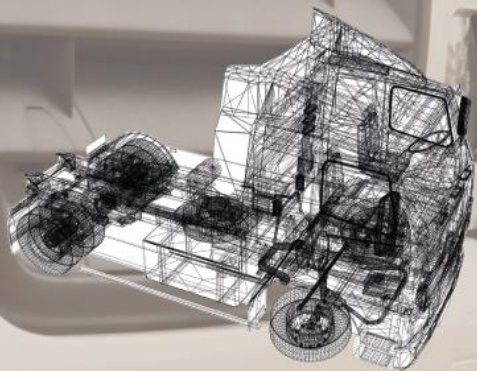




**Growth, Housing
and Environment**

Goods Vehicles Inspection Manual



DVS

Driver and
Vehicle Standards



Government of
JERSEY
Growth, Housing
and Environment

Government of Jersey Goods Vehicle Inspection Manual

(Commercial Vehicles with a GVW >3500kgs)

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Introduction

Purpose

This manual explains to everyone engaged in the practical work of vehicle examination and maintenance:

- The application of specific relevant requirements.
- The procedures and standards to be used.
- The reasons for failure.

The manual is not a legal interpretation of Regulations, nor does it necessarily lay down standards for rejection elsewhere.

Layout of Inspection Manual

The page layout for each inspection item consists of an application section across the whole width of the page; this section will contain the application criteria and may also contain notes relevant to the inspection. The remainder of the inspection item page(s) will be split between both a Method of Inspection (Mol) and Reason for Failure (RfF) columns.

Methods of Inspection (Mol)

The procedures given here assume that only parts of a vehicle which can readily be seen without dismantling, are to be examined. However, it may be necessary to ask the driver to remove wheel embellishers or panels, where it is not otherwise possible to inspect safety critical items.

Minimum Standards

It must be emphasised that these are minimum acceptable standards, which do not necessarily allow for further deterioration when the vehicle is in service.

Introduction

Acceptance for Test

Conditions for accepting vehicles for test include:

- A trailer must be accompanied by a suitable drawing vehicle.
- The vehicle chassis number or trailer identification mark must be permanently fixed to the vehicle in an accessible, easy to read position.
- The vehicle/trailer must be clean enough to allow the component parts to be inspected.
- The vehicle/trailer must not present a health & safety hazard, to inspect.
- The vehicle/trailer must be laden as specified in the appointment letter, to instruct vehicles to be presented loaded at 60% of GVW.

If you are in doubt regarding any of the above, it is recommended that you contact Driver and Vehicle Standards.

Vehicles normally fitted with permanent bodies and which have had them removed, fall outside the classification of a goods vehicle and should not be accepted for test. This does not include bin carriers, skeletal vehicles for carrying containers or demountable bodied vehicles.

Introduction

The Inspection

Each inspection has been allocated a number, which is given at the top of the page.
Not all inspections numbers have been allocated.

After The Test

On completion of the test, copies of the smoke test and brake test reports are issued (if applicable), along with either a pass certificate or a refusal to issue a certificate. The refusal will refer to the items considered to be below the minimum standard.

Limits of Wear and Tolerance

It is not practicable to lay down limits of wear or tolerance for components of all types of vehicles, therefore, the following points should be considered when making an assessment:

- The function of the component and its contribution to the road safety of the vehicle.
- Whether the component has clearly reached the stage where repair, replacement or adjustment is necessary to ensure the road safety of the vehicle.
- Whether the condition of the component appears to contravene the law.
- Whether the component is proved to be worn below the manufactured minimum replacement limit.

Introduction

Scope of Inspections

The scope of the inspections in this manual does not cover all the requirements of the Motor Vehicles (Construction and Use) (Jersey) Order 1998 and the Road Traffic (Lighting) (Jersey) Order. 1998.

Dual controls on vehicles will be inspected in the same manner as the primary controls although there will be no separate brake performance check.

Health and Safety

Drivers presenting vehicles for test must follow the instructions given by Driver and Vehicle Standards staff.
Radios and telephones must not be used whilst vehicles are undergoing test.

Data Protection and Security

For security and data protection reasons, all recording devices (such as dash cams) must be disabled whilst within a test station.

Terms and Definitions

Articulated Vehicle

An articulated vehicle is a motor car or heavy motor car with a trailer so attached, that part of the trailer is superimposed on the drawing vehicle and when the trailer is uniformly loaded, not less than 20% of the weight of its load is borne by the drawing vehicle.

Corrosion

The effect of corrosion on the safety of the vehicle depends on:

- its extent
- the function of the section on which it has occurred

A small amount of corrosion on an important part of the vehicle structure can make a vehicle unsafe, where it destroys the continuity of the load bearing structure. On the other hand, a heavy corrosion of unimportant sections may have no effect on the vehicle safety.

Corrosion Assessment

The inspection should determine whether excessive corrosion exists first by visual inspection and then by finger and thumb pressure. If necessary, careful scraping or light tapping of the area is permitted. Corrosion affected heavy gauge metal, may be tapped harder than light gauge, but unwarranted force and damage must be avoided.

Terms and Definitions

Corrosion Failure Criteria

Any part of a load bearing member or load bearing panelling should be rejected if it is weakened by corrosion to the extent that:

- by finger and thumb pressure it does not feel rigid, or
- it crumbles to leave a hole, or
- when tapped, there is penetration, or it causes the metal to crumble or disintegrate.

Cracked

A flaw or split in a component.

Damage

When assessing the extent of damage, it is important to consider whether the performance of the component/system will be impaired or if the component/system is likely to fail prematurely. Damage fulfilling either of these criteria is not acceptable and will be a reason for failure.

Deteriorated

This will be an RfF if the component of a system is weakened to such an extent that it can no longer adequately perform its function.

Distorted

This will be an RfF if the component or system is distorted to such an extent that it can no longer adequately perform its function.

Terms and Definitions

Excessive Travel

An abnormal amount of movement which clearly indicates that a component has reached a stage when it requires remedial action to enable it to either:

- operate effectively as designed, or
- prevent it from reaching the end of its permitted travel, or
- prevent it from exceeding manufacturer's known maximum permitted limits

Excessive Wear

A component which is worn to such an extent that it is either:

- likely to fail, or
- clearly not functioning effectively as designed, or
- visibly worn beyond manufacturer's known permitted limits, or
- likely to affect the operation or condition of another safety related component

First use Dates

Throughout this manual, we have used the terms “before” and “from” when referring to first use dates. The term “from” should be regarded to be ‘on or after’ a certain date. Where there is a first use date quoted for a motor vehicle/trailer, this will not normally apply if the vehicle/trailer was built more than 6 months before that date.

Terms and Definitions

Forward Control Vehicle

Is a vehicle the configuration of which:

- more than half of the engine length is rearward of the foremost point of the windshield base and
- the steering wheel hub is in the forward quarter of the vehicle length.

Fouling

This will only be an RfF if contact of two parts is likely to cause damage to, or restrict the movement of a component.

Fractured/broken

Gap, opening or rupture where separation has taken place.

HEV (Hybrid Electric Vehicle)

A vehicle powered by a power train that consists of both an internal combustion engine and an electric energy/power storage device.

Inappropriate Repair or Modification

Repairs and modifications to vehicles must be assessed on their merits. Taking account of the nature and function of the component. The main criterion to be used when assessing repairs is whether the repair is obviously likely to adversely affect the roadworthiness of the vehicle. In respect of modifications, the main criterion should be whether the modification has seriously weakened the component.

Terms and Definitions

Insecure

The term “insecure” is used many times throughout this manual to describe a defective condition. This term should be taken by vehicle inspectors to mean either:

- That a component on the vehicle has relative movement (looseness) either at its fixings or in relation to an associated component where there should be one, or
- That a component is not safely or completely attached, either, at its fixing or to an associated component.

All components on a vehicle need to be safely attached while it is in use on the road, however, how safe a component needs to be attached depends on its function.

Areas of the vehicle are considered critical in terms of the ability of the vehicle to endanger a driver, any passengers and other users of the road, can tolerate fewer fixings which are broken, loose, missing or otherwise ineffective than those in a less critical part of the vehicle.

The proportion will depend on factors such as the design of the component etc., but as a general rule, no more than 20% (1 in 5) of the fixing devices should be loose. More than this proportion means, that the remaining fixing devices could be over-stressed and therefore fail at any time.

Terms and Definitions

Examples of critical systems include (this is **not** an exhaustive list):

- steering and Brakes (Except those components not subject to heavy loads or forces e.g. power steering reservoirs or brake relay vales)
- suspension linkages
- leaf spring anchors
- trailer couplings
- live (i.e. moving) transmission components
- wheel and hubs

The proportion suggested above does not apply to:

- Components in a critical area of system secured by a single fixing device. If this device is loose, broken etc., then the component is to be considered insecure.
- Components in a critical area or system where detailed instructions are given in the manual (e.g. wheel studs/nuts). In such cases, these instructions must be used in preference.

Components that are not part of a critical system e.g. some body panels can tolerate a higher proportion of their fixings either loose, broken etc. Again, the proportion will depend on the design of the component but as a general rule no more that 33% (1 in 3) of the fixing devices should be loose, broken missing or otherwise ineffective.

A component secured by a non-standard temporary means, should be judged as if the temporary fixing was not fitted.

Terms and Definitions

Obligatory

Required to be fitted by law.

Semi-trailer

A trailer which is constructed or adapted, to form part of any articulated vehicle.

Trailer

Where the term trailer is used in this manual, it refers to all types of trailers and semi-trailers.

Type Approved Vehicle

A vehicle manufactured from 1 October 1982 and first used from 1 April 1983 and has been issued with a Type Approval Certificate of Conformity, a UK Minister's Approval Certificate or a Type Approval Certificate issued by an EU Member State.

Type Approved

A component or system fitted to a vehicle which has been issued with a Type Approval Certificate or Certificate of Conformity or built to an approval standard which shows that the system or component complies with the requirements of an EU Directive or ECE regulation.

If the presenter claims that the vehicle is fitted with type approved equipment which complies with the requirements of any EC directive and has no documentary evidence, consideration must be given to the following:

- annual test standards should not exceed those of type approval
- does the component or system appear to have been modified, replaced or damaged

Where doubt exists, the presenter may be given time to provide evidence of compliance.

Vehicle

Where the term vehicle is used in the application section of this manual it refers to, all types of **motor vehicles**.

Terms and Definitions

Vehicle Category (Definition used in the Community Directive)

N2: Vehicles used for the carriage of goods and having a maximum mass exceeding 3500 kg but not exceeding 12,000kg.

N3: Vehicles used for the carriage of goods and having a maximum mass exceeding 12,000kg.

02: Trailers with a maximum mass exceeding 750kg but not exceeding 3,500kg.

03: Trailers with a maximum mass exceeding 3,500kg but not exceeding 10,000kg.

04 Trailers with a maximum mass exceeding 10,000kg.

Standards for Prohibition Issue at Annual Test

This provides a standard for the issue of Notices where serious defects are observed during statutory tests.

The aim of the policy is to:

- Protect the public from vehicles returning from annual tests, where extremely serious defects have been observed.
- Provide information about such occurrences to the enforcement wing of the organisation and the IMT.
- Improve the consistency of the treatment of operators.
- Let operators know the rules, so that they know and understand the standards for prohibition issue at annual tests.
- Preserve a balance between providing a flexible, customer focused, testing service and providing the general public with protection from loss or injury from vehicles returning from test, with serious roadworthiness defects.

Note:

Where an RfF in the accompanying table is marked with ** or * this means that any failure for this item will result in the issue of a Notice. This Notice may give a maximum period of time to have the faults rectified and the vehicle represented or for safety critical components, this notice may impound the vehicle, preventing it from circulating on the public highway.

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1	Pressure Vacuum Warning and Build Up
Application	
<p>This inspection applies to all vehicles, except those with an unladen weight of less than 3050kg, where the vacuum reservoir is coupled direct to the engine induction manifold. These vehicles do not require a pressure/vacuum warning device.(if it is not possible to determine the unladen weight of a vehicle, the presenter should be given the opportunity to produce some evidence of the unladen weight before failing the vehicle).</p>	
<p>Vehicles used from 1 April 1983, can be fitted with either a visual warning device or an audible warning device. If both are fitted only one needs to work. Vehicles first used before 1 April 1983, must be fitted with a visual warning device. If an audible warning device is also fitted this is considered to be an addition to the mandatory requirement.</p>	
<p>A number of vehicles, among them; Mercedes 515, 609, 612, 614, 709 and Iveco Daily models were approved without a warning device and should not be failed for, a warning device not fitted.</p>	
<p>If there is no reservoir in a vacuum system, a warning device is not required.</p>	
<p>If the vehicle has full power hydraulic brakes, gauges are not normally fitted and there are no appreciable sounds when the brakes are applied.</p>	
<p>If gauges are not marked, take 3 bar (45 psi) for air systems and 25 to 30cm (10 to 12 Inches) for vacuum systems, as indicating minimum effective working condition.</p>	
<p>The time to reach minimum effective working pressure should normally be within 3 minutes for pressure systems and 1 minute for vacuum systems. With Type Approved vehicles designed to draw a trailer a build-up time of 6 minutes is acceptable. However, if the time recorded for the vehicle is appreciably longer than expected from that type of vehicle, this should be taken to indicate undue wear or a defect in the equipment.</p>	

1 Pressure Vacuum Warning and Build Up	
Method of Inspection	Reason for Failure
<p>1. Check the mandatory visual warning device:</p> <ul style="list-style-type: none"> a. can be seen by the driver in all lighting conditions b. is fitted and is working correctly <p>2. Deplete the air or vacuum system by applying the foot brake, when the warning device operates there must be two further assisted brake applications.</p> <p>3. Fully deplete the system and run the engine at just below governed speed and note the time for the warning device to show minimum effective working condition</p>	<p>1. A mandatory visual warning device:</p> <ul style="list-style-type: none"> a. cannot be seen by the driver in all lighting conditions b. not fitted or not working correctly <p>2. Not enough pressure or vacuum to give at least two fully assisted brake applications after the warning device has indicated minimum effective working conditions.</p> <p>*3. Time to reach minimum effective working pressure is more than 3 minutes for pressure systems and 1 minute for vacuum systems (6 minutes for type approved vehicles designed to draw a trailer)</p>

2 Hand Levers Operating Mechanical Brakes	
Application	
This examination applies to all vehicles fitted with a mechanical parking brake.	
Method of Inspection	Reason for Failure
<p>1. Check the Brake lever:</p> <ul style="list-style-type: none"> a. for fractures or cracks b. for excessive corrosion c. security d. position so that it can be operated satisfactorily. e. by applying the brake slowly and checking that it is not impeded in its travel f. when fully applied in the “on” position remains there when knocked on each side and the top g. is not at the end of its working travel h. does not have excessive side play within a pivot i. pivot operation j. releases correctly <p>2. Check the Pawl mechanism:</p> <ul style="list-style-type: none"> a. and mountings for condition b. spring is pushing teeth into positive engagement with ratchet teeth <p>3. Check locking and/or retaining devices for presence and or Security.</p>	<p>1. Brake lever:</p> <ul style="list-style-type: none"> a. fractured or cracked b. excessively corroded c. insecure *d so positioned that it cannot be operated satisfactorily e impeded in its travel **f is not held in the “on” position when knocked g has no further possible travel when the brake is fully applied h pivot with side play such that it is likely to fail i. pivot is tight in operation j. does not release correctly <p>2. Pawl mechanism:</p> <ul style="list-style-type: none"> a. and/or mountings in such a condition that early failure is likely b. pawl spring is not pushing teeth into positive engagement with ratchet teeth <p>3. Locking and/or retaining devices missing or insecure.</p>

3	Driving Controls
Application	
<p>This inspection applies to all vehicles. From the driver's seat, operate driving controls, except those for brakes and steering which are checked under other items, to see that they function correctly and are complete. Examples of driving controls which need to be inspected are:</p> <ol style="list-style-type: none"> 1. Gear control. 2. Accelerator pedal. 3. Clutch pedal. <p>The list is not exhaustive. An air leak from a gear valve is not an RfF. An accelerator pedal anti slip provision missing or worn smooth, is not an RfF.</p>	
Method of Inspection	Reason for Failure
<ol style="list-style-type: none"> 1. Check driving controls for: <ol style="list-style-type: none"> a. security b. completeness c. fractures, cracks and corrosion d. obstructions or impediments in its travel e. functioning correctly f. the presence of rubbish or other items likely to interfere with the proper control of the vehicle g. the presence of a pedal anti-slip provision, its security completeness and condition 2. Check the designated engine stop control for presence and operation. 	<ol style="list-style-type: none"> 1. A driving control is: <ol style="list-style-type: none"> a. insecure b. incomplete c. fractured, cracked or excessively corroded d. obstructed or impeded in its travel *e. obviously not functioning correctly f. with the presence of rubbish or other items likely to interfere with the proper control of the vehicle g. pedal anti-slip provision missing, loose, incomplete or ineffective 2. Engine stop control missing or inoperative.

4	Not Allocated
Intentionally Blank	

5	Service Brake Pedal	
Application		
This examination applies to all vehicles.		
Power operated braking systems where the foot valve is fully open before the pedal is fully depressed do not require any reserve travel.		
Method of Inspection		Reason for Failure.
1. Check Brake pedal: a. anti -slip provision presence, security and condition b. condition c. does not foul other parts of the vehicle d. has sufficient reserve travel when fully depressed 2. Check Brake pedal and assembly: a. is secure b. Is complete, with no fractures, cracks, or corrosion c. pivot operation d. releases correctly		1. Brake pedal: a. anti-slip provision missing, loose, incomplete or ineffective b. has excessive side play *c. fouling other parts of the vehicle d. insufficient reserve travel when fully depressed 2. Brake pedal or assembly: a. insecure *b. incomplete, fractured, cracked, or corroded c. pivot is tight in operation d. does not release correctly

6 Service Brake Operation	
Application	
This examination applies to all vehicles and trailers.	
Vehicles and trailers on which anti-lock braking systems are mandatory.	
Type of Vehicle	Date
Motor vehicles with a design GVW greater than 16,000kg and authorised to tow a semi-trailer or a centre axle drawbar trailer with total design axle weights greater than 10,000kg or a drawbar trailer with a design GVW greater than 10,000kg. See examples 1 and 2 below to determine as to whether a motor vehicle needs ant-lock brake.	First used from 1 April 1992 and up to 30 April 2002.
Motor vehicle with a design GVW greater than 3,500kg.	First used from the 1 May 2002.
Semi-trailers and centre axle drawbar trailers with a design total axle weight of more than 10,000kg.	Manufactured from 1 October 1991.
Semi-trailers and centre axle trailers with a design total axle weight of more than 10,000kg and which do not have a load sensing valve.	Manufactured from 1 October 1982 to 30 September 1991.
Semi-trailers and centre axle trailers with a design total axle weight of more than 3,500kg.	Manufactured from 1 May 2002.
Full drawbar trailers (turntable type) with a design GVW of more than 10,000kg.	Manufactured from 1 October 1991.
Full drawbar trailers (turntable type) with a design GVW of more than 10,000kg and which do not have a load sensing valve.	Manufactured from 1 October 1982 to 30 September 1991.
Full drawbar trailers (turntable type) with a design GVW of more than 3,500kg.	Manufactured from 1 May 2002.
<p>Anti-lock brake exempt vehicles.</p> <p>A public works vehicle which has a maximum design GVW of 7,500kg and which is specifically designed for use and used solely for the purpose of street cleaning.</p>	

6

Service Brake Operation

Application

How to determine if a drawing vehicle first used from 1st April 1992 and before 1 May 2002 needs antilock brakes.

Example 1

Semi-Trailer

or



Rigid and Drawbar Trailer

DGVW 18000kg
 DGTW greater than 28000 - (DGTW-DGVW > 10000kg)
 Anti-lock brakes required.

Example 2

Semi-Trailer

or



Rigid and Drawbar Trailer

DGVW 18000kg GTW 27000kg (DGTW-DGVW < 10000kg)

Anti-lock brakes may be required if:

1. the drawing hitch is rated at more than 10000kg or
2. the tractor is presented for test with a semi-trailer which has Total Axle Weight greater than 10000kg or
3. the drawing vehicle is presented for test with a trailer which has DGVW greater than 10000kg

The tow hitch should have a manufacturer's identification plate showing the hitch capacity.

For some brake systems, a small amount of creep may be due to elasticity in the brake components.

For test purposes, it will only be possible to check the static part of the warning light sequence. Some systems require movement of the vehicle but this is not part of the test.

6	Service Brake Operation
Application	
<p>If a trailer is submitted for test coupled to a motor vehicle which has no power supply for the trailer anti-lock system, the test should be suspended on the grounds that the trailer has not been accompanied by a suitable drawing vehicle. The presenter should be informed of this.</p>	
<p>If a trailer does not have a warning light, this is acceptable provided that the drawing vehicle has a trailer warning light fitted in the cab. If neither the tractor nor trailer has a warning light and there is a separate connector for the anti-lock system, the test should be suspended, as described above. If neither has a warning light and the trailer anti-lock is operated through the stop lamp circuit, the trailer should be failed.</p>	
<p>Vehicles and trailers fitted with ABS are not required to have a Load Sensing Valves (LSV). However, if an LSV is fitted and known to be a standard fitment this is an RfF, if it is removed or disconnected.</p>	
<p>There is no requirement to check the colour of Malfunction Indicator system warning lamps.</p>	
<p><u>ABS, ABS/EBS and ABS/EBS/ESC requirements</u></p>	
<p>ABS only vehicles</p>	
<p>Vehicles fitted with ABS only must have a mandatory warning malfunction indicator lamp (MIL) that illuminates when the system is energised (ignition or battery master switch on). It can be any colour, though they are usually red, yellow or amber. It must go out after a short period or when the engine is started but can then come back on and remain on until the vehicle speed exceeds approximately 5 kph (3 mph). It is not necessary to move the vehicle to check the speed-activated function, provided the lamp does go off momentarily. Trailers fitted with ABS must have either; a warning lamp (usually green and fitted on the trailer headboard), or if this is not present then there must be a trailer ABS warning lamp in the motor vehicle cab of any colour separate from the vehicle warning lamp. If trailer ABS warning lamps are fitted to both vehicle and trailer both systems must work (on some trailers the trailer warning lamp may be extinguished when the ISO7638 cable is fitted).</p>	
<p>Other lamps of the same or different colours showing e.g. that trailers are not connected, or are not fitted with ABS may also be fitted to motor vehicles. These are not mandatory and are for information purposes only. If these are illuminated it is not an RfF. It is important to establish that a lit warning lamp is actually showing an ABS defect, and is not an ABS information lamp. The Driver Handbook may be used to establish the function of a lamp.</p>	

6	Service Brake Operation
	Application
ABS/EBS equipped vehicles	
Vehicles fitted with ABS and EBS must have mandatory red and amber/yellow MIL's fitted. Drawing vehicles must be fitted with a separate amber/yellow MIL for the trailer, though one red MIL may be shared between tractor and trailer. If separate tractor and trailer red MIL's are fitted, they are both required to work.	
The red MIL illuminates if there is a foundation brake fault or the prescribed minimum brake performance cannot be met. The red MIL must illuminate with system initialisation, though this may not be clearly evident, as in some cases the sequence is extremely fast and may be missed. In this circumstance, if modulator cycling can be heard, it is acceptable to pass the vehicle. If a red MIL stays lit or is flashing, this is an RfF.	
The amber/yellow lamp illuminates, if there is an electronic fault.	
The amber/yellow MIL's must illuminate with system initialisation, though this may not be clearly evident, as in some cases the sequence is extremely fast and may be missed. In this circumstance, if modulator cycling can be heard, it is acceptable to pass the vehicle. If the MIL stays lit, this is an RfF. If the MIL illuminates on system initialisation, then goes out and then flashes this should be advised.	
ABS/EBS/ESC equipped vehicles Motor vehicles fitted with ESC, must have a separate amber/yellow MIL fitted apart from those used to signal EBS electronic faults. One lamp covers both the motor vehicle and any trailer fitted with ESC towed.	
The ESC lamp will be illuminated when the system is switched off, when the system is operating or if a fault is present. It is not required to light up on system energisation, but if it does this is acceptable, provided it then goes out after a short period or when the engine is started.	
If the vehicle has a switch to manually disable the ESC function, it must not be possible for the switch to be left in the "off" position and the ESC function must be automatically reinstated, every time the system is re-energised (ignition turned on).	
Electronic Stability Control Systems are commonly referred to as ESC, but may also be known as ESP/RSC or some other acronym. The MIL for these systems may take various forms and a vehicle should only be failed when the tester is certain that an illuminated lamp indicates an ESC malfunction. This may require reference to the owner's handbook, if one is available.	

6	Service Brake Operation	
Method of Inspection		Reason for Failure
<p>1. Air pressure or vacuum systems: With reservoir at maximum pressure or vacuum, fully depress the pedal and note the change in gauge readings, to see if they give indications of a leak in the system.</p> <p>2. Hydraulic systems (other than full power systems), fully depress the pedal and keep it depressed under steady pressure and check:</p> <ul style="list-style-type: none"> a. that the pedal does not creep down under full pressure b. there is no sponginess <p>3. Brake systems assisted by engine vacuum: Deplete the vacuum, partly depress the pedal, start the engine, and check if the pedal can be felt to dip.</p> <p>4. Full pressure hydraulic systems: Check that the system pressure is maintained for at least 10 minutes when the brakes are off and the engine is stopped. Loss of pressure will be indicated by the operation of the low pressure warning device (warning light or appearance of semaphore "flag" device).</p>		<p>1. Air pressure or vacuum systems gauge reading drops when pedal depressed, indicating a leak in the system.</p> <p>2. Hydraulic systems (other than full power systems):</p> <ul style="list-style-type: none"> a. pedal creeps down when depressed b. sponginess when pedal depressed <p>*3. Pedal does not dip when engine started, indicating lack of assistance for brake systems assisted by engine vacuum.</p> <p>4. Full pressure hydraulic system pressure is not maintained for ten minutes when the brakes are off and the engine is stopped.</p>

6	Service Brake Operation	
Method of Inspection	Reason for Failure	
<p>5. If the vehicle/trailer is fitted with an ABS or ABS/EBS or ESC system, check that required warning lamps:</p> <ul style="list-style-type: none"> a. are fitted. b. illuminate as required when ignition switched on. c. do not indicate a fault. <p>6. Vehicles and trailers fitted with ABS or ABS/EBS or ESC check:</p> <ul style="list-style-type: none"> a. the presence and condition of all visible system components b. the condition of all visible system wiring c. all system components for any inappropriate repair or modification d. the condition and operation of any switch fitted to turn the ESC system on and off <p>7. On vehicles and trailers both fitted with ISO 7638 (ABS/EBS) lead sockets check an ISO 7638 connecting lead is fitted and being used.</p> <p>8. On a vehicle or trailer on which anti-lock brakes are mandatory check that an ABS system is fitted.</p>	<p>5. Any of the required ABS or ABS/EBS or ESC warning lamps:</p> <ul style="list-style-type: none"> a. are missing b. do not illuminate as required when ignition switched on c. indicate a fault <p>6. Vehicles and trailers fitted with ABS or ABS/EBS or ESC:</p> <ul style="list-style-type: none"> a. a system component obviously missing or excessively damaged b. system wiring excessively damaged c. a system component inappropriately repaired or modified. d. an ESC system switch insecure or faulty or which does not allow automatic resetting of the ESC function to “on” at system energisation <p>7. On vehicles and trailers both fitted with ISO 7638 (ABS/EBS) lead sockets an ISO 7638 connecting lead not fitted or being used.</p> <p>8. A system not fitted to a vehicle where it is mandatory.</p>	

7 Hand Operated Brake Control Valves	
Application	
<p>This examination applies to all hand operated valves on vehicles which operate; secondary brakes, trailer brakes, spring brakes and lock actuators. It also applies to trailers fitted with hand operated spring brake valves.</p> <p>Certain air valves are subject to a slight amount of leakage and this is not an RfF.</p>	
Method of Inspection	Reason for Failure
<p>1. Check the Control Valve:</p> <ul style="list-style-type: none"> a. on a motor vehicle is capable of being operated from the driving position. b. is secure c. condition d. is unimpeded in its travel e. does not leak f. condition of gate or lever locating mechanism g. functions correctly 	<p>1. Control Valve:</p> <ul style="list-style-type: none"> a. on a motor vehicle unable to be operated from the driving position b. insecure c. fractured, cracked, damaged or excessively corroded *d impeded in its travel e leaking f excessive wear in the gate or lever locating mechanism *g malfunctioning

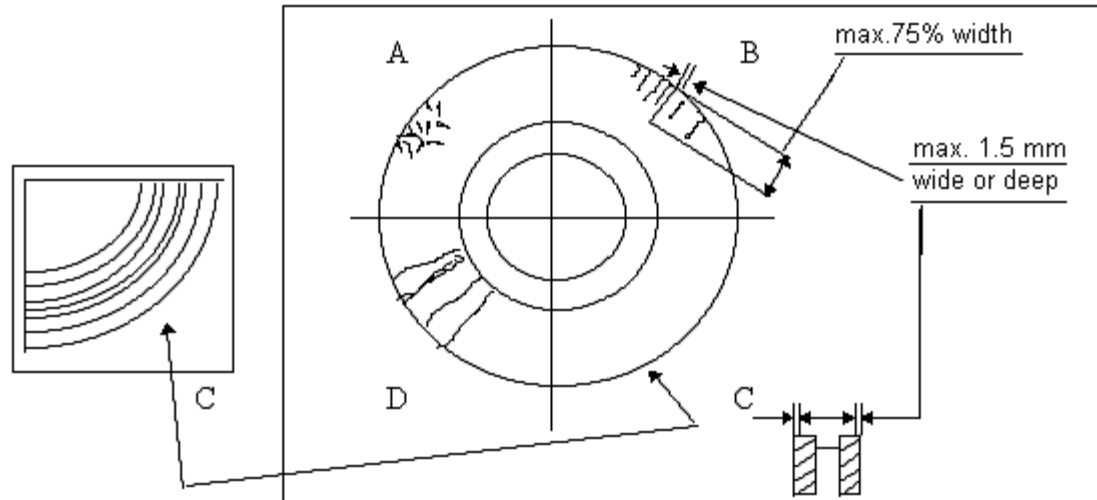
8	Additional Braking Devices	
	Application	
	<p>This inspection applies to vehicles where a device is fitted or required. Air leaks for operating mechanisms of hydraulic retarders or exhaust brakes should be tested and only fail if the leak is affecting the braking system.</p> <p>Any inoperative device will be a reason for failure, irrespective of whether it is mandatory or not.</p> <p>If the device has been removed and it is mandatory, this will be a reason for failure.</p> <p>The check of operation is made by visual assessment to establish the likelihood of correct fitment and function, rather than to see actual operation. Failure is justified only when it is obvious that a device is inoperative i.e. a disconnected linkage. Hybrid Electric Vehicles (HEVs) where the power train equipment acts as a regenerative brake, the unit(s) should be inspected as if it is an additional braking device. This will be marked on the technical record.</p>	
	Method of Inspection	Reason for Failure
	<p>1. Check additional braking devices for:</p> <ul style="list-style-type: none"> a. presence when known to be a mandatory fitment b. operation, condition completeness, and security c. security and condition of wiring 	<p>1. An additional braking device:</p> <ul style="list-style-type: none"> a. missing when known to be a mandatory item b. inoperative, damaged, component missing, or insecure c. wiring insecure or damaged

9	Brake Systems and Components
	Application
<p>This inspection applies to all vehicles.</p> <p>Automatic slack adjusters must be fitted to motor vehicles first used from and trailers manufactured from 1 April 1995.</p> <p>A rod or lever reduced by more than one third of its original diameter is considered a failure.</p> <p>A pipe with its wall thickness reduced by more than one third of its original thickness is considered a failure.</p> <p>Cables with less than 10% of the wires fractured are not regarded as a reason for failure unless there is bunching, or likelihood of bunching, where the cable enters an outer cable, guide or sleeve.</p> <p>A hose should be rejected for surface cracking or damage by chafing only, if the reinforcement is visible.</p> <p>Repairs to metal air brake pipes by sleeving are acceptable, providing the repair appears to be good and sound. A pipe repaired in-situ by brazing is not considered acceptable. Repairs to hydraulic brake pipes are not acceptable. Compression joints of the type using separate ferrules are not considered suitable for joints on hydraulic pressure lines.</p> <div data-bbox="224 702 952 933"> <p>The diagrams show three cross-sections of pipes. The top-left pipe is labeled 'Pass' and shows a small, clean repair. The top-right pipe is labeled 'Fail' and shows a large, messy repair. The bottom pipe is also labeled 'Fail' and shows a large, messy repair.</p> </div> <p>Guidance on sleeved repairs of metal brake pipes (sleeving is not acceptable on plastic brake pipes).</p> <p>The air pipe between the compressor and the reservoir is to be taken as a brake pipe.</p> <p>Lever slack adjusters; up to a total of 9.5mm radial movement at a radius of 150mm is considered acceptable within the slack adjuster and between the slack adjuster and cam cross shaft. Slack adjusters must have a secure fastening to the cross shaft including a locking device.</p> <p>Slack adjusters with different lever lengths on the same axle are not a reason for failure.</p>	

9

Brake System and Components**Application**

The diagram below shows the types of damage which is likely to be found on brake discs and gives guidance on how much damage is acceptable, before failing the vehicle. This should be a visual assessment.



- Interlinked cracks or surface crazing is acceptable
- Cracks running towards hub centre up to max. 75% of the width of the friction surface and a maximum of 1.5mm wide or deep is acceptable
- Unevenness in the disc surfaces less than 1.5 mm is acceptable
- Cracks running from edge to centre is not acceptable

Damp patches around valves or adjacent components are not an RfF. Only where there is evidence of heavy discharge of oil from the valve at the time of test should there be a failure.

