Heavy Vehicle Inspection Manual

01 December 2015

Compiled by

Customer Services

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Terms and Conditions

GENERAL

The primary purpose of the manual is to support DVA staff in conducting the annual inspections of vehicles.

The manual is not a legal interpretation of Regulations, therefore is to be taken as guidance only, and does not cover all the requirements of all Vehicles inspected. In addition to the Vehicle Inspection Manuals, Vehicle Examiners may consult appropriate legislation before issuing or refusing a Vehicle Test Certificate. Legislation consulted may include:

- Motor Vehicle Testing Regulations (Northern Ireland) 2003
- Goods Vehicles (Testing) Regulations (Northern Ireland) 2003
- Public Service Vehicles Regulations (Northern Ireland) 1985
- Motor Vehicles (Construction and Use) Regulations (Northern Ireland) 1999
- Road Vehicles Lighting Regulations (Northern Ireland) 2000
- Public Service Vehicles (Conditions of Fitness, Equipment and Use) Regulations (Northern Ireland) 1995
- Public Service Vehicles Accessibility Regulations (Northern Ireland) 2003
- The Road Vehicles (Display of Registration Marks) Regulations 2001
- Passenger and Goods Vehicles (Recording Equipment) Regulations (Northern Ireland) 1996
- Motor Vehicles (Authorised Weight) Regulations (Northern Ireland) 1999

All the above legislation is available from:
'The Stationary Office'
16 Arthur Street
Belfast
BT1 4GD.

PROCEDURES

The procedures given assume that only parts of a vehicle, which can readily be seen without dismantling, are to be examined. However, where it is not possible to inspect safety critical items and a defect is suspected, the examiner may remove wheel trims or panels. It is also important to note that any wheel trim or panel removed must be replaced or checked by the customer.

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.

Acceptance for Test

Conditions for accepting vehicles for test include: -

- A suitable drawing vehicle must accompany a trailer.
- 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.

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.

Limits of Wear and Tolerance

Because it is not practicable to lay down limits of wear or tolerance for components of all types of vehicles, an examiner is expected to use his/her experience and judgement in assessing the condition of a component, the following points should be considered when making an assessment.

- Whether the component has reached the stage where it is obviously likely to affect adversely the roadworthiness 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 break the law.

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.

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 a reason for failure if the component or system is weakened to such an extent that it can no longer adequately perform its function.

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:

a. Operate effectively as designed, or
b. Prevent it from reaching the end of its permitted travel, or
c. Prevent it from exceeding manufacturers known maximum permitted limits.

Excessive wear

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

a. Likely to fail, or
b. Clearly not functioning effectively as designed, or
c. Visibly worn beyond manufacturers known permitted limits, or
d. Likely to affect the operation or condition of another safety related component.

First use dates

The terms "before" and "from" when referring to first use dates. The term "from" should be taken to be the same as on or after a certain date.

Where there is a first use date quoted for a motor vehicle this will not normally apply if the vehicle was built more than 6 months before that date.

Fouling

This will only be a Reason for Failure 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.

Insecure

The term "insecure" will be used to describe a defective condition. This term should be taken by vehicle examiners to mean either: -

a. 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 none, or
b. 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 which are considered critical in terms of the ability of the vehicle to endanger the 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 etc. More than this proportion means that the remaining fixing devices could be over-stressed and could therefore fail at any time. Examples of critical systems include (this is not and exhaustive list):

a. Steering
b. Brakes,
c. Suspension linkages,
d. Leaf spring anchors,
e. Trailer couplings,
f. Live (i.e. moving) transmission components,
g. Wheels and hubs.

The proportion suggested above does not apply to: -

- Components in a critical area or 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 (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 than 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.

Obligatory

Required to be fitted by law.

Semi-trailer

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

Trailer

Where the term trailer is used in these notes it refers to all types of trailers and semi-trailers.

3 Wheeled Moped

- with a maximum design speed of 45km/h (28mph) (48km/h [30mph] if manufactured before 08/08/2003)
- fitted with a spark ignition internal combustion engine having a cylinder capacity not exceeding 50cc, or
- fitted with any other internal combustion engine which has a maximum net power output not exceeding 4kW, or
- fitted with an electrical motor with a maximum continuous power not exceeding 4kW
- not exceeding 270kg unladen
- if designed to carry goods a payload not exceeding 300kg

Light Quadricycles

- with a maximum design speed of 45km/h (28mph) (48km/h [30 mph] if manufactured before 08/08/2003)
- fitted with a spark ignition internal combustion engine having a cylinder capacity not exceeding 50cc, or
- fitted with any other internal combustion engine which has a maximum net power output of 4kw, or
- fitted with an electric motor with a maximum continuous power not exceeding 4kw
- not exceeding 350kg unladen
- if designed to carry goods a payload not exceeding 200 kg

If any of the above **moped** classes are powered by an electric motor the weight of the batteries must not be included in the unladen weight

Tricycles

3 wheeled vehicle (with 3 symmetrically arranged wheels)

- fitted with an internal combustion engine having a cylinder capacity of more than 50cc and/or a maximum design speed of more than 45km/h (28mph)
- not exceeding 1000kg unladen
- if designed to carry goods a payload not exceeding 1500 kg

Quadricycles

- fitted with an internal combustion engine having a cylinder capacity of more than 50cc and/or a maximum design speed of more than 45km/h (28mph)
- the maximum net engine power not exceeding 15kW
- not exceeding 400kg unladen (550kg for goods vehicles)
- if designed to carry goods a payload not exceeding 1000kg
- the weight of the batteries not being included in the unladen weight

Health & Safety

It is the duty of all staff to take reasonable care for the health and safety of themselves and of all other persons who may be affected by their acts or omissions at work. No staff shall intentionally or recklessly interfere with or misuse anything provided in the interests of health, safety or welfare e.g. fire extinguishers, personal protection equipment etc. Staff has a duty of care not only to themselves and all other persons but also to the property of the Agency and the public.

Prior to entering the brake test equipment the examiner must ensure that the customer wears their seat belt. Also make the customer aware that the vehicle may undergo sudden movements.

As the vehicle passes from the brake tester to the lift the customer will remain in the vehicle. The examiner will manoeuvre the vehicle in front of the lift and wait for it to

become available. When the vehicle has stopped, the examiner will observe the movement of the other vehicles and only when safe to do so will he issue instructions to the customer. The customer will be instructed to leave the vehicle and walk around the front of his vehicle away from work equipment and walk straight to the waiting area as there is no traffic movement. They will also be told to remain there until brought back to the vehicle by the examiner. If they do not comply with this operating system then their test should be stopped.

Note:

1. Whilst we will attempt 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. If a defect of this type were 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. It is not intended that this item should be used as a matter of routine but only for exceptional cases.

Axles, Stub Axles and Wheel Bearings

Heading 1

Application Normal bold

This inspection applies to all vehicles and trailers.

Procedure and Standards

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 lift account must be taken of any information given below and/or manufacturers' recommendations.

Check for excessive lift between stub axle and axle beam or between swivel joint and housing. For vehicles fitted with a " Hives" type thrust bearing any lift greater than 1.6 mm would be considered excessive and in the case of any other type of bearing lift greater than 1.0 mm.

Note: Mercedes Sprinter BM901-904 range of vehicles have suspension ball joints without springs, these joint are allowed up to 3.0 mm of axial play (lift) and 0 mm of radial play.
Note: On a steered axle it is not acceptable to weld the axle in the straight ahead position.
Note: Steered axles manufactured by BPW have a maximum lift of 12 mm.
Note: Renault Mascot vehicles with a design weight of 3.5 to 6.5 tonnes have a maximum king pin lift of 1.2 mm.
Note: This inspection may be carried out either while lifting and lowering the axle with a jack or by lifting each wheel with a heel bar whilst the vehicle is raised off the ground. Whilst the wheel is rocked, by using wheel play detector plates in the side to side mode, check for movement between:

a. Stub axle and axle beam.
b. King pin and bushes. Any movement greater than 10 mm on a 500 mm diameter wheel is considered excessive. For wheels of different diameter the maximum allowable movement should be in proportion to this figure.
c. Wheel bearings and housing.
d. Swivel joint and housing.
e. Swivel joint housing and stub axle.
f. Swivel joint housing and suspension arms.

Note: Wheel bearing free play can be isolated by applying the service brake.

- Check axle beam and stub axle for cracks.
- Check king pin retaining device for presence and security.
- Check swivel joint retaining and locking devices for presence and security.

Reasons for Failure

1. Stub axle and axle:
   a. Excessive lift between stub axle and axle beam.
   b. Cracked.
2. King pin:
   a. Excessively loose in axle beam.
   b. King pin or bush excessively worn.
   c. Retaining device missing or insecure.
3. Swivel joint:
   a. Excessively worn.
   b. Insecure.

   c. Retaining or locking device missing or insecure.
4. Wheel bearing:
   a. With excessive free play.

Body Condition

Application

This inspection applies to all vehicles.

Procedure and Standards

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.
Check for leaks from the load carrying compartment.
Check for any insecurity of glass panels or sharp edged glass on vehicles such as mobile shops and ice cream vans.

Reasons for Failure

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):
   a. insecure.
   b. fractured or cracked.
   c. distorted, excessively worn or damaged.

And which in each case would make the vehicle dangerous to other road users.

2. a leak from the load carrying compartment.

Body Security, Containers and Crane Support Legs

Application

Security of Body

This inspection applies to all vehicles and trailers fitted with a body.

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. (Note: a duel purpose flatbed trailer from which twistlocks have been removed is not subject to this inspection).

Security of crane support legs

This inspection applies to all vehicles and trailers fitted with supporting legs for loading cranes

Procedure and Standards

Security of Body

Check that the body is not displaced relative to the chassis.

Check for security, fracture, distortion, wear, corrosion and presence of:

- 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.

Note: 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.

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 tiebars the securing nut on the tie-bar is correctly secured at a relatively low torque setting and this should not be mistaken for looseness.

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 abnormal movement of the structure, which would indicate coach bolt failure.

Check the condition of the load bearing body members for corrosion, cracks or damage, which could seriously weaken their strength.

