



## Section 8

# Lights and Reflectors

### Objective:

To ensure that all compulsory lights, reflectors and other electrical lighting components as required by prescribed standards are operational.

✎ In this section the description 'yellow' is used as a more modern term instead of the description 'amber' which is used in earlier legislation and some ADRs.

In this section the description 'parking lights' is used as a more modern term instead of the description 'front position lamps' which is used in earlier legislation and some ADRs.

### Australian Design Rules relevant to this section

ADR 1	Reversing lamps
ADR 6	Direction indicators
ADR 13	Installation of lighting and light-signalling devices on other than L-group vehicles
ADR 44	Specific purpose vehicle requirements
ADR 45	Lighting and light-signalling devices not covered by ECE regulations
ADR 46	Headlamps
ADR 47	Retroreflectors
ADR 48	Devices for illumination of rear registration plates
ADR 49	Front and rear position (side) lamps, stop lamps and

	end-outline marker lamps
ADR 51	Filament lamps
ADR 58	Requirements for omnibuses designed for hire and reward
ADR 74	Side marker lamps
ADR 75	Headlamp cleaners
ADR 76	Daytime running lamps
ADR 77	Gas discharge headlamps
ADR 78	Gas discharge light sources

### 8.1. Check lights and reflectors

#### Reasons for rejection

- Compulsory reflectors are damaged, obscured, deteriorated, not installed in the correct location or are not fitted
- Any of the following lights are inoperative, obscured, deteriorated, insecure or not fitted where required, or are an incorrect colour:
  - headlight (high/low beam) (white)
  - daytime running lights (white)
  - front fog lights (white or yellow)
  - front park lights (white)

✎ A front park light may be yellow if the light functions as a front park light and side marker light.

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- tail lights (red)
  - brake lights (red)
  - reversing lights (where fitted, mandatory on motor vehicles after 30/06/1975) (white)
  - direction indicator lights (yellow)
  - clearance/end-outline marker lights (white/yellow to front, red to rear)
  - number plate light (white)
  - side marker lights (yellow or yellow to front, red to rear)
  - compulsory tell-tale lights
  - step lights (for buses), 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
  - interior bus lights.
- c. Any reflector on the vehicle, other than conspicuity markings:
- show white to the side or rear
  - show red to the side or front
- ↘ The rearmost side reflector can be red if it is grouped with the rear position lamp, the rear end-outline marker light, the rear fog light, the stop light, the red rearmost side-marker light or the rear retro-reflector.
- show yellow to the front or rear
  - show a colour other than red, yellow or white.
- d. Daytime running lights are not wired so:
- they are off when a headlight, other than a headlight being used as a flashing signal, is on, or
  - if included as part of a combination light, they dim when a headlight other than a headlight being used as a flashing signal, is on.
- e. More than two daytime running lights are fitted
- f. Daytime running lights fitted to a vehicle built from 1 October 1991:
- are not white
  - are less than 250mm or more than 1500mm from the ground, or
  - on a vehicle that is at least 1300mm wide, the distance between the inner edge of the lights is not at least 600mm, or
  - on a vehicle that is less than 1300mm wide, the distance between the inner edge of the lights is not at least 400mm
- g. Daytime running lights fitted to a vehicle built prior to 1 October 1991:
- Are not white or yellow
  - are installed so the centre of light is more than 510mm from the nearer side of the vehicle
  - on a vehicle that is at least 1300mm wide, the distance between the inner edge of the lights is not at least 600mm
  - on a vehicle that is less than 1300mm wide, the distance between the inner edge of the lights is not at least 400mm
- h. Any rear light other than a reversing light is installed or damaged to the extent that white light shows
- i. Any yellow clearance light or front turn signal is damaged so that it shows white light (except vehicles prior July 1973)
- j. The number plate light is not directing light onto the surface of the rear number plate
- k. Any optional light or reflector interferes with the effective operation of any compulsory light or reflector
- l. Any light has a tinted cover over it that affects its intended operation

- m. Any light that is not clearly visible under all normal conditions and of a consistent intensity, and are affected by dirty or damaged lenses or poor electrical contact
- n. Lenses and light reflectors are not securely mounted, are faded or discoloured and are not free from cracks, holes, or other damage which would allow the entry of moisture or dirt to impair the efficiency of the light or reflector
- o. There is any other type of opaque cover over a headlight which cannot be readily removed
- p. A bus that is not a school bus is fitted with either the lights and/or signs required by the school bus warning system

↘ Refer to Section 13 Buses, for further information on *school bus warning systems*.

- q. Lighting does not comply with the Heavy Vehicle (Vehicle Standards) National Regulation
- r. More than four driving lights are fitted
- s. Driving lights or additional headlights are not installed symmetrically about the centre of the vehicle
- t. Additional driving lamps are not wired to turn off when the main-beam (high beam) lights are turned off.
- u. For an LED type light more than 30% of the individual LEDs do not function.

↘ : For example, if an LED tail light is made up of 10 LEDs, at least seven of the LEDs must be working. If only six LEDs work, this is a reason for rejection.

### 8.2. Check headlights

#### Reasons for rejection

- a. Headlight reflector is tarnished or peeling to the extent that headlight performance is impaired
- b. Headlight lens is cracked or broken
- c. Headlight assembly is not secured or is out of position
- d. Headlight does not project white light
- e. Headlight lens or reflector is internally contaminated by dirt or moisture
- f. A device to indicate to the driver that the headlights are in the high beam position is not fitted and operational
- g. A dipping device to change the headlights from the high beam position to the low beam position and operated from the normal driving position is not fitted and operational
- h. Headlights do not comply with the Heavy Vehicle (Vehicle Standards) National Regulation.
- i. All low beam headlights with a luminosity of more than 2000 lumens are not self-levelling and self-cleaning
- j. Aftermarket LED/HID bulbs are fitted to incompatible headlight assemblies

### 8.3. Check headlight aim (includes driving lights and alternative headlights)

This section should be read in conjunction with the equipment manufacturer's instructions.

