NATIONAL ROAD TRANSPORT COMMISSION

ROADWORTHINESS GUIDELINES

September 1995

CONTENTS

INTRODUCTION

These Guidelines have been prepared by the National Road Transport Commission as part of its task to develop uniform or consistent laws and administrative guidelines for the safe and efficient operation of road transport in Australia.

To be considered roadworthy, a vehicle must comply with the *Road Transport Reform (Vehicle Standards) Regulations* (the "Vehicle Standards") and the relevant *Australian Design Rules* ("ADRs"). These contain mandatory requirements for the safe design, construction and maintenance of vehicles and for the control of emissions and noise.

The purpose of these Guidelines is to give practical information about wear, damage or change to the more important systems of a vehicle in-service to owners and operators of vehicles and administrators of road transport law to enable consistent criteria to be applied in each State and Territory of Australia.

A Guideline which applies to a vehicle or a component of a vehicle indicates that the safe operation of the vehicle or the control of its emissions may be impaired. This fits in with the requirements of Regulation 6 which reads as follows:

"Vehicles and combinations to be properly maintained

6(1) A vehicle or combination of vehicles must be kept in a condition that ensures:

(a) its safe operation; and
(b) the safety of its occupants and of other road users.

6(2) A vehicle or combination of vehicles must be kept in a condition that ensures that the means of control of its emissions of gas, particles and noise remain in good working order.

6(3) Subregulations 6(1) and (2) include, but are not limited to, the following aspects of the vehicle or combination:

(a) its steering, brakes, suspension, wheels, tyres, towing equipment and the means of transmitting engine power to the driven wheels; and
(b) the lights and reflectors that it is required to have under these regulations; and
(c) the strength of its structure; and
(d) its driver's view of the road."

When using these Guidelines, the following principles are relevant:

- Equipment required by the Vehicle Standards to be on a vehicle must be present and work properly.

- Equipment which is essential for compulsory equipment to function, for the safe operation of a vehicle and for the control of its emissions, must be kept in good condition.

- Equipment that is not required by the Vehicle Standards and with no direct effect on the vehicle's safe operation or the control of its emissions does not have to function, as long as it does not interfere with equipment that is required.

- Manufacturers' recommendations relevant to the safety of particular vehicle parts or to the control of emissions must be considered.

- Test methods or other conditions have not been specified except where they are necessary to determine whether criteria are met.

- Parts of a vehicle that deteriorate and have no direct safety or emission implications or where deterioration cannot readily be determined have not been included.

Some Guidelines and standards apply only to certain vehicles. Similarly, a vehicle may have been exempted from a Vehicle Standard or ADR.

Some of the relevant Vehicle Standards and ADRs are noted at the beginning of each part of the Guidelines. Those documents should be consulted for a complete list of the requirements.

PART 1: STEERING

The following Vehicle Standards are relevant to this part:

Clause 2.1 Steering
Clause 2.2 Turning Ability

The following Australian Design Rules are relevant to this part:

ADR 10	Steering Column
ADR 42	General Safety Requirements
ADR 43	Vehicle Configuration and Dimensions
ADR 69	Full Frontal Impact Occupant Protection

1.1 Steering wheel

(a) The steering wheel is loose on the shaft.

(b) The steering wheel structure is fractured or the hub, rim or spokes are loose.

1.2 Steering freeplay

With the road wheels in the straight ahead position, and the engine running (if the vehicle has power steering), a point on the steering wheel rim moves more than the amount shown below without movement at the road wheel:

Steering wheel diameter (mm)	***Movement (mm)***
up to 450	75
over 450	100

1.3 Steering operation

With the wheels off the ground, the steered road wheels do not turn freely to the left and right through their normal range of travel.

Note: Some rack and pinion steering assemblies are spring loaded. Steering load can change depending on the amount of rotation of the steering wheel.

1.4 Steering box

(a) The steering box, rack and pinion assembly, mounting brackets, bolts or couplings are cracked or loose.

Note: Some steering assemblies are not rigidly mounted to the vehicle.

(b) The pitman arm is loose on the steering output shaft.

1.5 Power steering

(a) Power assist cylinders are loose.

(b) Power steering assemblies leak.

Note: Dampness or staining around seals is acceptable.

1.6 Steering linkages

(a) Components are cracked or broken.

(b) Threaded or tapered joints are loose.

(c) Any free play due to wear in a ball joint exceeds manufacturers' specifications. Where these are not known or are no longer appropriate, the free play exceeds 3mm.

Note: (i) Some ball joints are spring loaded or are designed to have a certain amount of play.

(ii) If steering components have to be welded, bent or heated it is essential that the materials are suitable for these processes and that any manufacturers' instructions, relevant codes and metallurgical procedures followed, including pre- and post-treatment of affected areas and non-destructive testing where necessary.

(iii) Many techniques such as split pins, lock nuts and thread locking compounds are used to ensure that connections do not loosen. Any manufacturers' recommendations in relation to securing connections are to be followed.

1.7 Steered wheel suspension and linkage play

Free play at the steered road wheel rim in a horizontal or vertical plane (excluding any necessary wheel bearing play) exceeds manufacturers' specifications. Where these specifications are not known or are no longer appropriate, free play exceeds the amount below:

Rim diameter (mm)	***Free play (mm)***
up to 405	7.0
over 405 up to 455	10.0
over 455	13.0

1.8 Handlebars

Handlebars are loose, cracked or distorted.

Note: Some motorcycle handlebars are rubber mounted.

