heavy vehicle pages**.

Compressed air brake systems

17. Refer to **heavy vehicle pages**.

18. Reservoir capacity of a heavy PSV – with the air pressure in the braking system at its maximum operating pressure specified by the vehicle or brake manufacturer and the compressor stopped, the reserve of stored compressed air does not provide:

a) For a vehicle that complies with Australian Design Rule 35 or a European brake standard:

i. three full service brake applications, with full release of the brakes after each application, before the low-pressure warning device operates, and

ii. two full applications, with full release of the brakes, after the low-pressure warning device operates.

b) For a vehicle that does not comply with a European brake standard:

i. five full service brake applications with full release of the brakes after each application before the low pressure warning operates, and

ii. two full applications with full release of the brakes after the low pressure warning operates, or

Note A full service-brake application is considered to be made when the brake pedal is fully depressed and there is no further movement of the brake actuators.

19. Compressor capacity of a heavy PSV – with the vehicle's engine at maximum governed speed or if not governed, then at a speed determined by the vehicle inspector, the compressor is not capable of raising the air pressure in the braking system to the maximum operating pressure specified by the vehicle or brake manufacturer within:

- 90 seconds, starting from the pressure to which the brake system falls from the maximum specified operating pressure as a result of fully applying and releasing the service brakes five times.

20. A required low pressure warning device does not give a continuous signal, visible or audible, that clearly indicates to the driver when the pressure in any of the service brake reservoirs is below the minimum safe operating pressure unless the parking brake is fully applied or an automatic transmission is in the 'park' position (Note 2).

21. A service brake reservoir air-pressure gauge does not operate correctly.

22. A heavy PSV first registered in New Zealand **on or after 10 February 1978** has more than one air service brake circuit and there is no protection between those circuits (Note 3).

Vacuum brake system

23. On a heavy PSV with more than nine seating positions that uses vacuum to boost the force supplied by the driver to apply the brakes and is fitted with a vacuum reservoir:

a) The audible warning device does not give continuous signal at any time the vacuum in the vehicle's reservoir has less than 25 kilopascals or its equivalent (200mm mercury), or

b) The vacuum gauge does not indicate to the driver at all times the vacuum in kilopascals, or its equivalent, available in the reservoir.

Hydraulic brake system

24. The audible warning device and the visible warning lamp/suitable pressure gauge fitted to a heavy PSV first registered in New Zealand **on or after 1 September 1954** with brakes tht are operated by pump-generated hydraulic pressure:

a) is not clearly visible to the driver (day and night) from the normal driving position, or

b) does not operate correctly.

Modification and certification

25. Refer to **heavy vehicle pages**.

Note 1

A vehicle may be fitted with more than one gauge, but only one gauge that indicates the pressure in one service brake reservoir is necessary. A gauge fitted to a supply reservoir (wet tank) cannot be used to indicate the pressure in a service brake reservoir.

Note 2

Where the minimum safe operating pressure is not specified by the vehicle or brake manufacturer, the minimum safe operating pressure is taken as 50% of the correctly adjusted cut-out pressure for the compressor-governor.

Note 3

Protection, in this case, means a system to prevent a brake failure that lowers the pressure in one service brake circuit below the minimum safe operating pressure from lowering the pressure in any other service brake circuits below the minimum safe operating pressure.

Note 4

A **supply reservoir (wet tank)** is a brake reservoir from which the service brake reservoirs receive compressed air.

Table 8-1-8. Emergency brake Requirements for heavy PSVs

Vehicle with hydraulic service brake first registered 10 February 1978 to 31 October 1990	All vehicles first registered in New Zealand on or after 1 November 1990 except those in the right hand column	Vehicles first registered in New Zealand 1 November 1990 to 31 December 1994, when the parking brake acts on the transmission, and brakes not modified since manufacture
Full dual-circuit service brake[1], and a) one of those circuits activates the brake on all the front wheels and the other circuit activates the brake on all the rear wheels, or b) each circuit activates the brake on at least one-third of the wheels.[2]	Full dual-circuit service brake[1], and a) one of those circuits activates the brake on all the front wheels and the other circuit activates the brake on all the rear wheels, or b) each circuit activates the brake on at least one-third of the wheels.[2]	**EITHER** A full dual-circuit service brake[1], and a) one of those circuits activates the brake on all the front wheels and the other circuit activates the brake on all the rear wheels, or b) each circuit activates the brake on at least one-third of the wheels[2] **OR** A dual-line service brake that is fitted with a tandem/ dual master cylinder **OR** A single-line hydraulic service brake that is divided into two independent circuits through and excess flow-prevention valve, and the brake fluid reservoir is fitted with a low-level warning device.

[1] For a hydraulic system, this means a dual or tandem master cylinder.

[2] Both circuits acting together must activate the brake on all the wheels.

Summary of legislation

Applicable legislation

- Land Transport Rule: Heavy-vehicle Brakes 2006.

Mandatory equipment

Service brake

1. Refer to heavy vehicle pages.

Parking brake

2. Refer to **heavy vehicle pages**.

Emergency brakes

3. Refer to **heavy vehicle pages**.

4. The emergency brake of a heavy PSV first registered in New Zealand on or after **10 February 1978** that is combined with the service brake or the parking brake acts solely through the transmission must meet the requirements of Table 8-1-8.