Security of Containers

Check that container fastening devices are:

- present
- secure
- complete
- free to move
- fitted with an effective secondary locking device eg screw, detent or chain and clip.

Note: 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 have enough resistance to light hand pressure to remain closed.

Check any support bolsters and structures:

- for cracks, corrosion, damage and security such that a container would be unlikely to be supported or secured by it.
- are fitted with locking pins or other securing method incorporating an effective secondary locking device. (See note on secondary locking devices above)

Note: 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 legal length requirements before leaving the test station.

Security of crane support legs

Check supporting legs for security.

Check supporting leg retaining device for:-

- presence
- security
- condition

Note: This inspection only applies where retaining devices were originally fitted. A suitable alternative retaining device is acceptable provided the support leg is adequately secured.

Reasons for Failure

Security of Body

1. Body:
    a. excessively displaced relative to the chassis
    b. insecure.
2. A load bearing member:
    a. so cracked, corroded or damaged that the body is seriously weakened.

Security of containers

3. A container fastening device:
    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.
4. A support bolster or structure:
    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.

Security of crane support legs

5. A Crane Support Leg:
    a. insecure
    b. retaining device missing, insecure or in a condition that it would not adequately retain the leg.

Brakes: Additional Braking Devices

Application

This inspection applies to vehicles where a device is fitted.

Most buses with a maximum gross weight greater than 10000kg first used on or after 1 April 1983 or 5000kg first used on or after 1 May 2002 require such devices. A small but significant number of buses have been approved without additional braking devices due to the engine developing sufficient retardation without the need for an additional braking device. Whether the bus requires an additional braking device will have been determined at time of approval or initial inspection and therefore where fitted must be inspected.

There is no requirement to check any warning lights for vehicles fitted with electric retarders.

Air leaks for operating mechanisms of hydraulic retarders or exhaust brakes should be inspected under ‘Brake Systems and Components’ section of the Inspection Manual and only fail if the leak is affecting the braking system

Procedure and Standards

Check Additional Braking Devices for:

a. installation where fitted.
b. condition, completeness, contamination and security.
c. adequate clearance from other components.

d. presence of a heat shield where required.
e. signs of overheating of components or the surroundings.
f. exhaust gas or oil leaks.
g. security, positioning and condition of wiring.

Reasons for Failure

Additional Braking Device:

a. obviously inoperative, damaged, component missing, contaminated or insecure.
b. with inadequate clearance with other components.
c. heat shield missing.
d. component or its surroundings overheating.
e. with exhaust gas or oil leaks from the device.
f. wiring insecure, badly positioned or damaged.

Brake: Service Brake Performance

Application

This inspection applies to all vehicles and trailers.

Procedure and Standards

To avoid damage to the vehicle or the equipment, no tyre must be obviously under inflated.

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".

If the vehicle can be tested on a roller brake test machine proceed, as follows:

- **Preparation:** Fit Air Pressure Sensors to the vehicle in accordance with the test equipment manufacturer’s instructions, and enter where necessary the vehicle details i.e. gross weight, axle weight and the guaranteed air pressure.

Note: Air pressure test points are required to be fitted to vehicles used on or after 1 April 1983, and trailers manufactured on or after 1 October 1982. Air pressure test points are required to be fitted to vehicles used on or after 1 April 1983, and trailers manufactured on or after 1 October 1982. Each braking circuit should have at least one test point, therefore axles which share the same brake circuit only require one test point e.g. on a rear bogie, the test point may be on any one axle of that bogie.

Where a lift axle **does not** have a test point the examiner must assume that it is linked to another air brake circuit. For the purpose of the brake test, the Air Pressure Sensor attached to the regulated air pressure brake circuit should be used e.g. a drive axle.

Roller Brake Test

Place the road wheels in the brake tester rollers in turn. The rollers will start automatically. Follow the sequence of instructions as displayed and prompted on screen.

- Check for binding.

Note: 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.

- Apply the brake slowly and check for abnormal time lag in operation.
- Hold at a steady pedal pressure and check for brake force fluctuations. (While this check is carried out on all wheels, the results only apply to the steered wheels).

Note: Brake effort fluctuation of more than 70% of the higher brake effort shown at a steady pedal pressure should be considered as a Reason for Failure.

- Continue to apply the foot brake until the road wheels lock up, or until the service brake is fully applied, whichever occurs first.

- Using the maximum recorded force 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. (This will be calculated automatically by the brake test equipment and either passed or failed accordingly)

- Little or no brake effort recorded at any road wheel should be considered a Reason for Failure.

- Release all brakes and store results.

- Repeat for each axle in turn.

Load Simulation

If one third of the guaranteed air pressure cannot be obtained at the brake actuator, then the load simulator must be used. Care must be taken when fitting the simulator to the vehicle, as damage may be caused to vehicle components e.g. Pipes, valves, wiring, body or chassis members etc.

LIFT AXLES

Most lift axles can be lowered for the purpose of the brake roller test, however some will require a load simulation to be applied. Some trailer axles can be lowered by switching off the ignition in the drawing vehicle. The air pressure in the brake chambers of many lift axles will not achieve 1/3 of the vehicles guaranteed air pressure, in this case, the examiner should ignore the air pressure warning on the PC screen and record on the G1 record in the ‘Brake’ field after the brake system description ‘Lift axle’, followed by the axle number, e.g. ‘Lift axle 2’. Where a lift axle cannot be lowered the customer should be given a Notification of Refusal stating, ‘unable to lower lift axle for purpose of the brake test’.

Deceleration Test

If the vehicle cannot be roller brake tested, or for any other reason a decelerometer test is required, proceed as follows;

1. Set the decelerometer on the vehicle in accordance with the instrument manufacturer's instructions.
2. At a speed of approximately 20 mph, have the service brake applied; note the reading on the decelerometer and whether the vehicle deviates from a straight line.

Double Drive Rear Axle - Interposing Differential

Before carrying out a brake test on a vehicle fitted with a double drive rear axle it will be necessary to establish whether an interposing differential is fitted or not, and ensure all differential locks are disengaged.

If an interposing differential is fitted to the double drive rear axle the brake test can be carried out as normal.

If no interposing differential is fitted or the examiner is not sure, carry out the test as follows:

1. Before positioning any rear wheel in the brake tester rollers, change the direction of the roller rotation so that one roller will rotate forward and the other backward.
2. Carry out the brake test as described above, but note that only the results of the wheel, which is rotated forward, will be recorded.
3. To check the brakes of the other wheel on the same axle, stop the rollers and change the direction of rotation so that the wheel, which was rotated forward, will now be rotated backward and the wheel, which was rotated backward, will now be rotated forward. Carry out the brake test as above.

Move the vehicle forward and carry out the same procedure for the second driving axle.
Note: Do not run the rollers any longer than necessary to obtain an accurate reading.
Note: A transmission brake fitted to a vehicle of this type cannot be tested on a roller brake tester.

Electronic Braking Systems

1. The purpose of this system is to improve vehicle control, reaction and stability during braking over and above that currently possible from a conventional pneumatic system. This is achieved by using electrical signals to operate pneumatic valves. A back up system is usually retained in case of an electrical failure. One of the benefits of EBS is that it can simultaneously fulfil the operation of an anti-lock system (ABS) and a load sensing system with a superior reaction time. If the vehicle is towing an EBS trailer the two systems can communicate via a data bus and offer the potential of improved tractor/trailer compatibility.

2. The primary system of braking on an EBS vehicle is by wire and the secondary means is by air. This is achieved by the means of a redundancy valve; the system senses electronic failure and activates the air system. On some articulated units this has the effect of applying full air pressure to the trailer brakes and front brakes of the unit, but the rear brakes of the unit may have reduced braking and in some cases there will be no braking at all. This same effect can be achieved when roller brake testing if the ignition is switched off during the test, in this situation there will be a reduced or no braking on the rear wheels of an articulated unit. A rigid vehicle has braking at all wheels under secondary conditions.

Brake Roller testing of vehicles and trailers fitted with EBS

When testing a truck with an electronic braking system the following criteria must be met;

- When switching on ignition allow time for ECUs' to communicate with each other, failure to do so may cause a fault in the system
- Ensure ignition is on at all times during brake test.

Where load simulation is required to achieve 1/3 of the guaranteed air pressure at an axle, there may be braking systems that will not increase the brake system pressure at the wheels until the vehicle is driven over 7 km/h or is put into 'test mode'. The test mode can be selected by switching on the ignition, then allowing the brake rollers to run for 20

seconds before making the first brake application. The normal driving mode is reactivated automatically when the vehicle achieves a speed above 7 km/h.

SERVICE BRAKE EFFICIENCY REQUIREMENTS				
Motor Vehicles	2 Axle Rigid vehicle first used before 1 January 1968	Rigid vehicle with more than 2 axles or any articulated tractor first used before 1 January 1968	Any other vehicle	
Specified Efficiency	45% MAM	40% MAM	50% MAM	
Semi-Trailers	Manufactured before 1 January 1968 with GVW 6100kg or more	Manufactured before 1 January 1968 with GVW less than 6100kg	Manufactured from 1 January 1968 to 30 September 1982	Manufactured from 1 October 1982
Specified Efficiency	32% TAW	35% TAW	40% TAW	45% TAW
Draw-bar trailers	Manufactured before 1 January 1968	Manufactured from 1 January 1968 to 30 September 1982	Manufactured from 1 October 1982 to 31 December 2011	Manufactured from 1 January 2012
Specified Efficiency	40% MAM	50% MAM	45% MAM	50% MAM

MAM = Maximum Authorised Mass; The maximum gross weight permissible in UK.
GTW = Gross Train Weight: The maximum gross weight of the combination permissible in UK.
TAW = Total Axle(s) Weight, The maximum gross axle weight permissible in UK.