1.9 Head Stem Bearings

The head stem bearings are worn beyond manufacturers' specifications or are loose.

PART 2: SUSPENSION

The following Vehicle Standards are relevant to this part:

Clause 4.2	Relation Between Axles in an Axle Group
Clause 4.11	Ground Clearance
Clause 4.13	Construction of a Converter Dolly
Clause 4.15	Converter Dolly Suspension

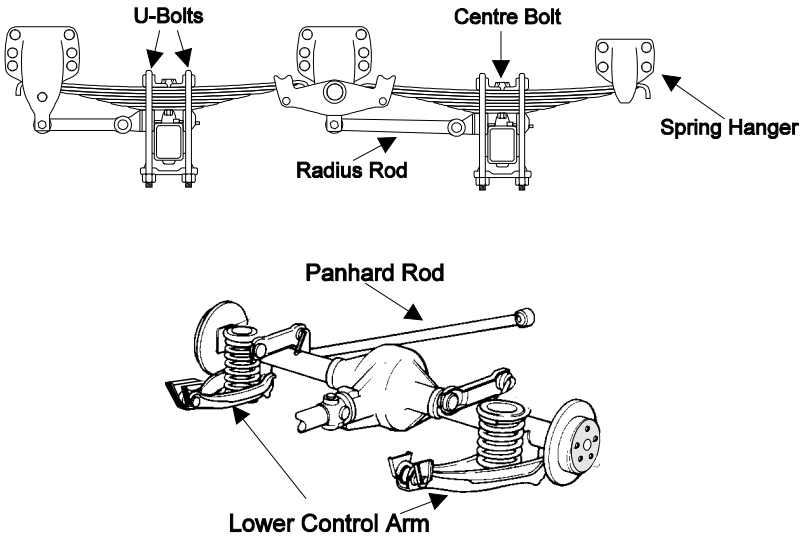
The following Australian Design Rules are relevant to this part:

ADR 43	Vehicle Configuration and Dimensions

2.1 Axle locating devices

U-bolts or other spring to axle or spring pack clamp bolts, centre bolts, spring eyes or hangers, torque, radius or tracking component assemblies, control arms, bushes or any parts used to attach them to the vehicle frame or axle are cracked, loose, broken, missing or worn beyond the manufacturers' safe working limits.

Note: Superficial crazing is acceptable on rubber bushes. This is often present on rubber suspension components even when new.



Axle locating devices

2.2 Springs

(a) Springs are cracked or broken.

(b) Rubber springs are cracked or missing.

Note: Superficial crazing is acceptable. This is often present on rubber suspension components even when new.

(c) Air bags leak.

(d) Leaves in a leaf spring are displaced sideways more than 10% of their width or so that they contact wheels, brakes or the frame.

(e) Shock absorbers, if originally fitted, or struts are missing, loose or do not work.

PART 3: STRUCTURE AND BODY WORK

The following Vehicle Standards are relevant to this part:

Clause 2.4	External or Internal Protrusions
Clause 2.7	Mudguards
Clause 2.12	Bonnet Latching
Clause 2.13	Electrical Wiring, etc
Clause 2.14	Televisions and VDUs
Clause 4.1	Axle Configuration

The following Australian Design Rules are relevant to this part:

ADR 2	Side Door Latches and Hinges
ADR 10	Steering Column
ADR 11	Sun Visors
ADR 21	Instrument Panel
ADR 29	Side Door Strength
ADR 42	General Safety Requirements
ADR 43	Vehicle Configuration and Dimensions
ADR 44	Specific Purpose Vehicle Requirements
ADR 57	Special Requirements for L-Group Vehicles
ADR 58	Requirements for Omnibuses Designed for Hire and Reward
ADR 59	Bus Rollover Strength
ADR 63	Trailers Designed for Use in Road Trains
ADR 64	Heavy Goods Vehicles Designed for Use in Road Trains and B-Doubles

3.1 Exterior body panels and fittings

Exterior body work or fittings on a vehicle have exposed sharp edges due to damage including corrosion or separated joints that could injure a person who comes into contact with the vehicle.

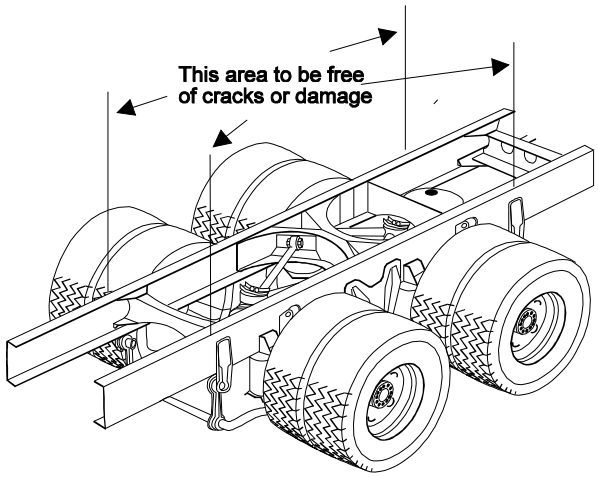
3.2 Cabin and body condition

Structural members of a body such as subframe, cross members, door sills, pillars, roof rails and floor panels are cracked or broken or corroded to an extent that weakens the body.

3.3 Chassis

(a) The frame members of the vehicle are cracked, loose, sagging or broken to an extent that allows the body to contact moving parts or have any other condition that indicates that the frame is likely to collapse.

(b) The frame members supporting the steering gear, tow coupling, engine, transmission, suspension or body are cracked, loose or broken.