To check the condition of brake pipes including; the output side of the compressor, valves, hydraulic master & wheel cylinders, it will be necessary to ask the driver to pressurise the braking systems. There is no requirement for a specific check on the operation of all valves, however where it is obvious that a valve is malfunctioning during any stage of the test, this is an RfF.

When assessing the significance of leaks, it should be remembered that certain pneumatic components are subject to leakage to some degree

9	Brake Systems and Components
Application	
<p>Vented master cylinders as fitted in particular to some Bedford vehicles, may be subject to some dampness around the vent, due to fluid in the bores of the cylinder used to lubricate the piston seals, this should not be treated as a defect.</p>	
<p>Quick Release Valves/Spring Brake Systems; On trailers fitted with spring brake systems a controlled discharge of air may occur from the quick release valve when the service brake is applied with the spring brakes in the 'off' position, this is acceptable and should not be treated as a defect.</p>	
<p>The following vehicle/trailer types require an adapter to be fitted to inspect the trailer secondary brake operation:</p> <ul style="list-style-type: none"> • Two line drawing vehicles coupled to three line trailers. • Three line drawing vehicles with no separate secondary control coupled to three line trailers. 	
<p>The following procedure should be carried out:</p> <ul style="list-style-type: none"> • Supply a suitable adapter and request the driver to connect the tractor/drawing vehicle service line to the trailer secondary line and request the driver to operate the brake (If spring brake actuators are fitted to the vehicle/trailer inspect the components of this system with the park brake in the "off" position). • Instruct the driver to remove the adapter and reconnect the brake lines. Check the reconnection by instructing the driver to apply the footbrake and note the operation. 	
<p>Care should be taken when inspecting BPW axles as the brake calliper may have 6 holes and only 5 bolts fitted.</p>	
<p>Two line trailers are not fitted with secondary brakes. Some drawing vehicles where the nominated secondary brake is the split service brake, do not operate the trailer brakes when the hand park brake control is applied. This is not a reason for failure.</p>	
<p>Reservoirs cannot be repaired by welding the term reservoir includes accumulators and other types of vacuum & pressure vessels. The hydraulic fluid level check only applies to readily visible reservoirs which can be checked without removing the reservoir cap.</p>	

9	Brake System and Components
	Application
	<p>It is not a requirement for Load Sensing Valves (LSV) to be moved manually to check their operation. In most cases a slight movement can be detected when the service brake is applied which is sufficient evidence that the LSV is operating. Only in the minority of cases where, in the opinion of the tester, the LSV appears seized and it is the type of valve that can be checked easily by hand without the possibility of causing damage should this be carried out.</p> <p>Pre 1995 vehicles which were fitted with automatic brake slack adjusters that have been removed and replaced with manual ones. If the automatic slack adjuster brackets have not been removed and are not being used, this is acceptable.</p> <p>If a brake chamber is attached to a chassis cross member and the cross member is fractured and parted at one end this is a reason for failure.</p> <p>The following list gives guidance on when trailers manufactured before October 1 1982, may be required to have a LSV or ABS as a mandatory fitment.</p> <ol style="list-style-type: none"> 1. Pre 1982 and post 1968 semi or draw bar trailer with three line braking (service yellow line, secondary/auxiliary blue line and emergency red line), LSV and ABS are not required. 2. Pre 1968 trailer with any number of brake lines, LSV or ABS are not required. 3. A post 1968 semi-trailer with a gross weight over 3500kg and converted to two line braking (type approved braking system), LSV or ABS required. 4. A post 1968 draw bar trailer with axle/s weight over 3500kg and converted to two line braking (type approved braking system), LSV or ABS required. 5. A trailer of any age with two brake lines and with an unladen weight 60% or less of the gross weight and can be demonstrate by calculations that the brakes comply with the requirements of the braking directive, LSV or ABS are not required. 6. Foreign trailers pre 1982 with two line brakes, LSV or ABS may be required. <p>Missing or illegible LSV plate only applies to the following;</p> <ul style="list-style-type: none"> • Trailers first used on or after 29th October 2013. • Trucks first used on or after 29th October 2014. <p>Some manufacturers use different sizes of brake chambers in addition to the standard sizes that have been used for many years and some manufacturers use common castings. For example, a Type 22 can be made from a Type 24 casting. To avoid confusion, the manufacturer fits a tag to confirm the chamber size. The first two digits are the service chamber size, if it is a spring brake, the second two digits are the parking brake chamber size. This is an acceptable method of identifying chamber sizes.</p>

9	Brake Systems and Components.	
Method of Inspection		Reason for Failure
<p>1. Check brake rods, clevis joints, linkages, relays, levers, pins, pivots, slack adjusters or cables for:</p> <ul style="list-style-type: none"> a. condition b. correct adjustment c. a locking device which is effective, secure and present d. the condition and completeness of a brake cable e. condition of cable guide f. the condition fitment, completeness, security, and operation of components of an automatic slack adjuster g. mandatory automatic slack adjuster fitted. h. the travel of a brake fitted with an automatic slack adjuster, compare the travel of the automatic slack adjusters across the same axle, the slack adjuster lever returns fully when the brakes are released. 		<p>1. A brake rod, clevis joint, linkage, relay, lever, pin, pivot, slack adjuster or cable:</p> <ul style="list-style-type: none"> *a. seriously weakened by excessive wear, corrosion, damage or reduced in diameter by more than the prescribed limit. *b. with abnormal movement indicating incorrect adjustment , or excessive radial free play. *c. with an ineffective, insecure or missing locking device. *d. a brake cable knotted, or with more wires broken than permitted by the specified standard. *e. cable guide is defective. *f. automatic slack adjuster component missing, disconnected, insecure, distorted, fractured or inoperative. *g mandatory automatic slack adjuster not fitted. *h. a brake fitted with an automatic slack adjuster exceeding two-thirds of the travel of the brake actuator, or obviously having a different travel from another brake on the same axle, or not returning fully when brakes are released.

9	Brake Systems and Components	
	Method of Inspection	Reason for Failures
	<p>2. Check brake pipes and flexible hoses for:</p> <ul style="list-style-type: none">a. clearance of moving parts.b. condition.c. adequately clipped or otherwise adequately supported.d. repairs and suitable joint fittings.e. non-metallic pipe(s) condition. <p>3. Check brake drums, back plates and shoes, discs, callipers and pads including friction material for:</p> <ul style="list-style-type: none">a. security and condition.b. brake back plate or calliper security bolt(s) secure and complete.c. brake lining(s) or pad(s) are secure and not less than 1.5mm thick at any one point.d. no restriction with the movement of a brake component.	<p>2. Brake pipes and flexible hoses:</p> <ul style="list-style-type: none">*a. fouled by moving parts.*b excessively chafed, cracked with reinforcement cords exposed, excessively corroded, deteriorated, damaged, leaking, bulging, kinked, stretched or twisted.*c inadequately clipped or otherwise inadequately supported.*d. inadequately repaired or with unsuitable joint fittings.*e non-metallic pipe(s) exposed to excessive heat. <p>3. Brake drums, back plates and shoes, discs, callipers and pads including friction material with:</p> <ul style="list-style-type: none">*a. a brake back plate, disc or drum in such a condition that it is seriously weakened or insecure.*b. a brake back plate or calliper securing bolt loose or missing.*c. a brake lining or pad insecure or less than 1.5mm thick at any point or below manufacturers recommended minimum.*d. restricted movement of a brake component.

9	Brake System and Components	
	Method of Inspection	Reason for Failure.
	<p>4. Check reservoirs for:</p> <ul style="list-style-type: none"> a. security, condition and leaks. b. damage. c. the condition of the securing strap d. presence. <p>5. Check air actuators, hydraulic master and wheel cylinders, valves and servos for:</p> <ul style="list-style-type: none"> a. operation. b. security. c. condition. d. presence and security of locking devices. e. travel of operating mechanism. f. presence of a cap is fitted to a hydraulic master cylinder reservoir. g. sufficient brake fluid. h. fluid level device. 	<p>4. Reservoir:</p> <ul style="list-style-type: none"> *a. insecure, excessively corroded, or leaking. *b. with dents that reduce the capacity or with angled dents. *c. with a securing strap fractured, cracked, excessively corroded or chafing on the reservoir or other mounting. *d. missing where it is known to be a standard fitting. <p>5. Air actuators, hydraulic master & wheel cylinders, valves and servos:</p> <ul style="list-style-type: none"> *a. defective in operation. *b. insecure. *c. leaking air or fluid, fractured, cracked, excessively damaged or corroded. *d. with a locking device missing or insecure. *e. with excessive travel of operating mechanism indicating a need for adjustment. *f. with a cap missing from a hydraulic master cylinder. *g. fluid below minimum level or level warning device activated. *h fluid level warning device defective.

9	Brake System and Components	
	Method of Inspection	Reason for Failure
	<p>5. Check air actuators, hydraulic master and wheel cylinders, valves and servos for (continued):</p> <ul style="list-style-type: none">i. a discharge of oil.j. presence and condition of a load sensing valve, where it is known to be a standard fitment.k. condition, movement and adjustment of a load sensing valve.l. dust cover presence and condition (only applicable to hydraulic brake actuators). <p>6. Check the load sensing valve data plate for:</p> <ul style="list-style-type: none">a. presence.b. legibility. <p>7. Where an air compressor is belt driven, check the drive for:</p> <ul style="list-style-type: none">a. fitment of a drive belt, its condition and adjustment.b. security of the pulley, its condition and presence. <p>8. Check trailer Secondary Brake for operation.</p>	<p>5. Air actuators, hydraulic master and wheel cylinders, valves and servos (continued):</p> <ul style="list-style-type: none">*i. with a valve with excessive discharge of oil.*j. a load sensing valve removed or disconnected when it is known to be a standard fitment.*k. a load sensing valve obviously seized or restricted in its free movement, linkage or brackets cracked, defective or out of adjustment.*l. hydraulic brake actuator dust cover, missing, insecure, excessively damaged or deteriorated to the extent that it would no longer prevent the ingress of dirt etc. <p>6. A load sensing data plate:</p> <ul style="list-style-type: none">*a. missing.*b. illegible. <p>7. Air Compressor Drive:</p> <ul style="list-style-type: none">*a. a drive belt missing, badly deteriorated and/ or so loose that it is likely to slip.*b. a compressor drive pulley loose, cracked or missing. <p>*8. Trailer Secondary Brake defective in operation.</p>

10	Service Brake Performance
	Application
This inspection applies to all vehicles and trailers.	
To avoid damage to the vehicle or the equipment , no tyre must be obviously underinflated.	
In the case of vehicle and trailer combinations , each unit of the combination is considered separately.	
In this section of the manual, the term "drum" includes "discs".	
Attention must be paid to Hybrid Electric Vehicles (HEVs).	
Due to the nature of the control systems some vehicles cannot be tested on the Roller Brake Tester and must receive a decelerometer brake test.	
Some vehicles have a regenerative braking system connected to the service brake system. If the regenerative system cannot be disconnected from the service brake, a decelerometer brake test is required. If the regenerative system can be disconnected and the vehicle control system allows a roller brake test this must be carried out.	
Brake testing HEVs, with a regenerative brake system must be appropriately charged (appropriately in this context means the red warning light showing there is a defect is not illuminated).	

10	Service Brake Performance
Application	
<p>Before failing a vehicle for binding, examiners should be aware that drag at a wheel may be recorded which is not necessarily due to brakes, but may be due to transmission drag, or by the deformation of the tyres on the rollers, which on a fully laden 10,000 kg axle could be as much as 250kg. A recorded bind in excess of 4% of the measured axle weight should be considered a Reason for Failure.</p>	
<p>Brake effort fluctuation of more than 70% of the higher brake effort recorded at a steady pedal pressure is a Reason for Failure. For ease of calculation if the higher brake effort divided by the lower brake effort is greater than 3.3 this is a Reason for Failure.</p>	
<p>The highest reading obtained should be recorded when the brake force from any one wheel is fluctuating in a regular manner between two readings, (e.g.1850kg should be recorded where the needle reading was fluctuating between 1750kg and 1850kg).</p>	
<p>Using the maximum recorded forces for each wheel on an axle, check that the braking effort from any wheel is 70% or more of the effort of the other wheel on the same axle. When wheels lock, this Reason for Failure will not apply if both the wheels lock, or if one wheel locks and the braking effort of the locked wheel is less than that of the other.</p>	
<p>Little or no brake effort recorded at any road wheel should be considered a Reason for Failure if less than 5% of the measured axle weight is not attained.</p>	
<p>Locked Wheels If more than half the number of wheels lock, the specified brake effort can be considered to be met. On a motor vehicle where not more than half the wheels lock, where available the allowances contained in any data card information must be taken into account. Wheels on the verge of locking are not acceptable, they must fully lock.</p>	
<p>Deceleration Test If the vehicle cannot be roller brake tested, or for any other reason a decelerometer test is required, proceed as MOI.</p>	

10	Service Brake Performance
Application	
Drop off of brake effort	
If drop off of brake effort is noted during the roller brake test, first confirm that it is drop off and not simply due to the driver releasing the brake pedal or brake effort fluctuation. If drop off is confirmed it will be appropriate to consider a reason for failure.	
Vehicles with full power hydraulic braking systems	
If necessary for vehicles with full powered hydraulic braking systems the following additional tests should be made:	
<ul style="list-style-type: none"> • Position the vehicle so that each axle in turn is located on the roller brake tester. • With the engine stopped, deplete the brake pressure by repeated application of the service brake pedal until commencement of operation of the low pressure warning device. • With the roller brake test machine driving the wheels of each axle in turn; <ol style="list-style-type: none"> a. Apply the service brake slowly and check for first indications of braking effort. Release brake immediately. Re-apply the brake, check for a second time for indication of braking effort, and release immediately. b. Repeat test sequence for each axle in turn. 	
Skeletal vehicles with an empty body fitted should be treated as unladen.	
For vehicles with Hydrostatic drives if the brake performance is not met on the brake rollers, perform a decelerometer test before making a decision on the pass fail requirements. Prior to roller brake testing any vehicle with hydrostatic drive and a transmission parking brake it may be necessary when the wheels are in the roller set to select the vehicles mode which disengages/bypasses the hydrostatic drive. Engaging this mode will prevent any hydrostatic retardation showing as excessive levels of bind.	
With some DTP numbers the roller brake tester may request you check for brake effort drop off, you need to establish whether the vehicle has air over hydraulic brakes, if it has do the drop off test, if the system is full air ignore the request for the drop off test.	
Ensure that the air suspension on tag/pusher axles that may have been jacked up are inflated should there be a problem achieving the brake efficiency for these axles (the inflation should only be done under supervision of station staff).	
Switching the ignition off on vehicles equipped with EBS is to be taken as the same as vehicles having their LSV disconnected. Tri axle trailers equipped with Knorr Bremse EBS/ABS should be driven to the RBT and not allowed to switch the ignition off while stationary on the brake rollers, if this circumstance occurs the following procedure must be followed:	
A. Make sure the ignition is switched off, B. apply the parking brake, C. apply the footbrake, D. switch the ignition on, E. start the engine, F. release the foot brake and parking brake and carry out a full brake test on all axles using the appropriate unladen or laden tri axle trailer criteria.	

10	Service Brake Performance
	Application
	<p>Vehicles and Trailers with Electronic Braking System (EBS)</p> <p>1. Testing Vehicles with EBS Braking Systems</p> <p>Vehicles with EBS that have load sensing on the front axle. If the minimum front axle brake figure is not achieved because the load sensing valve is regulated by the load imposed on the rear axle/s, re-test the front axle brakes in the following manner.</p> <ol style="list-style-type: none"> Build up the air reservoirs and stop the engine. Switch the engine off to deactivate the load-sensing valve. Carry out the brake performance test. <p>Switching the ignition off on a vehicle with EBS has the effect of by passing the load-sensing valve.</p> <p>2. Testing Trailers With WABCO Trailer EBS (Electronic Braking System)</p> <p>How to recognise EBS.</p> <ul style="list-style-type: none"> No ABS warning lamp on the headboard. With the ignition on, definitive solenoid clicks from the trailer on each application of the footbrake should be heard. Plate with the heading "WABCO Trailer EBS" on the front of the trailer and a pictogram showing an X through LSV and ABS. ISO 7638 electrical connector fitted in addition to the electrical connector for the lights. Last digit of the DTp Reference number is an '8'. The brake computer has not been programmed to accept an 8 so this must be replaced with 7 as the last digit. <p>When presented, the tractor unit must be compatible with the trailer and have a warning lamp to indicate that trailer ABS is working (this may be a combined ABS/EBS warning light).</p> <p>If presented with a compatible EBS tractor unit, if the red line is dropped, the brakes may not come on. To apply the brakes disconnect the ISO 7638 electrical connection. Ensure that the handbrake is applied on the tractor unit before disconnecting the red line and that safe working practices are followed.</p> <p><u>Brake Testing</u></p> <p>Irrespective of whether the trailer is laden or unladen, before commencing the brake test, the EBS Processor must be conditioned (not to be used for Knorr Bremse ABS/EBS equipped trailers see note on previous page) this is done by:</p> <ol style="list-style-type: none"> Putting the first axle of the trailer in the RBT. Switch off the engine/ignition and ensure no brake is applied. Restart engine. Continue the brake test as normal. This procedure only needs to be carried out once. The system will reset when the trailer is driven at a speed greater than 7 KMH. <p>Failure to do this will stop the Load Sensing Valve working, i.e. a full pressure brake reading on every application.</p>

10 Service Brake Performance				
Application				
Service Brake Efficiency Requirements				
Motor Vehicles	2 axle rigid vehicle first used before 1 January 1968 and with no manufacturers plate	Rigid vehicle with more than 2 axles or any articulated tractor first used before the 1 January 1968 and with no manufacturer's plate	Any other vehicle	
Specified Efficiency	45% DGVW	40% DGVW	50% DGVW	
Semi-trailers and centre axle drawbar trailers.	Manufactured before 1 January 1968 with a GVW 6,100kg or more.	Manufactured before 1 January 1968 with a GVW less than 6,100kg.	Manufactured from 1 January 1968 to 30 September 1982.	Manufactured from 1 October 1982
Specified Efficiency	35% DTAW	32% DTAW	40% DTAW	45% DTAW
Full Drawbar Trailers	Manufactured before 1 January 1968.	Manufactured from 1 January 1968 to 30 September 1982.	Manufactured from 1 October 1982	
Specified Efficiency	40% DGVW	50% DGVW	45% DGVW	

DGVW = Design Gross Vehicle Weight.

DTAW = Design Total Axle(s) Weight

10	Service Brake Performance	
Method of Inspection		Reason for Failure.
<p>1. Roller Brake Test Machines Operating With a Computer Controlled Brake Test Follow the sequence of instructions as displayed and prompted on screen. On completion of the test a result sheet is printed indicating the test result.</p> <p>2. All Roller Brake Test Machines</p> <ul style="list-style-type: none"> a. check no brake on any wheel is binding. b. apply brake slowly and check for abnormal time lag in operation of the brake on any wheel. c. on a (vehicle) steered axle with the service brake applied at a steady pedal pressure, check there is no indication of brake effort fluctuations regularly with each revolution of the road wheel. <p><i>The ovality check does not apply to trailers.</i></p> <ul style="list-style-type: none"> d. continue to apply the brake until the road wheel is just at the point of slip relative to the rollers, or until the service brake is fully applied, whichever occurs first. Note the maximum recorded brake effort. <p>3. Decelerometer test. The decelerometer on the vehicle in accordance with the instrument manufacturer's instructions. At a speed of approximately 20mph, have the service brake applied, note the reading on the decelerometer and whether the vehicle deviates from a straight line.</p>		<p>1. Roller Brake Test Machines Operating With a Computer Controlled Brake Test As computer prompt instructions (unless overruled).</p> <p>2. All Roller Brake Test Machines</p> <ul style="list-style-type: none"> a. a brake on any wheel binding. b. brake mechanism on any wheel sticking, indicated by an abnormal time lag before, an increased reading is obtained. c. with service brake applied at a steady pedal pressure, the indication of brake effort fluctuates regularly with each revolution of the road wheel, on a steered axle, so much that the ovality of any brake drum is obvious. A fluctuation of recorded reading in excess of 70%, between highest and lowest indicated readings is to be considered a Reason for Failure. d. With the service brake fully applied: <ul style="list-style-type: none"> *i there is little or no brake effort at any wheel. *ii braking effort from any wheel on an axle is less than 70% of the brake effort from another wheel on the same axle. *iii the specified brake effort is not met. <p>*3. Decelerometer test. The braking efficiency recorded by decelerometer is below the specified efficiency for the vehicle under test, or the vehicle deviates appreciably from a straight line.</p>

11 Secondary Brake Performance			
Application			
<p>This inspection applies to all motor vehicles where the designated secondary brake operates independently of the service brake. The notes relating to Electrical and Hybrid Electrical Vehicles under Inspection 10 also apply to this inspection particularly where the designated secondary brake is the parking brake, refer to these notes before deciding what type of brake test should be performed.</p> <p>To avoid damage to the vehicle or the equipment, no tyre must be obviously under inflated.</p> <p>There may be occasions where the specified brake effort is met but, if the brake effort from any wheel on an axle is one third or less than the brake effort from another wheel on the same axle it may be necessary to consider Reason for Failure 1a, 1b or 5a of Inspection 9. The notes relating to Locked Wheels and Load Simulation under Inspection 10 also apply to this inspection.</p>			
SECONDARY BRAKE EFFICIENCY REQUIREMENTS			
Motor Vehicles	2 axle rigid vehicle first used before 1 January 1968 and with no manufactures plate.	Rigid vehicle with more than 2 axles or any articulated tractor first used before 1 January 1968 and with no manufacturer's plate.	Any other vehicle
Specified efficiency	20% DGVW	15% DGVW	25% DGVW
DGVW = Design Gross Vehicle Weight.			

11	Secondary Brake Performance	
Method Inspection	Reason for Failure	
<p>1. Roller Brake Test Machines Operating With a Computer Controlled Brake Test</p> <p>Follow the sequence of instructions as displayed and prompted on screen. On completion of the test a result sheet is printed indicating the test result.</p> <p>2. All Roller Brake Test Machines For each road wheel in turn apply the secondary brake until the:</p> <ul style="list-style-type: none"> a. road wheel is just at the point of slip relative to the rollers, Or b. the secondary brake is fully applied, whichever occurs first. <p>Note the maximum braking effort indicated from the brake of each road wheel.</p>	<p>1. Roller Brake Test Machines Operating With a Computer Controlled Brake Test</p> <p>As computer prompt instructions (unless overruled.)</p> <p>2. All Roller Brake Test Machines With the secondary brake fully applied:</p> <ul style="list-style-type: none"> a. there is little or no braking effort at any wheel equipped with a brake operated by the secondary brake system. *b, the specified brake effort is not met. 	

12 Parking Brake Performance			
Application			
PARKING BRAKE EFFICIENCY REQUIREMENTS			
Motor vehicles	Any vehicle first used before 1 January 1968	Any vehicle first used from 1 January 1968 apart from a Type Approved articulated tractor or drawing vehicle	A type approved articulated tractor or drawing vehicle
Specified efficiency	-	16% DGVW	16% DGVW 12%DGTW
Semi-trailers and drawbar-Trailers	Manufactured before 1 January 1968	Any other trailer	
Specified efficiency	-	16% DGVW	
<p>DGVW = Design Gross Vehicle Weight DGTW = Design Gross Train Weight</p> <p>Type Approved – Manufactured from 1 October 1982 and first used from 1 April 1983 and has been issued with Type Approval Certificate of Conformity, a Minsters Approval Certificate issued by an EU member state.</p>			

12	Parking Brake Performance
Method of Inspection	Reason for Failure
<p>1. Roller Brake Test Machines Operating With a Computer Controlled Brake Test Follow the sequence of instructions as displayed and prompted on screen. On completion of the test a result sheet is printed indicating the test result.</p> <p>2. Applied Brake Test on a Roller Brake Tester Apply the parking brake fully and release any power assistance. The service brake may be used at this stage in setting the park brake. Start each brake machine roller in turn and note the maximum braking effort indicated for each wheel in turn.</p> <p>3. Alternative method With the roller brake test machine driving each road wheel in turn, apply the parking brake slowly until each road wheel is just at the point of slip relative to the rollers, or until the parking brake is fully applied, whichever occurs first. Note the braking maximum effort indicated from the brake of each road wheel.</p> <p>Transmission Parking Brakes. If the parking brake is a transmission brake, all wheels on the same axle braked by it must be driven by the roller test machine at the same time.</p> <p>4. Transmission Parking Brakes Roller Brake Test. With the roller brake machine driving both road wheels together, instruct the driver to apply the transmission brake as slowly as possible, constantly keeping the release button depressed, until any road wheel is just at the point of slip relative to the rollers, then release the brake quickly. Note the braking effort indicated from the brake of each wheel</p>	<p>1. Roller Brake Test Machines Operating With a Computer Controlled Brake Test As computer prompt instructions (unless overruled).</p> <p>2. Applied Brake Test on a Roller Brake Tester With the parking brake fully applied: a. there is little or no braking effort at any wheel equipped with a brake operated by the parking brake system. *b. the specified brake effort is not met.</p> <p>3. Alternative method With the parking brake fully applied: a. there is little or no braking effort on any wheel equipped with a parking brake, Or *b. the specified brake effort is not met.</p> <p>4. Transmission Parking Brakes Roller Brake Test. With the transmission parking brake full applied: a. there is little or no brake effort, or *b. the specified brake effort is not met.</p>

13	Not Allocated	
	Intentionally Blank	

14	Road Wheels and Hubs
	Application
<p>This inspection applies to all road wheels and hubs apart from spare wheels.</p> <p>Where possible wheel nuts will be lightly tapped with a hammer to check for looseness, but any other evidence such as rust marks or elongation of bolt/stud holes must also be taken into account.</p> <p>A nut or stud is considered to be “loose” if it is not obviously carrying out its function of clamping the wheel to the hub.</p> <p>With some vehicles, it is not possible to see the road wheels completely from ground level, especially with twin wheels and where the body hides part of the wheels. In such cases the vehicle must be moved to expose hidden parts of the wheels, or examined from underneath.</p> <p>Presenters should remove wheel embellishers prior to inspection; remove visual security indicators, if they prevent a full examination. Where this cannot be accomplished, continue to inspect the vehicle and annotate the test card to state that the embellishers were not removed.</p> <p>Capacity Limitations of 11.75 x 22.5 Alcoa Aluminium Wheels. Wheels with the part number 813520/813523 may be stamped on the inside of the wheel, opposite the valve, with a maximum load rating of 4250kg or 4500kg and those with part number 813530/813533 with a rating of 4500kg. It has been agreed that wheels with these part numbers and maximum load ratings are suitable for a maximum axle weight of 9150kg.</p> <p>Kronprinz wheels fitted to the Volvo FL L 4x2 rigid and FL 6H 4x2 rigid, are capable of carrying higher loads than those shown on the wheels. The wheels can be identified by the following markings stamped on the wheel:</p> <p>Wheel brand name Kronprinz Clamping type M20 Place of manufacture Made in France Designation 19.5 x 7.50HOS56 E-DOT Wheel load index 144/142 Volvo part number 20946506</p> <p>The wheel is capable of carrying a load equatable to a 145/143. Please be aware of the increased load capacity should you observe these wheels at annual test. This weight increase is applicable to all vehicles equipped with these wheels not just Volvo.</p>	

14

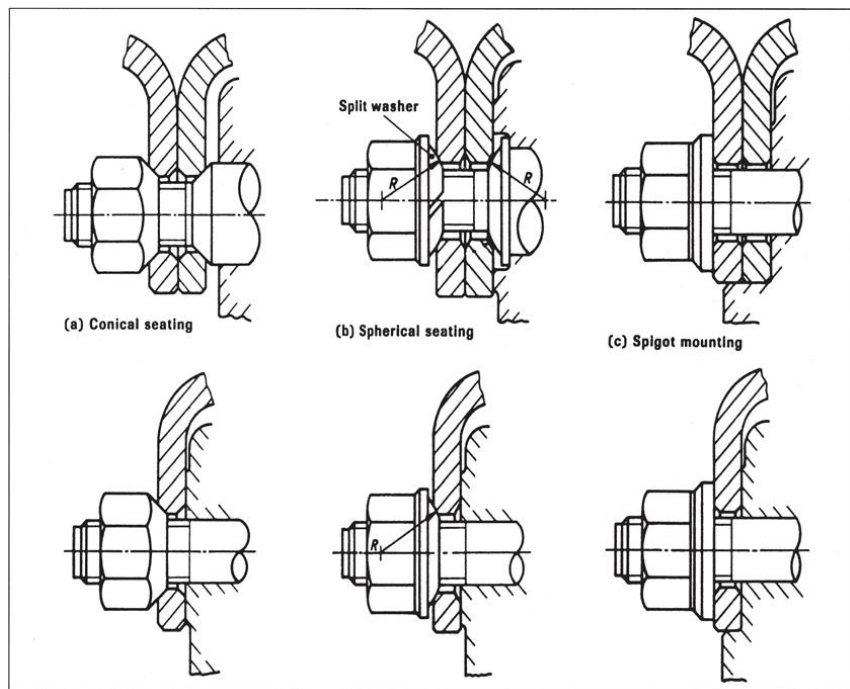
Road Wheels and Hubs

Application

Capacity limitation of a wheel marked with a load index

If a wheel is marked with a load index which indicates that the maximum load is lower than is required to support the axle load, the vehicle should be failed under Reason for Failure 2.i.

Wheels not marked with a load index or load marking must be assumed to be capable of carrying the axle weight.

Compatibility of Wheel Fixings

Vehicles with conical wheel fixings **MUST NOT** be fitted with wheels from vehicles designed for use with spherical fixings. (British built vehicles normally have conical wheel fixings).

Vehicles with spherical wheel fixings **MUST NOT** be fitted with wheels from vehicles which are designed for use with conical fixings.

Volvo wheels of the original spigot-mounting design **WILL NOT** interchange with another type. Volvo wheels designed for later type spigot mounting may be used in an emergency on British built trailers.

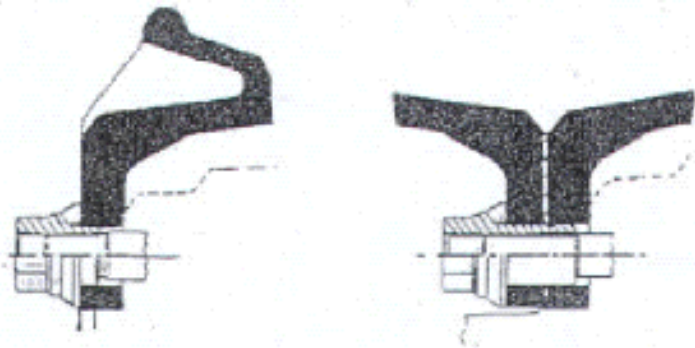
Wheels with conical fixings **MUST NOT** be used on Volvo vehicles because they do not have a machine centre bore to fit hub

14

Road Wheels and Hubs

Application

Sleeved Two Piece Flange Nut Fixing



Single wheel location

Twin Wheel Spigot Mounting

Sleeved two piece flange nut fixing this fixing method of utilising a sleeved nut has been adopted primarily to allow the retro fitting of aluminium wheels which incorporate a thicker flange.

Where wheel trim brackets are secured by the wheel retaining nuts it is acceptable provided the bracket does not stop the wheel nut from seating correctly in the taper of the stud hole. For spigot mounted wheels there may be some overlap between the washer and bracket, failure will only be justified where the nut clamping force is obviously ineffective.

Some wheel nut studs do not protrude all the way through the wheel nut this is acceptable provided there is no sign of insecurity.

Where twin wheels are fitted, the spigots must extend to the outer wheel to locate this.

14	Road Wheels and Hubs	
	Method of Inspection	Reason for Failure
	<p>1. Check tyre retaining rings for:</p> <ul style="list-style-type: none">a. fractures.b. clearance, (butting of the ends is acceptable with lift on the flange up to 1.5mm from the rim). <p>2. Check all road wheels for:</p> <ul style="list-style-type: none">a. presence, security and function of all retaining nuts and studs.b. elongation of a stud hole.c. the condition of spigot wheel nut washers.d. damage or distortion and the presence of the locating spigot or dowel.e. damage caused by wheel nutsf. compatible fixings.g. condition, cracks (except at the bridge over the valve), welds and repairs.h. repairs by welding to aluminium alloy wheels.i. the correct load rating that is required to support the maximum permissible (GB) axle load. <p>3. Check hubs for:</p> <ul style="list-style-type: none">a. condition, and that the half shaft bolts, studs or nuts are secure.b. clearance between a spigot mounted wheel and the hub spigots.	<p>1. A tyre retaining ring:</p> <ul style="list-style-type: none">a. fractured.b. butting causing the flange to lift more than 1.5mm from the rim. <p>2. A wheel:</p> <ul style="list-style-type: none">*a. nut or stud missing or loose or obviously not fulfilling the function of clamping the wheel to the hub.b. with any visible elongation of a stud hole.c. with a spigot wheel nut washer cracked.d. badly damaged or distorted or with a locating spigot or dowel missing.e. damaged by the corners of a wheel nut cutting into the material of the wheel.f. and its fixings not compatible.*g. cracked (except at the bridge over the valve), weld breaking away or an inadequate repair.h. made of aluminium alloy repaired by welding.i. with a load rating less than that required to support the maximum permissible (GB) axle load. <p>3. A hub:</p> <ul style="list-style-type: none">*a. cracked, badly damaged, or with a half shaft bolt, stud or nut loose or missing.b. with clearance between a spigot mounted wheel and the hub spigots that exceeds 3mm across the diameter.