Reasons for Failure

Roller Brake Test

1. A brake on any wheel binding.
2. Brake mechanism on any wheel sticking, indicated by an abnormal time lag before, an increased reading is obtained.
3. 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.
4. With the service brake fully applied:
   a. There is little or no brake effort at any wheel.
   b. Braking effort from any wheel on an axle is less than 70% of the brake effort from another wheel on the same axle.
   c. The specified brake efficiency is too low.
5. Air pressure test points not fitted, accessible or serviceable where required.
6. unable to lower lift axle for purpose of the brake test'

Decelerometer test.

1. 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.

Secondary Brake Performance

Application

This inspection applies to all motor vehicles.

Note: Most vehicles to-day have brake systems split in such away that it is impossible to assess separately with a roller brake tester, the performance of the secondary brake. In these cases, the vehicle should be accepted, unless there is clear evidence that either half of the system is defective.

Procedure and Standards

After the Service brake has been checked on a wheel/axle, carry out a Secondary brake test where possible.
Follow the sequence of instructions as displayed and prompted on screen.
Apply the Secondary brake gradually. When wheel slip occurs or maximum brake effort is achieved, whichever occurs first, then release all brakes and store results.

SECONDARY BRAKE EFFICIENCY REQUIREMENTS			
Motor Vehicles	2 Axle Rigid Vehicle first used before 1 January 1968	Rigid vehicle with more than 2 axles or any articulated tractor first used before 1 January 1968	Any other vehicle
Specified Efficiency	20% MAM	15% MAM	25% MAM

MAM = Maximum Authorised Mass; The maximum gross weight permissible in UK.

Reasons for failure

1. With the secondary brake fully applied.
   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 efficiency is too low.

Parking Brake Performance

Application

This inspection applies to all motor vehicles and trailers.

Procedure and Standards

After checking the Service brake and the Secondary brake (where possible) on each wheel/axle, check the Parking brake performance. Follow the sequence of instructions displayed and prompted on screen. Apply the Parking brake fully and release any power assistance.
Note: Both brake rollers will start allowing the vehicle to be aligned in the rollers. When this has taken place, stop one roller and test each wheel individually. The exception to this where a vehicles is fitted with a Transmission parking brake or a double drive axle with **no** interposing differential.

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
Apply the Parking brake as slowly as possible, constantly keeping the release button depressed, when road wheel slip occurs or maximum brake effort is achieved release the brake quickly, and store results.

PARKING BRAKE EFFICIENCY REQUIREMENTS		
Motor Vehicles	Any vehicle first used before 1 January 1968	Any vehicle first used on or after 1 January 1968
Specified Efficiency	-	16% MAM
Semi-trailers and Draw-Bar trailers	Manufactured before 1 January 1968	Any other trailer
Specified Efficiency	-	16% MAM

MAM = Maximum Authorised Mass; The maximum gross weight permissible in UK.

Reasons for Failure

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 efficiency is too low.

Hand Lever Operating Mechanical Brakes

Application

This examination applies to all vehicles fitted with a mechanical parking brake.

Procedure and Standards

1. With the lever in the off position check the condition of the lever and the pawl mechanism.
2. Slowly apply the brake and check the effectiveness of the mechanism and that it is not impeded in its travel.

3. With the brake fully applied check:
   a. If it can be disengaged by knocking the lever on each side and top and,
   b. If the lever is at the end of its working travel.

4. Check for the presence of locking or retaining devices.

Reasons for Failure

1. Brake lever:
   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
2. Pawl mechanism:
   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.
3. Locking and/or retaining devices:
   a. Missing or insecure.

Hand Operated Brake Control Valves

Application

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.

Procedure and Standards

Check the function and condition of the control valve.

Note: Certain air valves are subject to a slight amount of leakage and this is not a reason for failure.

Reasons for Failure

1. Control valve:
   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. Leaks.
   f. Excessive wear in the gate or lever locating mechanism.
   g. Malfunctioning.

Brakes Pressure Vacuum Warning and Build Up

Application

This inspection applies to all vehicles, except those with an unladen weight of less than 3050 kg where the vacuum reservoir is coupled direct to the engine induction manifold. These vehicles do not require a pressured/ vacuum warning device.

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 need 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.

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.

If there is no reservoir in a vacuum system a warning device is not required.

Procedure and Standards

Deplete the air or vacuum system by applying the footbrake, when the warning device operates there must be two further assisted brake applications.

Note: If the vehicle has full power hydraulic brakes gauges are not normally fitted and there are no appreciable sounds when the brakes are applied.

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.
Note: If gauges are not marked, take 3 bar (45 psi) for air systems and 25 to 30 cm (10 to 12 inches) for vacuum systems as indicating minimum effective working condition.
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. If, however, the time recorded for the vehicle is appreciable longer than expected from that type of vehicle, this should be taken to indicate undue wear or a defect in the equipment.

Reasons for Failure

1. A mandatory visual warning device:
   a. Cannot be seen by the driver in all lighting conditions.
   b. Not fitted or not working correctly.
   c. Which cannot be seen by the driver.
   d. Not illuminated, or its functioning not visible in darkness to the driver.
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.
3. Time to reach minimum effective working pressure is more than 3 minutes for pressure systems and 1 minute for vacuum systems.

Brakes Service Brake Operation and Electric Stability Control

Application

This examination applies to all vehicles and trailers.

Vehicles and trailers required to be fitted with Anti-lock braking systems are:

Item	Type of Vehicle	Date
1	Motor vehicles with design GVW greater than 16000kg and authorised to tow a semi-trailer or a centre axle drawbar trailer with total design axle weights greater than 10000kgs or a drawbar trailer with design GVW greater than 10000kgs. (an O4 trailer)	First used on or after 13 April 1992
2	Coaches with a design GVW exceeding 12000kgs. And which do not have a load sensing valve.	First used on or after 1 April 1983 to 12 April 1992
3	Coaches with a design GVW exceeding 12000kgs.	First used on or after 13 April 1992
4	Motor vehicles with design GVW greater than 3500kg or with more than 8 passenger seats. And which do not have a load sensing valve.	First used on or after 1 April 1983 to 20 May 2004
5	Motor vehicles with design GVW greater than 3500kg or with more than 8 passenger seats	First used on or after 21 May 2004
6	Semi-trailers and centre axle drawbar trailers with a design total axle weight of more than 10000kg. And which do not have a load sensing valve.	Manufactured from 1 October 1982 to 12 October 1991

7	Semi-trailers and centre axle drawbar trailers with a design total axle weight of more than 10000kg.	Manufactured on or after 13 October 1991
8	Semi-trailers and centre axle drawbar trailers with a design total axle weight of more than 3500kg.	Manufactured on or after 21 May 2004
9	Drawbar trailers with a design GVW of more than 10000kg.	Manufactured on or after 13 October 1991
10	Drawbar trailers with a design GVW of more than 10000kg and which do not have a load sensing valve.	Manufactured from 1 October 1982 to 12 October 1991
11	Drawbar trailers with a design GVW of more than 3500kg.	Manufactured on or after 21 May 2004

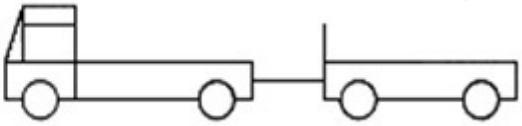
Note: Where only the year of manufacture is known, the date of manufacture should be taken to be the last day of that year.

Identifying vehicles that fall within item 1 of the above table

A little confusion has arisen from the term authorised to tow. This is where a vehicle has a manufacturer's plate fitted, displaying a Train Weight. The following should be used as a guide to clarify the situation for a vehicle first used between 13th April 1992 & 20th May 2004, and to determine if it is authorised to tow a trailer with a total design axle weight greater than 10000kgs

Example 1

Semi-trailer or



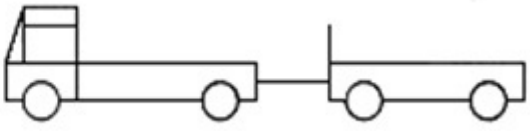
Rigid and Drawbar Trailer

Drawing vehicle Design GVW 18000kg
GTW greater than 28000kg (GTW – GVW > 10000kg)

When the GVW is subtracted from the GTW (Design Weight) and the sum is greater than 10000kg then ABS is required. There is no requirement to have a tow hitch fitted.

Example 2

Semi-trailer or



Rigid and Drawbar Trailer

Drawing vehicle Design GVW 18000kg
GTW equal to 28000kg or less (GTW – GVW < 10000kg)

Anti-lock brakes may be required if:

