

Light Vehicle Inspection Manual

Appendix I Lighting Standards

Appendix I - Lighting Standards

This Appendix summarises the vehicle lighting standards in accordance with the NT *Motor Vehicle Standards Regulations 2003 – Australian Vehicle Standard's Rules (AVSR)* and the Australian Design Rules (ADRs).

The regulations requires all vehicles to comply with the ADRs applicable to them or, for pre ADR vehicles - the AVSR apply. Special lighting requirements, such as flashing lights, are detailed in the NT *Traffic Regulations 1999* incorporating the Australian Road Rules.

More information on vehicle lighting, refer to Information Bulletin V14 Additional lighting and V15 High output light source lamps - <https://nt.gov.au/driving/industry/vehicle-information-bulletins-and-forms>

Flashing warning lights

The use of flashing warning lights in the Northern Territory - other than amber or yellow - are prescribed for police vehicles , ambulances, Transport Inspector vehicles, fire response vehicles, Australian Border Force vehicles and Australian Defence Force vehicles.

Additional lights

Additional mandatory lights (e.g. an extra pair of direction indicator lights) are also permitted. The Australian Design Rules set mandatory position, width and height limits for a primary set of lights fitted to a vehicle. In the case of light and heavy omnibuses (MD and ME categories), all commercial vehicles (N category) and medium and heavy trailers (TD and TC categories), additional direction indicator, hazard warning, stop, parking and rear position lights may be fitted to satisfy specific operational requirements.

These operational requirements could include the need to better project manoeuvring intentions in congested traffic such as for buses frequently stopping to pick up and set down passengers, the need to have additional lights to retain signalling capability in case of primary light breakages, and where operating environment results in low mounted lights becoming covered in dirt or dust.

The maximum height limits for particular lights, which includes stop lights, fitted to the above categories of vehicles do not apply when provided as additional lights.

Side marker lights

The ADR's have been amended to align with European standards and allow side marker lights to show yellow to the rear. Some new vehicles already have these lights fitted. The Vehicle Standards Regulations allows either red or yellow side marker lights to the rear on any age vehicle.

Forward facing cabin lights

The Vehicle Standards Regulations requirements for external cabin lights are as follows:

- A motor vehicle fitted with front clearance lights (also known as front end outline marker lights) may also have additional forward facing lights on or above the roof of its cabin.
- The additional forward facing lights must be spaced evenly between the front end-outline marker lights, with their centres at least 120mm apart.
- When on, an additional forward facing light must show a yellow or white light and not use over 7 watts of power.

NOTE:

Front end-outline marker lights may only be fitted to a vehicle that is at least 1.8 metres wide.

A pair of front end-outline marker lights must be fitted to a motor vehicle that is more than 2.1 metres wide, however, end-outline marker lights are not required when the vehicle's structure prevents them from being at least 200mm above the front position (side) lights.

Headlights (colour, compliance and symmetry)

Some new factory fitted headlights may appear to have a blue or yellow tinge. The Commonwealth (Department responsible for road vehicles) has advised that these colours can sometimes be seen on some of the new technology lights when viewed from the side. However, these lights do emit white light in the required angles and comply with the ADRs.

'Blue' halogen bulbs are a recent innovation in vehicle lighting technology. They operate at higher temperatures and provide superior illumination to the conventional halogen bulb. Historically, the white light emitted from headlamps on motor vehicles has been generated from incandescent light sources and contains a predominance of red/yellow frequencies. This has become the accepted norm for white light. The new bulbs, which are actually 'whiter' than the existing bulbs, contain less of the red/yellow frequencies and more of the blue end of the spectrum. The bulbs may be perceived as a very light blue.

The envelope around the filament of these bulbs is dyed blue, primarily to reduce the red/yellow frequencies that are always present in light produced by incandescent filament bulbs.

Motor vehicles have been required to comply with Australian Design Rules (ADRs) for lighting since October 1991. ADR 13 mandates the number and position of lamp assemblies, ADR 46 prescribes the photometric requirements of the lamp itself and ADR 51 is the standard for filament bulbs.

ADR 51 accepts ECE regulation 37 as an alternative standard for filament bulbs and prescribes the dimensional and photometric requirements for filament bulbs (including headlamps). This ensures interchangeability and correct functioning when installed in a complying lamp unit.

All complying bulbs sold in Australia would be marked with the 'E' mark and possibly the words 'Suitable for European Use'. The packaging may also indicate compliance with ADR 51 or ECE 37.

When a replacement complying bulb of the correct type (for example H4 45/60 Watts) for a complying headlamp is fitted to that assembly, the light emitted will be within the spectral requirements for white light.

Although these lamps are a standard fitment to many newer vehicles, a 'blue' complying lamp can be fitted to a lamp assembly on a vehicle that was not originally fitted with these bulbs.

It is important to note that ADR 51 limits the power of various bulb types, and bulbs of a similar style but higher power rating will not comply and should not be used. For example, the common H4 bulb that has a complying rating of 45/60 watts, is available in much higher rating of 45/100 watts. The higher powered bulbs produce more glare and the resulting light pattern would not comply with the ADR.