15	Suspension
	Application
<p>This inspection applies to all vehicles and trailers.</p> <p>Leaf spring systems:</p> <ul style="list-style-type: none"> • The fail criterion is that the leaves are so misaligned that each leaf is not taking a reasonable proportion of the load. • A leaf spring with a fracture or crack on the curled section which prevents the axle moving in the event of main leaf failure is a reason for failure. • A "U" bolt should be regarded as loose if there is clear visual evidence that it is not properly fulfilling its function of securing a spring and before it can do so it needs remedial action. • Surface cracks on laminated semi-elliptical springs are not an RfF. • It is permissible to have a larger road spring on one side of a vehicle than the other. <p>Spring Pins:</p> <ul style="list-style-type: none"> • The maximum permissible wear in a pin and/or mounting is 2mm for a 12mm diameter pin and 1/8 of the diameter for larger assemblies. For a threaded pin it is the diameter of the threaded part which should be taken into account when assessing wear. These criteria should not be used when checking rubber bushes which should be checked for deterioration of the rubber which could result in excessive movement. • The maximum side play must not exceed 6mm. This does not apply to a threaded pin and mounting assembly or to rubber bushes or to single spring bogie suspensions. • Where an anchor/shackle pin is secured at one end the maximum amount of movement at the free end should not exceed 1mm for smaller assemblies, increasing to 2mm for larger assemblies. <p>Slipper brackets:</p> <ul style="list-style-type: none"> • Rebound pins where fitted as standard should be correctly located. • Worn slipper brackets are an RfF when worn to the extent they could, at the time of the inspection, clearly affect the movement or correct location of the road spring (or have allowed the spring leaf to damage the chassis). <p>Air/Fluid systems:</p> <ul style="list-style-type: none"> • When assessing the significance of leaks it should be remembered that certain pneumatic components are subject to some degree of leakage. Slight seepage producing a thin film of oil on the component is not a Reason for Failure but any sign of dripping is unacceptable. • Exposure of air bag structural cords is acceptable providing that they are not damaged to such an extent the unit is likely to fail. • An air bag for holding a lift axle in the raised position must be considered against the same criteria as any other suspension air bag. 	

15	Suspension
	Application
	<p>Insecurity of attachment points can best be assessed when the steering and/or brakes are operated.</p> <p>A fractured and or repaired air bag pedestal if performing satisfactorily and not damaging the air bag is not an RfF.</p> <p>Independent suspension must be jacked to remove the weight from the suspension joints (suspension hanging freely).</p> <p>Trailers fitted with HD shock absorbers are not required to be fitted with check straps.</p> <p>Scania vehicles with air suspension have attachment points for a retaining chain, the omission of the chain is not an RfF.</p> <p>Tag axles with disabled lift facilities are not an RfF, these may also have the lift operation air bag removed.</p> <p>Shock Absorbers/Anti Roll Bars:</p> <ul style="list-style-type: none"> • Slight seepage producing a thin film of fluid on a shock absorber is not a reason for failure but any sign of dripping is unacceptable. • Anti roll bar bushes repaired with resin are acceptable providing the repair is adequate resulting in the removal of the excess wear. <p>On some unladen vehicles the suspension air bellows on one side may be deflated. This is a natural characteristic that occurs after certain types of operation of the electronically governed suspension system. This ensures the chassis frame remains at a constant height at all times.</p> <p>Before failing a vehicle, two operations should be tried which may re-inflate the bellows:</p> <ol style="list-style-type: none"> By using the driver control to raise/lower the vehicles suspension before resetting the suspension to the normal ride height. Ensure this operation is only performed under supervision, or Placing a load on the vehicle, while performing a brake test. If neither operation re-inflates the bellows then the vehicle should fail.

15	Suspension	
Method of Inspection	Reason for Failure	
<p>1. All suspension types. Check all suspension components and their attachment points for:</p> <ul style="list-style-type: none"> a. security. b. attachment. c. condition. d. general condition which may affect the control of the vehicle. e. correct fitment. f. fitment of all bolts and rivets. g. completeness of rubber and bonded bushes. h. defects which would allow a road wheel to foul another part of the vehicle. i. condition of pins, bushes or mountings. j. condition of ball joint dust covers. k. inappropriate repairs or modifications 	<p>1. All suspension types. A suspension component or its attachment point:</p> <ul style="list-style-type: none"> *a. insecure. *b. disconnected. *c. fractured or cracked. *d. so damaged, worn, distorted or corroded that it adversely affects its function. *e. incorrectly located or fitted. *f. bolt or rivet missing. *g. rubber or bonded bush deteriorated. *h. defective such that a wheel could foul any other part of the vehicle. *i. with wear in a pin, bush or mounting exceeding the prescribed limit. *j. a ball joint dust cover missing, insecure, excessively damaged or severely deteriorated to the extent that it would no longer prevent the ingress of dirt etc. *k. with an inappropriate repair or modification which has seriously weakened the component. 	

15	Suspension	
	Method of Inspection	Reason for Failure
	<p>2. Check Leaf Springs and Fixings for:</p> <ul style="list-style-type: none"> a. condition of pins and mountings. b. condition of leaves (repairs by welding are not acceptable). c. correct alignment of leaves. d. condition of spring fixing pins. e. presence of slipper bracket rebound pin. f. security between a spring and the axle. g. presence of shackles or anchor pins. h. condition of slipper brackets. i. general condition. j. security and presence of a locking device from a shackle or anchor pin. 	<p>2. Leaf Springs and Fixings:</p> <ul style="list-style-type: none"> *a. wear in spring pins/bushes or mountings exceeding the prescribed limit. *b. a fractured or cracked leaf or one repaired by welding. *c. spring leaves splayed beyond the prescribed limits or fouling any other part of the vehicle. *d. movement in a spring fixing pin in excess of the prescribed limits. *e. slipper bracket rebound pin missing or incorrectly located. *f. relative movement or displacement between a spring and the axle. *g. a missing shackle or anchor pin. *h. a worn slipper bracket. *i. so corroded, pitted or seriously weakened that it is likely to fail. *j. an insecure or missing locking device from a shackle or anchor pin.

15	Suspension	
Method of Inspection		Reason for Failure
<p>3. Check Coil Springs or Torsion Bars for:</p> <ul style="list-style-type: none"> a. completeness. b. condition (repairs by welding are not acceptable). c. general condition that it is likely to fail. d. condition and security of torsion bar fixings, any adjustment assemblies correctly fitted and securely locked. e. for correct fitment. <p>4. Air/Fluid Suspension Systems. Check valves, pipes, valve linkage, bellows and displacer/ accumulator unit for:</p> <ul style="list-style-type: none"> a. correct positioning, inflation and/or condition b. fouling by other parts or leaking. c. presence of check straps and their condition. d. security. e. pipe security. f. leaking. 		<p>3. Coil Spring or Torsion Bar:</p> <ul style="list-style-type: none"> *a. incomplete. *b. fractured, cracked or repaired by welding. *c. corroded, pitted, or seriously weakened so it is likely to fail. *d. torsion bar fixings with excessive free play, insecure, or an adjustment assembly incorrectly fitted and/or insecurely locked. *e. incorrectly located or fitted. <p>4. Air/Fluid Suspension System valves, pipes, valve linkage, bellows and displacer/ accumulator unit:</p> <ul style="list-style-type: none"> *a. displaced, deflated, kinked and/or so damaged/deteriorated that it is likely to fail. *b. fouled by other parts or leaking. *c. with check strap missing or defective. *d. insecure. *e. pipe insecure. *f. leaking.

15	Suspension	
Method of Inspection	Reason for Failure	
<p>5. Check Bonded Suspension Units for:</p> <ul style="list-style-type: none"> a. condition of the bonding between flexible element and metal so that part of the unit is unlikely to fail. b. condition of unit so that it is capable of carrying out its proper function. <p>6. Check Shock Absorbers for:</p> <ul style="list-style-type: none"> a. presence. b. condition and security. c. leaks. d. condition of the rubber bush or pivot. e. presence and condition of linkage and bracket. <p>7. Check Anti roll bars for:</p> <ul style="list-style-type: none"> a. presence. b. security. c. condition. <p>8. Check Anti roll bar linkages/brackets or bushes for:</p> <ul style="list-style-type: none"> a. presence. b. condition. <p>9. Check all suspension types for condition and function.</p>	<p>5. Bonded Suspension Unit:</p> <ul style="list-style-type: none"> *a with failure of bonding between flexible element and metal so that part of the unit is likely to fail. *b. unit is so damaged or deteriorated that it is no longer capable of carrying out its proper function. <p>6. Shock Absorber:</p> <ul style="list-style-type: none"> *a. missing from a vehicle on which it is a standard component. *b. with an anchorage fractured, unit insecure or with a sleeve damaged so that the unit is not functioning correctly. *c. leaking. *d. with an excessively worn rubber bush or pivot. *e. linkage missing, linkage bracket cracked so that it is likely to fail, fractured or cracked or excessively worn. <p>7. Anti roll bar:</p> <ul style="list-style-type: none"> *a. missing from a vehicle on which it is a standard component. *b. insecure. *c. fractured, cracked, severely distorted or so corroded or worn that its strength is seriously reduced. <p>8. Anti roll bar linkage/bracket or bush:</p> <ul style="list-style-type: none"> *a. missing. *b. fractured or cracked and likely to fail, or excessively worn. <p>*9. A suspension unit so weak that the body or other part of the vehicle is fouling the road wheels or is likely to do so if the vehicle is lade</p>	

16	Size and Type of Tyres
Application	
<p>This inspection applies to all tyres, apart from spare tyres.</p> <p>The use markings most likely to be encountered are "FRT" which indicates that the tyre is not suitable for use on a driven axle and "TRAILER USE ONLY". Tyres marked with a direction arrow pointing in the wrong direction should not be failed.</p> <p>Tyres are usually identified by their nominal section size followed by the rim diameter e.g. 10.00-20,750-16, etc. (the majority of modern tyres carry millimetric markings e.g. 205-16 etc.). For identification of sidewall markings refer to the diagram at the end of this section. All tyres on an axle must be of the same nominal size. If a tyre is dual marked one of the markings must be the same as the markings on the other tyres on the axle.</p> <p>There are still a number of high load capacity tyres in use which are marked with a code to indicate the tyre size and capacity e.g. a 10.00-20 16 ply tyre may be marked D20 or 4-20 (a full list of these tyres is given at Table 1).</p> <p>If tyres marked with a load capacity index are fitted the maximum permissible axle Load for normal use can be found in Table 2 at the end of this section. The Load Index (LI) may consist of one or two numbers e.g. 154 or 146/143. Where two numbers are displayed the first refers to the use of the tyre in single formation and the second in twin formation. Reference to the table shows that the maximum loads for this tyre are 6000kg in single formation and 10900kg in twin formation.</p> <p>If a load index is not shown the carrying capacity of a tyre can be determined from the Ply Rating. The load capacity of ply rated tyres is shown at Table 3. If no ply rating can be found on the tyre it should be assumed to have the lowest load capacity listed for that size of tyre.</p> <p>.</p>	

16	Size and Type of Tyres								
Application									
<p>STRUCTURE</p> <p>Examine all the tyres fitted and note the type of structure (radial, cross-ply or bias-belted) and the nominal size of tyres.</p> <p>All tyres on an axle must be of the same structure and nominal size.</p> <p>Tyres on an axle may be of different structures and nominal sizes to those on another axle with the following exceptions:</p> <ul style="list-style-type: none"> • All tyres on all steered axles must have the same structure. • All tyres on all driven axles must have the same structure. • On two axle motor vehicles where each axle is fitted with single wheels, if all the tyres are not of the same structure, the type of structure which is allowed to be fitted to each axle is shown in the table. 									
<table border="1"> <thead> <tr> <th>Axle 1</th><th>Axle 2</th></tr> </thead> <tbody> <tr> <td>Cross – ply</td><td>Bias - belted</td></tr> <tr> <td>Cross - Ply</td><td>Radial</td></tr> <tr> <td>Bias - belted</td><td>Radial</td></tr> </tbody> </table>		Axle 1	Axle 2	Cross – ply	Bias - belted	Cross - Ply	Radial	Bias - belted	Radial
Axle 1	Axle 2								
Cross – ply	Bias - belted								
Cross - Ply	Radial								
Bias - belted	Radial								
<p>This does not apply to an axle on which wide single tyres with a road contact width of more than 300mm are fitted.</p>									

16

Size and Type of Tyres

Application

TABLE 1

CODE	TYRE SIZE
A16 or 1 — 16	750 — 16 — 12 PR
B16 or 2 — 16	825 — 16 — 14PR
C16 or 3 — 16	900 — 16 — 14 PR
B17 or 2 — 17	825 — 17 — 14 PR
A20 or 1 — 20	750 — 20 — 12 PR
B20 or 2 — 20	825 — 20 — 14 PR
C20 or 3 — 20	900 — 20 — 14 PR
D20 or 4 — 20	1000 — 20 — 16 PR
E20 or 5 — 20	1100 — 20 — 16 PR
F20	1200 — 20 — 18 PR
G20	1400 — 20 — 22 PR
E22 or 5 — 22	1100 — 22 — 16 PR
B22.5 or 2 — 22.5	9 — 22.5 — 14 PR
C22.5 or 3 — 22.5	10 — 22.5 — 14 PR
D22.5 or 4 — 22.5	11 — 22.5 — 16 PR
E22.5	12 — 22.5 — 16 PR
C24 or 3 — 24	900 — 24 — 14 PR
E24	1100 — 24 — 16 PR

16 Size and Type of Tyres								
Application								
Table 2 Load capacity index table Extract from ECE Reg 54: "Load index" Table amended to show axle loads								
Load Index	Single Kg	Dual Kg	Load Index	Single Kg	Dual Kg	Load Index	Single Kg	Dual Kg
70	670	1340	100	1600	3200	130	3800	7600
71	690	1380	101	1650	3300	131	3900	7800
72	710	1420	102	1700	3400	132	4000	8000
73	730	1460	103	1750	3500	133	4120	8240
74	750	1500	104	1800	3600	134	4240	8480
75	774	1548	105	1850	3700	135	4360	8720
76	800	1600	106	1900	3800	136	4480	8960
77	824	1648	107	1950	3900	137	4600	9200
78	850	1700	108	2000	4000	138	4720	9440
79	874	1748	109	2060	4120	139	4860	9720
80	900	1800	110	2120	4240	140	5000	10000
81	924	1848	111	2180	4360	141	5150	10300
82	950	1900	112	2240	4480	142	5300	10600
83	974	1948	113	2300	4600	143	5450	10900
84	1000	2000	114	2360	4720	144	5600	11200
85	1030	2060	115	2430	4860	145	5800	11600
86	1060	2120	116	2500	5000	146	6000	12000
87	1090	2180	117	2570	5140	147	6150	12300
88	1120	2240	118	2640	5280	148	6300	12600
89	1160	2320	119	2720	5440	149	6500	13000
90	1200	2400	120	2800	5600	150	6700	13400
91	1230	2460	121	2900	5800	151	6900	13800
92	1260	2520	122	3000	6000	152	7100	14200
93	1300	2600	123	3100	6200	153	7300	14600
94	1340	2680	124	3200	6400	154	7500	15000
95	1380	2760	125	3300	6600	155	7750	15500
96	1420	2840	126	3400	6800	156	8000	16000
97	1460	2920	127	3500	7000	157	8250	16500
98	1500	3000	128	3600	7200	158	8500	17000
99	1550	3100	129	3700	7400	159	8750	17500

16 Size and Type of Tyres								
Application								
Table 2 Continued Load capacity index table Extract from ECE Reg 54: "Load index" Table amended to show axle loads								
Load Index	Single Kg	Dual Kg	Load Index	Single Kg	Dual Kg	Load Index	Single Kg	Dual Kg
160	9000	18000						
161	9250	18500						
162	9500	19000						
163	9750	19500						
164	10000	20000						
165	10300	20600						
166	10600	21200						
167	10900	21800						
168	11200	22400						
169	11600	23200						
170	12000	24000						
171	12300	24600						
172	12600	25200						
173	13000	26000						
174	13400	26800						
175	13800	27600						
176	14200	28400						
177	14600	29200						
178	15000	30000						
179	15500	31000						

1. Ply Rating Marked Tyres**How to use this table:**

1. Locate the line entry corresponding to the size and ply rating marked on the tyre sidewall;
2. Read off the maximum axle load (kg) for these tyres in 'SINGLE' or 'TWIN' formation, as appropriate.

TABLE 3

Nominal Tyre Size	Ply Rating	Maximum Axle Load (Kg)	
		Single Tyres ┌───┐	Twin Tyres ┌───┴───┐
145 - 13C	6	970	1840
145 - 13C	8	1120	2120
560 - 13C	6	1020	1940
590 - 13C	6	1070	2090
640 - 13C	6	1280	2240
640 - 13C	8	1430	2750
670 - 13C	6	1380	2650
670 - 13C	8	1580	3050
1050 - 13	12	4320	7880
1050 - 13	14	4830	8900
155 - 14C	6	1070	2040
165 - 14C	6	1300	2460
165 - 14C	8	1460	2760
175 - 14C	6	1430	2680
175 - 14C	8	1550	3000
185 - 14	RADIAL REINFORCED RAD	1200	2300
185 - 14		1340	2560
185 - 14		1340	2560
185 - 14C		1550	2920
185 - 14C	8	1700	3200
195 - 14	RADIAL REINFORCED RAD	1300	2490
195 - 14		1500	2870
195 - 14C		1700	3210
195 - 14C		1900	3600
205 - 14	RADIAL REINFORCED RAD	1420	2720
205 - 14		1650	3160
205 - 14C		1850	3510
205 - 14C		2060	3900
215 - 14C	8	2240	4240
590 - 14C	6	1170	2240
600 - 14C	8	1260	2400

Nominal Tyre Size	Ply Rating	Maximum Axle Load (Kg)	
		Single Tyres ┌───┐	Twin Tyres ┌───┴───┐
640 - 14C	6	1330	2550
650 - 14	4	970	1860
650 - 14C	6	1300	2460
650 - 14C	8	1500	2840
670 - 14C	6	1430	2750
670 - 14C	8	1680	3160
700 - 14	4	1070	2050
700 - 14C	6	1380	2650
750 - 14	4	1200	2300
750 - 14C	6	1530	2950
750 - 14C	8	1730	3360
11-15	6	2240	—
145 - 15C	8	1230	2320
185 - 15C	8	1750	3400
590 - 15C	6	1220	2340
640 - 15C	6	1380	2650
670 - 15C	6	1530	2900
670 - 15C	8	1780	3460
670 - 15	10	2000	3900
700 - 15C	6	1750	3400
700 - 15C	8	1940	3760
700 - 15	12	2440	4580
750 - 15C	6	1830	3560
750 - 15C	8	2060	3970
750 - 15	10	2340	4370
750 - 15	12	2750	5340
750 - 15	14	3150	6100
750 - 15	16	3660	6860
825 - 15	12	3050	5590
825 - 15	14	3360	6360
825 - 15	18	4680	8540
825 - 15	20	5000	9440
1000 - 15	12	3870	7120
1000 - 15	14	4320	8130
1000 - 15	16	5020	9580
1000 - 15	18	5400	10170

Nominal Tyre Size	Ply Rating	Maximum Axle Load (Kg)	
		Single Tyres ┌───┐	Twin Tyres ┌───┴───┐
175 - 16C	6	1500	2840
175 - 16C	8	1650	3100
185 - 16C	8	1800	3400
195 - 16C	8	1950	3700
205 - 16C	6	1900	3610
205 - 16C	8	2120	4000
215 - 16C	6	2120	4000
215 - 16C	8	2300	4360
235 - 85 - 16	10	2760	5040
600 - 16	6	1380	2550
600 - 16	8	1530	2920
600 - 16	10	1830	3300
650 - 16	6	1530	2920
650 - 16	8	1830	3460
650 - 16	10	2040	3900
700 - 16	6	1730	3260
700 - 16	8	2040	3870
700 - 16	10	2340	4480
700 - 16	12	2650	5000
750 - 16	6	2040	3870
750 - 16	8	2240	4270
750 - 16	10	2500	4720
750 - 16	12	2900	5600
825 - 16	8	2650	4880
825 - 16	10	2850	5440
825 - 16	12	3300	6400
825 - 16	14	3600	6800
900 - 16	6	2360	4360
900 - 16	8	2720	5140
900 - 16	10	3050	5600
900 - 16	12	4070	7200
900 - 16	14	4320	7800
1050 - 15	12	4580	8130

16

Size and Type of Tyres

Application

Table 3 (continued)

Nominal Tyre Size	Ply Rating	Maximum Axle Load (Kg)	
		Single Tyres	Twin Tyres
1400 - 16	18	7880	—
1400 - 16	20	8390	—
1400 - 16	22	9150	—
9.50 - 16.5	6	2130	3750
825 - 17	10	3260	5850
825 - 17	12	3560	6200
825 - 17	14	3820	7200
8 - 17.5C	8	2300	4480
8 - 17.5	10	2570	5000
8.5 - 17.5	RADIAL	2900	5600
9.5 - 17.5	RADIAL	3400	6400
8 - 19.5	RADIAL	3100	6000
9 - 19.5	RADIAL	3800	7200
9.5 - 19.5	RADIAL	4240	7800
600 - 20	6	1430	2750
600 - 20	8	1630	3100
600 - 20	10	1830	3460
650 - 20	6	1830	3460
650 - 20	8	2240	4070
650 - 20	10	2440	4680
700 - 20	8	2240	4480
700 - 20	10	2650	4880
700 - 20	12	2850	5340
750 - 20	8	2850	5340
750 - 20	10	3260	6000
750 - 20	12	3600	7000
825 - 20	10	3560	6610
825 - 20	12	3820	7200
825 - 20	14	4120	7800
900 - 20	10	4070	7630
900 - 20	12	4580	8240
900 - 20	14	5000	9200

Nominal Tyre Size	Ply Rating	Maximum Axle Load (Kg)	
		Single Tyres	Twin Tyres
1000 - 20	12	4830	8640
1000 - 20	14	5340	9720
1000 - 20	16	6100	10900
10.5 - 20	6	2800	—
1100 - 20	12	5340	9660
1100 - 20	14	6100	10900
1100 - 20	16	6610	11600
1200 - 20	14	6100	10600
1200 - 20	16	6860	12000
1200 - 20	18	7630	13010
12.5 - 20	10	3700	—
1300 - 20	16	7800	—
1300 - 20	18	8900	—
1300 - 20	20	*9300	—
1400 - 20	18	9150	—
1400 - 20	20	*9510	—
1400 - 20	22	*10000	—
14.5 - 20	10	4000	—
1500 - 20	20	10600	—
1500 - 20	22	11600	—
1500 - 20	24	12600	—
1600 - 20	14	6100	—
1600 - 20	20	11400	—
1600 - 20	22	12500	—
1600 - 20	24	13600	—
13/80 - 20	18	7300	13000
14/80 - 20	18	8250	—
1100 - 22	12	5590	10170
1100 - 22	14	6100	10810
1100 - 22	16	6860	12000

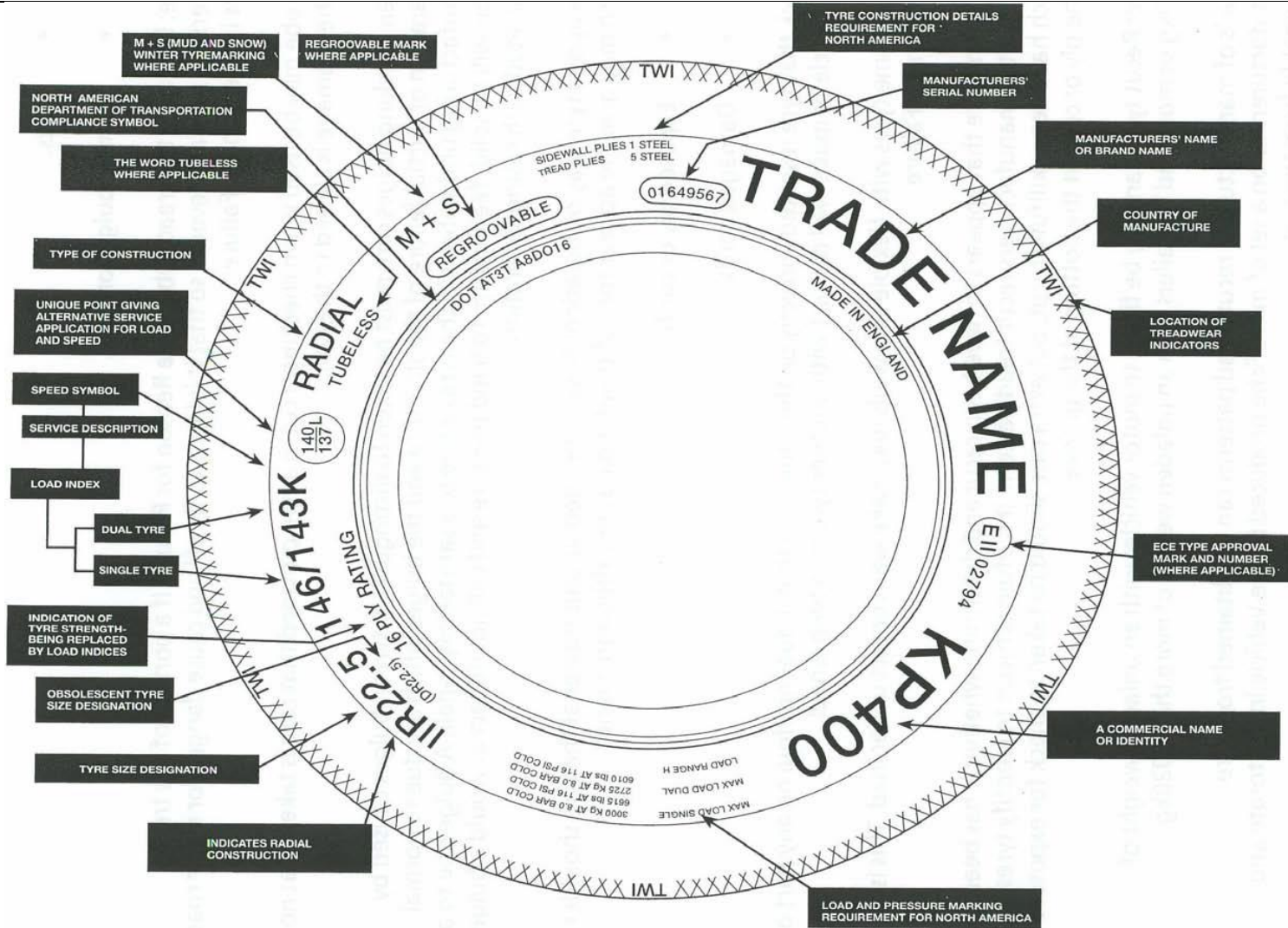
Nominal Tyre Size	Ply Rating	Maximum Axle Load (Kg)	
		Single Tyres	Twin Tyres
9 - 22.5	10	3560	6610
9 - 22.5	12	3820	7200
9 - 22.5	14	4120	7800
10 - 22.5	10	4070	7630
10 - 22.5	12	4580	8240
10 - 22.5	14	5000	9200
11 - 22.5	12	4830	8640
11 - 22.5	14	5340	9720
11 - 22.5	16	6100	10900
13 - 22.5	18	7500	13000
10/70 - 22.5	14	5000	9200
11/70 - 22.5	12	5300	9720
11/70 - 22.5	14	5600	10300
11/70 - 22.5	16	6100	10900
12/70 - 22.5	16	6610	11600
13/70 - 22.5	18	7630	13010
275/20 - 22.5	RADIAL	5000	9200
275/70 - 22.5	16	6100	—
315/70 - 22.5	16	6610	11600
900 - 24	12	5090	9150
900 - 24	14	5340	10170
1000 - 24	14	6100	10500
1100 - 24	12	5850	10300
1100 - 24	14	6610	11200
1100 - 24	16	7120	12300
1200 - 24	14	6610	—
1200 - 24	16	7370	—
1200 - 24	18	8130	—
1200 - 24	20	9000	—
1400 - 24	18	10000	—
1400 - 24	22	11200	—
11 - 24.5	14	5830	10800

Note: Items marked '**' are not suitable in UK over 9200kg due to minimum tread width requirement of 300mm

16

Size and Type of Tyres

Application



(A tyre may not necessarily carry all the markings)

16	Size and Type of Tyres	
	Method of Inspection	Reason for failure
	<div>1. Check each tyre to ensure:</div> <div><div>a. the nominal size; ply rating, load index or speed rating of any tyre is appropriate for the plated axle weight.</div><div>b. the tyre use marking is appropriate for the type of axle or vehicle to which it is fitted.</div><div>c.. the nominal size of a tyre to any other on the same axle.</div><div>d. the structure of a tyre to any other on the same axle.</div><div>e. the structure on a steerable axle is of the same structure as any other tyre on any steerable axle.</div><div>f. the structure on a drive axle is of the same structure as any other tyre on any driven axle.</div></div> <div>2. Check on a two axle motor vehicle fitted with single tyres on both axles the combination of tyres with structures which are in the table.</div>	<div>1. A tyre:</div> <div><div>a. of which the nominal size, ply rating, load index or speed rating of any tyre is below that appropriate for the plated axle weight.</div><div>b. which has a tyre use marking inappropriate for the type of axle or vehicle to which it is fitted.</div><div>c. of a different nominal size to another on the same axle.</div><div>d. of a different structure to another on the same axle.</div><div>e. on a steerable axle which is not of the same structure as any other tyre on any steerable axle.</div><div>f. on a driven axle which is not of the same structure as any other tyre on any driven axle.</div></div> <div>2. On a two axle motor vehicle fitted with single tyres on both axles a combination of tyres with structures which are not shown as acceptable in the table.</div>

17	Condition of Tyres
Application	
<p>This examination applies to all tyres fitted to vehicles and trailers apart from spare tyres.</p> <p>Lifting of the tread rubber is a Reason for Failure.</p> <p>If a portion of the tread material is partially severed so that it is likely to fly off and cause danger for other road users, it is a Reason for Failure.</p> <p>A probe may be used when checking a cut in a tyre for exposed ply or cords provided that care is taken that no further damage is caused to the tyre. Exposed, for this purpose, means the cords are visible as seen with the naked eye or in the case of a cut more than 25mm or 10% of the section width, can be made visible with the use of a probe. Where a cut in a tyre requires the use of a probe to check for cord exposure remember, if during investigation cords can be felt but not seen, pass & advise. A cut which is deep enough to expose the ply or cords, and is more than 25mm long, or 10% of the section width, whichever is greater should fail (the overriding factor is that the cords themselves must be exposed not merely felt).</p> <p>When checking bulges care must be taken to distinguish between bulges caused by separation or partial failure of the structure and the bulges which are due to normal manufacturing undulations in the tyre or due to a satisfactory repair. A bulge due to a repair will be solid, feeling firm to hand pressure and will not deflect as would a bulge associated with casing separation.</p> <p>A recapped tyre may on occasions have unbonded surplus rubber at the tyre shoulder which may give the appearance of tread separation, although it is not.</p> <p>Some tyres with flexible side walls may show signs of wall contact under load, this is not a Reason for Failure.</p> <p>When checking any tyre that appears to have been recut, it must be determined whether it has been recut to the manufacturer's recut tread pattern. It is often difficult to identify tyres which have been skilfully recut, but extra care should be taken to check for exposure of the ply or cord at the bottom of the grooves.</p> <p>Recut tyres can only be fitted to motor vehicles with an unladen weight of 2540kg or more and to trailers with an unladen weight of more than 1020kg.</p>	

17	Condition of Tyres										
	Application										
	<p>The original tread pattern means:</p> <ul style="list-style-type: none"> • On a re-treaded tyre the tread pattern immediately after the tyre was re-treaded. • On a recut tyre the manufacturer's recut tread pattern. • On a partly recut tyre, the part which has been recut the manufacturer's recut tread pattern, on the other part the tread pattern when new. • On any other tyre the tread pattern of the tyre when new. <p>When checking the tread pattern the "Breadth of Tread" is to be taken as that part of the tyre which can contact the road, under normal use, measured across the tyre.</p> <p>The following should be disregarded when deciding which grooves need to be checked in regard to the "original tread pattern".</p> <ul style="list-style-type: none"> • Grooves which wear out before the main grooves are worn. • Other minor features such as sipes, small lateral extensions to the circumferential grooves and minor lateral grooving on the shoulders. <p>Minimum tread depths applicable are shown in the table below:</p> <table border="1"> <tr> <th>Design gross weight of vehicle</th><th>Over 3,500kg</th><th>3,500kg or less</th></tr> <tr> <td>Minimum tread depth</td><td>1mm, excluding any tie bar or tread wear Indicator</td><td>1.6mm, excluding any tie bar or wear indicator</td></tr> <tr> <td>Position of minimum tread depth band</td><td>Form a continuous band covering at least any $\frac{3}{4}$ of the breadth of tread around the entire circumference</td><td>Form a continuous band covering the central $\frac{3}{4}$ of the breadth of the tread around the entire circumference</td></tr> </table> <p>The following diagrams show acceptable positions of the minimum tread depth band, for vehicles over 3500kg design gross weight, which must be measured at right angles to the axis of the wheel. Figures 1-4 show cambered wear and Figure 5 shows more detail of how the tread band is measured. For vehicles of 3500kg or less the band is the central $\frac{3}{4}$ of the breadth of tread and it is not necessary for tread depth to be visible on the remainder.</p> <p>Figure 6 shows that for certain cross country tyres that may be necessary to accept that the band of acceptable tread pattern may include a plain portion in the centre.</p>		Design gross weight of vehicle	Over 3,500kg	3,500kg or less	Minimum tread depth	1mm, excluding any tie bar or tread wear Indicator	1.6mm, excluding any tie bar or wear indicator	Position of minimum tread depth band	Form a continuous band covering at least any $\frac{3}{4}$ of the breadth of tread around the entire circumference	Form a continuous band covering the central $\frac{3}{4}$ of the breadth of the tread around the entire circumference
Design gross weight of vehicle	Over 3,500kg	3,500kg or less									
Minimum tread depth	1mm, excluding any tie bar or tread wear Indicator	1.6mm, excluding any tie bar or wear indicator									
Position of minimum tread depth band	Form a continuous band covering at least any $\frac{3}{4}$ of the breadth of tread around the entire circumference	Form a continuous band covering the central $\frac{3}{4}$ of the breadth of the tread around the entire circumference									

17

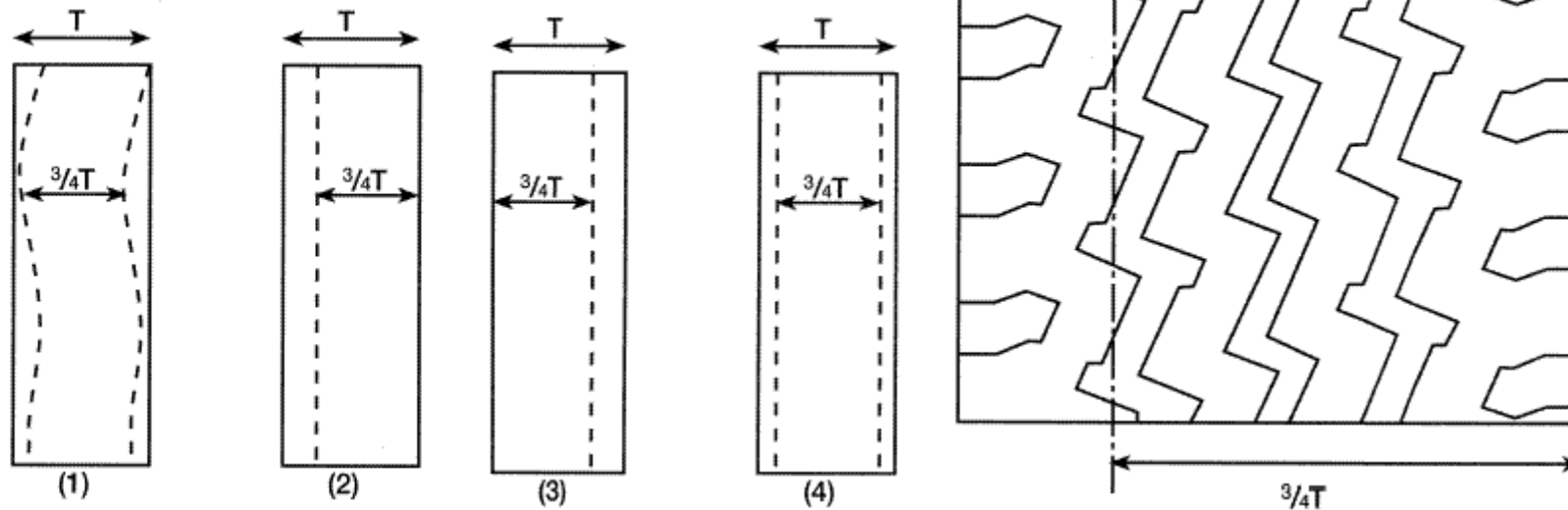
Condition of Tyres

Application

Figures (1), (2), (3) and (4) T = Breadth of Tread

$\frac{3}{4} T$ = Minimum width of continuous band.