Example of critical structural components

Note: Cracks can occur for a variety of reasons. In some locations, cracks may not adversely affect the vehicle or grow beyond a certain size. Some cracks may be controlled by various treatments while others may reappear after repair. If cracking occurs, it is important that the cause is established and manufacturer's advice sought where possible.

(c) Frame members in load areas are missing or damaged to an extent that the load area is not properly supported or the members are likely to fall out or contact moving parts.

3.4 Cabin and body mounting

(a) The cabin, body, sleeper compartment or load carrying areas or compartments are loose on the chassis or have missing mounting fasteners.

(b) Tilting cabin or tray latches do not hold the cabin or tray securely in its normal travelling position.

3.5 Doors, tailgates and compartment covers

(a) Hinges or slides for doors, tailgates, sidegates, hatches, bonnets or compartment covers are damaged or worn to the extent that any of these panels are likely to fall off, or passengers or loads held in the vehicle by them are likely to fall from the vehicle.

(b) Door, gate, hatch, bonnet or compartment latches do not hold the panel securely in the closed position or do not allow passenger access doors to be opened.

3.6 Bus passenger door controls

Any driver operated controls or safety devices on bus passenger access doors do not work properly.

3.7 Bus emergency exits

(a) Emergency exits do not have clear access or, where required by the Vehicle Standards Regulations, identification signs and operating instructions are not clearly visible.

(b) Equipment necessary to operate the exit is not present.

(c) The exit is broken, distorted or damaged in a way that stops it working properly.

(d) Any warning device to indicate the operation or condition of the exit is not in working order.

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

3.8 Interior body panels and fittings

(a) Interior body panels or fittings on a vehicle have exposed sharp edges due to damage including corrosion or separated joints that could injure a person who comes into contact with them.

(b) Interior fittings in a vehicle are not securely mounted.

(c) Bus floor coverings are torn, worn or loose to an extent that they could trip passengers.

(d) Bus handgrips, handrails or handstraps are loose or damaged.

(e) Bus passenger stop signals do not work.

(f) Bus steps are damaged to an extent that they could trip or injure a person.

3.9 Electrical equipment

(a) Electrical wiring or connectors are damaged, or hanging loose in a way that could allow them to be damaged.

(b) Batteries are not securely mounted or they leak.

3.10 Sliding axles

(a) Sliding axles do not lock securely in position or have lock pins missing or not engaging.

(b) Secondary securing devices and locking indicators do not work properly.

3.11 Cargo anchor points

(a) Side rails, pocket rails, supports or associated welds in the cargo area are broken or cracked.

(b) Floor rings in cargo areas are nicked, gouged, worn, bent, stretched or have broken welds.

3.12 Rear bumper (semi-trailers where required)

The rear bumper on a semi-trailer or its supports are cracked or loose.

Note: Bad bends or kinks are likely to affect the bumper's ability to withstand impact.

3.13 Spare wheel carriers

A spare wheel carrier is broken or insecure.

PART 4: BRAKES

The following Vehicle Standards are relevant to this part:

Clauses 6.1-6.21 (inclusive) Braking Systems

The following Australian Design Rules are relevant to this part:

ADR 7	Hydraulic Brake Hoses
ADR 31	Hydraulic Brakes for Passenger Cars
ADR 33	Brake Systems for Motor Cycles
ADR 35	Commercial Vehicle Brake Systems
ADR 38	Trailer Brake Systems
ADR 42	General Safety Requirements
ADR 63	Trailers Designed for Use in Road Trains
ADR 64	Heavy Goods Vehicles Designed for Use in Road Trains and B-Doubles

A. BRAKING EQUIPMENT

4.1 Brake controls

(a) Rubber faced brake pedals have the metal showing through the facing or other brake pedals have the friction surface worn out.

(b) Brake pedals or handles are broken or missing.

(c) Brake control mountings, pivots or links are loose or broken.

(d) Brake controls do not operate freely.

(e) A ratchet or locking device on a parking brake control does not hold the control in the applied position.

4.2 Brake pipes and hoses

(a) Abrasions on brake hoses penetrate further than the outer protective covering.

(b) Brake pipes, hoses or connections are cracked, broken, kinked or crimped, damaged by heat or have visible signs of collapse.

(c) Brake pipes or hoses leak.

4.3 Brake drums or discs

(a) Brake drums or discs:

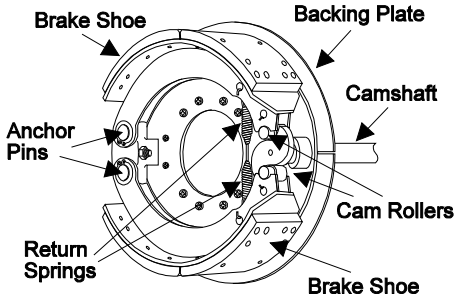
- are missing pieces; or
- have cracks other than short heat cracks inside the drums.

(b) Drums or discs are worn beyond the manufacturer's specification.

4.4 Brake operating mechanisms and related components

(a) Brake backing plates, spiders or Caliper assemblies are loose, bent or cracked.

(b) Shoes, springs, anchor pins, cam rollers or bushes, pull or push rods, clevis pins, retainers or brake chamber mounting bolts are missing or broken.



