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

## 8 Brakes

### 8-1 Service brake and parking brake

#### Reasons for rejection

##### Mandatory equipment

##### Service brake

(see Note 1)

1. A vehicle does not have a service brake.
2. A vehicle first registered anywhere on or after 1 February 1977 does not have a service brake that is designed to act on each wheel.
3. A vehicle first registered anywhere before 1 February 1977 does not have a service brake that is designed to act on at least two wheels.
4. A vehicle of class LE first registered anywhere before 1 February 1977 does not have a service brake that is designed to act on at least one wheel.
5. A vehicle of class MA, MB, MC, MD1, MD2 or NA first registered in New Zealand after 1 November 1990 that does not have a dual-circuit service brake does not have a parking brake that is capable of bringing the vehicle to a controlled stop.

##### Parking brake

(see Note 1)

6. A vehicle does not have a parking brake (does not apply to twinned-wheeled class LE vehicles).
7. A parking brake on a vehicle of class MA, MB, MC, MD1, MD2 or NA does not act on at least one complete axle.
8. A parking brake on a vehicle of class MA, MB, MC, MD1, MD2 or NA does not act on at least one axle that has dual wheels fitted.

##### Condition

##### Service brake

9. There is corrosion damage (Note 1) within 150mm of a brake component mounting point.
10. The service brake pedal:
  - a) is insecure, or

b) is spongy (indicating air in the system), or

c) creeps, or

d) has a non-slip surface which has deteriorated to such an extent that the brake cannot be safely applied, or

e) has excessive travel (pedal travel reduces after one or two applications).

11. A vacuum hose or pipe (including connections) is:

a) insecure, or

b) leaking, or

c) damaged (cracked, chafed, twisted, stretched or corroded, eg showing signs of pitting or a noticeable decrease in the pipe's outside diameter).

12. The brake vacuum servo (brake booster) is:

a) not functioning fully or adequately, or

b) leaking, or

c) insecure.

13. The brake vacuum pump:

a) is not functioning fully or adequately, or

b) is insecure, or

c) drive belt is in poor condition.

14. The brake master cylinder is:

a) leaking brake fluid, or

b) insecure, or

c) excessively corroded, or

d) reservoir fluid level is below the minimum indicator where this is visible externally.

15. A brake valve is:

a) not operating (eg has a seized load-sensing valve), or

b) leaking brake fluid, or

c) insecure, or

d) excessively corroded.

16. A brake pipe (including connections) is:

a) leaking brake fluid, or

b) insecure, or

c) deformed from its original shape, or

d) chafed, or

e) corrosion damaged, eg there are signs of pitting or a noticeable increase in the pipe's outside diameter.

17. A flexible hydraulic brake hose (including connections):

- a) is leaking brake fluid, or
- b) is insecure, or
- c) bulges under pressure, or
- d) is twisted, stretched or chafed, or
- e) has external sheathing which is cracked to the extent that the reinforcing cords are exposed, or
- f) has metal connections which are excessively corroded, or
- g) has an end fitting which is not attached to the hose by means of swaging, machine crimping or a similar process (Note 3).

18. A brake calliper:

- a) shows visible signs of leaking, or
- b) is insecure.

19. A brake backing plate is:

- a) insecure, or
- b) severely corroded, or
- c) deformed from its original shape, or
- d) cracked, or
- e) contaminated by brake fluid, oil or grease.

20. A wheel cylinder:

- a) shows visible signs of leaking, or
- b) is insecure, or
- c) is seized.

21. An ABS system component is damaged, insecure or missing.

22. A brake disc or drum is:

- a) worn beyond manufacturer's specifications (where visible without removing vehicle components) (Note 2), or
- b) fractured or otherwise damaged (where visible without removing components) (Note 2), or
- c) contaminated by brake fluid, oil or grease.

23. Brake friction material (where visible without removing vehicle components) (Note 2) is:

- a) worn below manufacturer's specifications, or
- b) separating from the brake pad backing plate or brake shoe, or
- c) contaminated by brake fluid, oil or grease.

24. A gap between the brake shoe and the brake drum exceeds manufacturer's specifications (where visible without removing vehicle components) (Note 2).