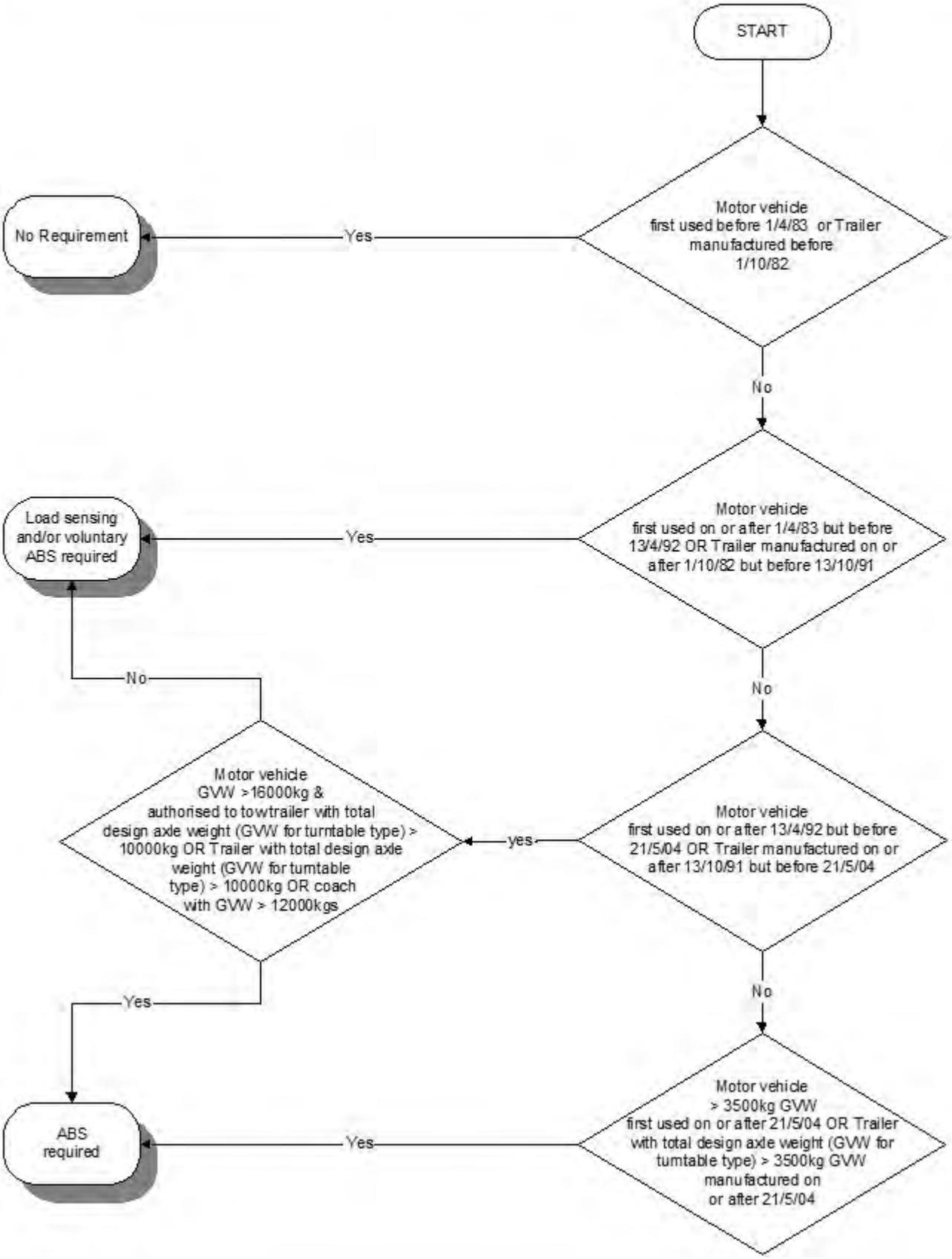
- the drawing hitch is rated at more than 10000kg, or
- the tractor is presented for test with a semi-trailer which has Total Axle Weight Greater than 10000kg, or
- the drawing vehicle is presented for test with a full drawbar trailer (turntable type) that has GVW greater than 10000kg

Note: The tow hitch should have a manufacturer's identification plate showing the hitch capacity, although if missing it is not a reason for failure.

ABS Exempt Vehicles

A public works vehicle which has a maximum design weight not exceeding 7500kg and is specifically designed for use and used solely for the purpose of street cleansing.

Load Sensing and ABS Requirements for Motor Vehicles and Trailers Over 3500kgs Gross



Procedure and Standards

Air pressure systems and vacuum systems with reservoirs.

- 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.

Hydraulic systems (other than full power systems).

- Fully depress the pedal and keep it depressed under steady pressure. Check for sponginess and whether the pedal creeps down under full pressure.

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

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.

Full power hydraulic systems.

- Check that the system pressure is maintained 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).

Anti-lock braking systems (ABS) and Electronic Braking System (EBS).

- Check whether the vehicle is required to be fitted with anti-lock brakes.
- Check the anti-lock warning lamp sequence of operation.
- Check for the presence of The ISO 7638 connection, which must be fitted to trailers with ABS manufactured on or after 21st May 2004 and motor vehicles first used on or after 21st May 2004.

Non – Towing Vehicles

For non-towing vehicles, when the ignition is switched on, a single ABS/EBS warning lamp on the dashboard will go through one of the following sequences:

1. Lamp comes on and goes out within a few seconds.
2. Lamp comes on and will remain on until the vehicle is driven over a nominal speed of between 7 and 10 km/h.
3. Lamp comes on, goes out after a few seconds, after a few more seconds comes back on and will remain on until the vehicle is driven over a nominal speed of between 7 and 10km/h.

Towing Vehicles

Before checking any warning lamps ensure that all electrical connections between the vehicle and trailer are being used, i.e. power **should** be taken from the ISO 7638 connection but may take a feed from the 24N (stop lamp Susie) and 24S (fog lamp Susie) as back-up power. For towing vehicles there are generally four arrangements of warning lamp:

1. One warning lamp on the vehicle dashboard and one warning lamp on the trailer.
2. Two warning lamps on the vehicle dashboard, one for the vehicle and one for the trailer.
3. There are two warning lamps on the vehicle dashboard, one for the vehicle and one for the trailer and an additional information lamp on the dashboard that advises the driver he is towing a non-ABS/EBS trailer.
4. Two information lamps on the dashboard, one for the vehicle, one for the trailer and one common warning lamp.

The ABS warning light sequence for a trailer should be checked where possible on the dash of the drawing vehicle.

Trailers fitted with Electronic Controlled Air Suspension (ECAS) often have a warning lamp fitted on the headboard of the trailer; care should be taken not to confuse this with a trailer ABS warning lamp.

For testing purposes the vehicle/trailer should be driven above 10km/h to extinguish all warning lamps on the dash, with ISO 7638 connected. If there is no provision for an ISO 7638 connection on the trailer, the ABS system is relying on stop lamp power, the footbrake must be applied to provide power to the system. In this case there must be a warning lamp fitted to the trailer and must extinguish when driven above 10km/h with the footbrake applied i.e. Drive the vehicle above 10 km/h, apply and hold foot brake sufficiently to activate stop lights. Observe warning lamp sequence.

Where a vehicle/trailer has been driven over 10km/h and the warning lamp has not extinguished, this should be recorded as a Reason for Failure 5c. If only an **information lamp** remains illuminated this is not a reason for rejection.

If a warning lamp has not extinguished during the drive, the examiner must identify whether the fault is in drawing vehicle or the trailer. In most cases the warning lamps are clearly marked, but where a common lamp is used for both the drawing vehicle and trailer or where there are two lamps that cannot be distinguished, the ISO lead must be removed. If the removal of the lead extinguishes the warning lamp, the examiner can assume there is a defect on the trailer. If the warning lamp does not extinguish with the removal of the ISO cable then there must be a fault in the drawing vehicle, and therefore it is not a suitable vehicle for presenting the trailer for test, i.e. Reason for Failure 5e.

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 vehicle nor trailer has a warning light when presented for inspection, the trailer should be failed for not having a warning lamp, if it has no ISO 7638 connection and the trailer is manufactured before 1st May 2004. If however the trailer has an ISO 7638 connection **or** is manufactured on or after 1st May 2004, the trailer should be failed for not being presented with a suitable drawing vehicle for testing purposes, i.e. Reason for Failure 5e.

If there is provision on the vehicle and trailer for the ISO7638 lead and it is not fitted this should be failed under Reason for Failure 5d. However the presenter should be given the opportunity to connect a lead if it is available.

If a trailer has provision for the ISO7638 lead but is submitted for inspection coupled to a motor vehicle, which has no provision for the ISO7638 lead, the trailer should be failed under Reason for Failure 5e.

If the vehicle and trailer are fitted with 24N, 24S and ISO7638 connections they should all be used.

Electronic Stability Control Systems are commonly referred to as ESC, but may also be known as ESP/RSC etc. The dashboard warning lamp for these systems may take various forms and a vehicle should only be failed when the Examiner is certain that an illuminated lamp indicates an ESC malfunction.

Reasons for Failure

1. Air pressure or vacuum systems:
   a. Gauge reading drops when pedal depressed indicating a leak in the system.
2. Hydraulic systems (other than full power systems):
   a. Pedal creeps down when depressed.
   b. Sponginess when pedal depressed.
3. Brake systems assisted by engine vacuum:
   a. Pedal does not dip when engine started, indicating lack of assistance.
4. Full pressure hydraulic systems:
   a. System pressure is not maintained for 10 minutes when the brakes are off and the engine is stopped.
5. Vehicle and trailers fitted with anti-lock brakes, EBS or ESC:
   a. Anti-lock braking system not fitted on a vehicle or trailer on which it is a mandatory requirement.
   b. ABS/EBS/ESC warning lamp not operating or following the correct sequence.
   c. ABS/EBS/ESC warning lamp not extinguishing when vehicle/trailer is driven over 10km/h, indicating a fault.
   d. ISO7638 lead not fitted where required.
   e. Trailer not presented for inspection with compatible drawing vehicle.
   f. ISO7638 connection not fitted where required.
   g. A warning light not fitted or not visible to the driver.
   h. A defect that would obviously render the ABS inoperative.
   i. An ABS, EBS or ESC system component obviously missing or excessively damaged.
   j. ABS, EBS or ESC system wiring excessively damaged.
   k. An ABS, EBS or ESC system component inappropriately repaired or modified.
   l. An ESC system switch missing, insecure or faulty.

Brakes Service Brake Pedal

Application

This examination applies to all vehicles

Procedure and Standards

Check the condition of the pedal and associated components.
Note: Power operated braking systems where the foot valve is fully open before the pedal is fully depressed do not require any reserve travel.
Vehicles with power assisted brakes should be inspected with the engine switched off.

Reasons for Failure

1. Brake pedal:
   a. Anti-slip provision missing, loose or incomplete.
   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. Fractured, cracked, corroded or incomplete.
   c. Pivot is tight in operation.
   d. Does not release correctly.

Brakes System and Components

Application

This inspection applies to all vehicles and trailers.

Procedure and Standards

Brake Components

Check the condition, security and operation of brake rods, relays, levers, including slack adjusters, clevis joints, linkages, cables, flexible and rigid pipes.
Check the condition and security of brake drums, back plates and shoes, discs, callipers, pads including friction material.