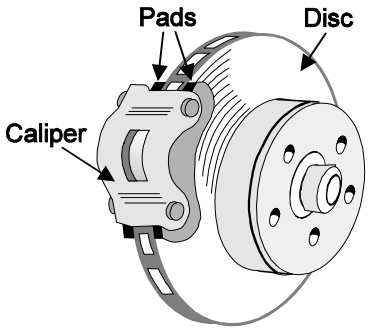
Drum brake components

(c) Brake chambers (including chamber clamps) or camshaft support brackets are loose, bent or cracked.

(d) Brake linings or pads are missing, broken or loose on their shoes or plates. Cracks or breaks in friction materials extend to rivet holes.

Note: It is acceptable to have small cracks that do not affect the way the friction materials are attached.

(e) Calipers or wheel cylinders leak.



Disc brake components

(f) Linings or pads are contaminated with oil, grease or brake fluid.

(g) The thickness of the linings or pads is less than the manufacturer's recommended minimum. If this is not known, or is no longer appropriate, the thickness of the linings or pads is less than:

if the vehicle has a GVM of more than 4.5 tonnes -
- 0.8mm above the fastener; or
- on bonded linings or pads, 1.5mm above the shoe or pad backing plate; or

if the vehicle has a GVM of 4.5 tonnes or less -
- 0.8mm above the fastener; or
- on bonded linings or pads, 0.8mm above the shoe or pad backing plate.

Note: Linings or pads less than the above thicknesses may provide adequate performance for a short period or under light braking but prolonged use will result in reduced performance or damage to components.

4.5 Reservoirs, master cylinders or servo units

(a) Reservoirs, master cylinders or servo units are loose, cracked, broken, worn or damaged in a way that makes them leak.

(b) The fluid level in a master cylinder reservoir is not within the range recommended by the manufacturer. If this is not known, the reservoir is less than one quarter full.

4.6 Air compressor/vacuum pump

(a) The air compressor or vacuum pump has loose mounting bolts or cracked or broken mounting brackets, braces or adapters.

(b) Drive pulleys are cracked, broken or loose.

(c) Drive belts are loose, cracked through to reinforcing plies, extensively frayed or missing drive sections.

4.7 Air cleaners

Filter units for air compressors or vacuum pumps are missing, loose, or blocked.

B. BRAKING SYSTEM OPERATION

4.8 Failure indicators

(a) Any brake failure indicators do not operate when the ignition switch is put in the "check" position.

(b) Any compulsory pressure/vacuum gauges do not work.

4.9 Control operation

The brake controls fail to cause the corresponding brake to work when they are operated (with the engine running if necessary).

4.10 Hydraulic brake system integrity

Under a steady, light and heavy force each applied for 10 seconds:

- after the initial travel, the service brake pedal travels to the floor; or
- the brake system failure indicator comes on.

If the vehicle has power brakes, run the engine when doing this check.

4.11 Hydraulic brake pedal reserve

Under steady, moderate force (approximately 225N), the brake pedal travels more than 80% of the distance from its free position to the floor, unless the brake system is designed to have greater travel.

If the vehicle has power brakes, run the engine when doing this check.

4.12 Vacuum assist unit integrity

With vacuum depleted from the system and with moderate steady force applied, the brake pedal does **not** travel towards the floor when the engine is started.

4.13 Low vacuum indicator

If the vehicle is fitted with a low vacuum indicator, the indicator does not come on at a vacuum level of 25kPa or more.

4.14 Vacuum operated brake system integrity

With the engine stopped, one application of the service brake with a moderate pedal force results in the low vacuum indicator coming on. If a trailer is connected to the motor vehicle, operating the service brake of the motor vehicle does not cause the trailer vacuum brakes to come on.

4.15 Air brake system integrity (including air over hydraulic)

(a) With the brake system fully charged and the engine stopped, the reservoir pressure drops more than 20% below the initial reading after the service brake has been fully applied once.

(b) With the engine at the manufacturer's recommended maximum speed and the compressor governor in the cut-in position, the air brake compressor does not increase the air pressure in the reservoir(s) to the fully charged level from the level recorded in (a) within 30 seconds for pre-ADR vehicles or 45 seconds for ADR vehicles.

(c) A visual or audible warning device connected to the air brake system does not come on when the air pressure is lowered to not less than the following levels, unless the manufacturer specifies a different level:

- 420kPa for ADR vehicles; or
- 350kPa for pre-ADR vehicles.

(d) The governor cut-in pressure is less than 550kPa and the cut-out pressure more than 930kPa, unless other values are recommended by the manufacturer.

(e) With the engine stopped and the service brake released, the air brake pressure drops more than 15kPa per minute. An additional drop per minute of 5kPa is allowable for each trailer that may be attached.

(f) With the reservoir(s) fully charged, the engine stopped and the service brakes fully applied, the air brake pressure drops more than 20kPa per minute. An additional drop per minute of 5kPa is allowable for each trailer that may be attached.

4.16 Air reservoir drain valves

Drain valves on reservoirs do not work.

4.17 Brake adjustment

(a) With the brakes fully applied, any stroke indicator runs out of travel.

(b) Pull or push rods move more than 80% of their travel with the brakes fully applied.

(c) Motor bike or motor trike service brake controls move more than 80% of their travel with the brakes fully applied.

(d) The park brake and emergency brake are not capable of being fully applied without the control running out of available travel.

Note: It is not always possible to determine the emergency brake travel on some vehicles.

PART 5: WHEELS AND TYRES

The following Vehicle Standards are relevant to this part:

Clause 2.18 Wheels and Tyres
Clause 2.19 Tyre Tread

The following Australian Design Rules are relevant to this part:

ADR 20 Safety Rims
ADR 23 Passenger Car Tyres
ADR 24 Tyre and Rim Selection

5.1 Wheels

(a) The rim of a wheel is cracked.