Fig 5



In this case the lateral grooves are the same depth as the circumferential groove and are included in the $\frac{3}{4}$ measurement.

The breadth of the tread is 'T'.

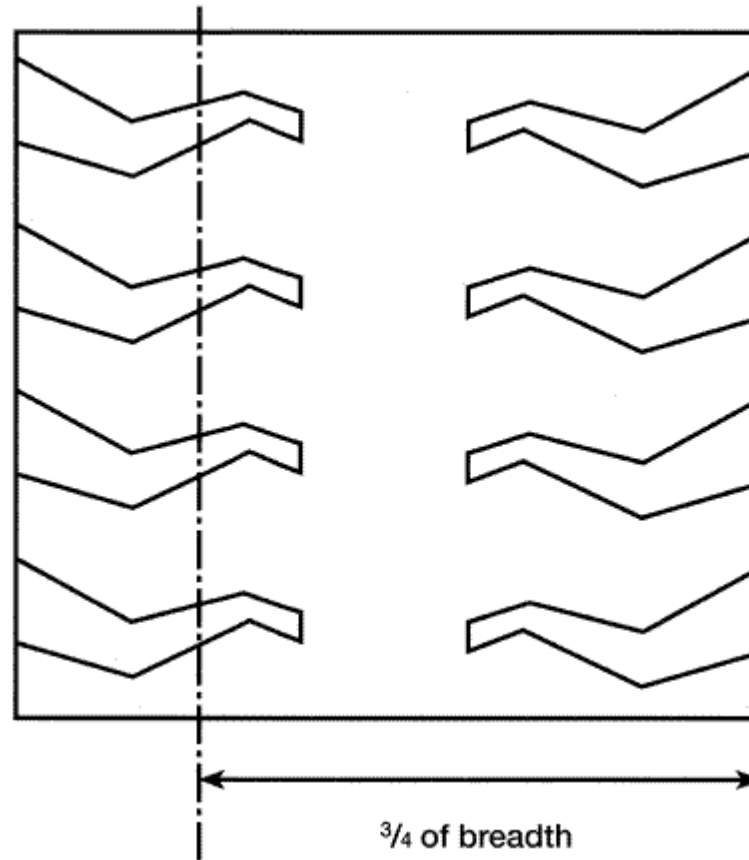
The $\frac{3}{4}$ of 'T' measurement can be taken over 'T' as in figure 1 to 4.

17

Condition of Tyres

Application

Fig 6



This tyre only has lateral grooving.

The band of acceptable tread pattern includes the plain portion which existed when the tyre was new. The remaining tread area should contain grooves to the depth of 1 mm.

17	Condition of Tyres	
	Method of Inspection	Reason for failure
	<p>1. Check each tyre for:</p> <ul style="list-style-type: none"> a. cuts. b. lumps, bulges or tears. c. exposed ply or cords. d. fouling on any part of the vehicle. e. correct seating on the wheel. f. wall contact with another tyre on a twin wheel. g. the base of any groove of the original tread pattern is clearly visible. h. the minimum tread depth and tread band requirement. <p>2. Check recut tyres:</p> <ul style="list-style-type: none"> a. fitted to a vehicle are legally acceptable. b. to ensure the wholly or partly recut tread pattern is to the manufacturer's recut tread pattern. 	<p>1. A tyre</p> <ul style="list-style-type: none"> a. with a cut which is deep enough to reach the ply or cords, and is more than 25mm long, or 10% of the section width, whichever is greater. **b. with a lump, bulge or tear caused by separation or partial failure of its structure, including any lifting of the tread rubber. *c. with exposed ply or cord. d. fouling on any part of the vehicle. e. incorrectly seated on its wheel. f. on a twin wheel making wall contact with another tyre. g. where the base of any groove of the original tread pattern is not clearly visible (vehicles with DGVW greater than 3500kg). *h where the minimum tread depth and tread band requirements are not met. <p>2. A recut tyre:</p> <ul style="list-style-type: none"> a. fitted to a vehicle which should not have one. b. on which the wholly or partly recut tread pattern is not to the manufacturer's recut tread pattern.

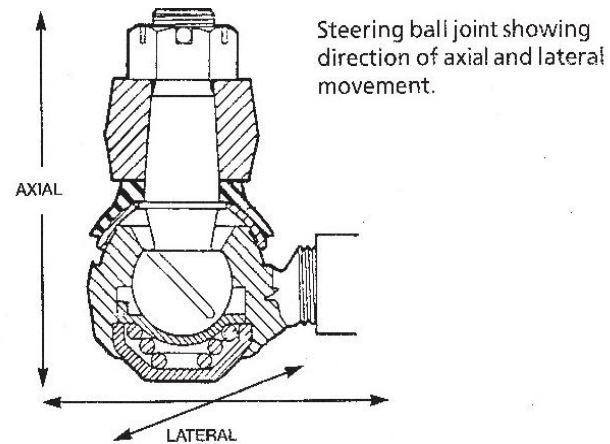
18	Not Allocated
Intentionally Blank	

19	Steering
Application	
This inspection applies to all vehicles and to trailers with steered axles.	
A steered axle is one which has a king pin or ball joints and can be turned to a left and right lock. An axle ceases being steered when it is fixed in the straight ahead position.	
Power steering must be inspected with the engine running. If vehicles are fitted with additional equipment, belt driven from the engine, where the belt may cause a hazard to the inspector they should be tested without the engine running. Examples are belt driven refrigeration compressors and air conditioning.	
Exposure of structural cords on power steering hoses is acceptable provided that these cords are not damaged.	
The hydraulic fluid level check only applies to readily visible reservoirs which can be checked without removing the reservoir cap.	
Any leakage from a power steering system is a Reason for Failure.	
For steered wheels on trailers and on any self-steered axle, visually check joints and components for wear and condition.	
With the road wheels on the ground rock the steering and check all steering joints and fixings.	
Instruct the driver to rotate the steering wheel through its full working range. If a lock stop, which is known to be a standard fitment, is missing this is a Reason for Failure. It should be noted however that in some cases there is provision for extra lock stops which are not a standard item. Where two are fitted only one needs to fulfil the function on each lock . They may be integral with the steering mechanism.	
If carrying out a steering full lock check with the wheels raised; any steering component, road wheel or tyre fouls any part of the vehicle when the vehicle is raised but does not foul any of these items when the vehicle is on the ground under normal running conditions, this is not an RfF.	
Vehicles with independent front suspension should be checked with the suspension in the normal running position.	
Common means of acceptable locking devices are:	
Anti-rattle washers, split pins, lock wire, spring washers, nyloc nuts and self-locking castle type nuts.	
If a plain flat washer is used with a spring washer the locking action of the spring washer becomes ineffective.	

19

Steering**Application**

Visually check for axial and lateral movement of all ball joints. Where a ball joint is fitted with a spring to take up such movement, the compression of the spring must not be mistaken for excessive wear. If excessive wear is suspected check by using hand pressure.

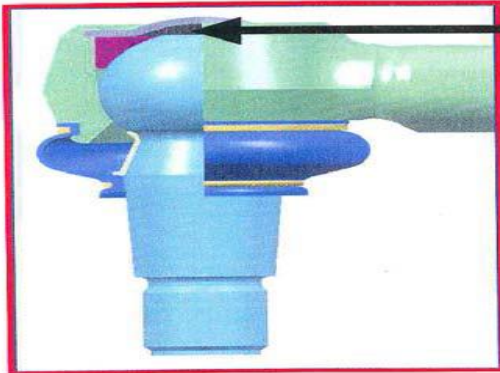


An increasing number of vehicles are now fitted with different types of ball joint, spring loaded or rubber mounted type each having different wear limits (some vehicles may be fitted with both type of joint). The rubber mounted type has a smaller wear limit than the spring loaded type.

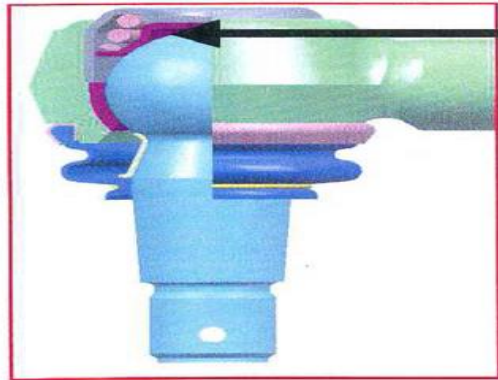
19

Steering

Application



Rubber mounted type



Spring-loaded type
2mm maximum axial lift
Note: - It can be clearly seen that the plate above the ball joint is domed to allow for the spring

Certain ball joints are designed only to swivel fore and aft and not side to side (front drag link ball joints only, fitted on Volvo FE range and Post 2006 Renault Magnum Dxi, Premium Dxi and Kerax Dxi). In an attempt to swivel the joint you may hear a knocking sound this is normal as this is the device to stop it swivelling. The only wear limits that should be taken into account for the annual test is axial movement. Where lateral movement is evident in the ball joint it must be confirmed that axial movement in excess of 2mm exists before failure is justified.

Other manufacturers with conventional ball joints have also stated that axial movement up to 2mm is acceptable.

19	Steering	
Method of Inspection	Reason for Failure.	
<p>1. Check all types of Power steering for:</p> <ul style="list-style-type: none"> a. correct operation. b. presence and completeness. c. air or fluid leaks. d. hydraulic fluid level. e. pump security and any drive system for presence and condition. f. condition of pipes and hoses, and for fouling of other parts of the vehicle. g. condition of ram and/or ram body anchorage, free play at ram anchorage. h. free play between ball and valve i. cables damaged, excessively corroded. j. inappropriate repair or modification. k. malfunction Indicator lamp does not indicate a fault. 	<p>1. Power steering:</p> <ul style="list-style-type: none"> *a. not working correctly. b. removed or disconnected when a standard fitment. c. with an air/fluid leak from any part of the system. d. reservoir is empty or fluid is below minimum level. e. pump insecure or its drive system missing or defective. f. pipe or hose excessively corroded, damaged, bulging or fouling other parts of the vehicle. g. with a cracked or damaged ram and/or ram body anchorage, any excessive free play at ram anchorage. h. with excessive free play between ball and valve to the extent that separation is likely. i. with cables damaged, excessively corroded. j. with an inappropriate repair or modification. k. malfunction indicator lamp indicates a fault. 	

19	Steering	
Method of Inspection		Reason for Failure
<p>2. Check Steering:</p> <ul style="list-style-type: none"> a. ball pin shank for security. b. neck of a ball pin, for condition. c. track rod or drag link end for security. d. joints for abnormal movement. e. sector shaft and drop arm has no movement. f. pivot point condition (e.g. an intermediate drop arm). g. parts fixed to the chassis for security (e.g. an intermediate drop arm, pivot housing, steering box, ram arm). h. arm and fixings has no movement between them. i. components for fractures, cracks or damage, wear, misalignment and deformation. j. retaining or locking device for installation and security. k. lock stops for installation, security and function. 		<p>2. Steering with:</p> <ul style="list-style-type: none"> *a. a ball pin shank loose. b. a sharp or deep groove at the neck of a ball pin. c. a track rod or drag link end insecure. d. any abnormal movement in a joint. e. movement between sector shaft and drop arm. f. excessive wear in a pivot point (e.g. an intermediate drop arm). g. a part fixed to the chassis insecure (e.g. an intermediate drop arm, pivot housing, steering box, ram arm). h. movement between a steering arm and its fixings. *i a component fractured or so cracked, damaged, misaligned, deformed or so worn that it is likely to fail. *j a retaining or locking device ineffective, not fitted or insecure. k. a steering lock stop missing, insecure or not fulfilling its function.

19	Steering	
Method of Inspection	Reason for Failure	
<p>3. Check Steering (continued):</p> <ul style="list-style-type: none"> l. components have not been modified and or repaired inappropriately by welding or showing signs of excessive heat being applied. m. component, road wheels or tyres are not fouling any part of the vehicle at its normal ride height. n. track rod is not excessively deformed. o. Is smooth and free in operation. p. lift and end float of a sector shaft. q. rack for wear. r. rack housing for movement in its bushes. s. rack gaiters are complete, undamaged and not displaced. t. ball joint dust covers for presence and condition. u. for leaks. v. gear casing for fractures. 	<p>3. Steering with (continued):</p> <ul style="list-style-type: none"> l. a component inappropriately modified, repaired by welding and/or showing signs of excessive heat being applied m. any steering component, road wheel or tyre fouling any part of the vehicle. n. track rod excessively deformed. *o. roughness or undue stiffness in the operation of the steering. p. excessive lift or end float of a sector shaft. q. excessive wear in the steering rack. r. excessive movement of rack housing in mounting bushes. s. a rack gaiter (if rack originally fitted with gaiters) split, damaged, missing or displaced. t. a ball joint cover missing, insecure, excessively damaged or severely deteriorated to the extent that it would no longer prevent the ingress of dirt etc. u. leak of oil. v. gear casing fractured. 	

20 Steering Control			
Application			
<p>This inspection applies to all vehicles.</p> <p>Cracks in the plastic covering do not necessarily mean that a spoke is fractured.</p> <p>This inspection does not apply to drivers' aid steering wheel knobs.</p> <p>Unless specified by the manufacturer vehicles fitted with power steering must be checked with the engine running.</p> <p>"Free Play" must not be confused with movement caused by the compression of steering joints etc. This operation should be carried out with light finger pressure to distinguish the feel of the steering wheel when it meets a resistance.</p> <p>Certain types of steering column might show some movement not due to excessive wear, e.g. those fitted with universal joints or flexible couplings.</p> <p>Free play at the steering rim in excess of 1/30 of the steering wheel diameter for a rack and pinion mechanism is considered a reason for failure. For other types of mechanism free play in excess of 1/5 of the wheel's diameter is considered a Reason for Failure. The acceptable free play for a range of wheels is shown below.</p>			
Wheel Diameter	Rack and Pinion Steering		Other Types of Steering
	Conventional	With Steering Wheel Ahead of the Rack and With a Number of Joints.	
380mm (15")	13mm (0.5")	48mm (1.9")	76mm (3")
455mm (18")	16mm (0.6")	57mm (2.3")	90mm (3.6")
530mm (21")	18mm (0.7")	67mm (2.6")	106mm (4.2")
610mm (24")	21mm (0.8")	77mm (3.3")	122mm (4.8")

20	Steering Control	
Method of Inspection		Reason for Failure
<p>1. Check the steering column:</p> <ul style="list-style-type: none"> a. has no excessive end float, when applying an upward and downward pressure to the steering wheel in line with the column. b. has no excessive side play indicating a badly worn top bearing or insecure top mounting bracket, by pulling and pushing the rim. c. flexible coupling and universal joint for condition and security. d. coupling clamp bolt or locking device is present and secure. e. adjustment device condition. <p>2. Check the Steering Wheel:</p> <ul style="list-style-type: none"> a. security. b. condition. c. hub retaining device is present and secure. <p>3. With the steered wheels in the straight ahead position lightly rotate the steering wheel to the left and right and note the amount of free play.</p>		<p>1. Steering column:</p> <ul style="list-style-type: none"> a. with excessive movement of centre of steering wheel in line with the column (end float). b. with excessive side play indicating a badly worn top bearing or insecure top mounting bracket. *c. flexible coupling or universal joint deteriorated, with excessive wear or insecure. *d. couple clamp bolt or locking device missing or loose. e. with an adjustment device worn to such an extent that it would render the column insecure. <p>2. Steering Wheel:</p> <ul style="list-style-type: none"> *a. loose. b. hub, spoke or rim fractured or cracked. The cover torn with jagged edges which may injure the driver. c. hub retaining device not fitted or loose. <p>3. Free play in system which is outside the prescribed limits.</p>

21	Not Allocated
Intentionally Blank	

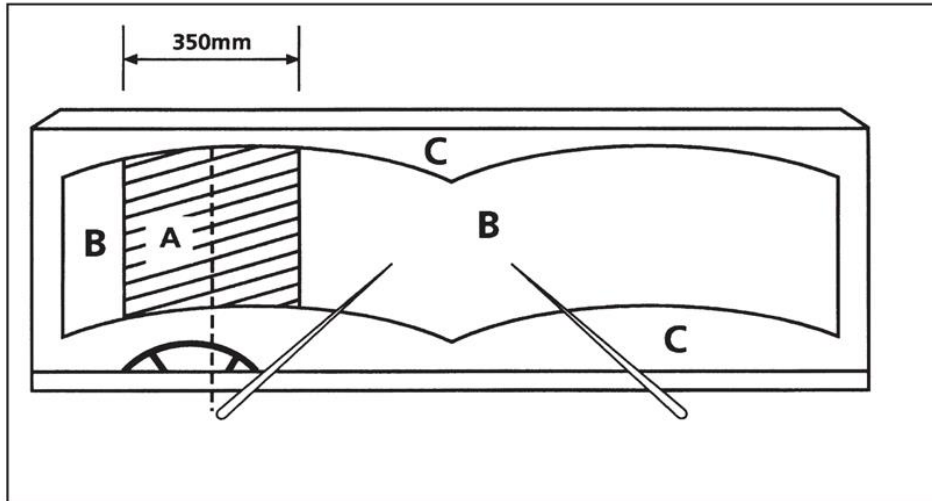
22

Glass and View to Front

Application

This inspection applies to all vehicles.

When checking the windscreen refer to the diagram below.



Zone "A" is 350mm wide, in the swept area of the screen and centred on the centre of the steering wheel.

Zone "B" is the remainder of the swept area.

Zone "C" is the remainder of the screen not covered by Zones "A" or "B".


Windscreen.

Examiners should have regard for the three separate "zones" when assessing damage or discolouration. A greater amount of damage or discolouration could be accepted in zone "C" than in zone "B". Likewise a greater amount can be accepted in zone "B" than in zone "A" where relatively minor damage would be a Reason for Failure.

When assessing damage, light surface scratches, are not to be considered as damage. However, an area of concentrated scratches such as those caused by prolonged use of a defective wiper blade which significantly obscures vision is to be considered a Reason for Failure if it meets the fail criteria.

Repaired windscreens must be inspected to the same criteria as original unrepaired screens. Repairs must be judged as to whether they interfere with vision. An 'invisible' or barely detectable repair, finished flush with the surrounding glass, does not count as damage even if the repair exceeds the limits of damage allowed in the test.

22	Glass and View to Front
Application	
<p>Visual transmission of light, all windows must comply with the percentage transmission levels as appropriate in the Construction and Use regulations.</p> <p>When checking the view of the road from the driver's seat, the view must not be obstructed by any changes to the original design such as the addition of stickers, pennants, cab decorations, stone-guards or other items which encroach more than 40mm into the swept area.</p> <p>Video monitors when fitted in the area at the top of the screen to give a view to the rear are acceptable provided they do not obstruct the swept area more than a rear view mirror would. Monitors fitted onto the dash must not encroach into the swept area by more than 40 mm.</p> <p>Official stickers are permitted to encroach more than 40mm if this is necessary to comply with other regulations, and include operator's licence, vehicle anti-theft scheme stickers issued by the Police Authority, toll payment tag/stickers, vehicle distance or lane indicator lenses and security passes. These should only be considered a reason for failure if they seriously restrict the view to the front.</p> <p>On many vehicles the original design will place things like instrument panel clusters inside the 40mm area swept by the wipers. Intrusions such as this which are original design features can be ignored, as can damage or unofficial stickers placed inside the 40mm limit but which are hidden by that feature.</p> <p>Some commercial vehicles have very large screens and have windscreen wipers which cover an area that have no practical use. For the purposes of the annual test, the area of the screen above a horizontal line taken from the driver's eye position, assessed with the driver seated, looking forward in a comfortable upright driving position and with the seat, if adjustable, in its highest position can be ignored other than the area through which the driver is required to view a mirror (front mirrors on HGVs are not required to be viewed through the area swept by the wipers).</p> <p>Swept area means the area swept by the wipers in their normal operation and does not include any additional area of the screen covered by the wipers to reach the parked position or which the original manufacturer has designed as opaque.</p>	

22	Glass and view to Front
Application	
Examples of acceptable features which may intrude into the swept area of the wipers provided they do not seriously impair the driver's view are:	
<ul style="list-style-type: none">▪ Vehicle distance or lane indicator lenses▪ Automatic windscreen wiper detectors▪ Grooves in the windscreen designed to clean wiper blades▪ Fresnel lens▪ Split windscreens▪ Wipers which park adjacent to a central pillar▪ Driver's aids such as blinds and their mountings. This includes manufacturer's exterior fixed sun visors.	
Examples of unacceptable features are:	
<ul style="list-style-type: none">▪ No smoking signs▪ Maximum height signs▪ Satellite navigation if not chassis makers original equipment (see example below)▪ Maintenance information stickers▪ Monitors which show the activities at the rear of the vehicle if not chassis maker's original equipment.	
	

22	Glass and View to Front	
Method of Inspection		Reason for Failure
<p>1. Check Windscreen for:</p> <ul style="list-style-type: none"> a. damage or discolouration which impairs the driver's view of the road. b. crack(s) passing through the swept area which renders the screen insecure or which impairs the driver's view. c. an obstruction which encroaches more than 40mm into the swept area (see note). d. crack(s) where there is noticeable displacement of the surfaces on either side which has an adverse effect on the condition and operation of the windscreen wipers. e. damage which exposes the inner layer of a laminated screen. <p>2. Check a windscreen or window is not:</p> <ul style="list-style-type: none"> a. so insecure that it is likely to fall out. b. damaged to such an extent it presents a danger to occupants or to other road users. c. excessively tinted. <p>3. Check there is no damage or obstruction of a side window which impairs the driver's view through a mandatory mirror.</p>		<p>1. A Windscreen:</p> <ul style="list-style-type: none"> a. with damage or discolouration which impairs the driver's view of the road. b. with a crack passing through the swept area which renders the screen insecure or which impairs the driver's view. c. with an obstruction which encroaches more than 40mm into the swept area. d. with any crack where there is noticeable displacement of the surfaces on either side which has an adverse effect on the condition and operation of the windscreen wipers. e. with damage which exposes the inner layer of a laminated screen. <p>2. A windscreen or window:</p> <ul style="list-style-type: none"> a. so insecure that it is likely to fall out. b. with damage which presents a danger to occupants or to other road users. c. is excessively tinted. <p>3. Damage or obstruction of a side window which impairs the driver's view through a mandatory mirror.</p>

23

Mirrors and Indirect Vision Devices.

Application	
This inspection applies to all vehicles. The number and type of mirrors and or indirect vision devices (excluding periscopes) which have to be fitted are shown below.	
Date of First Use	Requirements
Before 1 st April 1985	An exterior mirror on the offside and either an interior mirror (unless this would not give a view to the rear) or an exterior mirror on the nearside.
From 1 st April 1985	A main exterior mirror on both offside and nearside.
From 1 st October 1988 with DGVW greater than 12,000kg	A close proximity mirror on the nearside in addition to those shown above.
From 1 st October 1988 articulated vehicles with DGVW greater than 3,500kg	A wide angle mirror on the nearside in addition to those shown above.
From 1 st January 2000 with a DGVW exceeding 3,500kg	A main exterior mirror on both the offside and nearside. A wide angled mirror on the passenger side. A close proximity mirror on the passenger side.
From the 26 th January 2007 with a DGVW exceeding 7500kg	A main exterior mirror on both the offside and nearside. A wide angled mirror on the passenger side. A close proximity mirror on the passenger side. A front mirror.

Vehicles registered from 26 January 2007 but before 26 January 2008 in excess of 7500kg may not have a front mirror, these vehicles should be treated as if derogated and therefore pass and advise for this aspect of the inspection.

Any vehicle registered from 26 January 2008 in excess of 7500kg must have a front mirror, provided it can be fitted more than 2m from the ground.

"Indirect vision devices" means devices to observe the traffic area adjacent to the vehicle which cannot be observed by direct vision. These can be conventional mirrors, camera-monitors or other devices (but not a periscope) able to present information about the indirect field of vision to the driver.

"Interior mirror" means a device as defined in the above paragraph, which can be fitted in the passenger compartment of a vehicle.

"Exterior mirror" means a device as defined in the above paragraph, which can be mounted on the external surface of a vehicle.

23	Mirrors and Indirect Vision Devices
	Application
	<p>For vehicles up to 7500kg if the close-proximity mirror cannot be fitted at least 2m from the ground. The vehicle does not require either the wide angle or close-proximity mirrors.</p> <p>Known makes and models over 3500kg that do not require wide angle or close-proximity mirrors are:</p> <ul style="list-style-type: none"> • Iveco Daily • Johnston Sweepers 5000 series • Mercedes Chassis Cab Vario with two wheel drive and all Sprinters • Mitsubishi Fuso Canter • Nissan Cabstar • Isuzu N Series this is any Isuzu up to 7500kg • Renault Mascott and Maxity • Volkswagen LT and Crafter <p>There are a minority of vehicles which can achieve the view to the front without a front mirror.</p> <p>The retro fitting of mirrors from 1 January 2000 does not include the front mirror.</p> <p>Internal mirrors must be surrounded by protective material, this does not apply to vehicles registered before April 1969.</p> <p>For the purpose of this inspection on a left hand drive vehicle the nearside is at the right and the offside at the left.</p> <p>Close proximity and front mirrors must be at least 2m from the ground. If a vehicle is fitted with a low mounted cab so that the mirror cannot be fitted at this height it is exempt from the requirement to fit a close proximity and front mirror. Some Mercedes Unimogs fall into this category or the category of not being a forward control vehicle the U300, U400, U500 & U3000, U4000, U5000, Zetro 1833A and Zetro 2733A are exempt the front mirror but the U20 is not exempt and requires a front mirror.</p> <p>RfF 2 will not apply to cameras replacing front and or close proximity mirrors fitted less than 2 metres from the ground where the camera is hidden within the body contour.</p> <p>A cracked mirror is not an RfF unless the vision is obscured or it is in such a condition that the glass is likely to fall out.</p>

23	Mirrors and Indirect Vision Devices	
Method of Inspection		Reason for Failure
<p>Check:</p> <ol style="list-style-type: none"> 1. that the correct number and type(s) of mirror, or other indirect vision device are fitted. 2. that any required close proximity, front mirror or camera for an indirect visual device is fitted at least 2 metres from the ground. 3. that a required mirror or indirect vision device is in such a condition that anyone sitting in the driving seat can see clearly towards the rear, nearside or front where required. 4. mirrors or indirect vision devices and their mounting brackets for security and structure. 5. the internal mirror edge is surrounded by protective material. 		<ol style="list-style-type: none"> 1. Not fitted with the correct number or type(s) of mirror, or other indirect vision device. 2. Part of any required close proximity, front mirror or camera for an indirect visual device is fitted less than 2 metres from the ground. 3. A required mirror or indirect vision device in such a condition that anyone sitting in the driving seat cannot see clearly towards the rear or nearside or front where required. 4. A mirror, indirect vision device or its mounting bracket insecure or structurally deteriorated. 5. An internal mirror edge not surrounded by protective material or with damaged protective material.

24	Windscreen Washers and Wipers	
Application		
<p>This inspection applies to all vehicles except those with an opening windscreen or where an adequate view can be obtained by some other means.</p> <p>Wipers must be able to clear an adequate area of the screen to give the driver a view of the road to the front and in front of both sides of the vehicle.</p> <p>Washers must provide enough water to enable the wipers to clear the screen effectively.</p> <p>Frozen washers are to be considered ineffective.</p> <p>There is no requirement to check that wipers self-park.</p>		
Method of Inspection		Reason for Failure
<p>1. Check switches that control windscreen wipers and or washers are fitted and operational.</p> <p>2. Check Wipers:</p> <p> a. cover an adequate area.</p> <p> b. work continually when switched on.</p> <p> c. blade(s) are fitted, secure and in an effective condition to clear the screen.</p> <p>3. Check Washers are effective.</p>		<p>1. Switches missing or defective.</p> <p>2. Wipers:</p> <p> a. do not move over an adequate area.</p> <p> b. do not work continually when switched on.</p> <p> c. a blade missing, insecure or so deteriorated that it cannot clear the screen effectively.</p> <p>3. Washers ineffective.</p>

25	Speedometer	
	Application	
	<p>This inspection applies to all motor vehicles first used on or after the 1st April 1984 capable of exceeding 25mph.</p> <p>A vehicle must have a speedometer fitted that is capable of indicating the road speed in both miles and kilometres per hour. This can be simultaneously or by the means of a switch. If the glass dial is cracked and this does not affect operation this is not a Reason for Failure but the presenter should be advised of the defect.</p>	
	Method of Inspection	Reason for Failure
	<div> <div> 1. For all vehicles, check a speedometer is: <ul style="list-style-type: none"> a. fitted. b. complete and operative. c. able to be illuminated. d. check to ensure it is easily read. </div> <div> 1. For all vehicles, a speedometer: <ul style="list-style-type: none"> a. not fitted. b. incomplete, clearly inoperative, or with dial glass broken or missing (see note in application). c. cannot be illuminated. d. speedometer obstructed. </div> </div>	

26	Horn / Audible Warning	
Application		
<p>This inspection applies to all vehicles.</p> <p>Vehicles first used from 1 August 1973 must have a horn that produces a continuous or uniform sound.</p> <p>If vehicles are fitted with more than one horn only one has to work.</p> <p>If air horns are connected to the braking system of a vehicle the presenter should be made aware of the possible dangers as well as advising of any leaks from the air horns (there is no requirement to check if air horns operations deplete the braking system).</p> <p>If more than one horn control is fitted at least one must operate the horn.</p>		
Method of Inspection		Reason for Failure
<p>1.Check that a Horn Control is:</p> <p>a. fitted.</p> <p>b. reached easily from the driving seat.</p> <p>c. secure.</p> <p>2. Check the Horn:</p> <p>a. operates.</p> <p>b. is loud enough to be heard by other road users.</p> <p>c. sound is continuous or uniform.</p> <p>d. is secure.</p>		<p>1.Horn Control:</p> <p>a. missing.</p> <p>b. cannot be reached easily from the driving seat.</p> <p>c. insecure.</p> <p>2. Horn:</p> <p>a. does not work.</p> <p>b. is not loud enough to be heard by other road users.</p> <p>c. sound not continuous or uniform.</p> <p>d. insecure.</p>

27	Fuel Tanks and Systems
	Application
	<p>This inspection applies to all fuel tanks which are permanently attached to vehicles and to trailers, including gas fuel tanks and cylinders, bottles and other types of fuel container.</p> <p>Seepage is not a reason for failure.</p> <p>Fabricated and "emergency" fuel caps are acceptable provided that they function correctly. Where possible the tank cap should be opened to check the sealing arrangements.</p> <p>Very bad fuel leaks are a reason for refusing to carry out the test. If the test is suspended for this reason the presenter will be notified.</p> <p>If the vehicle is powered by gas and suffers a leak this should be treated in the same manner as a bad fuel leak. The vehicle should be moved to a well ventilated area away from people and buildings. If the leak is of a serious nature evacuate the building and call the Emergency Services.</p> <p>It is not necessary to run the engine but if a leak is present when the engine is running the vehicle should be failed.</p> <p>It is not necessary to run combustion heaters as part of this inspection.</p>

27	Fuel Tanks and Systems
Application	
Method of Inspection	Reason for failure
<ol style="list-style-type: none"> 1. Check the fuel tank for security. 2. Check tank straps and supports for: <ol style="list-style-type: none"> a. condition and presence. b. security and strength 3. Check Fuel System for : <ol style="list-style-type: none"> a. leaks. b. condition of pipes and that they are complete and secure. c. positioning of pipes so that they are unlikely to be fouled by moving parts. 4. Check Filler Cap for: <ol style="list-style-type: none"> a. presence. b. security: <ul style="list-style-type: none"> • by a positive means, or • such that pressure is maintained on the sealing arrangement. c. presence and condition of the sealing washer and that the mounting flange/sealing method is effective. 	<ol style="list-style-type: none"> **1. Tank so insecure on its mountings that it is likely to drop away partially or completely when the vehicle is used. 2. A tank strap or support: <ol style="list-style-type: none"> a. broken or missing. **b. so insecure or weakened that the tank is likely to drop away partially or completely when the vehicle is used. 3. Fuel System: <ol style="list-style-type: none"> *a leaking. b pipes so damaged (restricted/chafed), insecure or with an inadequate repair such that they are likely to fail and leak which would cause danger to persons on the vehicle or to other road users. c pipes damaged or so positioned that they are fouled by moving parts of the vehicle. 4. Filler Cap: <ol style="list-style-type: none"> **a missing. **b does not fasten securely: <ul style="list-style-type: none"> • by a positive means, or • such that pressure is not maintained on the sealing arrangement. **c sealing washer torn, deteriorated or missing, or a mounting flange/sealing method defective such that leakage of fuel is possible.