25. A service brake component shows signs of heating or welding after original manufacture.

### **Parking brake**

26. The parking brake lever:

- a) has excessive travel, or
- b) is insecure, or
- c) mounting is damaged, corroded, distorted or fractured within 150 mm of the lever mounting, or
- d) mechanism or lever pivot bearing is worn or damaged so that the parking brake could be easily released by accident.

27. The parking brake cable:

- a) is knotted, frayed or excessively corroded, or
- b) has an auxiliary tensioner fitted, or
- c) has otherwise deteriorated so that it may affect the parking brake performance.

28. A parking brake actuating rod or guide:

- a) is excessively corroded, or
- b) is excessively worn, or
- c) has otherwise deteriorated so that it may affect the parking brake performance.

29. A parking brake component shows signs of heating or welding after original manufacture.

### **Electronic Stability Control (ESC) systems**

30. Where the vehicle is fitted with an ESC system (if determined by the vehicle inspector – see [Technical Bulletin 11](#)), the warning light indicates a fault.

31. Where the vehicle is fitted with an ESC system (if determined by the vehicle inspector – see [Technical Bulletin 11](#)), the system has been removed from the vehicle.

### **Advanced brake systems**

32. A motorcycle that is fitted with an antilock brake system has a non-OEM means of disabling that system, such as an after-market/non-factory switch.

33. A motorcycle's ABS has been disabled.

### **Performance**

- see Note 4

### **Service brake**

34. The service brake cannot be applied in a controlled and progressive manner.

35. When the service brake is applied and without assistance from the engine:

- a) the vehicle does not stop within 7m from a speed of 30km/h (average brake efficiency of 50%), or

- b) the vehicle does not stop within 9m from a speed of 30km/h (average brake efficiency of 40%) for a vehicle which has a service brake designed to act on fewer than four wheels, or
- c) the vehicle does not stop within 20m from a speed of 30km/h (average brake efficiency of 18%) for a vehicle which has been manufactured before 31 December 1918.

36. When the service brake is applied:

- a) the vehicle vibrates under braking to the extent that the control of the vehicle is adversely affected, or
- b) the brake fails to release immediately after the brake pedal has been released, or
- c) the directional control is affected (eg there is swerving to one side, or the brakes on one side apply more slowly than on the other side), or
- d) the brake balance, at any time during the brake application, varies by more than 20% between wheels on a common axle.

### Advanced brake systems

37. The ABS or brake system warning lamp or self-check system, if fitted, indicates a defect in the ABS or brake system (does not apply to brake pad wear warning systems (see Figure 8-1-1 for examples of a brake system warning lamp on group L vehicles). A defect can be identified by either:

- the ABS light does not illuminate on ignition power-up (if ABS was originally fitted), or
- the ABS light does not turn off after the vehicle has been driven.

### Parking brake

38. When the parking brake is applied:

- a) the vehicle does not stop within 18m from a speed of 30km/h (average brake efficiency of 20%), or
- b) it does not hold the vehicle at rest on a slope of 1 in 5, or
- c) it does not hold all the wheels on a common axle stationary against attempts to drive the vehicle away.

39. The directional control of the vehicle is affected when the parking brake is being applied on a vehicle of class MA, MB, MC, MD1, MD2 or NA first registered in New Zealand on or after 1 November 1990 that does not have a dual-circuit service brake.

40. The parking brake is unusually difficult to apply or release.

### Modification

- see Note 1

41. A modification affects a brake or braking performance, and:

- a) is not excluded from the requirements for LVV specialist certification (Table 8-1-1), and
- b) is missing proof of LVV specialist or accepted overseas certification, ie:
  - i. the vehicle is not fitted with a valid LVV certification plate, or
  - ii. the operator is not able to produce a valid modification declaration or authority card , or
  - iii. the vehicle has not been certified to an accepted overseas system as described in [Technical bulletin 13](#)

## Note 1 Definitions

**Service brake** means a brake for intermittent use that is normally used to slow down and stop a vehicle.

**Parking brake** means a brake readily applicable and capable of remaining applied for an indefinite period without further attention.

