



## Section 13

# Buses

✎ The general roadworthiness of buses has been included within the standard vehicle inspection process outlined in each section. This section deals only with those items that apply exclusively to buses.

A small bus is considered to have an occupant capacity of less than 25, including the driver. A large bus is considered to have an occupant capacity of more than 25, including the driver.

Additional vehicle requirements may be imposed by jurisdictional passenger transport legislation. These requirements are not covered by this section.

### Objective:

To ensure that buses, including their associated components, are out fitted in accordance with the Vehicle Standards (including ADRs) and operate in a safe manner.

### Australian Design Rules relevant to this section:

ADR 3	Seat and seat anchorages
ADR 4	Seatbelts
ADR 42	General safety requirements
ADR 44	Specific purpose vehicle requirements
ADR 58	Requirements for omnibuses designed for hire and reward
ADR 59	Omnibus roll-over strength

ADR 66	Seat strength, seat anchorage strength and padding in omnibuses
ADR 68	Occupant protection in buses
ADR 93	Forward Field of View

### 13.1. Check safety equipment and interior fittings

Any requirement for a fire extinguisher in this section only applies to a bus if it is mandatory for the bus to carry a fire extinguisher.

#### Reasons for rejection

- Any emergency exit does not have clear access, or identification signs and operating instructions, where required, are not clearly visible
- Equipment necessary to operate an exit, such as brake glass hammers, is not present
- The exit is broken, distorted or damaged in a way that stops it working properly

✎ Some emergency exits are designed to be used only once. Do not operate them for testing purposes.

- Any controls for passenger access doors do not work properly
- Any warning device to indicate the operation or condition of the exit is not in working order
- Any interior body panel or fitting in a bus is not securely mounted or has exposed sharp edges due to damage, including

## Section 13 - Buses

corrosion or separated joints, that could injure a person who comes into contact with them

- g. Any floor covering of a bus used for hire and reward is:
  - torn, worn or loose to an extent that it could trip passengers, or
  - not finished with a skid resistant surface.
- h. Any handgrip, handrail or hand-strap of a bus used for hire and reward is loose or damaged
- i. Any passenger stop signal is inoperative of a bus used for hire and reward
- j. Any step is damaged to an extent that it could trip or injure a person
- k. Seatbelts are not fitted (where applicable)
- l. Where fitted, any seatbelt is not functional
- m. An interior lamp of a bus used for hire and reward design for passenger convenience is not operational.
- n. A bus used for hire and reward is not fitted with a Fire extinguisher that is:
  - filled
  - charged
  - under current inspection
  - operational
  - complete and operational (no handle, nozzle, hose etc missing)
  - securely mounted and in a readily accessible location in accordance with Australian Standard AS 2444 *Portable fire extinguishers – Selection and location*
  - no marked with the Standards Australia markings, having a fire test rating (as defined in the standard) of at least 20B and fitted with a hose.

⚠ Fire extinguishers can become ineffective even though they appear properly charged. For example, powder type extinguishers subject to vibration can fail due to compacting of the powder.

Section 10 of Australian Standards AS 1851 - 2012 portable fire extinguishers, contains suitable procedures for inspecting and testing fire extinguishers.

AS 2444 *Portable fire extinguishers – Selection and location* outlines the appropriate type, size and location of fire extinguishers for vehicles.

**Table 13.1 Fire Extinguisher requirements in accordance with AS 2444**

Type of vehicle	Minimum rating and classification of extinguishers	Minimum number of extinguishers
Passenger-carrying vehicle in urban areas or on short trips outside urban areas	2A:20B (fitted with hose)	1
Outside urban areas or when fitted with integral luggage compartment	2A:20B (fitted with hose)	2 (one to be mounted near the under-floor area or engine)

⚠ Consideration should be given to all extinguishers having an E rating where electrical hazards may be found in vehicles, if capable of being connected to 240V AC, e.g. caravans, campervans and the like.

### 13.2. Check school bus warning system

A school bus is a bus used solely or principally for the conveyance of children to or from school.

For any bus that is fitted with lights and signs indicating that it is a school bus, the following reasons for rejection apply.

Not all state or territory road transport authorities apply the national requirements. Apply local requirement if different to national approach (e.g. New South Wales).

#### SCHOOL BUS WARNING SIGNS

##### Reasons for rejection

Does not apply in New South Wales, Victoria or Tasmania - see local inspection manual for rejection reasons)

Applies to buses fitted with warning lights after July 1999.