28	Not Allocated
Intentionally Blank	

29	Not Allocated
Intentionally Blank	

30**Seat Belts and Supplementary Restraint Systems.****Application**

This inspection applies to all vehicles with seat belts and/or Supplementary Restraint Systems (SRS) fitted.

The minimum requirement for the fitment of seat belts is detailed in the tables below.

The only goods vehicles up to and including 3500kg DGW likely to be subject to this inspection are mini-articulated vehicles.


Minimum Requirements for Forward Facing Seats on Vehicles First Used from 1 October 2001 with A DGW in Excess of 3500kg

Driver's seat	Front passenger seat	Rear passenger seat
3 point belt (lap and diagonal or lap belt)	3 point belt (lap belt or disabled persons belt)	No belt required.

Vehicles First Used from 1 April 1980 up to and Including 3500kg DGW

Vehicle first used:	Drivers and specified front passenger seat (furthest from the driver)	Other front passengers	Rear passengers
1/4/1980 to 31/3/1981	2 point (diagonal body restraining)	No belt required	No belt required.
1/4/1981 to 31/3/1987	3 point belt (lap and diagonal)	No belt required	No belt required
From 1/04/1987	3 point belt (lap and diagonal)	No belt required	No belt required

30	Seat Belts and Supplementary Restraint Systems.
	Application
	<p>Seat belts are not required on light goods vehicles with an ULW exceeding 1525kg, if the model of vehicle was first manufactured before 1 October 1979 and the vehicle was manufactured before 1 October 1981, or first used before 1 April 1982.</p> <p>For seats with integral seat belts, it may not be possible to examine the fixing of the seat belt to the seat.</p> <p>On retracting seat belts, check that with the mechanism fastened and the seat adjusted to its rearmost position, excess webbing is wound into the retracting unit. If there is doubt about the operation of the retracting unit, this check should be carried out with the seat unoccupied.</p> <p>Some types of retracting belt might need manual help before they retract.</p> <p>Operate the release mechanism while pulling on the belt to check that the mechanism releases when required.</p> <p>Pull the sheaths aside if this can be done without damage</p> <p>Some vehicles have seat belts which will not release the inertia aspect of the seat belt unless the ignition is switched on. Ensure the park brake is applied and the gears are in the neutral position before switching on the ignition. Owing to the height of cabs on many commercial vehicles this inspection should be performed with the inspector sat in the appropriate seat.</p> <p>Floor mounted anchorages may need to be inspected from underneath the vehicle.</p> <p>Where a belt is fitted with no corresponding seat or if there is a buckle/stalk but no corresponding belt, it is NOT to be considered a seat belt</p> <p>The inspection of Supplementary Restraint Systems (SRS) applies to airbags, seat belt pre-tensioners and seat belt load limiters when fitted as standard.</p>

30	Seat Belts and Supplementary Restraint Systems.	
Application		
<p>The SRS malfunction indicator lamp (MIL) may display a symbol similar to that below, one depicting a person wearing a seat belt or alternatively the letters 'SRS'.</p>		
		
<p>A passenger air bag which has been switched off is not a reason for failure.</p>		
<p>Seat belt load limiters are used on some vehicles to minimise seat belt inflicted injury in particularly violent collisions. This is generally achieved by releasing a little more excess belt webbing when a great deal of force is applied to the belt. The simplest type of load limiter is a fold sewn into the belt webbing. The stitches holding the fold in place are designed to come apart when a high amount of force is applied to the belt, thereby releasing an extra bit of webbing. More advanced load limiters rely on a torsion bar in the retractor mechanism, which cannot usually be readily seen or tested.</p>		
<p>Seat belt pre-tensioners may be fitted to some seat belts. Once activated a warning device may display.</p>		
Method of Inspection		Reason for Failure
<p>1. Check Obligatory Seat Belts:</p> <ul style="list-style-type: none">a. for presence.b. are of the correct type. <p>Check the condition of all seat belts fitted.</p> <p>2. Anchorages:</p> <ul style="list-style-type: none">a. without dismantling check there is no excessive corrosion, serious deterioration or a fracture within 300mm (12”) of the anchorage (where a seat belt is attached to a seat frame this will apply to all seat mounting points).c. check seat belt/s are securely fixed to the seat or to the vehicle structure.		<p>1. Obligatory Seat Belt (see Table):</p> <ul style="list-style-type: none">a. missing.b. of an incorrect type. <p>2. Anchorages:</p> <ul style="list-style-type: none">a. with excessive corrosion, serious deterioration or a fracture in a load bearing member of the vehicle structure within 300mm (12”) of the anchorage (where a seat belt is attached to a seat frame this will apply to all seat mounting points).b. a seat belt not securely fixed to the seat or to the vehicle structure.

30	Seat Belts and Supplementary Restraint Systems.	
	Method of Inspection	Reason for Failure
	<p>3.Check Locking Mechanism, Stalks, Retracting Mechanism and Fittings. Fasten each belt locking mechanism and try and pull the locked sections apart:</p> <ul style="list-style-type: none">a. check the locking mechanism of the seat belt/s secure and release as intended.b. check the attachment and adjustment fitting for fractures, deterioration and that it is operating effectively.c. check the flexible stalk is free from corrosion or deterioration likely to lead to failure under load.d. check there are no broken flexible stalk strands.e. check the retracting mechanism retracts the webbing sufficiently to remove all the slack from the belt with the locking mechanism fastened. <p>4. Check that the Webbing:</p> <ul style="list-style-type: none">a. has no cut which causes the fibres to separate.b. has no fluffing or fraying sufficient to obstruct correct operation of the belt or which has clearly weakened the webbing.c. has no stitching badly frayed, is secure, complete and has not been repaired.	<p>3. Locking Mechanism, Stalks, Retracting Mechanism and Fittings:</p> <ul style="list-style-type: none">a. locking mechanism of a seat belt does not secure or release as intended.b. an attachment or adjustment fitting fractured, badly deteriorated or not operating effectively.c. corrosion or deterioration of a flexible stalk likely to lead to failure under load.d. broken flexible stalk strands.e. a retracting mechanism does not retract the webbing sufficiently to remove all the slack from the belt with the locking mechanism fastened. <p>4. Condition of Webbing:</p> <ul style="list-style-type: none">a. a cut which causes the fibres to separate.b. fluffing or fraying sufficient to obstruct correct operation of the belt or which has clearly weakened the webbing.c. stitching badly frayed, insecure, incomplete or repaired.

30	Seat Belts and Supplementary Restraint Systems.	
	Method Inspection	Reason for Failure
	<p>5. Check for obvious signs of structural weakness such that failure is likely in, seat belt; fittings, guides, stalks or pivots.</p> <p>6. Check seats with seat belts attached to them for:</p> <ul style="list-style-type: none"> a. security. b. there are no cracks or fractures in the leg or frame. <p>7. Check the presence and condition of any seat belt load limiters and/or pretensioners fitted as original equipment.</p> <p>8. As far as practicable, check that:</p> <ul style="list-style-type: none"> a. all driver and passenger airbags fitted as original equipment, are present and b. are not obviously defective. <p>9. Check the SRS warning light does not indicate a fault.</p>	<p>5. Obvious signs of structural weakness in a seat belt; fitting, guide, stalk or pivot such that failure is likely.</p> <p>6. Seats with seat belts attached to them:</p> <ul style="list-style-type: none"> a. insecure. b. with a cracked or fractured leg or frame. <p>7. A seat belt:</p> <ul style="list-style-type: none"> a. load limiter or pretensioner obviously missing where fitted as original equipment. d. pretensioner or a 'folded type' webbing load limiter obviously deployed. <p>8. An airbag:</p> <ul style="list-style-type: none"> a. missing. b. obviously defective. <p>9. The SRS warning lamp indicates any kind of failure in the system.</p>

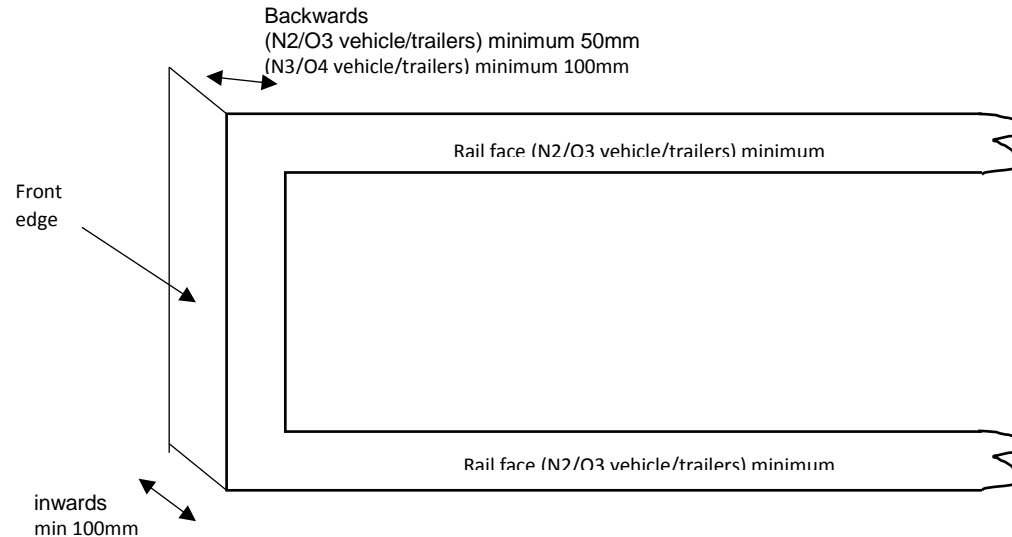
31	Sideguards, Rear Under-Run Devices and Bumper Bars.
	Application
	<p>Sideguards are applicable to:</p> <p>Motor Vehicles first used from 1 Jan 1999 with a design gross weight exceeding 3,500kg and where the distance between the centres of any two consecutive axles exceeds 3m;</p> <p>Trailers manufactured from 1 Jan 1999 with an unladen weight exceeding 1,020kg and where the distance between the centres of any two consecutive axles exceeds 3m; or in the case of a semi-trailer, where the distance between the centre of the kingpin position and the centre of the foremost axle exceeds 4.5m.</p> <p>Semi-Trailers manufactured before 1 Jan 1999 which have a design gross weight exceeding 26,000kg and which form part of an articulated vehicle with a design gross train weight exceeding 32,520kg and where the distance between the centre of the kingpin and the centre of the foremost axle exceeds 4.5m. Where more than one kingpin is fitted, it is the distance from the rearmost position which is taken into account.</p> <p>Exempted Vehicles:</p> <ul style="list-style-type: none"> • A vehicle or trailer constructed so that it can be unloaded by part of the vehicle being tipped sideways or rearwards. • A vehicle or trailer designed solely for use in connection with street cleaning, the collection/disposal of refuse or the contents of gullies/cesspools. (Skip carrying vehicles are classed as refuse vehicles and as such are exempt). • A trailer specially designed and constructed, and not merely adapted, to carry round timber, beams or girders, being items of exceptional length. • Tractor units. • A vehicle or trailer specially designed and constructed, and not merely adapted, to carry other vehicles loaded onto it from the front or rear (<i>Vehicles with a standard flat body fitted with a "beaver tail" are not exempt</i>). • A trailer with a load platform which is not more than 750mm from the ground throughout that part of its length under which a sideguard would have to be fitted. • A semi-trailer incorporating a sliding bogie.

31	Sideguards, Rear under Run Devices & Bumper Bars
Application	
Exempted Vehicles (continued):	
To fulfil this definition the vehicle must meet the following criteria:	
<ul style="list-style-type: none"> a. It must be of skeletal construction. b. It must have a minimum of two upright side supports (side bolsters) fitted to each side of the vehicle. c. It must not be fitted with a load platform, other than chassis rails, cross bearers and the minimum amount of flooring necessary to protect wiring or brake line components. 	
It is permissible for the vehicle to be fitted with the following:	
<ul style="list-style-type: none"> ▪ Loading equipment i.e. a Hiab crane or similar device. ▪ Cross bearers that do not have upright side supports. 	
This list is not exhaustive but covers the vehicles likely to be encountered within the testing scheme.	
Vehicles equipped with cranes , it is not practicable to fit sideguards in the area of the crane and its controls. Before reaching a decision on its pass/fail criteria for vehicles/trailers you need to take account of the following;	
Vehicles fitted with an extendible device or leg to provide stability during loading, and equipped with loading devices and controls, which makes it impracticable to fully comply with the sideguard legislation, will be deemed compliant provided sideguards are in place to the fullest extent practicable. All vehicles must be presented for statutory test with any such devices in the stowed position.	
Vehicles with access and a working platform adjacent to , and necessary for, the operation of a loading device, shall be regarded as a load carrying platform for sideguard compliance forward of the extendable device or leg.	
Acceptable circumstances are when other items on the vehicle such as fuel tanks, work boxes etc. which by virtue of their shape and characteristics conform to the requirements of a sideguard.	
Trailers manufactured before 1 Jan 1999 will not be failed if sideguards are not fitted, but the driver/operator notified that they may be required under certain circumstances.	

31	Sideguards, Rear Under-Run Devices and Bumper Bars.
	Application
<p>The continuous vertical rail or turn in, may not be required if the front edge of the sideguard is within 100mm of a permanent structure of the vehicle (vehicle cab/wheel arch).</p> <p>REAR UNDER-RUN DEVICES</p> <p>Rear under-run devices are applicable for motor vehicles with a gross design weight exceeding 3,500kg and first used from 1 Jan 1999; Or Trailers manufactured from 1 Jan 1999 with an unladen weight exceeding 1,020kg.</p> <p>Exempted vehicles:</p> <ul style="list-style-type: none"> • Tractor units. • A vehicle or trailer fitted at the rear with apparatus specially designed for spreading material on a road. • A vehicle or trailer so constructed that it can be unloaded by part of the vehicle being tipped rearwards. • A vehicle or trailer specially designed and constructed, and not merely adapted, to carry other vehicles loaded onto it from the rear. (Vehicles with a standard flat body fitted with a “beaver tail” are not exempt.) • A trailer specially designed and constructed, and not merely adapted, to carry round timber, beams or girders, being items of exceptional length. • A vehicle or trailer fitted with a tail lift so constructed that a lift platform, with a minimum length of 1m, forms part of the floor of the vehicle. • A vehicle specially designed, and not merely adapted, for the carriage and mixing of concrete. <p>This list is not exhaustive but covers the vehicles likely to be encountered within the testing scheme.</p> <p>If a vehicle has a rear tail lift, where the rear uprights for the tail lift are separated from the rear under-run, the uprights are not to be taken as part of the under-run device.</p> <p>Vehicles equipped with rear tail lifts are allowed to have gaps between the rear under-run rails. Gaps are permitted up to 500mm between rear under-run rails.</p> <p>Vehicles with tail lifts may be fitted with a guard up to 300mm wider than the outer edge of the outermost rear tyre provided it is no wider than the outer edge of the vehicle.</p> <p>Vehicles not required to be fitted with a rear under-run device but having one fitted are only to be inspected as if, it was a bumper bar.</p> <p>Where a rear under- run extends outside the width of the outermost rear tyre but is joined to a sideguard positioned to the rear of the tyre, this is not an RfF.</p>	

31	Sideguards, Rear Under-Run Devices and Bumper Bars.
	Application
	<p>Vehicles that have two rear axles where the rearmost one has a narrower track, the sideguard criteria needs to comply with the widest of the rear axles</p> <p>Vehicles with bodies that satisfy the dimensional requirements for rear under-run devices are considered acceptable.</p> <p>It is acceptable for a rigid vehicle to be presented for annual test without a rear under-run device fitted when towing a trailer. However, the under-run device must be readily available for use when not towing a trailer.</p>
	<p>BUMPER BARS</p> <p>This inspection applies to all vehicles and trailers.</p> <p>Vehicles are not required to have separate bumper bars, these may be incorporated into the body in some cases.</p>
	<p><i>Further sideguard Information</i></p>
	<p>Construction</p> <ul style="list-style-type: none"> • The guard should be as continuous as possible and the outermost surface smooth, essentially rigid and either flat or horizontally corrugated, but can be split into rails. Rails must be flat faced on the outside, (N2/O3 vehicles/trailers) minimum 50mm, (N3/O4 vehicle/trailers) minimum 100mm (but can be wider), and the distance between them not more than 300mm. Parts of the guard may be detachable for access, but must be securely fixed when the vehicle is in use. • The front edge of the guard must have a continuous surface extending back for (N2/O3 vehicles/trailers) minimum 50mm; (N3/O4 vehicle/trailers) minimum 100mm, for both ranges of vehicles the turning inwards is 100mm. • On occasions a single rail may fulfil this requirement and it will be sufficient that the forward face only covers the depth of the rail. <p>N₂ vehicles are vehicles over 3500kg but does not exceed 12000kg DGWV.</p> <p>N₃ vehicles are vehicles that exceed 12000kg DGWV.</p> <p>O₃ trailers are trailers over 3500kg but does not exceed 10,000kg TAW.</p> <p>O₄ trailer are trailers which exceed 10,000kg TAW.</p> <p>DGWV = Design Gross Vehicle Weight TAW = Total Axle Weight</p>

31

Sideguards, Rear under Run Devices & Bumper Bars**Application****Distance of Guard from Front Wheels (or landing legs) and Rear Wheels**Motor Vehicles

The front edge of the guard must not be more than 300mm from the tyre on the front wheel (or second wheel if two front axles) and the guard must extend to within 300mm of the tyre on the first rear axle.

Draw-Bar Trailer

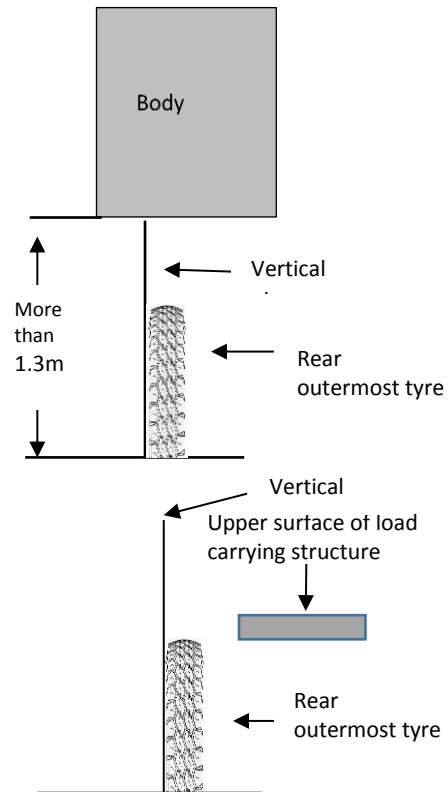
The front edge of the guard must not be more than 500mm from the tyre on the front wheel and the guard must extend to within 300mm of the tyre on the rear wheel.

Semi-Trailer

The front edge of the guard can be up to 250mm behind the centre line of the landing legs, but never more than 3m behind the centre of the king pin (in its rearmost position) and the guard must extend to within 300mm of the tyre on the first rear axle.

31**Sideguards, Rear under Run Devices & Bumper Bars****Application****Minimum Height to Top Edge**

To determine the height to the top edge, it is necessary to imagine a vertical plane parallel to the vehicle centre line and just touching the outer edge of the outermost rear tyre (neglecting the bulge). The line where the vertical plane cuts the structure of the vehicle is taken as the datum and may not be straight, but will move up and down as the plane cuts through transverse floor members etc. The upper edge of a sideguard shall not be more than 350mm below that part of the structure of the vehicle, cut or contacted by a vertical plane tangential to the outer surface of the tyres, excluding any bulging close to the ground except in the following cases.



Where the tangential plane cuts the structure of the vehicle at more than 1.3m above the ground, then the upper edge of the sideguard shall not be less than 950mm above the ground

Where the tangential plane does not cut the structure of the vehicle, the upper edge shall be level with the surface of the load carrying platform, or 950mm from the ground, whichever is the less.

Tangential plane should be taken as a line from the outermost edge of the rear tyre(s) excluding the bulge due to the weight of the vehicle

31

Sideguards. Rear under Run Devices & Bumper Bars**Application****Lateral Projection**

The guard must not project beyond the outside edge of the vehicle, and it must not be more than 150mm inside the outermost plane of the vehicle (Maximum width). The last 250mm of the sideguard, at the rear, must be no more than 30mm from the outer edge of the outermost rear tyre.

Components in the Sideguard Area

In general, the regulations do not allow for the sideguard run to be broken, if components such as fuel tanks and air reservoirs intrude, the components should be sited such that they do not interfere with the sideguard run. However, components may be incorporated if, by virtue of their shape and characteristics, they conform in all respects to the sideguard requirements. Where the guard is not continuous from front to rear; adjacent parts can overlap provided that the overlapping edge faces rearwards or downwards; or a gap of not more than 25mm measured longitudinally may be left, provided that the rearward part does not protrude outboard of the forward part.

Note: Protrusions from such components within the sideguard run must conform to all the side guard requirements. Protrusions from these components not within the side guard run (i.e. between the sideguard gaps do not need to conform to the standards.

If the sides of the vehicle are so designed and/or equipped, that by virtue of their shape and characteristics the component parts together meet the requirements, they may be regarded as replacing the sideguards.

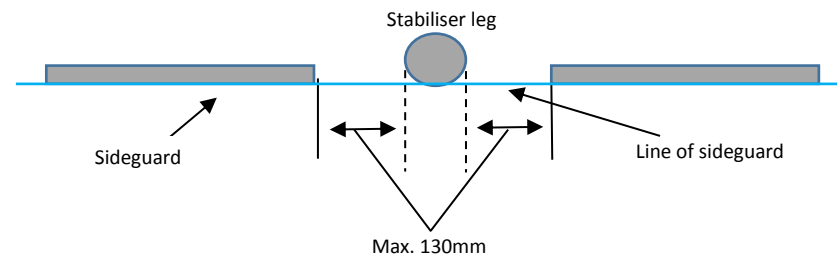
Where a vehicle's body meets the dimensional requirements (dimensional being, min. & max. height from the ground, plus the distance from rear of front wheel or landing leg and front of rear wheel) for sideguards these will be deemed to be met, however where only part of the body meets the requirements, side guards must be fitted in the remaining appropriate areas.

Chassis Mounted Cranes

Where cranes are fitted across the chassis the extendible legs are normally stowed and operate through the sideguard run.

The sideguard rail or rails are required to come within a distance of 130mm of the leg at each side, thus allowing working room.

Before deciding on the pass/fail criteria, consideration must be given to the crane and platform.



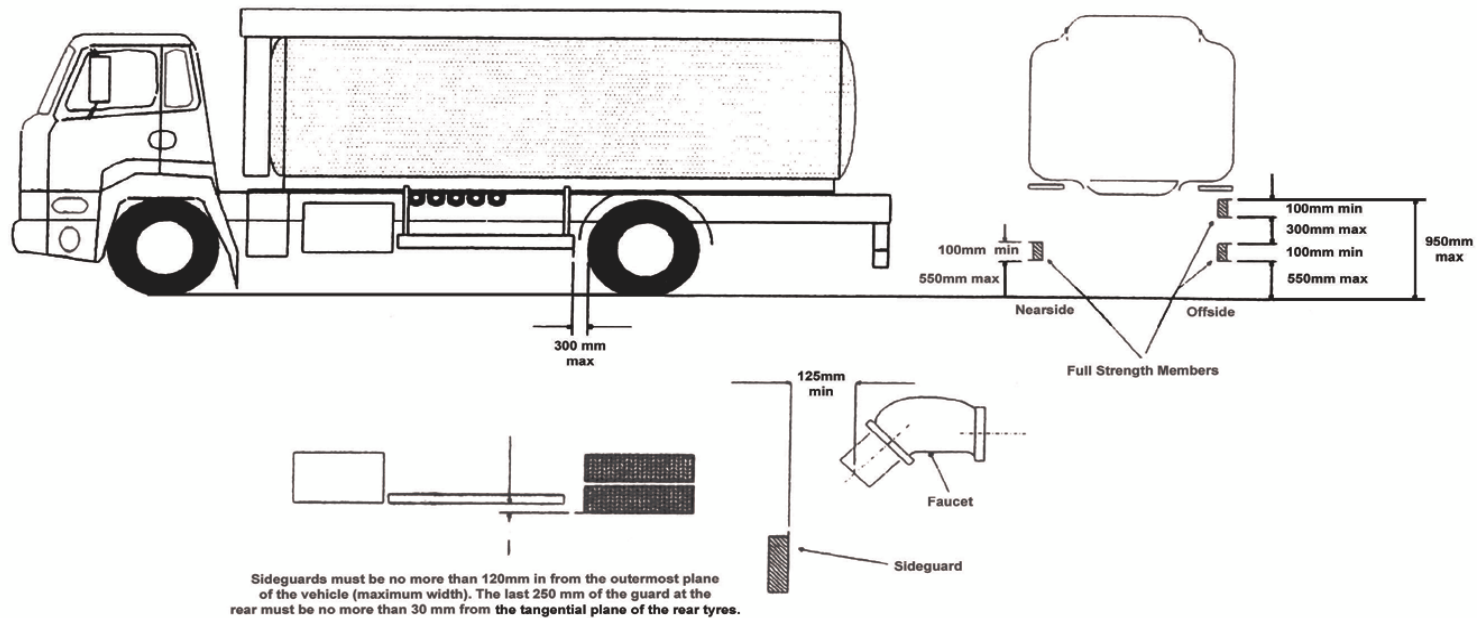
The diagram is only to illustrate the dimensions allowed between the stabiliser leg and a sideguard; it is not the intention that the stabiliser leg should be stowed in this position.

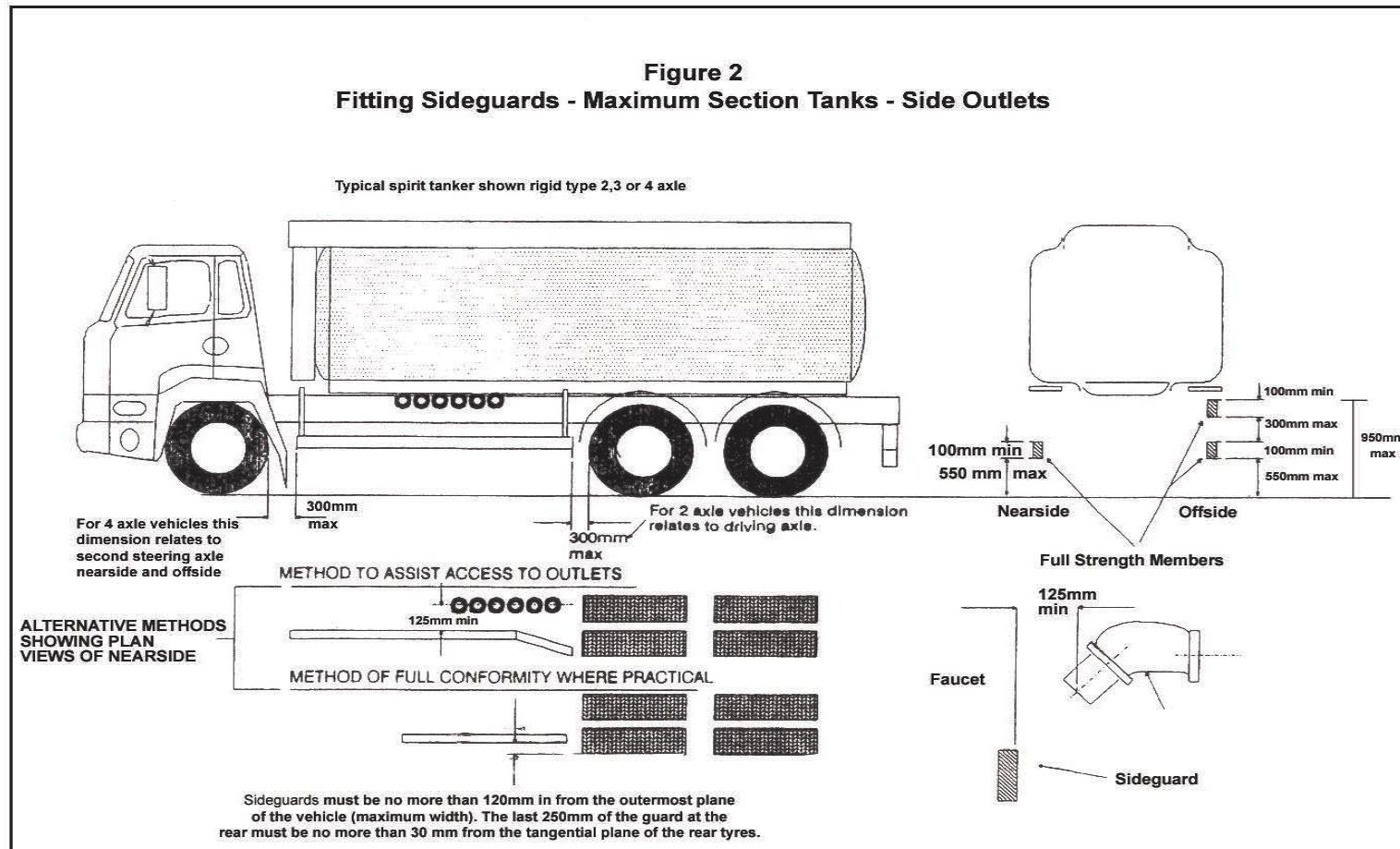
31	Sideguards, Rear under Run Devices & Bumper Bars										
	Application										
<p>Sideguard Material There is no legislation regarding the materials used for sideguards although there are regulations covering strength and deflection of these components. None of these however are subject to test.</p> <p>Protrusions Protrusions (on the side/guard outer faces) such as rivet or bolt heads are acceptable provided that they do not exceed 10mm and are suitably domed. External corners and edges must be rounded. Orange reflective strips are acceptable if fitted to sideguards provided that the front edge is rounded and it does not protrude more than 10mm.</p> <p>Short Bodied Vehicles Vehicles which have shortened bodies to facilitate the fitting of plant equipment usually have a large gap between the back of the cab and the body. There may therefore be a considerable length of sideguard area not covered by the body. In these cases the height of the guard covered by the body is the normal 350mm max below the structure, but the height of the guard in the area not covered by the body must be no lower than the body floor or 950mm whichever is the lowest and may require more than 1 rail.</p> <p>Type Approved Sideguards If the presenter claims that the vehicle or trailer is fitted with type approved sideguards (this will most often be on an imported trailer) which comply with the requirements of the EC directive, the presenter should be asked to provide documentary evidence. Although the standards are to accept sideguards made to the directive but not necessarily approved it may assist to identify those vehicles/trailers which are known to be approved, these are:</p> <table border="0" data-bbox="197 1021 1153 1244"> <tr> <td data-bbox="197 1021 672 1061"><u>Trailer Make</u></td><td data-bbox="672 1021 1153 1061"><u>Model</u></td></tr> <tr> <td data-bbox="197 1061 672 1093">Hellbender</td><td data-bbox="672 1061 1153 1093">EUT, KIP, KIS, TSA, MUL, CONC.</td></tr> <tr> <td data-bbox="197 1093 672 1125">Magyar</td><td data-bbox="672 1093 1153 1125">All models type approved.</td></tr> <tr> <td data-bbox="197 1165 672 1204"><u>Vehicle Make</u></td><td data-bbox="672 1165 1153 1204"><u>Model</u></td></tr> <tr> <td data-bbox="197 1204 672 1236">Mercedes-Benz</td><td data-bbox="672 1204 1153 1236">Atego.</td></tr> </table>		<u>Trailer Make</u>	<u>Model</u>	Hellbender	EUT, KIP, KIS, TSA, MUL, CONC.	Magyar	All models type approved.	<u>Vehicle Make</u>	<u>Model</u>	Mercedes-Benz	Atego.
<u>Trailer Make</u>	<u>Model</u>										
Hellbender	EUT, KIP, KIS, TSA, MUL, CONC.										
Magyar	All models type approved.										
<u>Vehicle Make</u>	<u>Model</u>										
Mercedes-Benz	Atego.										