Note:

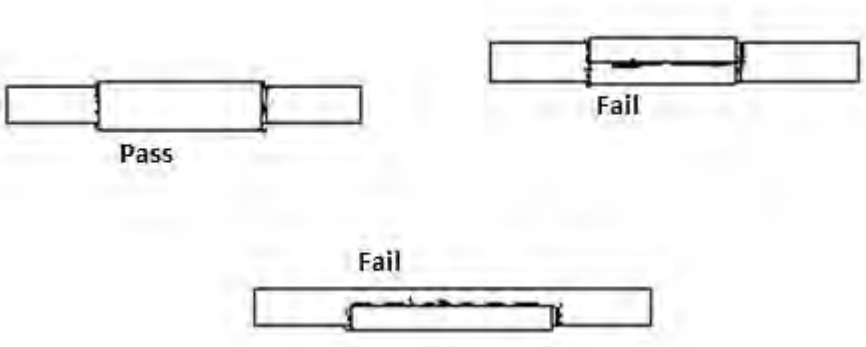
- A rod or lever reduced by more than one third of its original diameter is considered a failure.

- A pipe with its wall thickness reduced by more than one third of its original thickness is considered a failure.

- Cables, less than 10% of the wires fractured is 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 (cables are usually made up of strands each containing a number of wires).

- A hose should be rejected for surface cracking or damage by chafing only if the reinforcement is visible.

- 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.



Guidance on sleeved repairs of metal brake pipes (sleeving is not acceptable on plastic brake pipes).

The air pipe between the compressor and the reservoir is to be taken as a brake pipe.

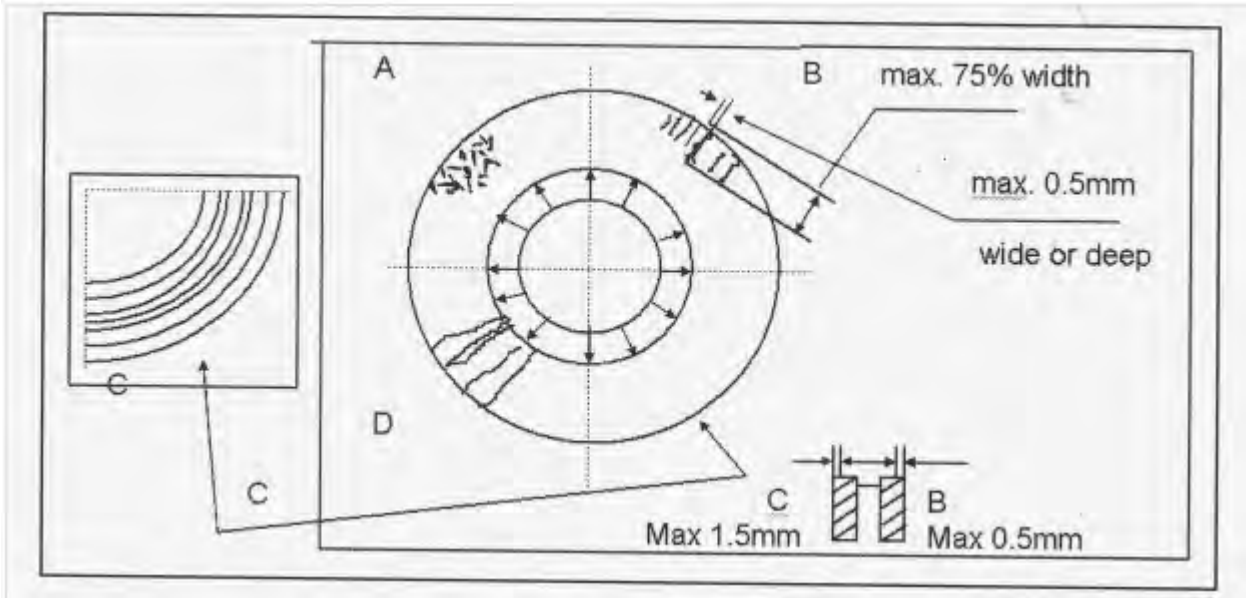
- Slack adjusters; up to 9.5 mm radial movement at a radius of 150 mm is considered acceptable within the slack adjuster and between the slack adjuster and cam cross shaft. Slack adjusters must have a secure fastening to the cross shaft including a locking device

- Check that automatic slack adjusters are fitted to vehicles and trailers on which they are mandatory (Trailers manufactured and vehicles first used on or after 1st May 1997) and check presence, condition and security of control brackets for all vehicles fitted with lever type automatic slack adjusters.
- Check and compare travel of automatic slack adjusters across the same axle when service brakes are applied, and check that automatic slack adjuster levers return fully when brakes are released.

Disc Brakes

The diagram below shows the type 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.

a. Interlinked cracks or surface crazing = acceptable
b. Cracks running towards hub centre up to max 75% of the width of the friction surface, and a maximum of 0.5mm wide or deep = acceptable
c. Unevenness in the disc surface less than 1.5mm = acceptable
d. Cracks running from edge to centre = not acceptable



Reservoirs (The term reservoir includes accumulators and other types of vacuum & pressure vessels).

- Check for condition, security and leaks.

Brake Actuators, Hydraulic Master & Wheel Cylinders, Valves and Servos.

- Check for operation, condition, security and leaks.

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

Note: To check the condition of brake pipes, valves, hydraulic master & wheel cylinders it will be necessary to ask the other examiner 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 a Reason for Failure.

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

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.
Load Sensing Valves: Vehicles first used before 1 April 1983 should not be failed where a load-sensing valve has been removed.

There are many types of load sensing valves fitted to vehicles, employing different methods of operation. Care must therefore be exercised when deciding if a valve is defective or not.

Certain vehicles with anti-lock braking systems or which otherwise comply with the requirements of the Brake Directive do not require load sensing valves. e.g. Municipal vehicles or vehicles with a high unladen weight in comparison with the laden weight.

Missing or illegible Load Sensing Valve (LSV) plate only applies to the following;

- Bus first used on or after 29th October 2011
- Trailers manufactured on or after 29th October 2013
- Trucks first used on or after 29th October 2014

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.
Buses, Goods vehicles and Trailers in excess of 3500 KGs GVW used on or after 1 May 1997, must have an automatic means of wear adjustment on the service brake system.

Air Compressor Drive

- Where belts drive the air compressor, check for presence, condition and adjustment of compressor drive belt(s).

Supply Dump Valve

The operation of the Supply Dump valve on drawing vehicles should be checked during the annual inspection. Ensure air braking system is fully charged, disconnect the service (yellow) brake line and vent to atmosphere, fully apply the service brake, air will vent for a few seconds before stopping and bringing the trailer brakes on. Where this does not happen the vehicle should be failed under Notice of Refusal 5a.

Note: If the vehicle and trailer is fitted with EBS, all electrical connections between the drawing vehicle and trailer must be disconnected **or** the ignition switched off before this check is carried out.

Trailer Parking Brake

The operation of the parking brake must be tested before uncoupling with all air lines connected:

1. Mechanical brakes i.e. ratchet/screw type, apply the parking brake and observe the movement/operation of all relevant components.
2. Air/spring type, pull the park button to exhaust air from brake chambers, and observe the movement/operation of all relevant components (there is no specific time period for the air to be fully exhausted). Request the driver to attempt to shunt the vehicle forward, observe that all relevant brakes are applied.

Note: - It is essential that the trailer parking brake is applied before uncoupling.

Trailer secondary Brake (where fitted)
Pressurise the trailer secondary brake system and inspect functioning and operation. (This should be carried out when checking the self-sealing couplings).

The following vehicle/trailer type require an adapter to be fitted to inspect the trailer secondary operation and the following procedure should be carried out:

- Two line drawing vehicles coupled to three line trailers.
- Three line drawing vehicles with no separate secondary control coupled to three lined trailers.

Using a suitable adapter, connect the tractor/drawing vehicle service line to the trailer secondary line.

Instruct the driver to apply the service brake, inspecting the appropriate hoses and system operation.

Note: If spring brake actuators are fitted to the vehicle/trailer inspect the components of this system with the parking brake in the “off” position.
Remove the adaptor and connect the brake lines. Check the reconnection by instructing the driver to apply the footbrake and note the operation.
Note; Care should be taken when inspecting axles manufactured by BPW, as the brake calliper may have 6 holes and only 5 bolts fitted.
Note: Hydraulic fluid reservoir level checks are confined to transparent reservoirs or where an indicator is fitted. Reservoir caps should not be removed.

Reasons for Failure

Brake Components

1. A brake rod, clevis joint, linkage, relay, lever, slack adjuster or cable:
    a. Seriously weakened by excessive wear, corrosion or damage.
    b. With abnormal movement indicating incorrect adjustment or excessive radial free play.
    c. With an ineffective, insecure or missing locking device.
    d. Reduced in diameter by more than the prescribed limit.
    e. A brake cable knotted, or with more wires broken than permitted by the specified standard.
    f. Cable guide is defective
    g. Automatic slack adjuster component missing, disconnected, insecure or inoperative.
    h. Brake system not fitted with a means of Automatic wear adjustment where required.
    i. A brake fitted with an automatic slack adjuster exceeding one-third 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.
2. Brake pipes and flexible hoses:
    a. Fouled by moving parts or excessively chafed.
    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. A non-metallic pipe exposed to excessive heat.

3. Brake drums, back plates & shoes, discs, callipers, pads including friction material with:
    a. An insecure or fractured brake drum or disc.
    b. A brake back plate or calliper securing bolt loose or missing.
    c. A brake lining or pad insecure or less than 1.5 mm thick at any one point.
    d. A brake disc excessively worn.
    e. Restricted movement of a brake component.
4. Reservoirs:
    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 on the reservoir or other mounting.
    d. Missing where it is known to be a standard fitting.
5. Air actuators, hydraulic master & wheel cylinders, valves & servos:
    a. Defective in operation.
    b. Insecure.
    c. Leaking air or fluid.
    d. Fractured, cracked or damaged.
    e. Excessively corroded.
    f. With a locking device missing or insecure.
    g. With excessive travel of operating mechanism indicating a need for adjustment.
    h. With a cap missing from a hydraulic master cylinder.
    i. fluid below minimum level or level warning device activated
    j. incorrect function of fluid level warning device.
    k. With a valve with excessive discharge of oil.
    l. A load sensing valve removed or disconnected when it is known to be a standard fitment.
    m. A load sensing valve obviously seized or restricted in its free movement linkage or brackets cracked, defective or out of adjustment.
    n. A dust cover missing or excessively damaged, deteriorated or insecure to the extent that it would no longer prevent the ingress of dirt etc.
6. A load sensing data plate
    a. Missing
    b. illegible
7. Air Compressor Drive:
    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.
8. Trailer Secondary Brake defective in operation.