- a. A rectangular sign bearing either the words 'SCHOOLBUS' in black capital letters at least 100mm high or an image of two children in the same proportions as the children in Australian Standard AS 1743 *Road signs – Specifications*, image W6-3, with the image of the taller child at least 230mm high, is not displayed at the front and rear of the bus
- b. Either sign is not at least 550mm long and 400mm high if the warning lights are on the sign or 400mm long and 250mm high if the warning lights are not on the sign
- c. There are not two lights at each end of the bus
- d. If the lights are on the warning sign and obscure the words or image on the signs
- e. The signs do not have a black border and graphics or have a yellow surface complying with Class 1 or 2 of Australian/ New Zealand Standard AS/NZS 1906 *Retroreflective materials and devices for road traffic control purposes*
- f. The lights are not at least 300mm apart
- g. The lights are more than 100mm from the edge of the warning sign
- h. The lights are not on each side of, and the same distance from, the centre of the warning sign
- i. The lights are not at the same height and mounted as high as practicable
- j. The lights are mounted with the lowest point on the lens of each light at least midway between the highest and lowest points on the bus body
- k. Each light does not have an effective lit lens area of at least 60cm<sup>2</sup>
- l. If the centres of the warning lights are less than 1.8 metres above ground level no part of the warning lights or warning sign is to be on the left side of the bus
- m. If the warning lights, when switched on, do not emit a flashing yellow-coloured light and flash between 90 and 180 times per minute
- n. If the warning lights, when switched on, do not flash alternately at the same end of the bus
- o. If the warning lights, unless turned off, do not operate automatically when a door on the bus opens and for at least 10 seconds, but not more than 20 seconds, after all the doors on the bus have closed
- p. The bus does not have an audible or visible signal that tells the driver of the bus in the normal driving position when the warning lights are flashing
- q. The bus is not fitted with a switch that allows the driver of the bus to turn the warning lights off from the normal driving position
- r. Each light does not have a luminous intensity (in candela) of at least the values mentioned in Table 13.2 when measured at the angles mentioned in the table.

## Section 13 - Buses

Table 13.2 Luminous intensity values

Horizontal angle from centre of light									
	-300	-200	-100	-50	00	50	100	200	300
100				50	80	50			
500		180	320	350	450	350	320	180	
00	75	450	1000	1250	1500	1250	1000	450	75
-50	40	270	450	570	600	570	450	270	40
-100				75	75	75			

### 13.3. Check ordinary entrances and exits

#### Reasons for rejection

- No ordinary entrance door fitted on the left hand side
- Must not have an entrance or exit on the right side of the bus other than:
  - a mandatory emergency exit, or
  - the driver's door.
- The entrance door is:
  - less than 1800mm high, or
  - less than 550mm wide.
- A stairway on a double-deck bus:
  - is less than 400mm wide, or
  - has no guard rail or panel.
- 

### 13.4. Check emergency exits

#### Reasons for rejection

- If the bus is not fitted with at least the number of emergency exits shown in Table 13.3.

Table 13.3 Number of required emergency exits

Number of occupants, including driver and standing, per component deck or section	Minimum number of emergency exits
Less than 26	4
26–36	5
Greater than 36	6

- An emergency exit on at least three of the following surfaces:
  - roof
  - front face
  - rear face
  - left hand side
  - right hand side
  - floor (top deck of a double-deck bus only).
- A bus used for hire and reward does not have:
  - for a single deck bus—at the extreme rear of the bus or in the rear half of the roof of the passenger compartment
  - for a double-deck bus—at the front or rear face of each deck.
- If an emergency exit does not meet the minimum dimensions in Table 13.4

Table 13.4 Emergency exit dimensions

Type of emergency exit	Dimension	Minimum
Emergency door	Height	1250mm
	Width	550mm
Emergency window	Area	0.4m <sup>2</sup>
	Height	500mm
	Width	600mm

Escape hatch	Area	0.4m <sup>2</sup>
	Height	500mm
	Width	600mm

- If there is no suitable means of opening any exit at all times
- An emergency exit is not capable of being operated from both the inside and outside of the vehicle
- Emergency hammers are not fitted for breakable glass exits
- The emergency exit is covered with a film and the vehicle no longer complies with, or cannot provide evidence of continued compliance with, ADR 44 or ADR 58 (as applicable)

Refer to Vehicle Standards Guide 8 (VSG8), for more information about the requirements that apply to applying films (advertising, vandal proofing, tinting and other films) to bus emergency exits.