Although regulations do not require drivers of pre-1991 vehicles to fit complying bulbs, consumers should be careful when fitting non-complying 'blue' light bulbs to pre-ADR vehicles, as the resulting light spectrum may fall outside the standard for white light (that is, the blue frequencies may predominate).

Motorcycles, including motor tricycles, with twin headlights side by side may have one light as low beam and the other as high beam. That is, the high and low beam do not need to be symmetrical about the longitudinal centre line of the motor cycle, including motor tricycle(s).

High Intensity Discharge (HID) Lights

Fitting HID lights to non-HID lamp assemblies is not permitted.

HID lights are more efficient than traditional incandescent lights due to displaying a greater proportion of visible light rather than heat, the light that they emit may appear to have a blue tinge.

A requirement of fitting HID lights is that a complete system be fitted. The system includes a specific lens and reflector design, headlamp cleaning and auto level devices, these are required to reduce the chances of dazzling other road users.

LED Replacement Globes

Recently added to the market are LED replacement globes. LED replacement globes do not meet the requirements of the ADRs. Fitted to original manufactured lamps LED globes do not provide a light display that meets the requirements. Many of the LED replacement globes are advertised as "Off road use only" and "Not ADR compliant", therefore are not suitable for use on a public street.



Driving Lights

Are designed to illuminate the road over a long distance. Driving lights must be wired so that they switch on and off with the main beam (high beam) headlight. Never use your lights to dazzle another road user.

LED Light Bars

ADR 13 (Australian Design Rules) has been amended removing the requirement for additional lamps to be fitted in pairs. This allows the fitment of singular light bars. A LED light bar is a lamp assembly that contains multiple LED light sources in one or more rows which is used to better illuminate the road in front of the vehicle. Light bars are to only be used to supplement the vehicles high beam as an additional driving light and therefore must be wired so that they only operate with the vehicles high beam and automatically turn off when the high beam headlights are turned off.



If a light bar has the ability to have sections switched on and off independently then each independently controlled section counts as one lamp and each section may only operate when the vehicle high beam lights are operating. LED light bars must not be fitted so that they obstruct the drivers view, at the front of the vehicle.

Daytime Running Lamps

Daytime running lights are an optional light and when fitted are designed to increase the visibility of a vehicle to other road users during daylight hours. The light pattern dispersed by daytime running lights is designed to make the vehicle more conspicuous to all road users without causing unnecessary glare or discomfort. After-market daytime running lights may be fitted to vehicles if they are fitted in accordance with relevant legislation. Daytime running lights must not use over 25 watts of power.

Daytime running lights turn on automatically when the engine starts and must be wired so that they are turned off when the headlights are on unless the headlight is being used as a flasher signal.

Daytime running lights must only be fitted in pairs, and if fitted must be positioned so that they are not more than 510mm from the extreme outer edge of the vehicle. The centre of each light is at least 600mm from the centre of the other light. If the vehicle is narrower than 1300mm the centre of each light may be 400mm from the centre of the other light. They may be fitted not less than 250mm above the ground and not more than 1500mm from the ground.

Fog Lamps

Front fog lights are optional lights which are fitted to the front of a vehicle to improve illumination of the road in fog, snowfall, and heavy rain or dust clouds. Fog lamps emit a low, narrow vertical pattern of light with a wide lateral spread. People are often confused as to what is classed as a fog lamp, if you are unsure please refer to the owner's manual provided with your vehicle to ascertain if it is fitted with fog lamps.

A Rear fog lamp is an optional light (other than a brake light, a tail light, a number plate light or a reversing light) fitted to the rear of a vehicle to make the vehicle more easily visible from the rear in fog, snowfall, heavy rain or dust clouds.

Front fog lights must be white or yellow in colour and rear fog lamps must only emit a red light. Up to 2 lamps may be fitted towards the front of the vehicle, they must be situated no more than 400mm from the outer edge of the vehicle to the centre of the fog light and be no less than 250mm above the ground. The maximum height permitted is dependent on the vehicle. The centre of a fog light must not be above the centre of the low beam headlight. Passenger cars and light goods vehicles must be no higher than 800mm above the ground all other vehicles must be no more than 1200mm above the ground apart from off-road vehicles which may have the lights fitted to a maximum of 1500mm above the ground. Fog Lamps may be concealed when not in use. Fog lamps must not be fitted in such a way that they may be considered a dangerous protrusion or dazzle other road users when operating.

The driver must be able to turn the front and rear fog lights on or off independent from other lights. It is a requirement for vehicles from October 1991 that a tell-tail light must illuminate on the dashboard when the fog lights are operating.

Fog lights must not be illuminated unless fog or other reduced visibility conditions exist.

If, during the course of an inspection, Vehicle Examiners have cause to inspect vehicles modified by changing the original lighting componentry assemblies, they are to ensure that individual vehicles comply with the previously mentioned details. Modifications of this type which do not comply with the above requirements are to be rejected immediately.