(b) Disc wheels have cracks anywhere on the wheel.

(c) Spider wheels have:

- cracks across a spoke or hub section; or
- cracks in web areas.

(d) Tubeless demountable adapters have cracks in the spokes.

(e) Welds attaching a wheel disc to the rim, or a tubeless demountable rim to an adapter, are cracked or broken.

(f) Cast wheels have missing pieces.

(g) Wheels have weld repairs not in accordance with relevant industry practice.

Note: Weld repairs cannot be safely carried out on many wheels due to metallurgical considerations and the complex loading patterns they are subjected to. Such repairs must not be attempted without a thorough understanding of the effects of the repairs on the wheel. Testing of the repairs by a suitably qualified person will usually be necessary.

(h) Valve protection lugs are missing.

(i) Wheels are not compatible with the hubs.

(j) Wire spoke wheels have more than one spoke in each quadrant missing, loose, or broken.

5.2 Wheel fasteners

(a) Wheel fasteners are missing, loose, cracked or stripped.

(b) The fasteners are not of the correct type for the wheel being used or are not tightened in accordance with the manufacturer's specifications.

(c) Fastener holes are worn to the extent that the fastener does not contact the wheel in the intended areas.

(d) Fasteners allow a rim to slip.

5.3 Retaining rings

Lock or side rings are bent, broken, cracked, incorrectly seated, sprung or mismatched.

5.4 Tyres

(a) The tyres on the same axle of a vehicle are not of a similar size and construction.

Note: (i) Exercise care in mixing tyre construction on different axles of a vehicle as its controllability may be affected under some circumstances.

(ii) The ADRs generally require the same tyre construction on all axles of a passenger vehicle.

(iii) Some vehicles are supplied with a temporary use spare tyre which may be quite different in construction and size to the tyres on the vehicle. Similarly, in an emergency an appropriate type of tyre may not be available.

(b) The overall diameters of dual tyres on the same side of an axle are not matched within 25mm.

(c) Tyres are not compatible with the rims.

(d) Tyres are incorrectly inflated.

(e) Tyres have any visible chunking, bumps, or bulges.

Note: Small bulges due to a manufacturing process are acceptable as is a bulge not exceeding 10mm in height due to a section repair.

(f) The breaker strip or casing ply is visible in the tread area.

(g) Sidewalls of a tyre are cut, worn or damaged to the extent that the ply cord is visible.

5.5 Tyre/wheel clearance

(a) The tyres or wheels on a vehicle contact the body, chassis, frame or unrelated braking, steering or suspension components.

(b) Dual tyres contact each other.

PART 6: LIGHTS AND REFLECTORS

The following Vehicle Standards are relevant to this part:

Clause 5.1- 5.40 (inclusive) Lights and Reflectors

The following Australian Design Rules are relevant to this part:

ADR 1	Reversing Lamps
ADR 6	Direction Indicator Lamps
ADR 13	Installation of Lighting and Light-signalling Devices on other than L-Group Vehicles
ADR 19	Installation of Lighting and Light-signalling Devices on 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	Reflex Reflectors
ADR 48	Rear Registration Plate Illuminating Devices
ADR 49	Front and Rear Position (Side) Lamps, Stop Lamps and End-outline Marker Lamps
ADR 51	Filament Globes
ADR 58	Requirements for Omnibuses Designed for Hire and Reward
ADR 60	Centre High mounted Stop Lamps
ADR 67	Installation of Lighting and Light-signalling Devices on 3 Wheeled Vehicles

6.1 Lights and reflectors

(a) The compulsory lights or reflectors do not work properly or are obscured.

(b) Headlights are not correctly aimed in both high and low beam positions or are loose.

(c) Any compulsory tell-tales do not work.

(d) Optional lights or reflectors interfere with the effective operation of compulsory lights and reflectors.

Note: Requirements for lights and reflectors, including colours and fitting, are contained in the Vehicle Standards.

PART 7: TOW COUPLINGS

The following Vehicle Standards are relevant to this part:

Clause 4.14 Converter Dolly Coupling

Clause 9.1-9.16 (inclusive) Mechanical Connections Between Vehicles

The following Australian Design Rules are relevant to this part:

ADR 62 Mechanical Connections between Vehicles
ADR 63 Trailers Designed for Use in Road Trains

7.1 Fifth wheels

(a) Fasteners either side of the mounting frame, plate or pivot brackets are insufficient or ineffective.

Note: The manufacturers' specifications or the specifications in the Vehicle Standards will indicate the appropriate number of fasteners.

(b) There is movement between the fixed mounting components.

(c) There is more than 5mm horizontal movement between:

- the pivot bracket pin and bracket; or
- a slider bracket and slide base.

(d) There are cracks in mounting angles or plates, pivot brackets, slider components or coupler plates except for casting shrinkage cracks.

(e) The fifth wheel pivot bracket pin(s) or bushes are missing or insecure.

(f) The latching fasteners on either side of a sliding coupling do not work.

(g) End stops on slides are missing or insecure.

(h) King pin locking mechanism parts are missing, or damaged to the extent that the king pin is not securely held.

7.2 Skid plates (including king pin)

(a) The horizontal or vertical movement between the upper and lower fifth wheel halves of coupled vehicles exceeds 13mm.

(b) The king pin is loose.