- There is no 'EMERGENCY EXIT' sign displayed on the exit both inside and outside the bus of an emergency exit (except service doors)

A bus is not required to be fitted with an emergency exit if it:

- is designed and constructed to seat not more than 12 adults, including the driver, and
- is fitted with one or more doors on each side and these doors are fitted with an emergency release, and
- has an overall width of not more than 2 metres.

A hinged and latched door fitted to a small bus with a seating capacity of not more than 15 adults, including the driver, may be regarded as an emergency exit if it is capable of being opened outwards from inside the bus.

### 13.5. Check doors

Service doors that also function as emergency exits must meet the requirements in this section, as well as the requirements for emergency exits.

#### Reasons for rejection

- A bus is fitted with an interior door that separates the space normally used by passengers from the access doors or emergency exits
- A bus is fitted with an inward opening door other than a 'jack-knife' or 'glide-away' door which is so constructed that no part of it extends beyond the back of the lowest step of the entrance or exit where it is located
- A bus is fitted with an outward opening rear hinged door

### 13.6. Check steps

#### Reasons for rejection

- If any step within the vehicle is not securely fitted
- If the height of the tread of the lowest step from the ground is over 410mm or under 250mm
- The height of any step, in relation to an adjacent step is more than:
  - for an off-road (all-wheel drive) bus—450mm except a rear step that may be no more than 500mm
  - for a small bus having a single row of seats with an occupant capacity of 15 persons or less, including the driver—450mm
  - for any other bus—300mm.
- The transverse depth of the tread of each step in a small bus is less than 180mm

## Section 13 - Buses

- e. The transverse depth of the tread of each step in a large bus is less than 225mm
- f. The width of the tread of the lowest step is less than the width of the entrance
- g. The width of each step, other than the lowest step, is less than 450mm
- h. If each step is not fitted with skid-resistant tread
- i. If step treads and risers are not directly illuminated, except in the case of an external access step to a single row of seats for a small bus having a seating capacity of not more than 15 adults, including the driver.

### 13.7. Check interior height

#### Reasons for rejection

- a. For a bus with a longitudinal aisle the measurement from the floor to the centreline of its roof is less than:
  - for a small bus with an aisle length not over 2 metres—1.2 metres
  - any other small bus—1.35 metres
  - for each deck of a double-deck bus—1.65 metres
  - for a large bus that is not involved in frequent stops for the purpose of picking up or setting down passengers—1.65 metres
  - for a large bus that is involved in frequent stops for the purpose of picking up or setting down passengers—1.8 metres
- b. For a bus without a longitudinal aisle the measurement from the floor to the centreline of its roof is less than:
  - for a large bus—1.5 metres
  - for another bus—1.2 metres.

### 13.8. Check aisle width

#### Reasons for rejection

- a. If the width of an aisle is less than:
  - for a small bus—small bus—300mm
  - for a large bus used only to carry seated passengers—300mm
  - for another large bus—380mm.

### 13.9. Check passenger seating

#### Reasons for rejection

- a. Any passenger seating position does not have a dimension of at least 400mm when measured along the front of the seat cushion
- b. The distance from the foremost point of each seat squab to the foremost point of its corresponding seat cushion is less than 350mm
- c. There is any obstruction horizontally forward of the seat squab for a distance, when measured on the centreline of the seating position and between the top of the seat cushion and any point up to 610mm above the floor, within:
  - in the case of opposite facing seating positions (as shown in Figure 13.1)—1200mm, or
  - in the case of other seating positions (as shown in Figure 13.2)—660mm.