Brakes Trailer Parking, Emergency Brakes and Air Line Connections

Application

Parking and Emergency Brakes

- This inspection applies to all trailers.

Air Line Connections

- This inspection applies to all trailers of whatever age and to drawing vehicles first used from 1 April 1989.

Procedure and Standards

Parking Brake

- Check that the brake Operates on at least two road wheels, and can be securely set.
- Check the mechanism for security, cracks, excessive wear and/or corrosion.
- With the brake fully applied, check that the mechanism is not at the end of its working travel and there is no fouling of adjacent parts.

Emergency Brake and Air Line Connections

- 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 that the trailer brakes are automatically applied when the emergency line is disconnected.
- 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 adapter which can open the self sealing coupling in the connector from the drawing vehicle.
- Check that the operating adapter lifts the indicator on the test coupling by the correct amount. The wasted portion of the indicator (coloured green) must be exposed, but no more than this.
- Check that any brake line on the drawing vehicle is not fitted with a manual shut-off tap.

Trailer Secondary Brake (where fitted)

- Pressurise the trailer secondary brake system and check for operation and air leaks

The following vehicle/trailer types require an adapter to be fitted

- Two line drawing vehicle coupled to three line trailer.
- Three line drawing vehicle with no separate secondary control coupled to a three line trailer.
- Supply a suitable adapter and request the driver to connect the tractor/drawing vehicle service line to the trailer secondary line.
- Instruct the driver to apply the service brake, and listen for brake application and air leaks.

Note: If spring brake actuators are fitted to the vehicle/trailer ensure parking brake is 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.

Some park brake controls also deplete the air suspension systems when the red air line is removed this is acceptable provided it does not drain the air brake reservoir. If it does refer to Reason for Failure under section titled ‘Brakes Systems and Components’.

Reasons for Failure

1. Trailer parking brake:
   a. Does not operate on at least two wheels.
   b. Cannot be securely set.
   c. Mechanism insecure, cracked, excessively worn and 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.
2. Trailer emergency brake:
   a. Not applied automatically when the emergency (red) brake line is disconnected.

3. Operating adapter, to open self sealing coupling:
    a. Not fitted in service (yellow) line.
    b. Produces incorrect amount of lift.
4. An airline fitted with a manual shut off tap.
5. Trailer Secondary brake system defective

Cab Door

Application
This inspection applies to all vehicles.

Procedure and Standards

- Open and close each door and check that they will not open inadvertently.

NOTE: Only one operational door is required. On security vehicles this door may be fitted so that it does not open directly into the cab. Other doors which have deliberately been made inoperative should be considered part of the cab and not a door. A door with one handle missing should not be failed, if the door can be opened from inside using the remaining handle.

Reasons for Failure

A door which:

a. Is missing.
b. Cannot be opened.
c. Is worn or damaged so that it is very difficult 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)

Cab security

Application

This inspection applies to all vehicles.

Procedure and Standards

- All means of securing the cab are to be inspected where practical.
- Check for security and condition by pushing and rocking the cab by hand where practical.
- Movement which is designed into mountings should not be confused with excessive wear.
- On tilt cabs examine the retention and/or locking devices for damage or security.
- Visually check wind deflectors and other cab mounted accessories for security.

Reasons for Failure

1.
    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.

Chassis Condition

Application

This inspection applies to all vehicles and trailers.

Procedure and Standards

Check main, cross members and outriggers which have load restraining devices attached to them (e.g. twistlocks) for fractures, cracking, advanced corrosion and deformation. Check the security of fastenings between the frame and cross members including securing bolts and rivets. Check the soundness of any welds.

On integral bodied vehicles and trailers where the body panels provide an important part of the strength of the vehicle check that where any replacement panels have been fitted that they are of a suitable material and that they have been secured in a way that ensures the strength of the structure will be maintained.

Note: 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.

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.

Reasons for Failure

1. Any main or cross member or outrigger which has a load restraining device attached:
   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.
2. Frame and/or cross member fastenings:
   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.
3. Integral body replacement panels:
   a. Of an obviously unsuitable material.
   b. Not adequately secured by an appropriate method.

Driver accommodation

Application

This inspection applies to all vehicles.

Procedure and Standards

1. Check cab, floor including wheel arches for condition and security.

2. Check steps and drivers grab handle for condition and security.

Additional for PSV's

3. Check drivers escape window:
   a. for presence.
   b. for operation.

Reasons for Failure

1. Cab, floor in the drivers area or wheel arch so badly deteriorated it is likely to impair the drivers control of the vehicle or is likely to cause injury.
2. Steps and drivers grab handle which is so insecure or in such a condition it is likely to cause injury

Additional for PSV's

3. Drivers escape window:
   a. not provided.
   b. cannot be opened.

Driving Controls

Application

This inspection applies to all vehicles.

Procedure and Standards

From the drivers 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.

Check that no rubbish or other items can impede the operation of the controls.

Operate engine stop control.

Other driving controls which need to be inspected which are not mentioned are:

1. Pedal anti-slip provision.
2. Gear control.

The list is not exhaustive.

Reasons for Failure

1. A driving control:
   a. Insecure.
   b. Fractured, cracked, excessively corroded or incomplete.
   c. Obstructed or impeded in its travel.
   d. Obviously not functioning correctly.
   e. With the presence of rubbish or other items likely to interfere with the proper control of the vehicle.
   f. Pedal anti-slip provision missing, loose or incomplete.
2. Engine stop control:
   a. Missing or inoperative.

Electrical Wiring and Equipment

Application

This inspection applies to all vehicles and trailers.

Procedure and Standards

Check:

- All visible wiring for condition, position and security.
- Battery for condition and security. If the battery is only held by the cables and by a lip on the carrier this cannot be considered to be secure.
- Switches controlling all obligatory lights.

Reasons for Failure

1. Wiring:
   a. Not adequately insulated or secured.
   b. Positioned so that it is chaffing or likely to be damaged by heat.
2. Battery:
   a. And/or carrier insecure and likely to become displaced.
   b. Case leaking.
   c. Cell closure missing or insecure.
3. Switch controlling an obligatory light:
   1. Insecure or malfunctioning
4. A trailer electrical socket
   a. Insecure.
   b. Damaged or deteriorated to the extent that the connecting lead could not be securely connected.

Engine and Transmission Mountings

Application

This inspection applies to all vehicles.

Procedure and Standards

- Check condition of mountings and subframes and their security to the chassis or underframe.

- There will only be a failure under this item if a mounting is no longer capable of performing its function of location and support.

- Serious fractures in clutch or bell housing which affect the security of the engine or gearbox are a reason for failure.

Reasons for Failure

Any mounting or subframe:

a. Loose.
b. Cracked or fractured.
c. Badly deteriorated.

Exhaust Emissions

Application

This inspection applies to all Diesel and other Compression Ignition engined vehicles.

Procedure and Standards

Diesel (Compression Ignition) Engines

The density of the exhaust emission must be checked using a smoke meter, only in exceptional circumstances where it is not possible to use a smoke meter will a visual check be carried out.

Note: If a vehicle has twin independent exhaust systems without a balance pipe, both exhaust systems will have to be checked for smoke emissions. It may be necessary to clear the exhaust system of accumulated soot before the second check.

Some Volvo models have fitted an exhaust regulator governor, which functions as an exhaust brake and to heat the engine by loading, when starting and during idling. On the F10 and F12 models, in addition to the normal controls, the application of the parking brake automatically engages the exhaust governor.

On these models with the parking brake applied a 'free acceleration' check may produce dense black smoke. Therefore, the parking brake must be released before the smoke check is carried out.

Examiners must ensure that when such a smoke check is being carried out the vehicle is adequately chocked to prevent it moving off. The chocks must not be removed until the parking brake has been re-applied.

If the exhaust has been deliberately modified to prevent the smoke meter from being used, this is a Reason for Failure.

If the vehicle has a supercharger the test should be treated as a non-turbocharged engine.

Note: 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 centre.

Care must be taken to ensure that the probe is correctly aligned to the exhaust gas flow.

1. Free acceleration test using smoke meter
    a. Select the appropriate test settings on the PC.
    b. Inserted the smoke meter probe into the exhaust pipe
    c. Check that the engine is at or near normal operating temperature (using vehicles own temperature gauge where applicable – not required to actually measure or enter the temperature on the test system).
    d. Purge the inlet and exhaust systems fully by holding the engine speed steady at just below maximum governed speed for up to 30 seconds (this in most cases can be done when building up air pressure in the braking system).
    e. If there are any obvious signs of an engine defect e.g. oil pressure warning light illuminated, abandon smoke test and record on notification of refusal.
    f. Select the appropriate settings on the smoke meter hand set.
    g. 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 (on some very clean engines the meter may not recognise a change in smoke when full throttle is applied and therefore will continue to ask for full throttle, in these cases the examiner must press the enter key and release the throttle). 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.

h. 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.

Note: A vehicle will pass the statutory test requirements if the opacity level is no greater than

- 2.50m^{-1} for vehicles with non-turbocharged engines, used before 1 July 2008
- 3.00m^{-1} for vehicles with turbocharged engines, used before 1 July 2008
- 1.50m^{-1} for vehicles used on or after 1 July 2008

2. Visual emission test

   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:

   a. With the engine at or near normal operating temperature check the density of the exhaust emission visually.
   b. 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.
   c. Ignore smoke from the first acceleration.
   d. Repeat up to a maximum of six times if necessary until the exhaust smoke is considered to be acceptable for two successive accelerations.

3. Continuous load test for turbocharged CI engines

This test is only to be carried out when a satisfactory result cannot be obtained by the visual free acceleration test.

Ask the driver to drive the vehicle around the test centre, on full power, against the sustained load of a partially applied brake. Observe the level of smoke emitted.

Caterpillar Engines
Examiners should be aware of the 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 around the centre against the load of a partially applied brake sufficient to reset the AFRC prior to conducting the test.