Note: (i) Some king pins are designed to drop into place. A small clearance often exists between the pin and its receptacle.

(ii) Wear limits for king pins are contained in the Vehicle Standards and the referenced Australian Standards.

(c) A bolted skid plate or king pin on a semi-trailer has insufficient effective bolts.

(d) Skid plates are cracked.

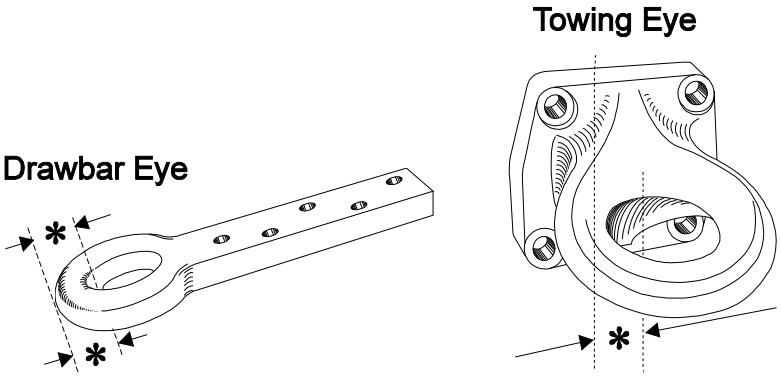
7.3 Pins, drawbar eyes and pintle hooks

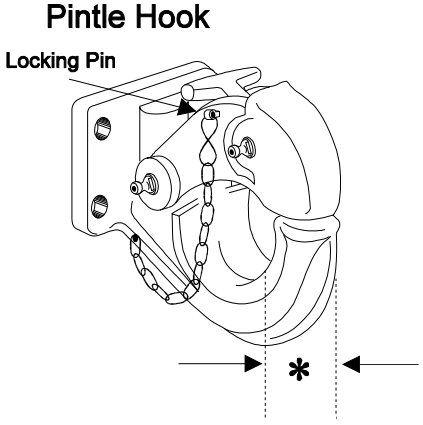
(a) Pins, drawbar eyes or pintle hooks have any missing or ineffective fasteners.

(b) The area that the pin or pintle hook is mounted on is loose or cracked or any latch component is insecure or missing.

(c) The pin, pintle hook or any drawbar eye attachment welds have cracks.

(d) Pins, pintle hooks or drawbar eyes are worn beyond the manufacturers' limits or any relevant limit in the Vehicle Standards. If manufacturers' limits are not known, any dimension on a wear surface of the horn of a pintle hook, a pin or a drawbar eye is worn more than 5%. Typical wear surfaces are marked with an asterisk in the figures below.





Note: If a section reduction is visible when the eye and coupling are connected, this wear condition is likely to exist.

7.4 Drawbar/tongue

(a) A drawbar or a tongue is cracked.

(b) There is more than 6mm of movement between the subframe and hinged drawbar at the attachment point.

(c) Any sliding drawbar latching mechanism does not work.

(d) One or more stops on a sliding drawbar are missing or do not work.

(e) A sliding drawbar has more than 6mm of movement between the slider and the housing.

(f) Air or hydraulic cylinders, hoses or chambers on sliders leak (other than normal weeping of hydraulic seals).

7.5 Safety chains and cables

Safety chains or cables are stretched, nicked, frayed or cracked or have insecure attachment points, clamps or fasteners.

7.6 Turntables

(a) The top and bottom mounting flanges have insufficient effective fasteners.

(b) The top and bottom plates, flanges and welds are cracked.

(c) Ball bearing type turntables are worn beyond the manufacturers' specifications or to the extent that the upper and lower flanges or bearing halves contact each other or the ball bearings seize.

7.7 Tow bars

Tow bars are loose, cracked or severely corroded.

Note: Bad bonds or kinks are likely to affect a tow bars capacity to carry a load.

7.8 Ball couplings

(a) The tow ball is loose or cracked.

(b) The ball coupling is loose, cracked or has an insecure latch.

PART 8: SEATS AND SEAT BELTS

The following Vehicle Standards are relevant to this part:

Clause 2.5 Driver's View and Control of Vehicle
Clause 2.6 Seating

The following Australian Design Rules are relevant to this part:

ADR 3	Seat Anchorages
ADR 4	Seat Belts
ADR 5	Anchorages for Seat Belts and Child Restraints
ADR 22	Head Restraints
ADR 34	Child Restraint Anchorages and Child Restraint Anchor Fittings
ADR 58	Requirements for Omnibuses Designed for Hire and Reward
ADR 66	Seat Strength, Seat Anchorage Strength and Padding in Omnibuses
ADR 68	Occupant Protection in Buses
ADR 69	Full Frontal Impact Occupant Protection

8.1 Seats

(a) Seat frames or attaching points are loose, cracked or have fasteners missing.

(b) Adjustment mechanisms do not work properly or any securing device does not hold the seat in the selected position.

(c) The seats have an exposed sharp edge or other parts that stick out due to damage.

8.2 Seat belts

(a) Seat belts or their attaching points are loose, cracked or have fasteners missing.

(b) Retractors, buckles or adjustment devices do not work.

(c) Webbing is cut, burnt, twisted, frayed or has broken stitching.

Note: Fading or discoloration of webbing is not a reliable indicator of its condition.

8.2 Child restraints

Child restraint attachment points are loose, cracked or missing.