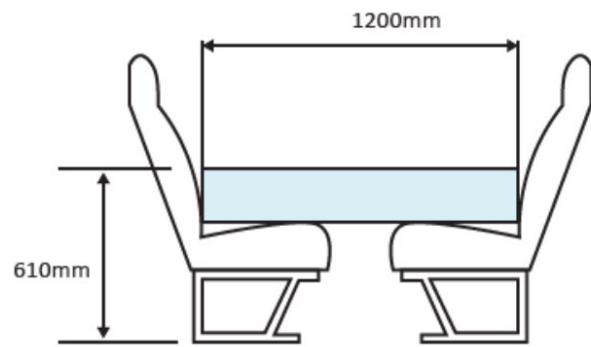


Figure 13.1 Measuring obstructions for opposite facing seat

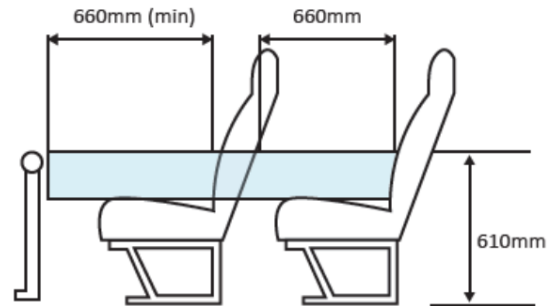


Figure 13.2 Measuring obstructions for non-opposite facing seats

- d. There is any obstruction in front of each seating position for a space 200mm horizontally forward of the seat cushion, and 300mm in width but not extending beyond the nominal seat width, and between the floor and the level of the seat cushion
  - The spaces described by this requirement shall not intersect each other or any other spaces designated for standing passengers or required minimum aisle width.
- e. The average height of each unloaded seat cushion relative to the floor exceeds 500mm or is less than:
  - for a large bus—400mm
  - other buses—380mm
  - if the floor level is interrupted by a wheel housing and/ or engine housing or similar structure—300mm.
- f. Any seat interrupts the minimum access and clearance dimensions
- g. Any seat is not securely attached to the vehicle
- h. The minimum concave radius of any seat squab is less than 450mm for a route service omnibus or 300mm for any other omnibus, when measured in any horizontal plane between the top of the seat cushion and 610mm above the floor and within 150mm on either side of the centreline of the seating position
- i. Where luggage racks are fitted above any seating position, the distance between the lowest part of the rack and the top of the seat cushion is less than 950mm on the centreline of the seat.

### 13.10. Check driver seating

#### Reasons for rejection

- a. If the driver's seat on a bus is not:
  - securely attached to the bus, and
  - designed and fitted in such a way that the driver can have control of the bus.

## Section 13 - Buses

### 13.11. Safety and guard rails

#### Reasons for rejection

- a. A bus is not fitted with a suitable rail or partition in front of any seat located on the left side of the bus immediately behind a step so as to prevent persons from falling into a step well
- b. A bus with a centre or rear door, suitable rails and/or partitions are not in place to stop passengers coming into contact with the rear face of the opening door
- c. The driving position on a large bus is not separated from the passenger compartment with either a suitable guard rail or other structure so as to inhibit passengers from:
  - coming into contact with the driver or the controls, or
  - obstructing the drivers view.

### 13.10. Engine and fuel system

#### Reasons for rejection

- a. Where the transmission incorporates any longitudinal drive shafts, couplings, or intermediate shafts, there is no guard that prevents the front end of any such shaft or coupling contacting the road in the event of detachment of the front end from its normal position
- b. Fuel tank or components are located:
  - in the passenger, engine or driver compartment
  - less than 1.2 metres from the front of the bus, or outside the overall width of the bodywork.

✎ A fuel tank is considered to be separated from the engine compartment if it is separated by a chassis rail or by a fuel resistant partition.

A filler pipe, including the filler inlet, is considered to be separated from the engine compartment if it is separated by:

- a fuel resistant partition; or
  - by a distance not less than 900 mm, so that they are not exposed to excessive heat and that in the event of any fuel spillage during filling operations or leaks from the filler cap connection, fuel cannot fall on to the engine or exhaust system.
- c. The fuel tank filler inlet:
    - allows accumulation of overflow or leakage
    - projects beyond the overall width of the body
    - is less than 900mm from an access opening or emergency exit, except in the case of a small bus having an occupant capacity of up to 15 persons, including the driver
    - is not beneath an access opening or emergency exit, except in the case of a small bus having an occupant capacity of up to 15 persons, including the driver
    - is located in the interior of the bus unless protected by a sealed cover that does not allow leakage, or
    - is located in the engine compartment.
  - d. The engine compartment:
    - contains insulating materials that could be, or are, contaminated with oil or fuel
    - does not have drainage holes for fluids
    - does not have heat-resisting material on surfaces adjoining the rest of the bus.
  - e. The fuel system including lines and fittings:
    - are located such that leaks would contact the exhaust and no shield is provided, or
    - provides for gravity feed to the engine.