4. Emission control systems

This is confined to those systems fitted as original equipment by the manufacturer and only those components which are readily visible.

Reasons for Failure

1. Smoke Meter Test
   a. After a total of six accelerations have been completed, the average smoke opacity recorded for accelerations 4, 5 and 6 is more than:
      - 2.50m^{-1} for vehicles with non-turbocharged engines, used before 1 July 2008
      - 3.00m^{-1} for vehicles with turbocharged engines, used before 1 July 2008

- $1.50m^{-1}$ for vehicles used on or after 1 July 2008

b. The exhaust emits excessive smoke or vapour of any colour, to an extent likely to obscure vision.

c. The emissions cannot be measured because:
   - a tailpipe accessory is fitted which prevents insertion of the smoke meter probe, or
   - the examiner is not satisfied that the engine is in a condition that the smoke test would not cause damage.

2. Visual Test
   a. After a maximum of six accelerations the exhaust emits smoke of a level greater than that of equivalent metered levels (turbocharged engines emitting excessive smoke must be further tested using the continuous load test).
   b. The exhaust emits excessive smoke or vapour of any colour, to an extent likely to obscure vision.

Note: The criterion is density and not volume of smoke. The description 'dense smoke' includes any smoke or vapour which largely obscures vision.

A Catalytic converter, particulate filter or selective catalytic reduction system missing where it was fitted as standard.

Exhaust Systems

Application
This inspection applies to all vehicles.

Procedure and Standards

Examine the condition of the exhaust pipes and silencers and check for

1. Security.
2. Leaks.

Note: Where a diesel engined vehicle is failed for exhaust system leaking, the smoke test could be affected by the induction of air into the exhaust system. When presented for retest the smoke test should be rechecked.

Check for the presence of the silencer and assess its effectiveness in reducing, so far as is reasonable, noise caused by the exhaust.

Slight leaks are acceptable

For PSV's
Check that the exhaust system is not, or likely to be a fire hazard.

Check that the exhaust or any waste systems do not foul and are likely to contaminate, or be a fume hazard.

Check for the presence and adequacy of grease shields to hot exhaust.

Reasons for Failure

1. An exhaust system:
   a. So insecure that it might fall away partially or completely when the vehicle is in use.

   b. Leaking or positioned so that fumes are likely to enter the driver's cab.
2. An exhaust silencer:
   a. Missing.
   b. Ineffective.
3. A Public Service Vehicle exhaust or waste system
   a. Likely to cause a fire hazard
   b. Fouling or likely to cause a fume hazard.
   c. Missing or inadequate grease shields to hot exhaust.

Fuel Tank and Systems

Application

This inspection applies to all fuel tanks which are permanently attached to vehicles and to trailers, including gas fuel tanks, cylinders, bottles and other types of fuel container.

Procedure and Standards

Tanks and supports must be checked for security.

The system must be checked for leaks. Seepage is not a reason for failure.

Filler caps must be checked for presence and to ensure that when in the closed position they will not allow spillage or leakage. Fabricated and "emergency" caps are acceptable provided that they function correctly. Where possible the tank cap should be opened to check the sealing arrangements.

Pipe-work must be checked to see that it is secure and undamaged.

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 of this.

If the vehicle is powered by gas and suffers a leak this should be treated in the same manner as any fuel leak. The vehicle should be moved to a well ventilated area away from people and buildings.

Note: It is not necessary to run the engine but if a leak is present when the engine is running the vehicle should be failed.
Note: It is not necessary to run combustion heaters as part of this inspection.
Note: Before failing a vehicle for a leak from a gas system an examiner must be able to ascertain the point of leakage. This may be achieved by listening but is more likely to be identified by smell (due to a stanching agent) or signs of “frosting” around the point of leakage. Leak detection devices should only be used to confirm the leakage.
Note: In the case of a Public Service Vehicle
Pipework must be checked to see that it is secure and undamaged and that it does not run immediately adjacent to or in contact with electrical wiring, unless the wiring is encased in a sleeve or is protected so that the insulation of the wiring is not in direct contact with the pipe or tank.

All vehicles must be checked to ensure that no spilled or leaked fuel can contaminate or accumulate inside the vehicle and on the bodywork and that petrol engined vehicles are fitted with a carburettor driptray and drainage pipe.

Reasons for Failure

Tank:

1. 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:
   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:
   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:
   a. Missing.
   b. Does not fasten securely 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.
5. Public Service Vehicle fuel system
   a. With a pipe immediately adjacent to or in contact with electrical wiring.
   b. Where split or leaking fuel can contaminate or accumulate inside the vehicle or on the bodywork.
   c. Carburettor driptray and/or drain pipe missing.

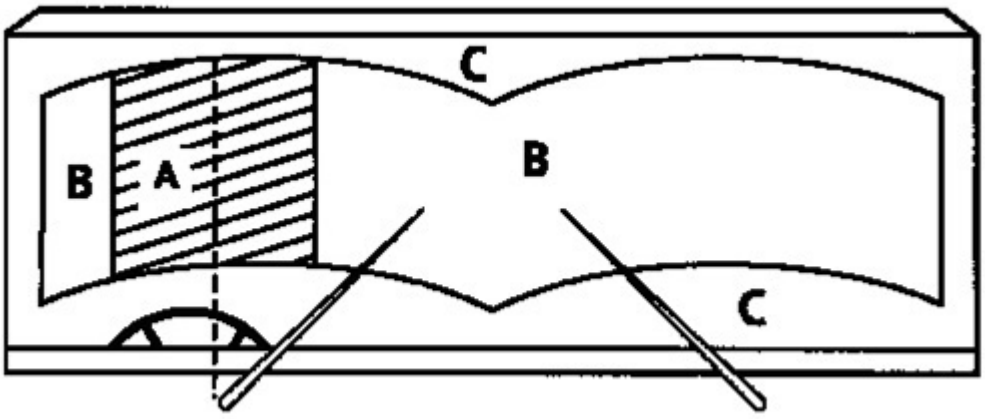
Glass and View of the Road

Application

This inspection applies to all vehicles.

Procedures and Standards

Check all glass or other glazing material fitted in the windscreen and any side windows normally used in driving, for cracks, discolouration, surface damage and correct material.



When checking the windscreen refer to the diagram above.

Zone "A" is 350 mm 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".

Damage or discoloration will be a reason for failure if it impairs the driver's view of the road.

Windscreen
Examiners should have regard for the three separate "zones" when assessing damage or discoloration. A greater amount of damage or discoloration 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 scratching should not be considered as damage.

Repaired windscreens must be inspected to the same criteria as original unrepaired screens. Repairs must be judged as to whether they interfere with vision.

Check the security of all windscreens and windows. Any crack passing through the swept area and reaching two points at the edge will be deemed to render the screen insecure.

Check 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 40 mm into the swept area.

Notes: Video monitors fitted to give a view to the rear are acceptable provided they do not obstruct the swept area more than a rear view mirror. Monitors fitted onto the dash must not encroach into the swept area by more than 40 mm.

Official stickers are permitted to encroach more than 40 mm if this is necessary to comply with other regulations and include road fund licence, 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.

Driver’s aids such as blinds and their mountings are permitted to encroach into the relevant areas. This includes manufacturer’s exterior fixed sun visors.

On many vehicles the original design will place things like instrument panel clusters inside the 40 mm limits. Intrusions such as this which are original design features can be ignored, as can stickers placed inside the 40 mm limit but which are hidden by a feature of the original design.

Grooves in the windscreen designed to clean the wiper blades should not be failed unless they seriously restrict the view to the front.

Pass Fail

Side Windows

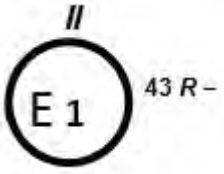
Damage which prevents the driver from having a proper view through mandatory mirrors will be a Reason for Failure.

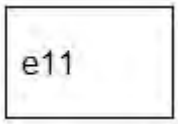
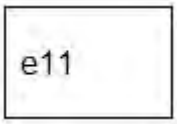
Reasons for Failure

1. A Windscreen:
   a. with damage or discoloration which impairs the drivers view of the road.
   b. with a crack passing through the swept area and reaching two points on the edge, rendering the screen insecure or which impairs the drivers view.
   c. with an obstruction which encroaches more than 40 mm 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.
   f. Where the light transmission is obviously less than the legal requirement
2. A windscreen or window:
   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. not made of safety glass
   d. Windscreen or window missing where fitted as original equipment.
3. Damage or obstruction of a side window which impairs the drivers view through a mandatory mirror.

Type of Glass and Light Transmission

Item	Windows	Type of Glass	Light Transmission
1	Windscreens and other windows wholly or partly on either side of the driver's seat fitted to motor vehicles first used before 1 June 1978 **NOTE:** This requirement only applies where glass is fitted.	Safety glass, or Specified safety glass, or Specified safety glass (1980)	
2	Windscreens and other windows wholly or partly on either side of the driver's seat fitted to motor vehicles first used on or after 1st June 1978 but before 1st April 1985	Specified safety glass, or Specified safety glass (1980)	70%
3	Windscreens and other windows wholly or partly on either side of the drivers seat fitted to motor vehicles first used on or after 1st April 1985	Specified safety glass (1980) (These side windows may be safety glazing if the vehicle has been issued with a Department's Approval Certificate)	Windscreens 75% (70% if the vehicle has been issued with a Department's Approval Certificate) All other windows 70%
4	All other windows	Safety glazing, or Specified safety glass, or Specified safety glass (1980)	No requirement