PART 9: MIRRORS

The following Vehicle Standards are relevant to this part:

Clause 2.9 Rear Vision Mirrors

The following Australian Design Rules are relevant to this part:

ADR 14 Rear Vision Mirrors
ADR 58 Requirements for Omnibuses Designed for Hire and Reward

9.1 Mirror surfaces

The minimum required reflective area of any compulsory rear view mirror:

- has missing sections; or
- is cracked; or
- is obscured.

9.2 Mirror mounting

Mirrors are not securely mounted.

PART 10: WINDSCREENS AND GLAZING

The following Vehicle Standards are relevant to this part:

Clause 2.5	Driver's View and Control of Vehicle
Clause 2.15	Windscreens and Windows
Clause 2.16	Window Tinting
Clause 2.17	Windscreen Wipers and Washers

The following Australian Design Rules are relevant to this part:

ADR 8	Safety Glazing Material
ADR 12	Glare Reduction in Field of View
ADR 15	Demising of Windscreen
ADR 16	Windscreen Wipers and Washers
ADR 42	General Safety Requirements

10.1 General

(a) Glazing is loose in its frame or cracked to the extent that sharp edges are exposed.

Note: Many vehicles have glazing that is bonded to the window frames to increase the strength of the passenger compartment. Replacement glazing in these vehicles must be bonded using an adhesive of suitable strength.

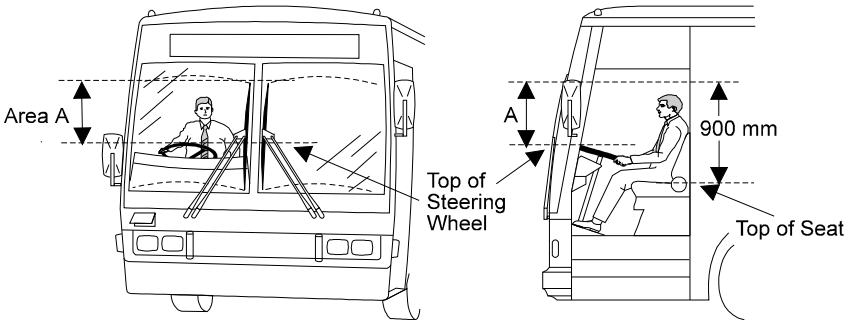
(b) Glazing that is necessary to allow the driver to see the road is discoloured, obscured, badly scratched, sandblasted or fractured to the extent that it interferes with the driver's view.

Note: Grooves in windscreens that are designed specifically to clean the wiper blades are not regarded as damage unless they seriously affect the driver's view. Approved grooving is usually identified by the installer.

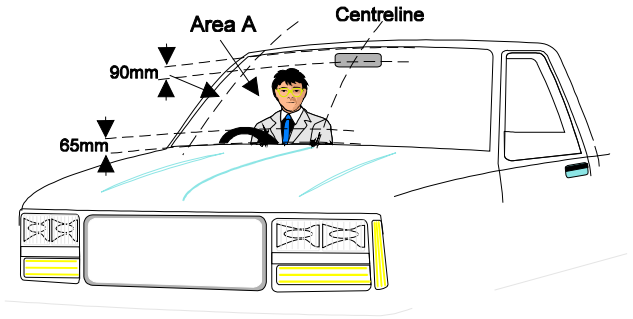
(c) Items that could obscure the driver's view are placed in the area of the windscreen described in 10.2(a) or the corresponding area on the other side of the windscreen.

10.2 Windscreen

(a) For the wiped area of the windscreen in front of, and on the same side of the centre of the vehicle as the driver, shown in the diagrams below as Area A, any bulls-eye and star fractures exceed 16mm in diameter.



Vehicles with a GVM of more than 3.5 tonnes



Vehicles with a GVM of not more than 3.5 tonnes

Note: Area A does not include any areas not in the primary vision area as described in the ADRs.

(b) Any cracks in a laminated windscreen penetrate more than one layer of glass or are more than 150mm long.

10.3 Windscreen wipers

(a) Windscreen wiper(s) do not work.

(b) Wiper blade rubbers are missing.

(c) Wiper blade rubbers are cracked, hardened or frayed.

10.4 Windscreen washers

Windscreen washers do not work or are not correctly aimed.

10.5 Windscreen demister

The demister does not work properly.

PART 11: ENGINE, DRIVELINE AND EXHAUST

The following Vehicle Standards are relevant to this part:

Clause 2.3	Ability to Travel Backwards and Forwards
Clause 2.10	Automatic Transmissions
Clause 2.11	Diesel Engines
Clause 7.1	Crank Case Gases
Clause 7.2	Visible Exhaust Emissions
Clause 7.3	LPG-powered Vehicles
Clause 7.4	Exhaust System
Clause 7.5	Stationary Noise Limit
Clause 8.1	Speed Limiting

The following Australian Design Rules are relevant to this part:

ADR 17	Fuel System
ADR 28	External Noise of Motor Vehicles
ADR 30	Diesel Engine Exhaust Smoke Emissions
ADR 36	Exhaust Emission Control for Heavy Duty Vehicles
ADR 37	Emission Control for Light Vehicles
ADR 39	Exhaust Noise of Motor Cycles
ADR 41	Mandatory Operation on Unleaded Petrol
ADR 42	General Safety Requirements
ADR 44	Specific Purpose Vehicle Requirements
ADR 56	Moped Noise
ADR 57	Special Requirements for L-Group Vehicles
ADR 58	Requirements for Omnibuses Designed for Hire and Reward
ADR 70	Exhaust Emission Control for Diesel Engine Vehicles

11.1 Exhaust system

(a) The exhaust system:

- has missing or broken supports, hangers or fasteners; or
- contacts any unrelated part.