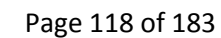
31	Sideguards, Rear under Run Devices & Bumper Bars
Application	
<p>Tankers</p> <p>It is recognised that there are practical problems in the fitting of sideguards to some tankers and there can be differing views over what constitutes "so far as is practicable".</p> <p>A. Tankers which Convey Dangerous Substances</p> <p>Vehicle Safety Division, the Society of Motor Manufacturers and Traders and the British Tank Manufacturers Technical Committee agreed on the design layout specification for sideguards on these vehicles. This agreement is summarised in the drawings that follow. In all other respects the guards must conform to the regulations.</p> <p>B. Skeletal Trailers Carrying Frameless Tanks</p> <p>(i.e. a tank or container which does not have a lower side rail or rave).</p> <p>Sideguards fitted to skeletal trailers carrying frameless tanks must incorporate a top rail, the upper edge of which should be at least 950mm from the ground or to the height of the trailers upper tank carrying surface (e.g. twist locks) if this is less than 950mm.</p> <p>C. Milk Tankers with External Cylindrical Tubes for Stowage of Hoses</p> <p>An external cylindrical tube permanently fitted longitudinally to the side of a vehicle and intended for the stowage of a hose, can for the purpose of the sideguard positional requirements be considered part of the body.</p> <p>This only applies to that side of the vehicle fitted with the cylindrical tube and where the tube completely extends over the length of the vehicle required to be fitted with sideguards. Any other type of hose support, e.g. rack or tray, should not be considered part of the bodywork.</p> <p>D. Hose Racks</p> <p>With the exception stated at "C" above, a hose rack fitted to a vehicle or trailer should be disregarded when making an assessment as to whether the body cuts the vertical plane as in the section dealing with Maximum Height to Top Edge.</p> <p>It is however permissible for the hose rack to be taken as part of the sideguard if it meets the dimensional requirements.</p>	

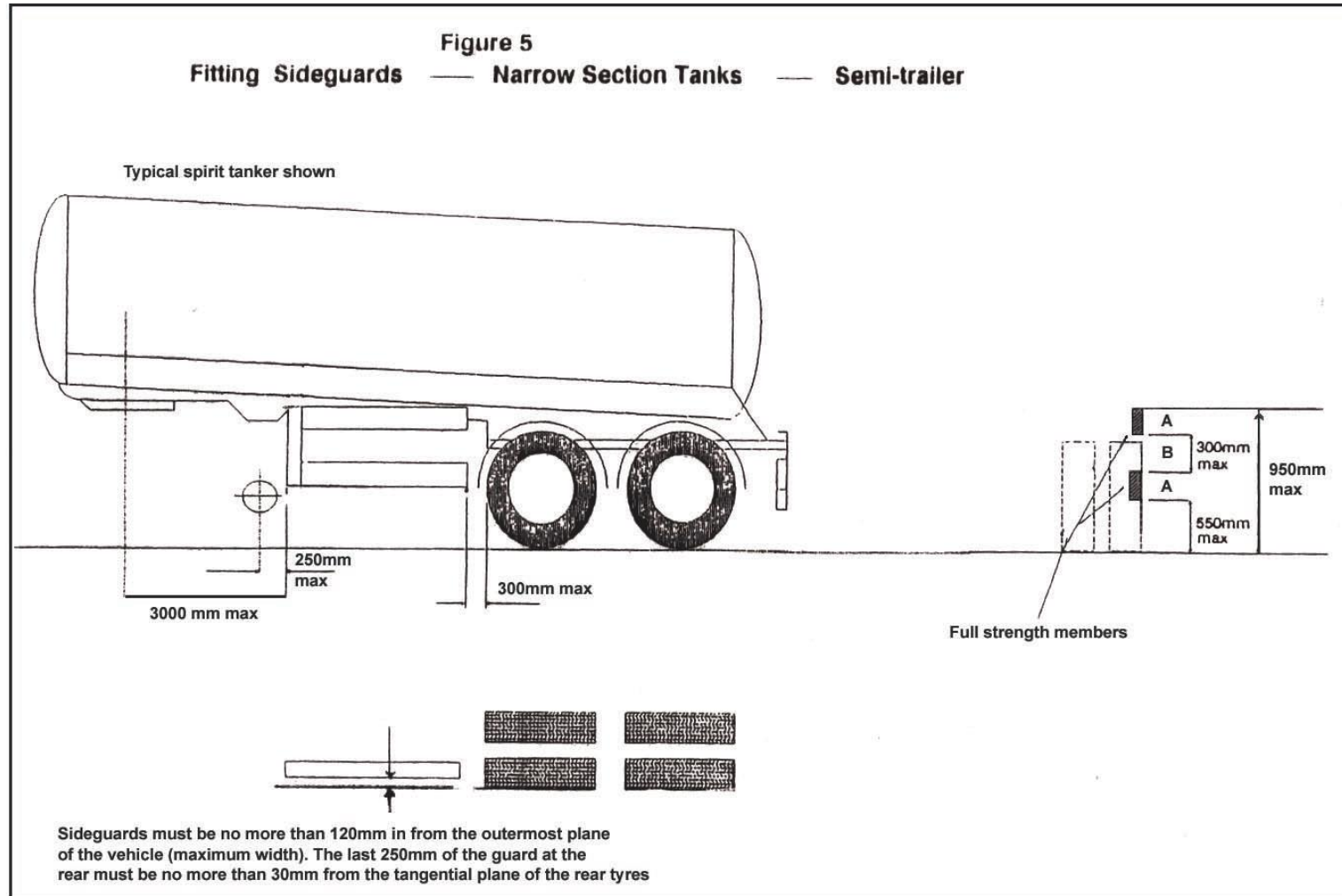
Figure 1

Fitting Sideguards to N/S when Battery Box and Meter Equipment Fitted.

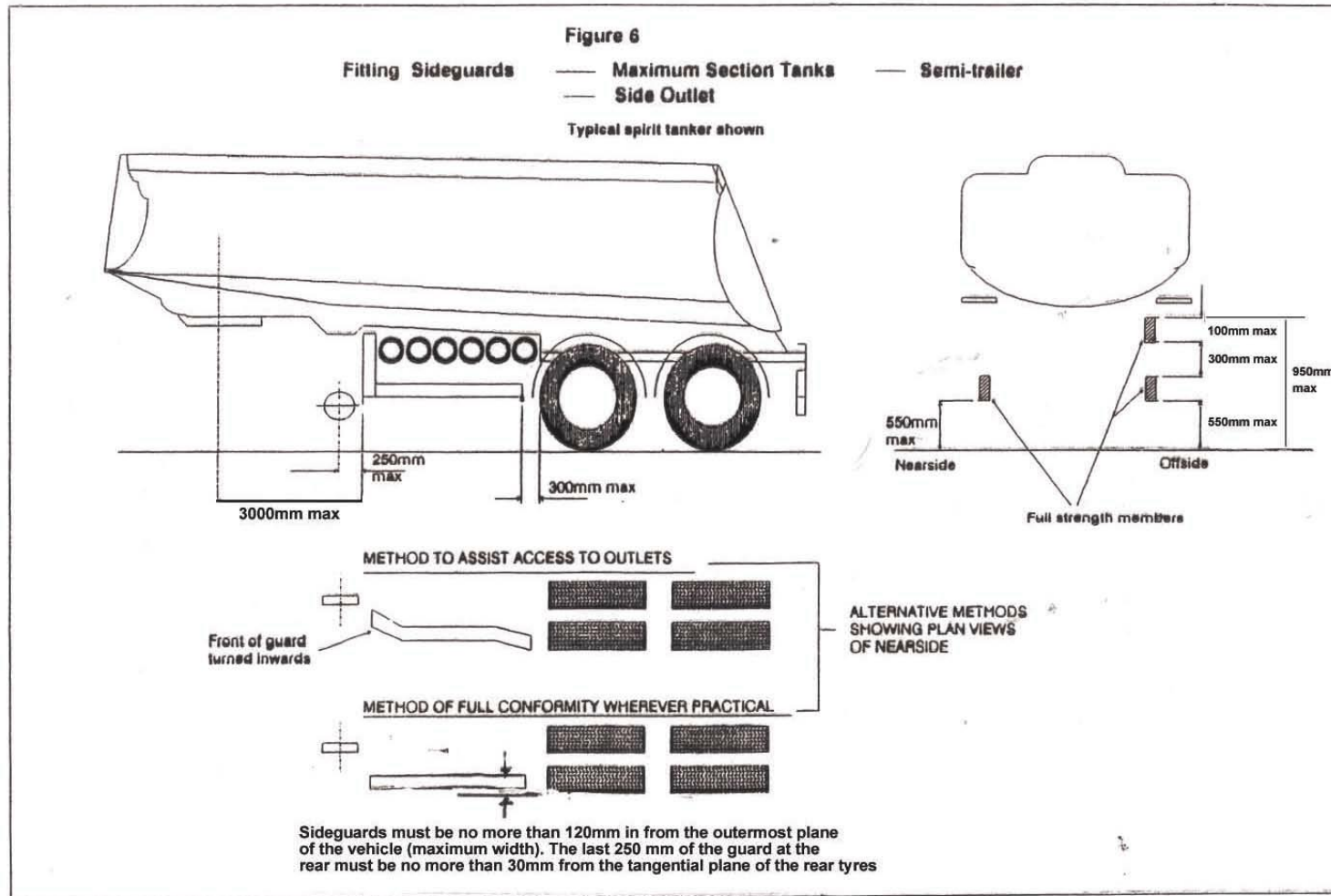








Application



31	Sideguards, Rear under Run Devices & Bumper Bars	
	Method of Inspection	Reason for Failure
	<p>Check Sideguards for:</p> <p>1. Fitment to a vehicle required to have them.</p> <p>2. Check a sideguard or bracket for:</p> <p>a. security.</p> <p>b. condition.</p> <p>c. surfaces which are smooth.</p> <p>d. external edges that are radiused.</p> <p>e. correct dimensions visually.</p> <p>f. being continuous along the vehicle length in other than accepted circumstances (See application) .</p> <p>g. overall width.</p> <p>h. the height from the ground to the lowest edge of the guard. (Not applicable to semi-trailers attached to a tractor unit where the lower edge is not horizontal with the ground, there is no requirement to separate the trailer from the tractor).</p>	<p>Sideguards:</p> <p>1. Not fitted to a vehicle required to have them fitted.</p> <p>2. A sideguard or bracket:</p> <p>a. insecure.</p> <p>b. cracked, fractured, corroded or damaged so that its effectiveness is reduced.</p> <p>c. with exposed surfaces which are not smooth (e.g. projecting brackets, jagged edges, bolt heads that are not dome shaped).</p> <p>d. with external edges that are not radiused.</p> <p>e. with incorrect dimensions.</p> <p>f. that is not continuous along the vehicle length in other than accepted circumstances.</p> <p>g. that increases the overall width of the vehicle.</p> <p>h. with more than 550mm height from the ground to the lowest edge of the guard. (vehicle unladen or semi-trailer load platform horizontal).</p>

31	Sideguards, Rear Under-Run Devices and Bumper Bars.	
Method of Inspection		Reason for Failure
<p>Check Rear Under-Run Devices are:</p> <p>3. Fitted to a vehicle required to have one.</p> <p>4. Check a Rear Under-Run device for:</p> <ul style="list-style-type: none"> a. security. b. condition. c. jagged edges. d. being no more than 550mm from the ground unladen. e. not extending beyond the outer edge of the outermost rear tyre. f. the outer end of the device being no more than 100mm inboard of the outer edge of the outermost rear tyre (or not more than 300mm inboard where a demountable body is fitted). g. not extending beyond the outermost width of the vehicle which is fitted with a tail lift. h. complete. <p>5. Check a bumper bar or bracket for:</p> <ul style="list-style-type: none"> a. security. b. jagged or projecting edges. 		<p>Rear Under-Run Device:</p> <p>3. Not fitted to a vehicle required to have one fitted.</p> <p>4. A Rear Under-Run device:</p> <ul style="list-style-type: none"> a. insecure. b. cracked, fractured, corroded or damaged so that its effectiveness is reduced. c. that has a jagged edge. d. with more than 550mm ground clearance (unladen). e. which extends beyond the outer edge of the outermost rear tyre (see note in application). f. with the outer end of the device more than 100mm inboard of the outer edge of the outermost rear tyre (or more than 300mm inboard where a demountable body is fitted). g. extends beyond the outermost width of the vehicle which is fitted with a tail lift. h. incomplete. <p>5. A bumper bar or bracket which is:</p> <ul style="list-style-type: none"> a. insecure. b. has a jagged or projecting edge likely to cause injury.

32	Not Allocated
Intentionally Blank	

33	Not Allocated	
	Intentionally Blank	

34	Exhaust Systems	
Application		
<p>This inspection applies to all vehicles.</p> <p>Where a diesel engined vehicle is failed for exhaust system leaking, the smoke emission test could be affected by the induction of air into the exhaust system. When presented for retest the emission test should be rechecked.</p> <p>Check for the presence of the silencer and assess its effectiveness in reducing, so far as is reasonable, noise caused by the exhaust.</p> <p>An excessively deteriorated exhaust is not a reason for failure providing RfF 1.a and 1.b do not apply.</p>		
Method of Inspection		Reason for Failure
<p>1. Check the condition of the exhaust pipes and silencers for:</p> <p>a. security.</p> <p>b. leaks.</p> <p>c. position, so that fumes are unlikely to enter the driver's cab.</p> <p>2. Check the exhaust silencer for:</p> <p>a. presence.</p> <p>b. effectiveness.</p>		<p>1. An exhaust system:</p> <p>a. so insecure that it might fall away partially or completely when the vehicle is in use.</p> <p>b. leaking.</p> <p>c. positioned so that fumes are likely to enter the driver's cab.</p> <p>2. An exhaust silencer:</p> <p>a. missing.</p> <p>b. ineffective.</p>

35	Exhaust Emissions
	Application
<p>This inspection applies to all Diesel and other Compression Ignition engine vehicles. For Hybrid Electric Vehicles see ninth bullet point below.</p> <p>Diesel and other Compression Ignition Engines:</p> <ul style="list-style-type: none"> • Exhaust emissions must be tested using an approved and calibrated smoke meter. • Only in exceptional circumstances where it is not possible to use a smoke meter will a visual check be carried out. • If the exhaust has been deliberately modified to prevent the smoke meter from being used the test should not be completed because the exhaust smoke emissions test cannot be carried out. • Twin exhaust systems, without a balance pipe - both systems must be individually tested for smoke emissions. It may be necessary to purge the exhaust system again prior to the second check. • Supercharged engines should be tested by selecting the non-turbocharged option on the smoke meter. • The test procedure for turbocharged and non-turbocharged engines is the same. • It is not normally sufficient to run the engine with the vehicle stationary to warm it up to temperature, so the emissions should be tested as soon as possible after the vehicle arrives at the test station. • With some types of smoke meter care must be taken to ensure that the probe is correctly aligned to the exhaust gas flow (reference to meter manufacturer's instruction may be necessary). • HEVs do not require a metered smoke test or a visual smoke test as described in MOI 2. However where there is a supplementary engine used, this should be observed that it does not emit excessive smoke. If excessive smoke is observed this is an RfF. 	

35	Exhaust Emissions
	Application
<p>Some diesel smoke meters (DSM) may fail to trigger a reading when testing modern vehicles fitted with low emission diesel engines which produce very low levels of smoke. If the smoke meter does not register a reading or shows an error reading follow step one or two below as appropriate:</p> <ol style="list-style-type: none"> 1. If the DSM produces a print out, this should be marked showing that the emissions limits were tested and met but the DSM could not register the reading. This should be attached to the test card in the normal way. 2. If the DSM will not produce a printout, the tester should make a note on the bottom of the test card stating that the emissions limits were tested and met but the DSM could not register the reading. <p>Air Fuel Ratio Control (AFRC) fitted to Caterpillar engines. When the engine is stopped the control goes into an excess fuel position. When the engine is restarted the inlet manifold pressure necessary to reset the AFRC into its normal running position is normally greater than that generated during the free acceleration test. Vehicles should therefore either be checked at the start of the test if the engine has not been stopped or at the end of the test where the vehicle should be driven on the test track against the load of a partially applied brake sufficient to reset the AFRC prior to conducting the test.</p> <p>If a vehicle fails the test because the exhaust is holed the emissions must be rechecked when the vehicle is retested.</p>	

35	Exhaust Emissions	
Method of Inspection		Reason for Failure
<p>1. Free acceleration test using smoke meter</p> <p>1a.</p> <ol style="list-style-type: none"> Check that the engine is at or near normal operating temperature. Purge the inlet and exhaust systems fully by holding the engine speed steady at just below maximum governed speed for 30 seconds. Select the appropriate test programme on the smoke meter. Follow the meter prompts; depress the accelerator pedal quickly but not violently, to reach full fuel position in less than 1 second. Hold it there until a release prompt is given. If, at the end of the 1st acceleration, the smoke meter value is no more than 1.50m⁻¹ the vehicle will have met the fast pass limit. If the 1st meter reading is more than 1.50m⁻¹ further accelerations will be required, following meter prompts, up to a maximum of 6 accelerations. For vehicles first registered from 1 July 2008. If they fail the fast pass test you will need to choose the most appropriate programme for the meter to perform a full metered smoke test, should the meter only allow 3 accelerations you may need to repeat the exercise to gain the 6 accelerations required and then look for 3 consecutive results from both printouts before deciding whether the vehicle should pass or fail (It is recommended that RPC4 is chosen for this operation). <p>1b. Assess visually whether the smoke emitted from the exhaust regardless of the measured density, is likely to obscure the vision of other road users.</p>		<p>1. Statutory Smoke Meter Test</p> <p>1a.</p> <p>After a total of six accelerations have been completed, the average smoke opacity recorded for accelerations 4, 5 and 6 is more than:</p> <p>For vehicles registered prior to 1 July 2008:</p> <ul style="list-style-type: none"> • 2.5m⁻¹ for non-turbocharged engines • 3.0m⁻¹ for turbocharged engines. <p>For vehicles first registered from 1 July 2008:</p> <ul style="list-style-type: none"> • 1.5m⁻¹ for all diesel engines. <p>1b. The exhaust emits excessive smoke or vapour of any colour, to an extent likely to obscure vision.</p>

35	Exhaust Emissions	
Method of Inspection		Reason for Failure
<p>2. Visual emission test</p> <p>2a.</p> <ul style="list-style-type: none"> i. Only in exceptional circumstances where it is not possible to use a smoke meter will a visual check be carried out. The visual test is only to be used when it is not possible to use the smoke meter or where risk to health and safety would arise. The procedure is the same for supercharged, turbocharged and non-turbocharged engines. ii. With the engine at or near normal operating temperature check the density of the exhaust emission visually. iii. Ask the driver to depress the accelerator pedal quickly but not violently, to reach full fuel position in less than 1 second. Immediately release when the engine reaches its maximum governed speed, allow the engine to return to idle speed. iv. Ignore smoke from the first acceleration. v. Repeat up to a maximum of six times if necessary until the exhaust smoke is considered to be acceptable for two successive accelerations. <p>2b. Assess whether the smoke emitted from the exhaust, regardless of the measured density, is likely to obscure the vision of other road users.</p> <p>3. Check the vehicle for presence of emission control systems fitted as standard.</p>		<p>2. Statutory visual test</p> <p>2a.</p> <p>After a maximum of six accelerations the exhaust emits smoke of a level greater than that of equivalent metered levels.</p> <p>2b. The exhaust emits excessive smoke or vapour, of any colour, to an extent likely to obscure vision.</p> <p>Note: The criterion is density and not volume of smoke. The description 'dense smoke' includes any smoke or vapour which largely obscures vision.</p> <p>3. A Catalytic converter, particulate filter or selective catalytic reduction system missing where it was fitted as standard.</p>

36	Wings and Wheel Arches
Application	
Wings and Wheel Arches	
This inspection applies to all vehicles and trailers.	
<p>Road wheels must have associated with them equipment or part of the body which, as far as is practicable, catches mud or water thrown up by the wheels as they rotate. Check that the wing covers the whole width of the tyre especially where wide “Super Single” tyres are fitted to the front axle.</p>	
<p>With regard to the requirements for wings and wheel arches, a vehicle may be passed without wings when a semi-trailer/body/container is carried which fulfils the requirements of a wing i.e. a vehicle presented for annual test towing a trailer and the wing tops are not fitted on the vehicle due to the trailer being very close to the tyres. This is not a reason for failure for wings providing the rotation of the wheels does not permit mud or water to be thrown directly on the road surface.</p>	
Mud flaps	
<p>If a mud flap is an extension to a wing or similar fitting, a missing or damaged mud flap is an RfF. Any mud flap fitted to a vehicle must be made of an approved spray suppressant material.</p>	
<p>Where a mud flap is fitted in place of a wing, i.e. it serves the purpose of a wing (as on some semi-trailers) it must be treated as a wing and be securely fixed to prevent excessive movement.</p>	

36

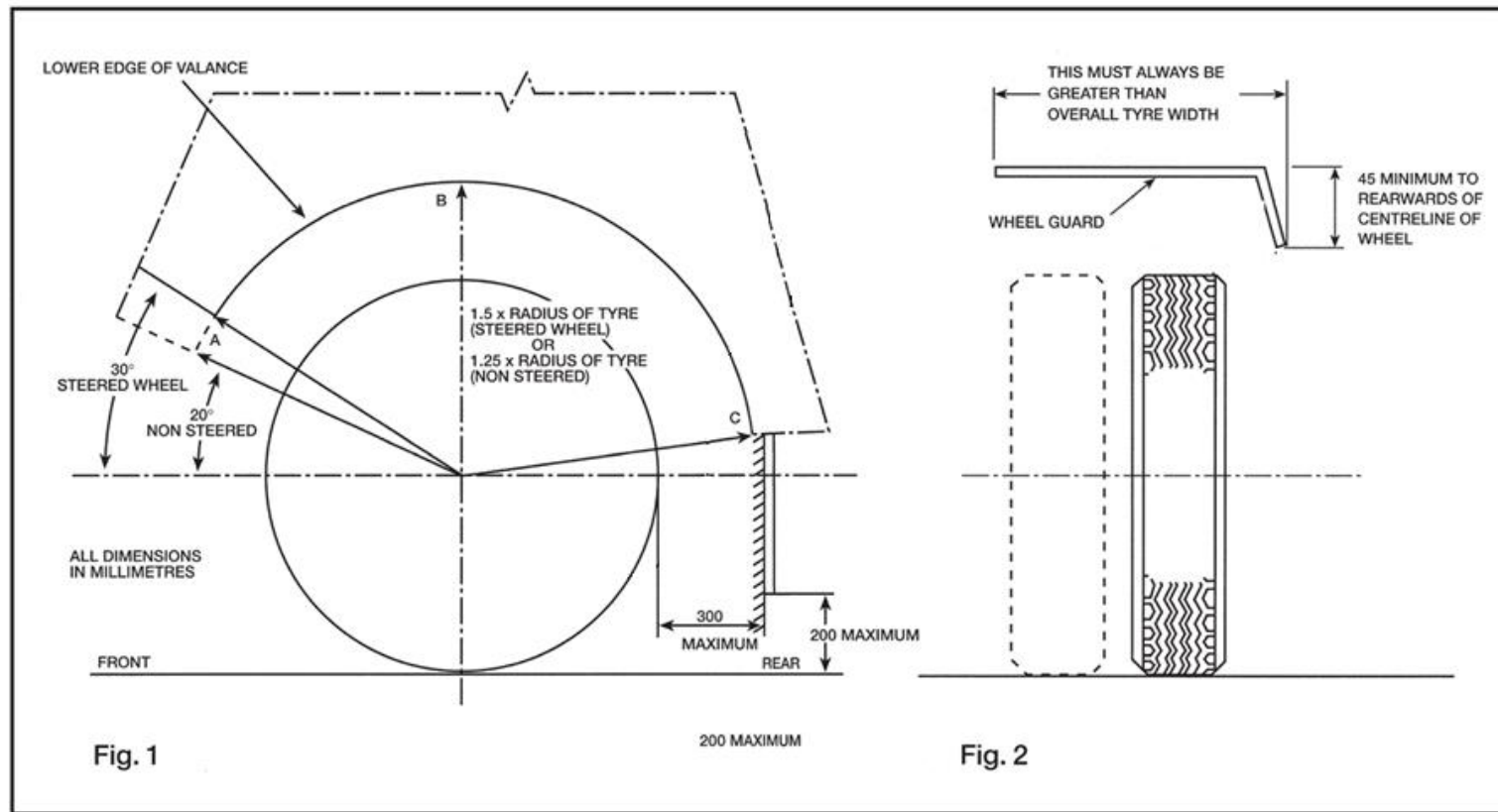
Wings and Wheel Arches

Application

Conventional Mudwing Types of Wheel Guards

Single Axle Arrangements or Multi-axle arrangements where distance between wheels is greater than 300mm.

The lower edge of the outer valance shall not exceed 1.5 x tyre radius on steerable wheels or 1.25 x tyre radius on non-steerable wheels at points A, B and C



36	Wings and Wheel Arches
Application	
<p>Wheel Flaps Wheel flaps must be fitted behind each wheel and should cover the full breadth of the tyre(s) and be mounted to the wing without gaps that would permit the exit of spray.</p> <p>Wheel Guards Where the wheel guard consists of several components there should be no gaps between or within individual parts when assembled that will permit the exit of spray when the vehicle is in motion.</p>	

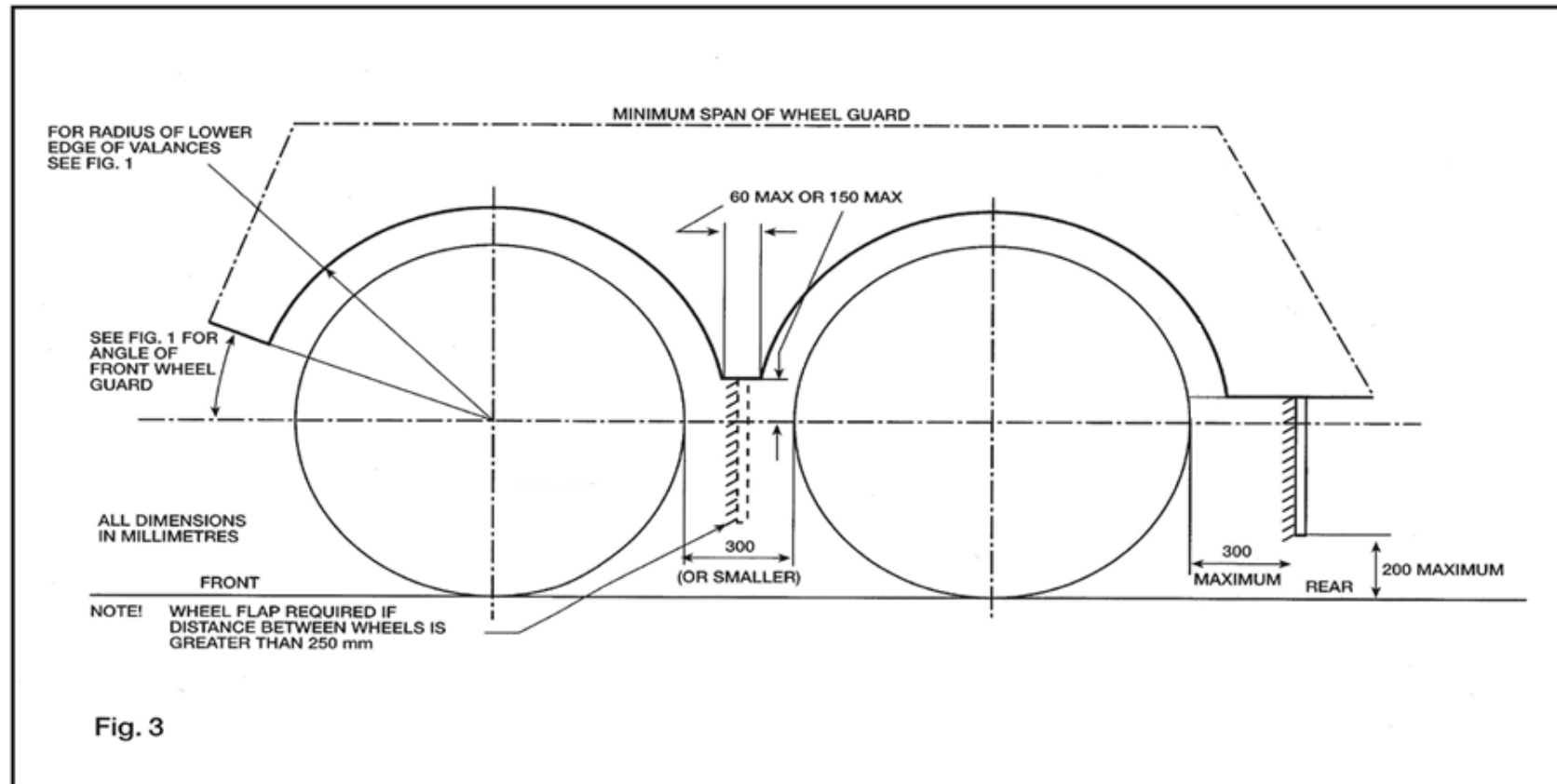
36

Wings and Wheel Arches

Application

Conventional Mudwing Types of Wheel Guards

Multi-axle arrangements where distance between wheels is 300mm or less



The lower edge of the outer valance shall not exceed $1.5 \times$ tyre radius on steerable wheels or $1.25 \times$ tyre radius on non-steerable wheels at points A, B and C as in the single axle diagram.

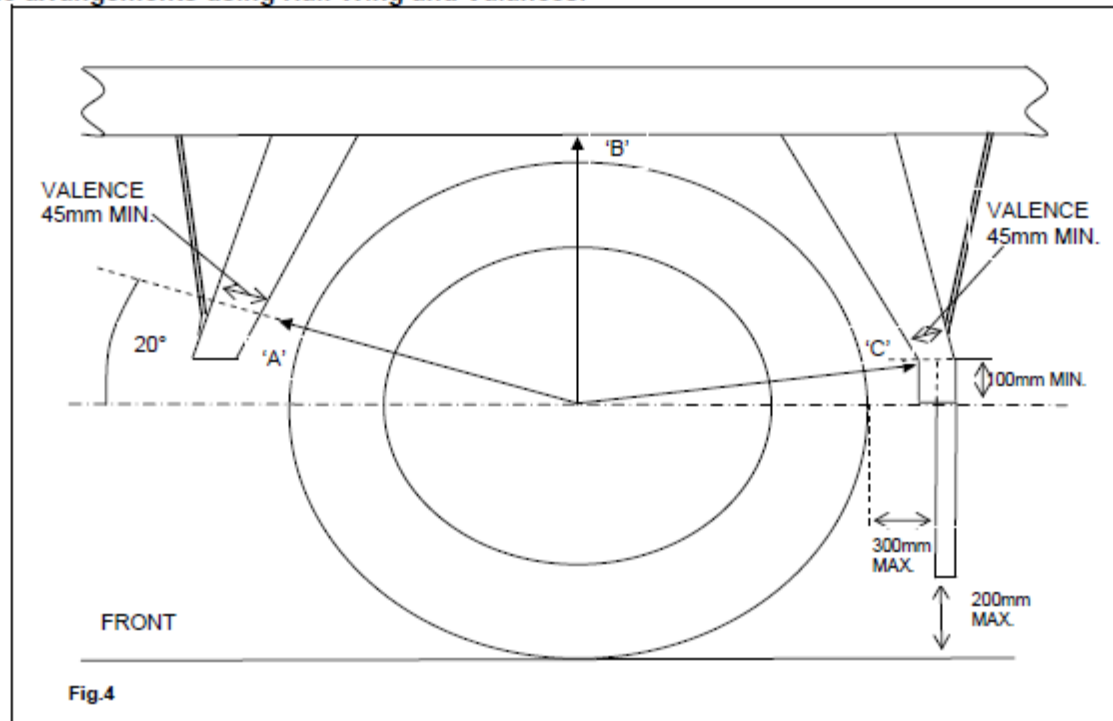
36	Wings and Wheel Arches
Application	
Wheel Flaps	
<p>Wheel flaps should cover the full breadth of the tyre(s) and be mounted to the wing without gaps that would permit the exit of spray. Wheel flaps are required behind each wheel where the distance between tyres on a group of multiple axles is 250mm or more. Up to 290mm can be accepted where it is clear that the limit of 249mm is exceeded only by tyre wear.</p>	
<p>Where the distance between tyres on a group of axles is less than 250mm, wheel flaps are only required on the rearmost axle of each group.</p>	
Wheel Guards	
<p>Where the wheel guard consists of several components there should be no gaps between or within individual parts when assembled that will permit the exit of spray when the vehicle is in motion.</p>	

36

Wings and Wheel Arches

Application

Single or Multi-axle arrangements using Half Wing and Valances.



The lower edge of the outer valance shall not exceed 1.5 x tyre radius on steerable wheels or 1.25 x tyre radius on non-steerable wheels at points A, B and C.