**Corrosion damage** is where the metal has been eaten away, which is evident by pitting. The outward signs of such corrosion damage is typically displayed by the lifting or bubbling of paint. In extreme cases, the area affected by the corrosion damage will fall out and leave a hole.

**Modify** means to change a vehicle from its original state by altering, substituting, adding or removing a structure, system, component or equipment, but does not include repair.

**Repair** means to restore a damaged or worn vehicle, its structure, systems, components or equipment to within safe tolerance of its condition when manufactured, including replacement with undamaged or new structures, systems, components or equipment.

**Twinned wheels** means two wheels mounted on the same axle where the distance between the centres of their areas of contact with the ground is equal to or less than 460 mm.

## Note 2

If a brake is fitted with an inspection port plug, this must be removed for inspection of the brake components.

## Note 4

Refer to [Technical bulletin 10](#) for specific service and parking brake test procedures for specific vehicles (such as electro-mechanical parking brakes on BMW vehicles), especially when testing these vehicles on roller brake machines.

**Table 8-1-1. Modifications that do not require LVV certification**

Fitting of or modification to:	LVV certification is not required provided that:
Aftermarket brake pedal pads or covers	<ul style="list-style-type: none"> <li>• the fitment of the pads or covers does not:               <ul style="list-style-type: none"> <li>◦ necessitate any modification to the pedal arm, or</li> <li>◦ significantly affect the safe operation of the brake pedal or other pedals (eg a brake pad or cover significantly wider than the original brake pad may not be acceptable, depending on fitment).</li> </ul> </li> </ul> <p>See also <a href="#">Table 7-1-1</a></p>
Aftermarket or custom brake pedal extensions (for unusually short people)	<ul style="list-style-type: none"> <li>• The extension:               <ul style="list-style-type: none"> <li>◦ does not exceed 100mm length when measured from the surface of the original brake pedal, and</li> <li>◦ is securely clamped to the original pedal by mechanical means, and</li> <li>◦ is sufficiently strong and rigid to withstand emergency brake loads, and</li> <li>◦ does not involve any modification to, or compromise the strength of, the original brake pedal, and</li> <li>◦ does not significantly change the sideways load or leverage against the pedal, and</li> <li>◦ does not significantly increase the weight of the pedal.</li> </ul> </li> </ul>
Additional brake pedals  (for driving school vehicles)	<ul style="list-style-type: none"> <li>• the operation of the primary brake pedal is not affected, and</li> <li>• no modifications to the primary brake pedal or any other part of the primary brake system has occurred.</li> </ul>
Brake lines/hoses (including stainless steel braided brake hoses)	<ul style="list-style-type: none"> <li>• Brake lines or hoses are direct replacements; and</li> <li>• the lines or hoses are fitted using all OE mounts.</li> </ul> <p>Note: Flexible hose end fittings must be crimped to the hose.</p>
Brake rotors	<ul style="list-style-type: none"> <li>• rotors are direct OE replacements, or</li> <li>• after market substitute brake rotors are:               <ul style="list-style-type: none"> <li>◦ the same size as the OE rotors, and</li> <li>◦ catalogued aftermarket items for that make and model of vehicle (and can include cross-drilled and/or slotted types), and</li> <li>◦ attached to unmodified OE parts, and</li> <li>◦ not modified in anyway.</li> </ul> </li> </ul>

Fitting of or modification to:	LVV certification is not required provided that:
Disability parking brake system	<ul style="list-style-type: none"> <li>the system is a non-OE mechanical or electrical system for applying and releasing the OE parking brake, and: <ul style="list-style-type: none"> <li>the parking brake performance is not compromised, and</li> <li>in the case of electrical failure, the parking brake does not release.</li> </ul> </li> </ul>
Removal of secondary accelerator and brake system (where driving school vehicle is converted to single primary system)	<ul style="list-style-type: none"> <li>the vehicle was not originally manufactured as a dual-control vehicle (system was retrofitted after manufacture), and</li> <li>the removal of the secondary system has reinstated the vehicle's primary systems back to the vehicle's exact original specification.</li> </ul>
Fitting of or modification to:	LVV certification is never required:
Brake linings/pads	<ul style="list-style-type: none"> <li>in-service requirements for condition and performance must be met.</li> </ul>
Any modifications for the purposes of law enforcement or the provision of emergency services	