(b) The exhaust system is holed or leaks.

Note: (i) Manufacturers of exhaust systems often include condensation drain holes in them. These are not leaks.

(ii) ADR 39 requires certain motor bikes and motor trikes and their exhaust systems to be marked with stationary noise test information and sufficient details to identify the exhaust components.

11.2 Noise and emission controls

(a) The vehicle has missing or deteriorated:

- noise shielding; or
- noise absorbing material; or

- other noise control equipment.

Note: (i) Noise levels for vehicles are contained in the Vehicle Standards and the ADRs.

(ii) Changes to the original design of the engine, fuel system, air inlet system, or exhaust system all have the potential to affect compliance of the vehicle with noise standards. Where any such modifications have been carried out a noise test may be necessary to ensure that the vehicle complies with the exhaust noise limits. Such modifications could also affect compliance with exhaust emission requirements.

(b) Exhaust and evaporative emission control equipment is missing or not working properly.

(c) A catalytic converter is missing or has a missing heat shield.

Note: (i) Some vehicles are not built with a catalytic converter or heat shield.

(ii) Damage to a converter housing or rattling when the converter is shaken could mean that the converter is no longer working effectively.

11.3 Emissions

(a) A petrol engine vehicle with a positive crankcase ventilation system lets out crankcase fumes. Other petrol engine vehicles let out excessive crankcase fumes.

(b) The engine of a vehicle lets out sparks, flames, excessive gases, oil or fuel residue.

Note: Visible exhaust requirements are contained in the Vehicle Standards. Smoke Guidelines dealing with the requirements have also been issued.

(c) The fuel injection equipment, engine speed governor or any other part of an engine is adjusted so that it increases smoke.

Note: Adjustments or modifications to components of the fuel system have the potential to affect compliance of a vehicle with emission standards. The manufacturer's advice should be sought to ensure the vehicle is kept within prescribed limits.

(d) A diesel cold starting device is kept in a condition that causes the engine to be supplied with excess fuel when the vehicle is in motion.

11.4 Engine and driveline

(a) Engine and driveline mounts are loose, cracked, broken or are missing components or fasteners.

(b) Engine and transmission controls do not work properly.

(c) Fasteners on couplings in the driveline are missing or loose.

(d) Seals on covers between the engine and the passenger compartment are missing, distorted or damaged in a way that allows fumes to enter the passenger compartment.

(e) A motor cycle chain or belt guard is cracked, broken or missing.

11.5 Oil leaks

The engine and driveline leak oil:

- onto brake friction surfaces; or
- onto the exhaust; or
- more than one drop every 30 seconds at any joint or seal.

11.6 Fuel leaks (non LPG/CNG)

Fuel systems of a vehicle leak.

Note: Sweating at joints is acceptable.

11.7 Fuel tanks (non LPG/CNG)

(a) Fuel tanks are not securely mounted and straps, supports, mounting brackets or fasteners are missing or loose.

(b) Fuel tanks are damaged or corroded so that leaks could result.

(c) Filler caps are not secure or are not sealed correctly or are not the correct type for the tank.

(d) The fuel filler restrictor is missing from the filler neck of a vehicle built for the exclusive use of unleaded petrol and fitted with a catalytic converter.

11.8 Fuel lines (non LPG/CNG)

Fuel lines are:

- not secure; or
- in contact with moving parts; or
- kinked or cracked.

11.9 LPG/CNG leaks

Containers, valves, connections or pipes leak.

11.10 LPG/CNG container

(a) The certification period for the container has expired.

(b) The container has gouges or bulges or is badly corroded.

(c) The container has dents or creases longer than 75mm.

(d) A dent in the container is deeper than 10% of the dent's width.

(e) The container is not securely anchored.

11.11 LPG/CNG compartment or subcompartment

(a) The compartment housing the gas container or the subcompartment on the container is not structurally sound.

(b) A joint, conduit connection or pipe bulkhead seal leaks. Conduits are kinked, damaged or badly deteriorated.

(c) Service valves, excess flow valves, fuel lock valves or other controls and devices do not work properly.

11.12 LPG/CNG filler connection

(a) Filler couplings for LPG/CNG are dirty or damaged.

(b) The filler cap is not securely attached. The sealing washer is missing or is badly deteriorated.

(c) The filler valve housing is loose. The remote fill line is damaged.

PART 12: MISCELLANEOUS

The following Vehicle Standards are relevant to this part:

Clause 2.8	Horns and Alarms
Clause 6.14	Braking System Design for a Trailer in a B-Double or a Road Train

The following Australian Design Rules are relevant to this part:

ADR 18	Instrumentation
ADR 42	General Safety Requirements
ADR 44	Specific Purpose Vehicle Requirements
ADR 58	Requirements for Omnibuses Designed for Hire and Reward

12.1 Fire extinguishers (where required by the Regulations)

(a) Fire extinguishers are not filled or charged.

Note: 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.

Australian Standard AS 1851.1—1995 Portable Fire Extinguishers, contains suitable procedures for inspecting and testing fire extinguishers.

(b) Handles, nozzles or hoses of fire extinguishers are missing or damaged.

(c) The extinguishers are not securely mounted in the vehicle.

12.2 Wheel chocks (where required by the Regulations)

Wheel chocks are damaged to the extent that they cannot hold the vehicle stationary.

12.3 Warning triangles (where required by the Regulations)

Warning triangles or their stands are damaged.