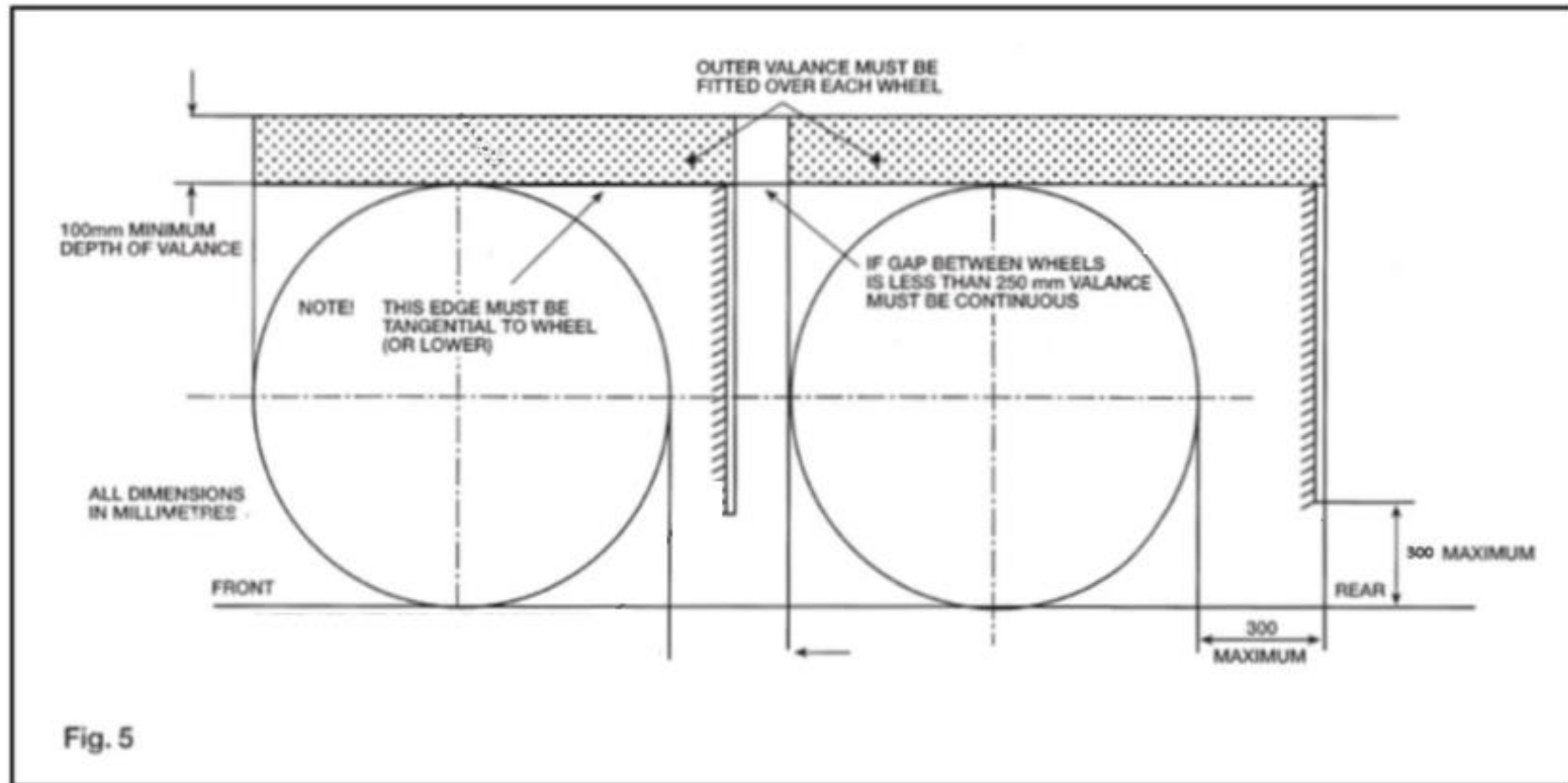
36	Wings and Wheel Arches
Application	
Wheel Flaps	
<p>Wheel flaps should cover the full breadth of the tyre(s) and be mounted to the wing without gaps that would permit the exit of spray. Wheel flaps are required behind each wheel where the distance between tyres on a group of multiple axles is 250mm or more. Up to 290mm can be accepted where it is clear that the limit of 249mm is exceeded only by tyre wear.</p>	
<p>Where the distance between tyres on a group of axles is less than 250mm, wheel flaps are only required on the rearmost axle of each group.</p>	
Wheel Guards	
<p>Where the wheel guard consists of several components there should be no gaps between or within individual parts when assembled that will permit the exit of spray when the vehicle is in motion.</p>	

36

Wings and Wheel Arches

Application

Flap and Valance System for Non-Steered Axles



The valance should cover the area extending from the underside of the body to at least a line formed by the tangent to the top of the tyres and between the outer edge of the wheel flap, with which it should form a seal and the vertical plane formed by the tangent at the front of the tyre. An outer valance must be fitted over each wheel.

36	Wings and Wheel Arches	
Method of Inspection	Reason for Failure	
<p>Wings and Wheel Arches.</p> <p>1. Check all Wings or Wheel Arches for:</p> <ul style="list-style-type: none"> a. presence and security or, in the case of a mud flap fitted as a wing, it is restrained or constructed to stop wind lift. b. corrosion and distortion. c. sharp edges that are likely to cause injury. d. rubbing on a tyre. e. covering the whole width of a tyre when the wheel is in the straight ahead position. 	<p>Wings and Wheel Arches.</p> <p>1. A Wing or Wheel Arch:</p> <ul style="list-style-type: none"> a. missing or so insecure that it can fall off or rub on the tyre, or, in the case of a mud flap fitted as a wing, it is not restrained or constructed to stop wind lift. b. so badly corroded or distorted to stop it acting as an adequate shield. c. that has sharp edges that are likely to cause injury. d. which is rubbing on a tyre. e. which does not cover the whole width of a tyre when the wheel is in the straight ahead position. 	

37	Department Plate	
Application		
This inspection applies to all registered goods vehicles manufactured after 1 January 1973 with a gross design weight exceeding 3,500kg.		
The department plate must be affixed securely to the nearside of the vehicle in a clearly visible position.		
Method of Inspection		Reason for Failure
1. Check that there is a department plate fitted to the vehicle, and check for: a. presence. b. compliance.		1. A department plate: a. missing. b. non-compliant.

38	Registration Plates	
Application		
<p>This inspection applies to all registered motorised vehicles.</p> <p>A registration plate should be easily legible to a person standing approximately 20m from the front/rear of the vehicle</p> <p>The vehicle chassis number or trailer identification mark must be permanently fixed to the vehicle/trailer in an accessible, easy to read position.</p>		
Method of Inspection		Reason for Failure
<p>1. Check that there is a registration plate at both the front and the rear of the vehicle, and check each one for:</p> <p>a. presence.</p> <p>b. security.</p> <p>c. compliant.</p> <p>2. Check the registration/chassis mark for:</p> <p>a. presence.</p> <p>b. legibility</p>		<p>1. A registration plate:</p> <p>a. missing.</p> <p>b. insecure.</p> <p>c. non-compliant.</p> <p>2. A registration mark:</p> <p>a. missing.</p> <p>b. illegible.</p>

39	Spare Wheel Carrier	
Application		
This inspection applies to all vehicles and trailers fitted with a spare wheel or carrier.		
Method of Inspection	Reason for Failure	
1. Check the spare wheel and carrier are secure, free from damage, and are correctly positioned.	1. A spare wheel or carrier so insecure, damaged or positioned so that either is likely to fall from the vehicle or affect the safe operation of the vehicle or trailer.	

40	Vehicle to Trailer Coupling
	Application
<p>This examination applies to all vehicles fitted with a trailer coupling (at the front or at the rear) and to all trailers. This inspection also covers fifth wheel couplings mounted on converter dollies.</p>	
<p>To check for relative movement between the tractor and trailer apply the trailer brakes and ask the driver to lightly shunt the tractor back and forth.</p>	
<p>When assessing wear/lift between bracket/bush or pin/bush consideration should be given to those bushes which have been designed to provide a cushioning effect in order to relieve shock loadings. The load when the bush is fully compressed is taken from the main plate directly onto the mounting bracket and therefore some degree of controlled lift, up to 8mm in some units is acceptable in the trunnion pin and bush (Up to 12mm lateral movement is acceptable in some cases in fifth wheel couplings, lateral movement of draw-bar turntable top plate movement relative to the lower plate should not exceed 10mm).</p>	
<p>Wear should be considered excessive if a drawing hitch, bar, hook, eye, ball or ball socket has the metal reduced to $\frac{3}{4}$ of its original thickness.</p>	
<p>If the inspection of the fifth wheel jaws is carried out without a trailer attached, then wear on the jaws in excess of 6mm would be considered a Reason for Failure.</p>	
<p>Examples of a secondary locking devices are:</p>	
<p>a. A dog clip and chain.</p>	
<p>b. Spring loaded pin between the operating handle and the body of the 5th wheel housing.</p>	
<p>c. Lever dropped behind the operating handle.</p>	
<p>An optional third 5th wheel locking device such as a dog clip with a chain or wire from the secondary clip to a hole in the handle could be fitted. The chain or wire may only be there to assist the operator to unlock the secondary device. The absence of a chain/wire is not an RfF if its only purpose is to prevent loss of the dog clip.</p>	

40	Vehicle to Trailer Coupling	
Method of Inspection		Reason for failure
<p>1. Check the drawing hitch, bar, hook, eye, ball or ball, socket; or a fifth wheel king pin and its mounting or a turntable for:</p> <ul style="list-style-type: none"> a. wear. b. distortion. c. cracking. d. security. e. movement. f. clearance between upper and lower plates of a turntable. g. presence and operation of locking device. <p>2. Check the Fifth Wheel Coupling for:</p> <ul style="list-style-type: none"> a. security between the fifth wheel and its mounting sub-frame and or chassis. b. all mandatory bolts are secure and present. c. wear and adjustment of the jaws. d. the safety locking device being operative. e. wear in an articulating bracket or pivot and its security. f. cracks in a load bearing member. g. security and wear of any operating members to the extent the coupling is safe 		<p>1. A drawing hitch, bar, hook, eye, ball or ball socket; or a fifth wheel king pin and its mounting or a turntable which:</p> <ul style="list-style-type: none"> a. is excessively worn. b. is seriously deformed impairing its effectiveness and or weakens the component. *c. is cracked. d. is insecure. *e. has excessive movement between the vehicle and trailer. f. a turntable which has no clearance between mating surfaces, i.e. evidence of contact between the surfaces. g. has a missing, damaged, seized and or inadequate safety or locking device. <p>2. A Fifth Wheel Coupling with:</p> <ul style="list-style-type: none"> a. insecurity between the fifth wheel and its mounting sub-frame and or chassis. b. a mandatory bolt loose or missing. c. jaws so worn or out of adjustment that the trailer kingpin might not be securely held. d. a safety locking device is inoperative. e. an articulating bracket or pivot excessively worn or insecure. f. any crack in a load bearing member. g. an operating member insecure or worn to such an extent the coupling is unsafe.

41	Trailer Parking, Emergency Brakes and Air Line Connections
Application	
<p>Parking and Emergency Brakes This inspection applies to all trailers.</p> <p>Air Line Connections This inspection applies to all trailers of whatever age and to drawing vehicles first used from 1 April 1989.</p> <p>Emergency Brake and Air Line Connections:</p> <ul style="list-style-type: none"> • Ensure that the air reservoirs on the drawing vehicle are fully charged. • With the vehicle parking brake on and the trailer parking brake off, ask the driver to disconnect the service (yellow) and emergency (red) brake lines. • Check, on vehicles and trailers fitted with "C" type couplings, that the coupling in the service (yellow) line - either fitted to the trailer or in the line itself - is fitted with an operating adaptor which can open the self-sealing coupling in the connector from the drawing vehicle. • Check that the operating adaptor lifts the indicator on the test coupling by the correct amount. The wasted portion (coloured section) of the indicator must be exposed, but no more than this. This does not include additional couplings which may be used on trailers such as extendable types. • Check that any brake line on the drawing vehicle is not fitted with a manual shut-off tap. Additional taps fitted to extendable trailers are not included in this inspection. <p><i>The driver must be instructed to reconnect all couplings before the vehicle is moved</i></p> <p>When presented, the tractor unit must be compatible with the trailer and have a warning lamp to indicate that trailer ABS is working (This may be a combined ABS/EBS warning light). If presented with a compatible EBS tractor unit, if the red line is dropped, the brakes may not come on. To apply the brakes disconnect the ISO 7638 electrical connection. Ensure that the handbrake is applied on the tractor unit before disconnecting the red line and that safe working practices are followed.</p> <p>Provided self-sealing couplings are used on the tractor couplings it does not matter whether the air adaptor couplings are the conventional way or reversed.</p> <p>Some park brake controls also deplete the air suspension systems when the red airline is removed, this is acceptable provided it does not drain the air brake reservoir.</p>	

41	Trailer Parking, Emergency Brakes and Air Line Connections	
Method of Inspection		Reason for Failure
<p>1. Check trailer parking brake:</p> <ul style="list-style-type: none"> a. operates on at least two road wheels. b. can be securely set. c. mechanism is secure, is not cracked, excessively worn or badly corroded. d. when fully applied, check that the mechanism is not at the end of its working travel and there is no fouling of adjacent parts. <p>2. Check the Trailer emergency brake to ensure that the trailer brakes are automatically applied when the emergency line is disconnected.</p> <p>3. Check operating adaptor, to open self-sealing coupling:</p> <ul style="list-style-type: none"> a. presence in service (yellow) line. b. produces correct amount of lift. <p>4. Check that any brake line on the drawing vehicle is not fitted with a manual shut-off tap.</p>		<p>1. Trailer parking brake:</p> <ul style="list-style-type: none"> **a. does not operate on at least two wheels. **b. cannot be securely set. c. mechanism insecure, cracked, excessively worn or badly corroded. d. when fully applied the mechanism is at the end of its working travel or it is fouling adjacent parts of the vehicle. <p>**2. Trailer emergency brake not applied automatically when the emergency (red) brake line is disconnected (see application note).</p> <p>3. Operating adaptor, to open self-sealing coupling:</p> <ul style="list-style-type: none"> a. not fitted in service (yellow) line. *b. produces incorrect amount of lift. <p>**4. An airline fitted with a manual shut off tap.</p>

42	Trailer Landing Legs	
Application		
This inspection applies to all trailers fitted with landing legs.		
Method of Inspection		Reason for Failure
1. Check for security of the landing leg and any component part.		1. A landing leg or any component part is missing or so insecure that it is likely to fall from the vehicle.

43	Cab Security
	Application
<p>This inspection applies to all vehicles.</p> <p>All means of securing the cab are to be inspected where practical.</p> <p>Movement which is designed into mountings should not be confused with excessive wear.</p> <p>Cab security inspection applies to the primary and secondary locking devices for tilt cabs</p> <p>The inspection does not cover air leaks from cab air suspension unless it affects the brakes. This would be an RfF within the appropriate brake section.</p>	
Method of Inspection	Reason for Failure
<p>1.</p> <ul style="list-style-type: none"> a. Check for security and condition by pushing and rocking the cab by hand where practical. b. On tilt cabs examine the retention and/or locking devices for damage and security. c. Check the front hinge pins and/or brackets for wear such that safe control of the vehicle is not affected. d. Check there is no excessive corrosion or damage to a load bearing member which seriously reduces its strength near the cab mountings. e. Visually check wind deflectors and other cab mounted accessories for security. 	<p>1.</p> <ul style="list-style-type: none"> **a. Any insecurity that is likely to affect the drivers control of the vehicle. b. A retention and/or locking device on a tilt cab missing or defective. c. Wear of front hinge pins and/or brackets such that safe control of the vehicle may be impaired. d. Excessive corrosion or damage to a load bearing member which seriously reduces its strength near the cab mountings. e. A wind deflector or other accessory so obviously insecure that it is likely to become detached.

44	Cab Doors	
	Application	
This application applies to all vehicles		
All doors are to be in place and operational as manufactured. On security vehicles this door may be fitted so that it does not open directly into the cab.		
	Method of Inspection	Reason for Failure
	1. Check that a door: a. is fitted. b. can be opened. c. is not so worn or damaged that the door is very difficult to open or close. d. opens and closes and check that they will not open inadvertently.	1. A Door which: a. is missing. b. cannot be opened. c. is worn or damaged so that it is very difficult to open or close. d. will not remain closed or is likely to fly open inadvertently (If a door fitted with a two position catch will only engage in the first or semi-shut position, this will be regarded as a reason for failure).

45 Cab Floors and Steps	
Application	
This inspection applies to all vehicles.	
Method of Inspection	Reason for Failure
1. Examine the condition of the cab floor and internal wheel arches. 2. Examine the condition and security of the steps to cab.	1. A cab floor or internal wheel arch which is so badly deteriorated or insecure that it would impair the driver's control or is likely to cause a danger to any occupant. 2. Any step or step ring so insecure or dangerous that it is likely to cause injury.

46	Seats
Application	
This inspection applies to all vehicles.	
When checking the driver's seat adjustment it is not necessary to check that the seat can be secured in all possible positions.	
In the case of electrically adjusted seats , it is not necessary to check any 'memory position' function.	
Method of Inspection	Reason for Failure
1. Check the driver's seat for condition and security.	*1. A driver's seat so insecure or in such a condition that it could cause the driver to lose control of the vehicle.
2. Check that the driver's seat position can be adjusted forwards and backwards and secured in the selected positions.	2. The driver's seat fore and aft adjustment mechanism not functioning as intended.
3. Check all passenger seats for security and that the back rest can be secured in the upright position.	3. A passenger seat insecure or a back rest that cannot be secured in the upright position.

47	Security of Body, Containers and Crane Support Legs
Application	
<p>Security of Body: This inspection applies to all vehicles and trailers fitted with a body.</p> <p>The inspection covers:</p> <ul style="list-style-type: none"> • all fixings (e.g. brackets) securing the body to the chassis or to a sub-frame or supporting members. • fastenings e.g. securing bolts, rivets or welds for the fixings. • structural (stressed) panels. <p>Defective fastenings do not necessarily mean that the body is insecure. The whole structure must be assessed and a failure will only be justified where sufficient bolts, rivets and welds etc. are loose or defective to allow the body to move enough to cause a hazard for other road users.</p> <p>Some designs of body mounting allow a limited amount of flexing between the body and chassis. This must not be confused with insecurity. On body mountings with tie-bars the securing nut on the tie-bar is correctly secured with a relatively low torque setting and this should not be mistaken for looseness.</p> <p>Coach bolt failure due to corrosion may not be obvious, as the failed section may be in a position where it cannot be seen. Care should be taken to check that there is no sign of an abnormal movement of the structure which would indicate coach bolt failure.</p> <p>Security of Containers This inspection applies to all vehicles and trailers constructed or adapted to carry removable shipping containers, whether a container is mounted or not (a dual purpose flatbed trailer from which all twist locks have been removed is not subject to this inspection). A secondary locking device is something that stops the primary fastening device coming open accidentally when the vehicle is in motion. To be effective it must give enough resistance to light hand pressure to remain closed.</p> <p>Support Bolsters and Structures Presenters should be asked to set any moveable supports or bolsters to a deployed position wherever possible prior to the commencement of the test to assist inspection. The presenter should reset them after the test within British legal length requirements before leaving the test station.</p> <p>Security of Crane Support Legs This inspection applies to all vehicles and trailers fitted with supporting legs for loading cranes. This inspection only applies where retaining devices were originally fitted. A suitable alternative retaining device is acceptable provided the support leg is adequately secured.</p>	

47	Security of Body, Containers and Crane Support Legs	
	Method of Inspection	Reason for Failure
	<p>Security of Body</p> <p>1. Check the body for:</p> <ul style="list-style-type: none">a. displacement relative to the chassis.b. security. <p>2. Check load bearing members for cracks, corrosion or damage that seriously weaken the body.</p> <p>Security of containers</p> <p>3. Check a container fastening device is:</p> <ul style="list-style-type: none">a. present.b. secure.c. complete.d. free to move.e. fitted with an effective secondary locking device e.g. screw, detent or chain and clip.f. in such a condition that a container is secured by it. <p>4. Check support bolster or structure for:</p> <ul style="list-style-type: none">a. security, cracks, corrosion or damage such that a container is supported and secured by it.b. presence of locking pins or other securing method incorporating an effective secondary locking device. <p>Security of crane support legs</p> <p>5. Check Crane Support Legs for:</p> <ul style="list-style-type: none">a. security.b. retaining device present, secure and in a condition that it would retain the leg.	<p>Security of Body</p> <p>1. Body:</p> <ul style="list-style-type: none">a. excessively displaced relative to the chassis.b. insecure. <p>2. A load bearing member so cracked, corroded or damaged that the body is seriously weakened.</p> <p>Security of containers</p> <p>3. A container fastening device:</p> <ul style="list-style-type: none">a. missing when another of a matched pair is present.b. insecure.c. incomplete.d. seized.e. not fitted with an effective secondary locking device.f. in such a condition that a container is unlikely to be secured by it. <p>4. A support bolster or structure:</p> <ul style="list-style-type: none">a. insecure, cracked, corroded or damaged such that a container is unlikely to be supported and secured by it.b. not fitted with locking pins or other securing method incorporating an effective secondary locking device. <p>Security of crane support legs</p> <p>5. A Crane Support Legs:</p> <ul style="list-style-type: none">a. insecure.b. retaining device missing, insecure or in a condition that it would not adequately retain the leg.

48	Condition of Body	
	Application	
	<p>This inspection applies to all vehicles.</p> <p>Check for defective items which would make the vehicle dangerous to other road users and pedestrians. The cumulative effect of any defects found must be considered or their influence on other items. Superficial damage which does not affect the strength of a component or which does not pose a danger to other road users is not a reason for failure.</p> <p>Check for any insecurity of glass panels or sharp edged glass on vehicles such as mobile shops and ice cream vans.</p>	
	Method of Inspection	Reason for Failure
	<p>1. Check any headboard, rave, cross or longitudinal member, hinge or retaining device, tipping gear, glass panel or any part of the body designed to carry or contain the load (including the floor and main support pillars) for:</p> <ul style="list-style-type: none"> a. security. b. fractures or cracks. c. distortions, excessive wear or damage. <p>2. Check for leaks from the load carrying compartment.</p>	<p>1. Any headboard, rave, cross or longitudinal member, hinge or retaining device, tipping gear, glass panel or any part of the body designed to carry or contain the load (including the floor and main support pillars):</p> <ul style="list-style-type: none"> a. insecure. b. fractured or cracked. c. distorted, excessively worn or damaged. <p>and which in each case would make the vehicle dangerous to other road users and pedestrians.</p> <p>2. A leak from the load carrying compartment.</p>

49	Not Allocated	
	Intentionally Blank	

50	Condition of Chassis
	Application
	<p>This inspection applies to all vehicles and trailers.</p> <p>For integral construction the term chassis should also be taken to apply to the underframe. For vehicles without a chassis those parts of the body must be examined which take the place of the chassis.</p> <p>A missing chassis cross member is not a reason for failure but it is subject to an alteration procedure which may result in a vehicle requiring an engineer's report.</p> <p>When assessing corrosion it must only be regarded as a failure if it is sufficiently advanced to obviously impair the strength of a load bearing member.</p> <p>RfF 2 also includes sliding bogies and their locking mechanisms. It does not include the operating mechanism to move the bogie (these are normally air brake chambers) unless detachment is likely when any other dangerous defect should be used.</p> <p>Seddon 6 x 2 has a 'H' section cross member fitted forward of the drive axle, there are 2 holes in the bottom flange on each side of the chassis frame and cross member which were originally for securing the steel spring suspension front spring bracket to the chassis frame. When air suspension is fitted there is no requirement to fit bolts in these 2 holes.</p>

50	Condition of Chassis	
Method of Inspection		Reason for Failure
<p>1. Check all main members, cross members and outriggers which have load restraining devices attached (e.g. twist locks) for:</p> <ul style="list-style-type: none"> a. fractures or cracks. b. advanced corrosion. c. deformation. <p>2. Check frame and/or cross member fastenings for:</p> <ul style="list-style-type: none"> a. security of flitch plates and fastenings. b. condition of welding. <p>3. On integral bodied vehicles and trailers where the body panels provide an important part of the strength of the vehicle check any Integral body replacement panels:</p> <ul style="list-style-type: none"> a. are of a suitable material. b. are adequately secured by an appropriate method. 		<p>1. Any main or cross member or outrigger which has a load restraining device attached:</p> <ul style="list-style-type: none"> a. fractured or cracked or b. with advanced corrosion or c. deformed so that the control of the vehicle is likely to be affected or the load will become insecure. <p>2. Frame and/or cross member fastenings:</p> <ul style="list-style-type: none"> a. insecure flitch plates and/or fastenings or b. a weld breaking away so that the control of the vehicle is likely to be affected or the load will become insecure. <p>3. Integral body replacement panels:</p> <ul style="list-style-type: none"> a. of an obviously unsuitable material. b. not adequately secured by an appropriate method.

51	Engine and Transmission Mountings	
Application		
<p>This inspection applies to all vehicles, including Hybrid Electric Vehicles. Where there is separate power train equipment this should be treated as an engine/transmission.</p> <p>There will only be a failure under this item if a mounting is no longer capable of performing its function of location and support.</p> <p>Serious fractures in clutch or bell housings which affect the security of the engine or gearbox are a reason for failure.</p>		
Method of Inspection		Reason for Failure
<p>1. Check condition of mountings and sub frames and their installation to the chassis or underframe for:</p> <ul style="list-style-type: none"> a. security. b. cracks or fractures. c. deterioration. 		<p>1. Any mounting or sub frame:</p> <ul style="list-style-type: none"> a. loose. b. cracked or fractured. c. badly deteriorated.

52	Oil Leaks	
	Application	
<p>This inspection applies to all vehicles and trailers.</p> <p>Check without operating any equipment other than the engine which may be run at tick-over speed.</p> <p>Very bad oil leaks are a reason for refusing to carry out the test. If the test is suspended for this reason the presenter will be notified of this.</p> <p>Temporary means of preventing leaked oil reaching the ground such as fabricated drip trays consisting of sheet metal supported by wire strands are not acceptable. This does not apply to permanent fittings such as drip trays for feed pipes on tankers.</p> <p>Fabricated repairs to an oil pipe which effectively stop an oil leak are acceptable.</p>		
	Method of Inspection	Reason for Failure
	1. Check for leakage of any type of oil other than fuel oil.	*1. Any oil leak from any assembly which can deposit oil onto the road surface or any exhaust or braking components.

53	Axle, Stub Axles and Wheel Bearings
Application	
This inspection applies to the steered wheels of all vehicles and trailers.	
A steered axle is one which has a king pin or ball joints and can be turned to a left and right lock. An axle ceases being steered when it is fixed in the straight ahead position.	
When assessing excessive wear, play or king pin clearance (lift) account must be taken of any information given below and/or manufacturers' data.	
With the wheels on the ground king pin clearance is assessed between the stub axle upper yoke and beam axle using feeler gauges. With the wheels off the ground king pin clearance may be measured between the stub axle lower yoke and beam axle.	
For vehicles fitted with a "Hives" type thrust bearing any clearance greater than 1.6mm would be considered excessive and in the case of any other type of bearing lift greater than 1.0mm.	
King pin and bushes. Any movement outside of the manufacturers recommended limits should be considered a failure. If no manufacturers limits are available or they are unknown, any movement greater than 10mm on a 500mm diameter wheel is considered excessive. For wheels of different diameter the maximum allowable movement should be in proportion to this figure.	
Wheel bearing free play can be isolated by applying the service brake.	
Mercedes Sprinter range of vehicles have front suspension ball joints without springs , these joints are allowed up to 3.0 mm of axial play (lift) and 3.0 mm of radial play. Rejection is only justified when play exceeds the manufacturer's limits.	
On a trailer steered axle where the axle has been welded in the straight ahead position this is not a Reason for failure. If steered axles are permanently locked in the straight ahead position an engineer's report is required to demonstrate that any alterations to the vehicle have been carried out in accordance with manufacturer's instructions.	
Steered axles manufactured by BPW have a maximum clearance of 12 mm.	
Renault Mascot vehicles with a design weight of 3.5 to 6.5 tonnes have a maximum king pin clearance of 1.2 mm.	

53	Axle, Stub Axles and Wheel Bearings	
Method of Inspection		Reason for Failure
<p>1. Check the:</p> <ul style="list-style-type: none"> a. clearance between stub axle and axle beam. b. stub axle and axle beam for cracks. <p>2. Check king pin for:</p> <ul style="list-style-type: none"> a. security in axle beam. b. condition of king pin or bush. c. presence and security of retaining device. <p>3. Check Swivel joints for:</p> <ul style="list-style-type: none"> a. wear. b. security. c. presence and security of locking device. <p>4. While a wheel is rocked using wheel play detector plates in the side to side mode Check Wheel bearings for free play.</p>		<p>1. Stub axle and axle:</p> <ul style="list-style-type: none"> *a. excessive clearance between stub axle and axle beam. *b. cracked. <p>2. King pin:</p> <ul style="list-style-type: none"> *a. excessively loose in axle beam. * b. king pin or bush excessively worn. *c. retaining device missing or insecure. <p>3. Swivel joint:</p> <ul style="list-style-type: none"> *a. excessively worn. *b. insecure. *c. retaining or locking device missing or insecure. <p>*4. Wheel bearing with excessive free play.</p>

54	Transmission
Application	
This inspection applies to all vehicles including Hybrid Electric Vehicles (HEVs) and to trailers with driven axles.	
Vehicles must be in neutral gear and with any transmission brake released during this inspection.	
The presenter should be advised if any shaft or carrier locking device is missing or ineffective.	
Failure for excessive wear of a universal joint is only justified when radial movement indicates that needle roller bearings are missing from one or more cups.	
Transmission shafts include those shafts that transmit drive for HEVs.	
Propeller shaft spline wear is not a Reason for Failure.	
A power take off prop shaft universal joint is not subject to this inspection.	

54	Transmission	
Method of Inspection		Reason for Failure
<p>1. Check all vehicles for:</p> <ul style="list-style-type: none"> a. propshaft flange bolt(s) for security and presence. b. condition of any flange and its security. c. condition of a shaft bearing. d. condition of a bearing housing and its security. e. condition of universal joints. f. condition of flexible couplings. g. condition of shaft(s). h. condition of a bearing housing flexible mounting. i. transmission shaft(s) fouling another component. <p>2. Check front wheel drive shafts for:</p> <ul style="list-style-type: none"> a. condition and security of constant velocity or universal joints. b. condition, of the flexible coupling. c. condition presence and security of gaiters protecting the constant velocity joint. 		<p>1. All vehicles with:</p> <ul style="list-style-type: none"> a. a loose or missing propshaft flange bolt. b. any flange cracked or loose. c. excessive wear in a shaft bearing. d. a bearing housing insecure, cracked or fractured. e. excessive wear in a universal joint. f. deterioration of a flexible coupling such that failure is imminent. g. a seriously damaged or cracked shaft. h. deterioration of a bearing housing flexible mounting such that failure is imminent. i. evidence of a transmission shaft fouling on another component. <p>2. Front wheel drive shafts with:</p> <ul style="list-style-type: none"> a. a constant velocity or universal joint excessively worn or insecure. b. a flexible coupling severely cracked, softened or breaking up such that failure is imminent. c. a constant velocity gaiter missing, insecure, excessively damaged or severely deteriorated to the extent that it would no longer prevent the ingress of dirt etc.

55	Electrical Wiring and Equipment	
Application		
This inspection applies to all vehicles and trailers.		
<p>If the battery is only held in place by the cables and by a lip on the carrier this cannot be considered to be secure.</p> <p>Where it is not possible to inspect batteries for condition and leaks every effort should be made to inspect the area where the batteries are installed to confirm there are no signs of leakage.</p> <p>When checking the condition and security of the wiring, care needs to be taken when inspecting the high voltage systems of Hybrid Electric Vehicles. These high voltage wires are colour coded orange.</p>		
Method of Inspection		Reason for Failure
<p>1. Check all visible wiring for:</p> <p>a. condition and security.</p> <p>b. positioning so that it is unlikely to be chafed or damaged by heat.</p> <p>2. Check the battery and carrier for:</p> <p>a. security.</p> <p>b. condition.</p> <p>3. Check switches controlling obligatory lights for security and function.</p> <p>4. Check trailer electrical sockets for:</p> <p>a. security.</p> <p>b. damage or deterioration.</p> <p>5. Check all power train equipment for:</p> <p>a. security.</p> <p>b. risk of fire or injury.</p>		<p>1. Wiring:</p> <p>a. not adequately insulated or secured.</p> <p>b. positioned so that it is chafing or likely to be damaged by heat.</p> <p>2. Battery:</p> <p>a. and/or carrier insecure and likely to become displaced.</p> <p>b. case leaking.</p> <p>3. Switch controlling an obligatory light insecure or malfunctioning.</p> <p>4. A trailer electrical socket:</p> <p>a. insecure.</p> <p>b. damaged or deteriorated to the extent that the connecting lead could not be securely connected.</p> <p>5. A power train:</p> <p>a. insecure.</p> <p>b. presents a risk of fire or injury.</p>

56	Not Allocated	
	Intentionally Blank	

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Markers and Reflectors**Application****Rear Markings**

This inspection applies to the vehicles and trailers listed below which must be fitted with rear markers. The type of marking which is acceptable is shown in the table below. The type numbers refer to diagrams (1 to 13) on the following page.

Motor vehicles with a maximum gross weight exceeding 7500kg (not articulated tractors and vehicles constructed or adapted for transporting two or more boats, vehicles or vehicle bodies).