Hoses and other flexible tubing

5. Refer to **heavy vehicle pages**.

Compressed air brake systems

6. Refer to **heavy vehicle pages**.

7. An air-braked heavy PSV first registered in New Zealand **before 10 February 1978** must be fitted with either:

a) one (or more) pressure gauge(s), readily visible to the driver at all times from the driver's normal driving position, to indicate to the driver the pressure in the brake reservoir(s), or

b) a device that provides a continuous signal that is clearly visible from the driver's normal driving position if the pressure in one or more of the brake reservoirs is below the minimum safe operating pressure specified by the vehicle manufacturer or brake manufacturer.

8. An air-braked heavy PSV first registered in New Zealand **on or after 10 February 1978** must be fitted with one (or more) pressure gauge(s), readily visible to the driver at all times from the driver's normal driving position, to indicate to the driver the pressure in the brake reservoir(s).

9. An air-braked heavy PSV first registered in New Zealand **on or after 10 February 1978** must be fitted with a device that provides a continuous signal that is clearly visible or audible from the driver's normal driving position if the pressure in one or more of the service brake reservoirs is below the minimum safe operating pressure specified by the vehicle manufacturer or brake manufacturer. An audible signal may be rendered inoperative only while the parking brake is fully applied or an automatic transmission is in the park position.

Vacuum brake systems

10. A heavy PSV with more than nine seating positions first registered in New Zealand **on or after 10 February 1978** that uses a vacuum to boost the force supplied by the driver to apply the brakes and is fitted with a vacuum reservoir, must be equipped with:

a) a device that provides a continuous signal that is clearly audible to the driver, and

b) a vacuum gauge.

Hydraulic brake systems

11. A heavy PSV first registered in New Zealand **on or after 1 September 1954** with brakes that are operated by pump-generated hydraulic pressure must be fitted with an audible warning device, and either:

a) a warning lamp, or

b) a suitable pressure gauge that is able to record both the maximum and minimum pressures being used.

Permitted equipment

12. Refer to **heavy vehicle pages**.

Prohibited equipment

13. Refer to **heavy vehicle pages**.

Condition

14. Refer to **heavy vehicle pages**.

Performance

15. Refer to **heavy vehicle pages**.

Service brake

16. Refer to **heavy vehicle pages**.

Parking brake

17. Refer to **heavy vehicle pages**.

Compressed air brake systems

18. Refer to **heavy vehicle pages**.

19. Reservoir capacity of a heavy PSV first registered in New Zealand **on or after 10 February 1978** – with the air pressure in the braking system at its maximum operating pressure specified by the vehicle or brake manufacturer and the compressor stopped, the reserve of compressed air of the braking system must provide a minimum of:

a) in the case of a vehicle that complies with Australian Design Rule 35 or a European brake standard:

- three full service brake applications with full release of the brakes after each application before the low-pressure warning operates, and 2 further full applications after the low pressure warning device operates, or

b) in the case of a vehicle that does not comply with a European brake standard:

- five full service brake applications with full release of the brakes after each application before the low pressure warning device operates, and two further full applications after the low pressure warning device operates,

Note A full service-brake application is made when all the brake actuators on the vehicle are operated to apply their associated brakes in an effective manner.

20. Compressor capacity of a heavy PSV first registered in New Zealand **on or after 10 February 1978** – at the maximum governed speed, or where the engine is not governed at a speed determined by the vehicle inspector, the compressor shall be capable of raising the pressure in the braking system to the maximum operating pressure specified by the vehicle or brake manufacturer within the following time:

- In not more than 90 seconds, starting from the pressure to which the brake system falls from the maximum operating pressure specified by the vehicle manufacturer or brake manufacturer as a result of fully applying and releasing the service brakes five times.

21. For a heavy PSV first registered in New Zealand **on or after 10 February 1978** that has more than one compressed air service or parking brake circuit, a failure in any service or parking brake circuit that lowers the pressure in any service or parking brake reservoir below the pressure at which the low pressure warning device starts to operate, must not reduce the pressure in any other service or parking brake reservoir below that pressure.

Vacuum brake system

22. A heavy PSV with more than nine seating positions first registered in New Zealand **on or after 10 February 1978** that uses vacuum to boost the force supplied by the driver to apply the brakes and is fitted with a vacuum reservoir , must meet the following requirements:

a) the audible warning device must give continuous warning at any time the vacuum in the vehicle's reservoir has less than 25 kilopascals or its equivalent (eg 200mm mercury), and

b) the vacuum gauge must indicate to the driver, in kilopascals or equivalent units, the vacuum available in the reservoir.

Hydraulic brake system

23. The audible warning system and the visible warning system / suitable pressure gauge fitted to a heavy PSV first registered in New Zealand **on or after 1 September 1954** with brakes that are operated by pump-generated hydraulic pressure must ensure that the driver at all times becomes aware immediately that the minimum hydraulic pressure is less than the pressure necessary for the safe operation of the vehicle.

Modification and certification

24. Refer to **heavy vehicle pages**.

Page amended **11 July 2023** (see **amendment details**).