**Figure 8-1-1. Examples of ABS warning light fault indication**



# Summary of legislation

## Applicable legislation

- [Land Transport Rule: Light-Vehicle Brakes 2002.](#)

## Mandatory equipment

### Service brake

1. Vehicles must have a service brake that acts on each wheel, except in the following cases:
  - a) A vehicle first registered anywhere before 1 February 1977 may have a service brake that is designed to act on fewer than four wheels
  - b) A vehicle of class LE first registered anywhere before 1 February 1977 may have a service brake that is designed to act on fewer than three wheels.
2. A vehicle of class MA, MB, MC, MD1, MD2 or NA first registered in New Zealand from 1 November 1990 that does not have a dual-circuit service brake must have a parking brake that is capable of bringing the vehicle to a controlled stop if the service brake fails.

### Parking brake

3. A vehicle of class MA, MB, MC, MD1, MD2 or NA must have a parking brake that:
  - a) acts on at least one complete axle, or
  - b) if the vehicle has dual wheels on an axle, acts on that axle.
4. A vehicle of class MA, MB, MC, MD1, MD2 or NA first registered in New Zealand from 1 November 1990 without dual-circuit service brakes must have a parking brake that is capable of bringing the vehicle to a controlled stop if the service brake fails.

### Permitted equipment

5. A vehicle of class MA, MB, MC, MD1, MD2 or NA may be fitted with a warning system that is part of, or associated with, the use of a brake component or system.

### Condition

6. A brake must be in good condition.
7. The brake friction surfaces on a vehicle of class MA, MB, MC, MD1, MD2 or NA must be within safe tolerance of their state when manufactured, and must not be scored, weakened or damaged to the extent that the safety performance of the brake is adversely affected.

### Performance

8. The service brake on a vehicle of class MA, MB, MC, MD1, MD2 or NA must be able to be applied in a controlled and progressive manner.
9. When the brake on a vehicle of class MA, MB, MC, MD1, MD2 or NA is applied:
  - a) the vehicle or its controls must not vibrate to the extent that control of the vehicle is adversely affected, and

b) the braking effort on each wheel must provide stable and efficient braking without adverse effect on the directional control of the vehicle, and

c) if the vehicle is equipped with an anti-lock braking system (ABS), the wheels must not lock, other than when the speed of the vehicle falls below the ABS activation parameters set by the vehicle manufacturer.

10. A brake warning system, if fitted on a vehicle of class MA, MB, MC, MD1, MD2 or NA, must function correctly (does not apply to a brake pad wear system).

### **Service brake**

11. The service brake of a vehicle or vehicle combination that is operated on a hard, dry, level surface that is free of loose material and without assistance from the compression of the engine or other retarders must operate in the following manner:

a) A service brake that acts on each wheel must stop the vehicle within a distance of 7m from a speed of 30km/h (average brake efficiency of 50%).

b) A service brake that is designed to act on fewer than four wheels on a vehicle first registered anywhere before 1 February 1977 must stop the vehicle within a distance of 9 m from a speed of 30km/h (average brake efficiency of 40%).

c) The service brake on a vehicle manufactured before 31 December 1918 not capable of exceeding 30km/h must stop the vehicle within a distance of 20m from a speed of 30km/h (average brake efficiency of 18%).

### **Electronic Stability Control (ESC) systems**

12. An ESC system, including all components of that system fitted in a motor vehicle, must:

a) be maintained in good working order, and

b) not be removed from the vehicle.

### **Parking brake**

13. A parking brake must:

a) stop the vehicle within 18m from a speed of 30km/h (average brake efficiency of 20%), or

b) hold the vehicle at rest on a slope of 1 in 5.

### **Modification**

14. A modification to a brake or vehicle that affects the braking performance must be inspected and certified by an LVV Specialist Certifier, unless the vehicle:

a) is excluded from the requirement for LVV specialist certification (Table 8-1-1), and

b) has been inspected in accordance with the requirements in this manual, including those for equipment, condition and performance.

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