Overall Length	Acceptable type of markings for vehicles first used before 1 April 1996	Acceptable markings for vehicles first used from 1 April 1996
13m or less	1,2,3,6,7,8 or 9	6,7,8 or 9
More than 13 m	4,5,10,11,12 or 13	10,11,12, or 13

Trailers with a maximum gross weight exceeding 3500kg (not trailers constructed or adapted for transporting two or more boats, vehicles or vehicle bodies).

Overall Length of combination	Acceptable type of markings for trailers manufactured before 1 October 1995	Acceptable markings for trailers manufactured from 1 October 1995
11m or less	1,2,3,6,7,8 or 9	6,7,8 or 9
More than 11m but not more than 13m	Any type shown in the diagrams	6,7,8,9,10,11,12 or 13m
More than 13m	4,5,10,11,12 or 13	10,11,12, or 13

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Markers and Reflectors

Application

They must be fitted with the lower edge between 400mm and 1700mm from the ground.

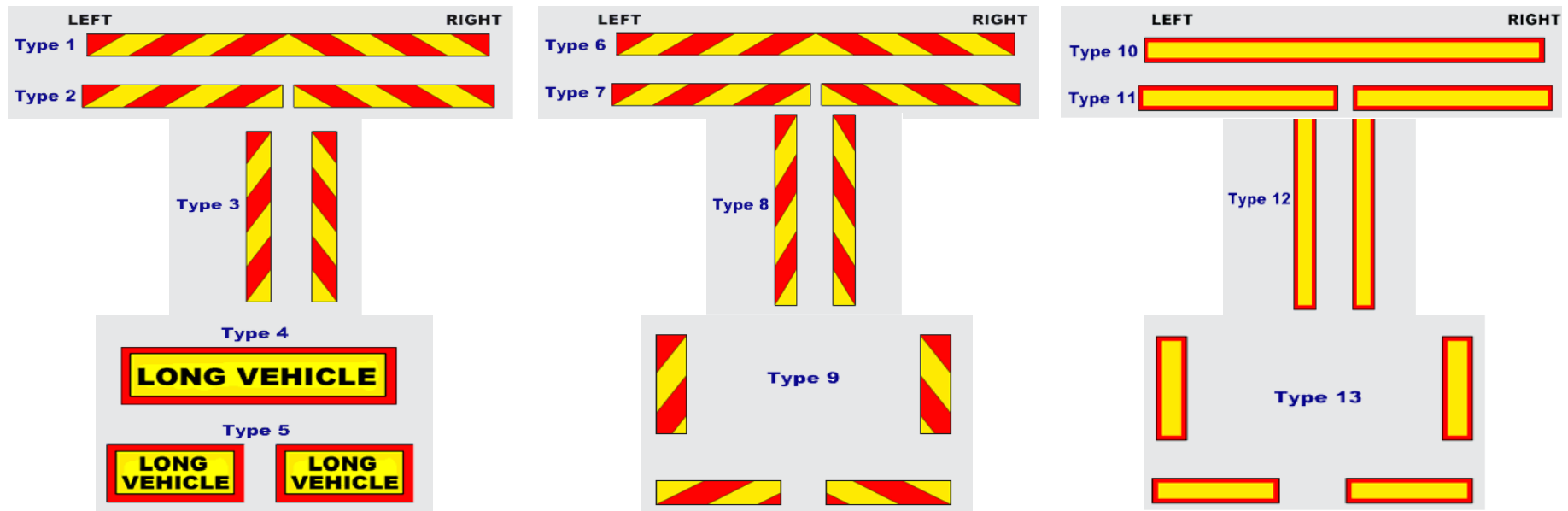
A rear marker must not be more than 10% obliterated or obstructed.

If the rear marker boards chevrons are fitted the opposite way around than shown below this is not an RfF.

When a demountable fork lift is carried on the rear of a vehicle/trailer, the fork lift is not included into the overall length of the vehicle/trailer to establish what the correct type of marking fitted is. This would also apply to refuse vehicles with bin lifting equipment fitted to the rear of the vehicle.

Rear markings on a retractable rear under-run device are not a reason for failure if the vehicle is presented towing a trailer and the vehicle rear markings are not visible.

Acceptable approval marks for rear marker boards are either BSAU152 (diagrams 1 - 5), 'E' or 'e' (diagrams 6 - 13).



57	Markers and Reflectors
Application	
<p>Reflectors</p> <p>This inspection applies to all motor vehicles and trailers but only obligatory reflectors are to be checked.</p> <ul style="list-style-type: none"> • Every motor vehicle and trailer requires 2 red reflectors facing to the rear. • Trailers manufactured from 1 October 1990 require two white reflectors facing to the front. <p>The inspection does not include a check that the reflectors have the appropriate approval mark. Reflective plates or tape are not acceptable as a substitute for a reflector. The check for position should be visual and only vehicles with reflectors and markings obviously out of position should be failed for this reason.</p> <p>Front Reflectors [trailers only]</p> <p>The maximum height from the ground is 900mm, if this is impractical it can be 1500mm.</p> <p>White front reflectors must be fitted to the front of each section of a combination trailer.</p> <p>Rear Reflectors</p> <p>The maximum height from the ground is 900mm. There are some exceptions:</p> <ul style="list-style-type: none"> • If 900mm is impractical it can be 1500mm. • For vehicles used before 1 April 1986 and trailers manufactured before 1 October 1985 the maximum height is 1525mm. <p>Trailers must be fitted with triangular (rear) reflectors, these are not acceptable on motor vehicles and must be failed using RfF 1f.</p> <p>Side reflectors</p> <p>This inspection applies to a motor vehicle.</p> <ul style="list-style-type: none"> • first used before 1 April 1986 with an overall length of more than 8m and first used from 1 April 1986 with an overall length of more than 6m. • This inspection applies to trailers with an overall length of more than 5m excluding any drawbar. <p>They must be positioned as shown in one of the two diagrams on the following page. They must be amber in colour unless within 1 m of the rear of the vehicle or trailer when they may be red.</p> <p>If less than 50% of any reflector is visible, this is a reason for failure.</p>	

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Application		
Method of Inspection	Reason for Failure	
<p>1. Check reflectors, and/or rear markers are:</p> <ul style="list-style-type: none"> a. fitted. b. correctly positioned. c. secure. d. clearly visible. e. facing the appropriate direction. f. of the correct type fitted. g. clean and effective and their function is clear. h. complete. i. the appropriate colour. 	<p>1. Reflectors, and/or rear markers:</p> <ul style="list-style-type: none"> a. missing. b. incorrectly positioned. c. insecure. d. not clearly visible. e. not facing to the appropriate direction. f. of the incorrect type fitted. g. so dirty or ineffective that its function is impaired. h. broken, damaged or incomplete to the extent that the reflecting area is significantly reduced. i. not of the appropriate colour. 	

58	Lamps
	Application
<p>The inspection of front position lamps, headlamps, rear position lamps and registration plate lamps applies to all the obligatory lamps fitted to vehicles and trailers.</p> <p>Stop lamps The inspection of stop lamps applies to any stop lamp fitted to vehicles and trailers.</p> <p>End outline Marker Lamps The inspection of end outline marker lamps applies to the obligatory marker lamps fitted to:</p> <ul style="list-style-type: none"> • vehicles first used from 1 April 1991. • trailers manufactured from 1 October 1990. <p>and which in both cases are more than 2.1m wide.</p> <p>End outline marker lamps are not required on vehicles designed to carry demountable bodies if the overall width without the body fitted is less than 2.1 m.</p> <p>The front and the rear end out line markers lamps may be combined as for example on an articulated tractor.</p> <p>The rear marker lamps on vehicles such as tippers and tankers and those designed to carry demountable bodies may be fitted at chassis level.</p> <p>It is not acceptable for a position light to be used additionally as a marker lamp, a separate lamp must be fitted.</p> <p>The end outline marker lamps fitted to the rear of a vehicle can also act as the rear most side marker lamp provided it is of the correct colour and position. It is not acceptable for a side marker lamp to operate as an outline marker lamp.</p> <p>Front marker lamps are not required to be fitted to the front section of the rear half of a combination trailer.</p> <p>Rear fog lamps The inspection of rear fog lamps applies to any vehicle or trailer fitted with a rear fog lamp. Rear fog lamps must be fitted to vehicles first used, and trailers manufactured from 1 April 1980.</p> <p>The rear fog lamps are permitted to be reciprocally incorporated with the rear position lamps providing the positional requirements are met (when the fog lamp is switched on the rear position lamps intensity increases to become the fog lamp).</p> <p>Fog lamps are not needed on modern trailers when drawn by old vehicles (see above for dates).</p> <p>Inspection of non-obligatory rear fog lamps is restricted to a check of colour (RfF 1.d) and whether the operation of the brakes affects the fog lamp (RfF 1g).</p> <p>No more than two rear fog lamps may be fitted. It is not an RfF if the vehicles rear fog lamp does not operate when a trailer is towed. However, the electrical connections to the trailer must be disconnected to confirm that the rear fog lamp/s operate when the vehicle is not towing a trailer.</p>	

58	Lamps						
	Application						
Headlamps The plain looking covers fitted to some vehicle headlamps should be treated as a lens. Main beam warning lamps are required on vehicles first used on or after 1 April 1986.							
Side marker lamps The inspection of side marker lamps applies to all obligatory side marker lamps fitted to vehicles and trailers. Side marker lamps must be fitted to: <ul style="list-style-type: none"> • vehicles with an overall length exceeding 6m first used from 1 April 1991 • trailers with an overall length exceeding 6m manufactured from 1 October 1990 • trailers with an overall length exceeding 9.15m manufactured before 1 October 1990 							
Two or more marker lamps must be fitted at each side to ensure that the following is complied with:							
<table border="1"> <tr> <td>Maximum distance of the foremost marker lamp from the front of the vehicle or trailer including any drawbar</td><td>4m</td></tr> <tr> <td>Maximum distance of the rearmost marker lamp from the rear of the vehicle and trailer</td><td>1m</td></tr> <tr> <td>Maximum distance between light emitting surfaces of adjacent marker lamps</td><td>3m or if this is not reasonable practicable 4m</td></tr> </table>		Maximum distance of the foremost marker lamp from the front of the vehicle or trailer including any drawbar	4m	Maximum distance of the rearmost marker lamp from the rear of the vehicle and trailer	1m	Maximum distance between light emitting surfaces of adjacent marker lamps	3m or if this is not reasonable practicable 4m
Maximum distance of the foremost marker lamp from the front of the vehicle or trailer including any drawbar	4m						
Maximum distance of the rearmost marker lamp from the rear of the vehicle and trailer	1m						
Maximum distance between light emitting surfaces of adjacent marker lamps	3m or if this is not reasonable practicable 4m						
Vehicles first used before 1 April 1996 are exempt from the need to fit side marker lamps if they are fitted with all of the lighting and signalling devices listed in items 1.5.7 to 1.5.20 of Annex 1 of Community Directive 76/756/EEC as amended. Motor vehicles which comply with these requirements will be fitted with a label showing a dipped headlamp and a percentage dip figure.							
Rear registration plate lamps The clear cover for the bulb is not a lens. The registration plate lamp must be fitted in a position where it can illuminate the registration plate. A lamp fitted in a position where it cannot do this is not a registration plate lamp and this should be dealt with under RfF 1a.							

58	Lamps
	Application
<p>Obscuration of lamps, provided at least 50% of a lamp is visible this is not an RfF.</p> <p>Matched Pair means that the lamps emit light of the same colour and intensity and that both lamps are of the same size and are symmetrical to one another.</p> <p>If more than one bulb or LED is fitted in the lamp at least 50% must work.</p> <p>If two or more lamps are fitted and the aggregated illuminated area occupies 60% or more of the area of the smallest rectangle circumscribing the illuminated area this should be treated as one lamp.</p> <div data-bbox="1014 539 1440 651" data-label="Image"> </div> <p>Vehicles with fork lifts fitted to the rear of the vehicle. If the fork lift has lights to replace the vehicles which may be obscured, the lights on the fork lift must comply with the annual test standards.</p> <p>The check for position should be visual and only vehicles with lamps obviously out of position should be failed for this reason (not applicable to lamps fitted to rear under-run devices that fold underneath the load deck to accommodate the attachment of a trailer).</p> <p>Before failing the operation of a lamp being affected by the operation of another lamp. The engine should be run to charge the electrical system.</p> <p>Light that bleeds through from an adjacent lamp is acceptable provided the illuminated light lens does not change colour.</p> <p>Gas discharge lamps, blue tint bulbs and lamps with neutral colour lenses are acceptable providing when lit the light emitted is white or; if it is a direction indicator is amber or in the case of a stop lamp red and are compliant.</p> <p>Normally plastic cable ties are not acceptable as the only means of securing a lamp or lamp lens however Crane Fruehauf have a side marker lamp arrangement which includes a cable tie as an integral part of the design to provide some flexibility and to avoid damage to the marker lights. This arrangement is acceptable on Crane Fruehauf trailers and on any other makes of vehicle or trailer where a similar lamp system is fitted.</p> <p>Vehicles equipped with dim dip require the front position lamps to be checked for operation with the ignition switched off</p>	

58						
Lamps						
Application						
A summary of the main requirements for each type of lamp is shown below.						
TYPE		DATE OF FIRST USE (MANUFACTURE FOR TRAILERS)	POSITION			COLOUR
			MAX. DISTANCE FROM SIDE (MM)	MAX. HEIGHT (MM)	MINUMUM HEIGHT (MM)	
Front Position Lamps	Motor Vehicles	From April 1986	400	1500 or if impracticable 2100	-	White or yellow if in a headlamp that shows yellow light
		Before April 1986	510	2300	-	
	Trailers	From October 1985	150	1500 or if impracticable 2100	-	White
		Before October 1985	510	2300	-	
Front End Outline Marker Lamp	Motor Vehicles	From April 1991	400	-	The top of the lamp shall be no lower than the top of the windscreen	White
	Trailers	From October 1990	400	-	As high as possible with regard to the lateral position and the use for which the vehicle is constructed	
Dipped Beam Headlamp		From 1931	400 Being a matched pair	1200	500	White or yellow
Main Beam Headlamp		From 1931		-	-	White or yellow
Rear Position	Motor Vehicles	From April 1986	400	1500 or if impracticable 2100	350	Red
	Trailers	From October 1985				
	Motor Vehicles	Before April 1986	800	2100	-	
	Trailers	Before October 1985				

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58 Lamps							
Application							
A summary of the main requirements for each type of lamp (continued)							
	Rear end Outline Marker Lamps	Motor Vehicles	From April 1991	400	-	As high as possible with regard to the lateral position and the use for which the vehicle is constructed	Red
		Trailers	From October 1990				
	Stop lamps		From 1971 (refer to Lighting regulations for earlier vehicles)	One on each side with a minimum separation distance of 400mm	1500 or if impracticable 2100	350	Red
	Rear Registration Plate Lamp		All vehicles and trailers	-	-	-	White
	Rear Fog Lamp	Motor vehicles and trailers	From April 1980	Where one lamp is fitted on centre line or offside of vehicle.	1000	250	Red
	Side Marker Lamps	Motor vehicles	1 st April 1991	-	2300	-	Amber or red if within 1m of the rear of the vehicle
		Trailers	1 st October 1990	-	2300	-	Amber or red within 1m of the rear of the trailer or if fitted to a trailer built before October 1990, exceeding 9.15m in length, one side marker lamp on each side, positioned longitudinally, such that no part of the light emitting surface is forward of, or more than 1530mm to the rear of the centre point of the overall length of the trailer. The lamp may show a white light to the front of the red light to the rear or alternatively amber.

58	Lamps	
Method of Inspection	Reason for Failure	
<p>1. Check lamps for:</p> <ul style="list-style-type: none"> a. presence security and compliance of an obligatory lamp. b. correct illumination and function. c. presence of the lens, its visibility, security and condition. d. showing a light of the right colour. e. correct position. f. a steady light when lightly tapped by hand. g. not being affected by the operation of any other lamp. <p>2. Check the fog lamp (in addition to the above):</p> <ul style="list-style-type: none"> a. fog lamp has a tell tale light fitted, working and visible to the driver. b. the number of rear fog lamps fitted. <p>3. Check the stop lamp (in addition to the above) for a steady red light when the brakes are applied and goes out when the brakes are released.</p>	<p>1. For all lamps:</p> <ul style="list-style-type: none"> *a. an obligatory lamp missing, insecure or non compliant. *b. a lamp dim, due to dirt or internal deterioration, or not working. *c. a lens missing, obscured, insecure, or damaged so it is likely to fall apart. *d. not showing a light of the right colour. *e. incorrectly positioned. *f. flickers when lightly tapped by hand. *g. is affected by the operation of any other lamp. <p>2. Fog lamp:</p> <ul style="list-style-type: none"> a. tell-tale light not fitted, not working or cannot be seen by the driver. b. more than two rear fog lamps are fitted. <p>*3. Stop lamp does not show a steady red light when the brakes are applied, or does not go out when the brakes are released.</p>	

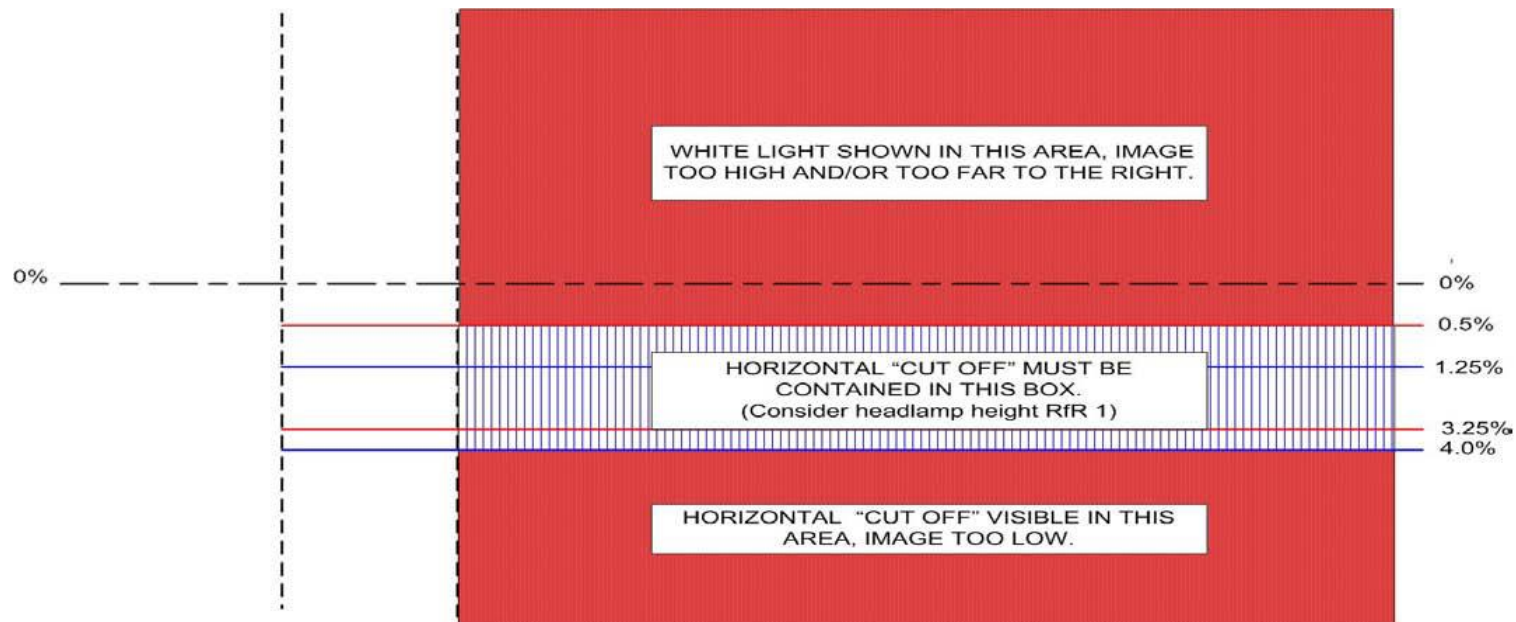
58	Lamps	
Method of Inspection		Reason for Failure
<p>4. Check a headlamp (in addition to the above) for:</p> <ul style="list-style-type: none"> a. forming part of a matched pair. b. being positioned symmetrically in relation to the other lamp. c. a lamp of a matched pair showing a light of the same intensity and colour as the other. d. a main beam headlamp that can be switched off by the operation of one switch which at the same time leaves a pair of dipped beams. e. a main beam warning light illuminates when main beam is selected and extinguishes when dipped beam is selected. <p>5. Check the rear registration plate lamp (in addition to the above) does not throw direct light to the rear.</p>		<p>4. Headlamp:</p> <ul style="list-style-type: none"> a. not forming part of a matched pair. b. not positioned symmetrically in relation to the other lamp. c. one of a matched pair does not show a light of the same intensity and colour as the other. d. a main beam headlamp cannot be switched off by operating one switch which at the same time leaves a pair of dipped beams. e. main beam warning lamp does not illuminate when main beam is selected and extinguish when dipped beam is selected. <p>5. A rear registration plate lamp throws direct light to the rear.</p>

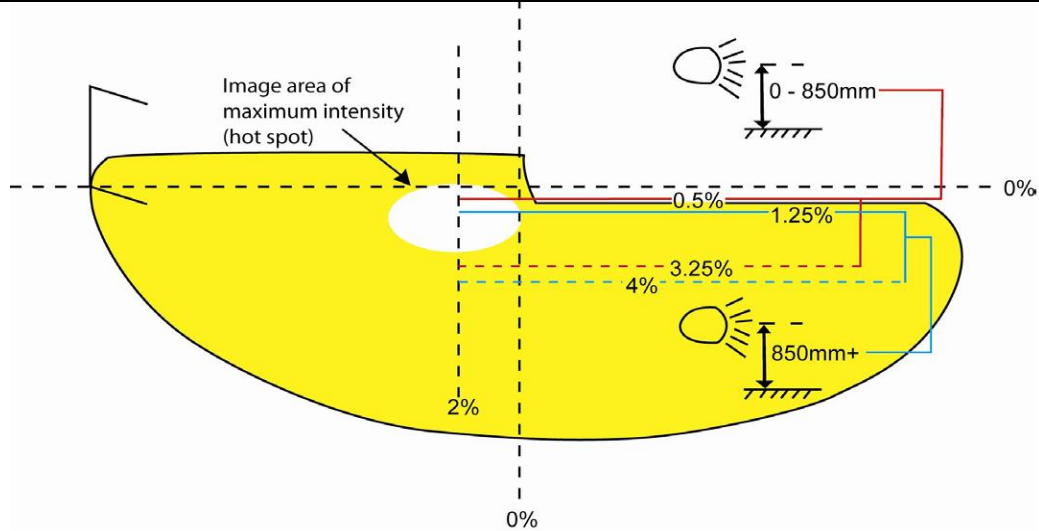
59	Direction Indicators and Hazard Warning Lights
	Application
<p>Direction indicators This inspection applies to all vehicles first used after 1 January 1936 and trailers manufactured from 1 September 1965.</p> <p>Side repeaters are required on motor vehicles first used from 1 April 1986.</p> <p>All indicators fitted must work. These must show amber light unless fitted to a vehicle first used before 1 September 1965 when both indicators may show white to the front or red to the rear.</p> <p>The tell-tale on direction indicators may be audible rather than visual but for hazard warning lamps it must be a flashing light. A tell tale is not required, if the operation of one or more indicators on each side can be seen from the driver's seat.</p> <p>If the flash rate is below 60 times per minute, recheck with the engine running.</p> <p>A semaphore indicator is acceptable. It must illuminate when in operation, and is not required to flash.</p> <p>Hazard warning lamps This inspection applies to all vehicles fitted with hazard warning lamps. They need not be fitted to vehicles first used before 1 April 1986. The tell-tale shall be a flashing light which may operate in conjunction with any direction indicator tell-tale, with the ignition on and off.</p> <p>Where red-neutral direction indicator lenses with an amber bulb are fitted, the assessment made must be against the colour of the light emitted not the colour of the lens.</p> <p>Some vehicles are fitted with obligatory side marker lamps/indicator side repeater lamps, these remain illuminated when the side lights are switched on. This is not an RfF provided the lamp flashes when required.</p> <p>If two or more lamps are fitted and the aggregated illuminated area occupies 60% or more of the area of the smallest rectangle circumscribing the illuminated area this should be treated as one lamp.</p> <div data-bbox="927 1177 1352 1289" data-label="Image"> <p>The diagram illustrates the requirement for aggregated illuminated area. It shows three yellow circles (representing individual lamps or LEDs) arranged horizontally within a black rectangular border. An arrow points from the text 'Illuminated area' to the three circles. Another arrow points from the text 'Rectangle' to the black rectangular border that encloses the circles.</p> </div> <p>If more than one bulb or LED is fitted in the lamp at least 50% must work.</p>	

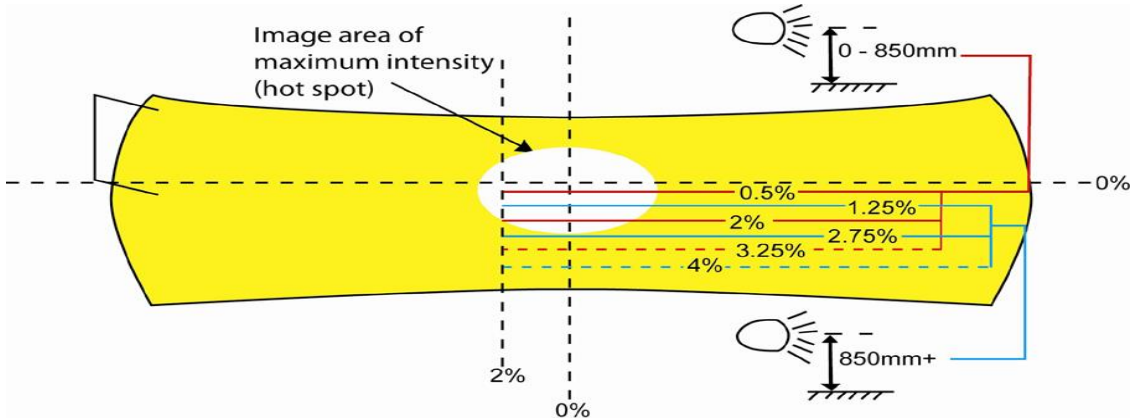
59	Direction Indicators and Hazard Warning Lights	
	Method of Inspection	Reason for Failure
	<p>1. Check direction indicators for:</p> <ul style="list-style-type: none"> a. presence, operation, operating on the correct side of a vehicle/trailer, their condition and are visible to the front and rear. b. presence of a side repeater. c. the presence of the lens, its security and condition. d. flashing at between 60 to 120 times a minute. e. a light of the right colour. f. presence of a tell-tale, its operation and can be seen/heard by the driver. f. the rate of flash and illumination is not affected by any other lamp. h. the operation of a semaphore indicator. <p>2. Check hazard warning lamps for:</p> <ul style="list-style-type: none"> a. operation with the engine stopped and the ignition switched off and on. b. all the direction indicator lamps operating simultaneously when switched on by one switch. c. presence of a tell-tale, its operation and it can be seen by the other 	<p>1. Direction indicator:</p> <ul style="list-style-type: none"> a. missing, inoperative, operating on the wrong side of a vehicle/trailer, dim or not visible either to the front or to the rear. b. side repeater missing. c. lens missing, insecure or damaged so that it is likely to fall apart. d. does not flash at between 60 to 120 times a minute. e. does not show a light of the right colour. f. tell-tale not fitted, is inoperative or cannot be seen/heard by the driver. g. rate of flash or illumination is affected by any other lamp. h. a semaphore indicator sticking. <p>2. Hazard warning lamp:</p> <ul style="list-style-type: none"> a. does not operate with the engine stopped and the ignition switched off and on. b. all the direction indicator lamps do not operate simultaneously when switched on by one switch. c. tell-tale not fitted, is inoperative or cannot be seen by the drive

60	Aim of Headlamps
Application	
<p>The headlamp aim criterion is applicable to all dipped beam headlamps.</p> <p>Headlamp beam converters fitted to right hand dipping headlamps which effectively mask/deflect the beam are not acceptable.</p> <p>Some vehicles may be fitted with an "in-cab" headlamp adjustment device. If the vehicle is presented for test unladen, the in cab headlamp adjustment device must be set relative to this condition. In all other cases this may be adjusted to enable both headlamps to meet the criteria, however both headlamps must comply with the requirements with the device set in one position.</p> <p>The headlamp control in the cab is allowed to be used to align the headlamps without failing the vehicle.</p> <p>Most modern vehicles are fitted with European headlamps. Dipped beam headlamps can be identified from the marking on the lamps. There will be a "C" shown above an "E" or "e" mark.</p> <p>Repairs must not be carried out during a test however; minor adjustments to the headlamp aim are acceptable.</p> <p>If the beam pattern is blurred due to condensation and does not show a distinctive cut-off point for the examiner to determine whether the alignment is correct this will be a failure under Reason for Failure 1.</p> <p>Some vehicles with complex headlamp systems (with the dipped beam and main beam having separate pockets) may be encountered. It is essential that the headlamp aim test equipment is aligned exactly on the centre of the dipped beam pocket. At this point it may not be possible to see a clearly defined headlamp pattern, in order to see the full beam pattern, it may be necessary to move the vehicle closer to the test equipment. Once this has been done, the beam pattern should be clearly visible on the aiming screen. When a full pattern can be seen, the normal assessment of headlamp aim should be followed.</p> <p>The standards to be applied are shown above the beam patterns likely to be encountered on the following pages.</p>	

60	Aim of Headlamps	
Method of Inspection	Reason for Failure	
<p><u>European checked on Dipped Beam</u> Align the headlamp aim testing equipment to the vehicle in accordance with the manufacturer's instructions.</p>	<ol style="list-style-type: none"> 1. In relation to the 0% horizontal line, the beam horizontal cut-off line is not between the limits listed below. Headlamp centres up to and including 850mm high Upper limit: All vehicles. 0.5% Lower limit: All vehicles 4.0% Headlamp centres over 850mm high Upper limit: All vehicles. 1.25% Lower limit: All vehicles 4.0% 2. The beam image contains a "Kick up" that is not visible on the screen 3. White light shows in the zone formed by the 0% vertical and 0.5% horizontal lines. 	



60	Aim of Headlamps
Method of Inspection	Reason for Failure
<p><u>British American Checked on Dipped Beam</u></p> <p>Align the headlamp aim testing equipment to the vehicle in accordance with the manufacturer's instructions.</p>	<p>4. In relation to the 0% Horizontal line, the upper edge of the "Hot Spot" is not between the limits listed below.</p> <p>All headlamp heights Upper limit: All vehicles. 0% Lower limit: All vehicles 4.0%</p> <p>5. The right hand edge of the "Hot Spot" is to the right of the vertical 0% line, or more than 2% to the left of it.</p> <p>6. All - A headlamp dips to the right. (See note in Applications).</p>
 <p>The diagram illustrates the beam pattern of a headlamp. A yellow shaded area represents the beam. A vertical dashed line is labeled '0%' at the bottom. A horizontal dashed line is labeled '0%' on the right. A 'Hot Spot' is indicated by a white oval. The 'Image area of maximum intensity (hot spot)' is labeled. Various percentage limits are shown: 0.5%, 1.25%, 3.25%, 4%, and 2%. Two headlamp icons are shown: one at the top right with a height of '0 - 850mm' and one at the bottom right with a height of '850mm+'.</p>	

60	Aim of Headlights
Method of Inspection	Reason for Failure
<p><u>British American Checked on Main Beam</u> Align the headlamp aim testing equipment to the vehicle in accordance with the manufacturer's instructions.</p>	<p>7. In relation to the 0% Horizontal line, the centre of the "Hot Spot" is not between the limits listed below.</p> <p>Headlamp centres up to and including 850mm high Upper limit: All vehicles. 0% Lower limit: All vehicles. 2.0%</p> <p>Headlamp centres over 850mm high Upper limit: All vehicles. 0% Lower limit: All vehicles. 2.75%</p> <p>8. In any case the centre of the "Hot Spot" is to the right of the vertical 0% line or more than 2% to the left of it.</p> <p>9. A Headlamp dips to the right. (See note in Applications).</p>
 <p>The diagram illustrates the headlight beam pattern on a yellow background. A central white oval represents the 'Image area of maximum intensity (hot spot)'. A vertical dashed line marks the 0% horizontal reference. Horizontal lines are drawn at various percentages: 0.5%, 1.25%, 2%, 2.75%, 3.25%, and 4%. A red bracket on the right side of the diagram indicates the height range from 0 to 850mm, corresponding to the first set of limits. A blue bracket indicates the height range from 850mm+, corresponding to the second set of limits. A horizontal dashed line at the top is labeled -0%. A vertical dashed line on the left is labeled 2%, and another on the right is labeled 0%.</p>	

61	Other Dangerous Defects	
Application		
<p>This applies to all vehicles and trailers.</p> <p>Whilst this manual attempts to be comprehensive and cover all reasons for failure which could be dangerous it is inevitable that due to changes in design, or other reasons, from time to time dangerous defects may be found which are not described in any of the reasons for failure in the other items in this manual. If a defect of this type is found, which is such that the use of the vehicle on the road would involve a danger of injury to any person, this would justify a failure under this item. In addition it would be appropriate to issue an Immediate Prohibition for a defect of this nature.</p> <p>It is not intended that this item should be used as a matter of routine but only for exceptional cases.</p>		
Method of Inspection		Reason for Failure
		**1. Any defect not described elsewhere in the manual such that the use of this vehicle or trailer is likely to cause a danger to any person in or on the vehicle or trailer on a road.