#### Reasons for rejection

- a. The aim of the headlight is adjusted such that, when on high beam and measured at an effective distance of 8 metres, the projected centre of the beam is to the right of the headlight centre and/or is above the headlight centre

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- b. When measured at an effective distance of 8 metres, any part of the top edge of the high intensity portion of the low beam pattern is above, and to the right of the centreline of the headlight.

➤ In the region above and to the right of the centreline of the headlight the luminous intensity must not exceed 437 candela. The portion of the beam to the left of the centreline of the light may extend above the height of the centreline of the headlight. The centreline of the headlight passes through the centre of the globe filament, or equivalent.

For information regarding headlight testing screens, refer to Additional Information – Headlight Testing Screens.

### 8.4. Backlit badges

#### Reasons for rejection

- The light source is not integrated within, and contained totally within, the badge/logo
- The badge/logo shows:
  - white to the rear of the vehicle
  - red to the front of the vehicle
  - a colour other than red, white or yellow
- The luminous intensity is more than 60 candela
- The light flashes
- The badge/logo and light source is within 200mm of another lamp
- The light can be seen, either directly or by reflection, by the driver when in the normal seated driving position
- The light source is not connected so that it only operates with the front lighting system
- The light is overly large so as to affect the prominence of other mandatory lamps.

### 8.5. Check conspicuity markings

Conspicuity markings are optional reflective markings that can be fitted to a heavy vehicle intended to improve visibility of the vehicle.

#### Reasons for rejection

- Reflective material used for conspicuity markings:
  - shows white to the rear
  - shows red to the side or front
  - shows yellow to the front
  - shows a colour other than red, yellow or white.
- Markings do not continue for at least 80% of the length or width of the vehicle
- Markings on the side of the vehicle do not come within at least 600mm of the front or rear of the vehicle

➤ The markings do not need to continue in the gap between the cabin and the body

- The lowest part of the markings is less than 250mm or more than 1500mm from the ground

➤ Where the design of a vehicles does not allow for fitting within 1500mm, the marking may be fitted up to 2100mm from the ground

- For full or partial contour markings that are fitted to the side of the vehicle, markings at the top are more than 400mm from the upper extremity of vehicle

- For full or partial contour markings that are fitted to the rear of the vehicle, markings:
  - on the sides of the vehicle are more than 400mm from the outer edge of the vehicle
  - at the top of the vehicle are more than 400mm from the upper extremity of vehicle
- Markings do not comply with Australian Design Rule 13/..

For additional information regarding conspicuity markings, refer to the Australian Trucking Association's Technical Advisory Procedure on Heavy Vehicle Visibility.

### 8.6. Additional Information - Headlight Testing Screens

#### Scope

This specification describes requirements for the headlight testing screen and the layout of the headlight testing space.

#### Headlight testing screen

The surface of the screen should be 'flat' white (gloss finish should be avoided). The screen shall be at least 1300mm in height and 2400mm in width and shall be marked with horizontal and vertical lines. Horizontal lines shall be spaced 75mm apart and vertical lines shall be spaced 300mm apart. Horizontal lines shall be labelled with their height starting from the bottom of the screen. The bottom of the screen shall be placed level to the surface upon which the vehicle is standing during test.

	Horizontal spread (mm)							
	300	600	900	1200	1500	1800	2100	2400
1275								
1200								
1125								
1050								
975								
900								
825								
750								
675								
525								
450								
375								
300								
225								
150								
75								
0								

Figure 8.1 Headlight testing screen

➤ All lines to be black except centre vertical which is to be red. The thickness of all lines is to be as small as possible and consistent with good visibility for an observer at a distance of 8 metres from the screen during test of headlights. The heights of the horizontal lines above the level of surface upon which vehicle is standing during test are to be clearly marked with black figures, as shown, of a size to ensure good visibility for an observer at a distance of 8 metres from the screen during test of headlights.

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### Layout of the testing space

- The ground on which the vehicle stands shall be marked with a centreline which passes through the centreline of the screen and a transverse line which intersects the centreline and is 8000mm from the screen (the headlights of the tested vehicle are positioned directly over this line). Additional longitudinal lines in the region where the vehicle standing would assist alignment and their use is recommended.
- The bottom of the screen is at the same level as the surface on which the vehicle stands.
- The screen and testing space must be adequately shielded from extraneous light.
- The testing space must be clear of obstruction.

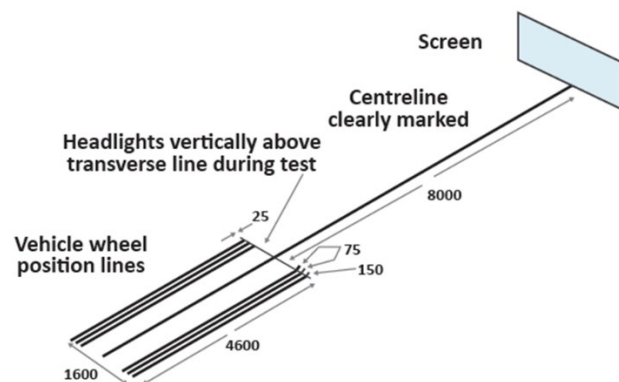


Figure 8.2 General arrangement of the headlight testing space

➤ All dimensions in the diagram are in millimetres.