Acceptable Markings			
Standard	Windscreens	All Other Windows	Notes
BS857 "Specified Safety Glass"	Kite Mark or "BS857: 1967" plus either "Z", "Z1", "Z2" or "WHP"	Kite Mark or "BS857: 1967" plus either "L", "Laminated", "T", "CHT", "F", "Float", "P", "Plate", "S", "Sheet", "C", "Compo", "Commercial" of "HP"	"T" = Heat treated toughened glass"CHT" = Chemically toughened safety glass*Not acceptable on vehicles first used after 31 March 1985.
BS5282 "Specified Safety Glass"	"BS5282" plus either "WT", "WL", "Laminated Windscreen", "WLT" or "Treated Laminated Windscreen".	BS5282" plus either "T" "Tempered", "Toughened", "L" or "Laminated"	*"Not acceptable on vehicles first used after 31 March 1985
BS857 as amended "Specified Safety Glass (1980)	"BS857-2: 1967" plus either "Z", "Z1", "Z2" or "WHP"	Kite Mark or "BS857: 1967" plus either "L", "Laminated", "T", "Toughened", "Tempered", "CHT", "F", "Float", "P", "Plate", "S", "Sheet", "C", "Compo", "Commercial" or "Hp"	"CHT" = Chemically toughened glass. Glass marked "W" is NOT permitted on Public Service Vehicles.
BSAU178 "Specified Safety Glass (1980)"	"BSAU178" plus either "WL", "WL", "Laminated Windscreen", "WLT" or Treated Laminated Windscreen"	"BSAU178" plus either "T" "Tempered", Toughened", "L", or "Laminated"	Glass marked "W" is NOT permitted on Public Service Vehicles
ECE43 "Specified Safety Glass (1980)	A circle surrounding the letter E and the distinguishing number of the country which has granted approval. The number 43 followed by the letter R, a dash and the approval number to the right of the circle plus either "I", "II" or "III", for example  43R - 002439	A circle surrounding the letter E and the distinguishing number of the country which has granted approval. The number 43 followed by the letter R, a dash and the approval number to the right of the circle, for example  43R - 002439	The roman numerals may be above, below or to the left of the circle but NOT to the right of it. "I" = Toughened glass windscreen "II" = Ordinary laminated glass windscreen "III = Treated laminated glass windscreen Not acceptable as a windscreen without the above marks

92/22EEC	A rectangle surrounding the letter "e" and the distinguishing number of the country which has granted the approval. Above the rectangle the roman numeral II, III or IV. Below the rectangle, the serial number of the certificate e.g. II  2439	A rectangle surrounding the letter "e" and the distinguishing number of the country which has granted the approval. Above the rectangle the roman numeral V, VI. Below the rectangle, the serial number of the certificate e.g. II  2439	The roman numerals may only be above the rectangle "II" =Laminated Glass "III" =Treated Laminated Glass which is not coated "IV" =Plastic Glass "V" =Regular light transmission of less than 70% "VI" =Double Glazed
Glass manufactured in France (C&U 32(9))	"TP GS" or "TP GS E"	"TP GS" or "TP GS E"	Not acceptable on vehicles first used after 30 September 1989
Non-European Acceptable markings	AS1, AS10 11-4-21 JIS R3211 11-4-27 JIS R3211 SABS 1191 SABS 1193	AS1, AS2, AS10, AS11A, 11-4-21 JIS R3211 11-4-27 JIS R3211 SABS 1191 SABS 1193	Note: other acceptable standards for windows behind the drivers seat are AS3, AS14, AS15, AS16.

Horn

Application

This inspection applies to all vehicles.

Procedure and Standards

Operate horn control and listen to sound emitted. Check controls and mounting. Vehicles first used from 31 Dec 1976 must have a horn that produces a continuous or uniform sound.

Reasons for Failure

1. Horn control:
   a. Missing.
   b. Cannot be reached easily from the driving seat.
   c. Insecure.
2. Horn:
   a. Does not work.
   b. Is not loud enough to be heard by other road users.
   c. Sound not continuous or uniform.
   d. Insecure

Direction Indicators and Hazard Lamps

Application

Direction Indicators

This inspection applies to all vehicles first used after 1 January 1936 and trailers manufactured from 1 September 1965.

Side repeaters are required on motor vehicles first used from 24 January 1996.

Hazards Warning LAMPS

This inspection applies to all vehicles fitted with hazard warning lamps.

They need not be fitted to vehicles first used before 24 January 1996.

If fitted to a vehicle first used from 24 January 1996 they must also operate the indicators of any trailer which is being towed.

The hazard warning lamp ‘tell tale’ may be a separate light or the same as the indicator ‘tell-tale. However, it must be a flashing light.

Procedures and Standards

Direction Indicators

- Check for correct operation, visibility, cleanliness, completeness and security.
- Check that one or more indicators are fitted and visible to the front and to the rear on each side of the vehicle. 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.
- 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 not required if the operation of one or more indicators on each side can be seen from the driver's seat.
- Check that they flash at between 60 and 120 times per minute. If they flash at below 60 times per minute, recheck with the engine running.
- A semaphore indicator is acceptable. It must illuminate when in operation, must not stick and is not required to flash.

Hazards Warning LAMPS

The tell-tale shall be a flashing light which may operate in conjunction with any direction indicator tell-tale.

Some vehicles are fitted with obligatory indicator/side repeater lamps, these remain illuminated when the side lights are switched on. This is not a Reason for Failure provided the lamp flashes when required.

Check that the hazard warning lamps for:

a. operation with the engine stopped and the ignition switched off.
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 driver.

Reasons for Failure

1. Direction Indicator:
   a. Missing, inoperative, operating on the wrong side of a trailer, dim or not visible either to the front or to the rear
   b. Side repeater missing or not visible to the rear
   c. Lens missing, insecure or damaged so that it is likely to fall apart
   d. Does not flash at between 60 to 120 times per 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.
2. A hazard warning device:
   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 driver.

Lamps Headlamp Aim

Application

The headlamp aim criteria is applicable to all dipped beam headlamps.

Procedure and Standards

Type of headlamp

The aim of headlamps must be checked on main or dipped beam according to their type. The method of inspection involves the use of beam checking equipment with a collecting lens.

Masks or converter kits

Right hand dip headlamps can be temporarily altered for use in the UK by fitting masks or converter kits which remove the beam ‘kick-up’ to the right.

A headlamp altered in this way is not a reason for rejection, if

   a. The headlamp aim is not rejected for the reasons listed under European ‘E’ beam headlamp (except that the top of the beam image will be a straight line).
   b. The light output is not unduly reduced – not usually a problem with commercially produced kits.
   c. The mask or converter is securely attached.

Driver’s beam aim controls

Some vehicles may be fitted with an " in-cab" headlamp adjustment device. 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.

METHOD OF INSPECTION

To check headlight aim

1. Position the vehicle on the designated headlamp aim standing area.
2. Follow the headlamp tester manufacturer’s user manual instructions, and
   a. align the headlamp aim equipment with the longitudinal axis of the vehicle,
   b. align the centre of the collecting lens with the centre of the headlamp under test.
3. With the customer sitting in the driving seat, switch on the headlamps to the beam on which the headlamp is to be checked
4. Determine the appropriate headlamp type and its aim.

Note: Old vehicles (approx pre 1980) headlamps beam image may not conform to either of the types of lamps described in this section or they may not be bright enough to activate the headlamp equipment. Therefore no information should be sent to the PC. In such cases check the alignment of the lights against a vertical surface. Position the vehicle in front of the vertical surface, at a distance of 25feet from the surface the headlamp image should be below 3feet 6inches.

When the examiner identifies the type of headlamp, and selects the appropriate testing program, the beam testing equipment will electronically record the test values and display these for each headlamp. When this information is transferred to the test lane, these test values will be automatically compared with the limit values and the headlamp aim passed or failed.

Types of Headlamps

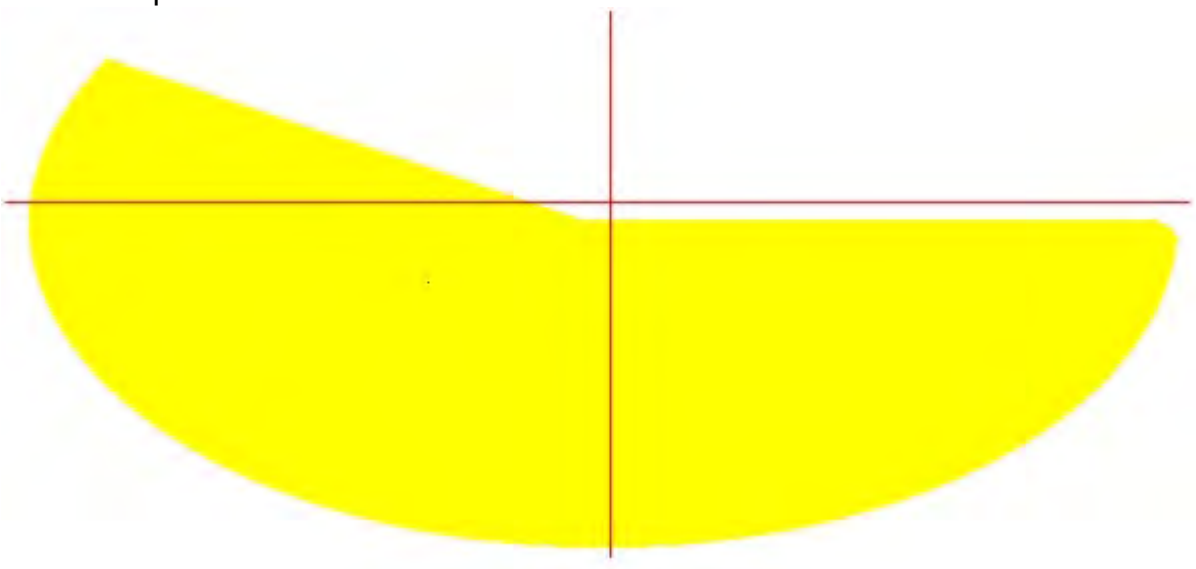
a. European type headlamp (checked on dip beam) – Characteristics:

- this is the most common type of headlamp.
- an asymmetric dipped beam pattern with
- a distinctive horizontal cut-off on the right, and
- a 15 degree wedge of light above the horizontal (the ‘Kick up’) towards the left.
- a lens with one or more asymmetric stepped patterns moulded in the glass
- a lens may carry
- a European approval mark – a circle containing an ‘E’ and a number, or
- a rectangle containing an ‘e’, and a number.

A. EUROPEAN 'E' BEAM HEADLAMP (CHECKED ON DIPPED BEAM)

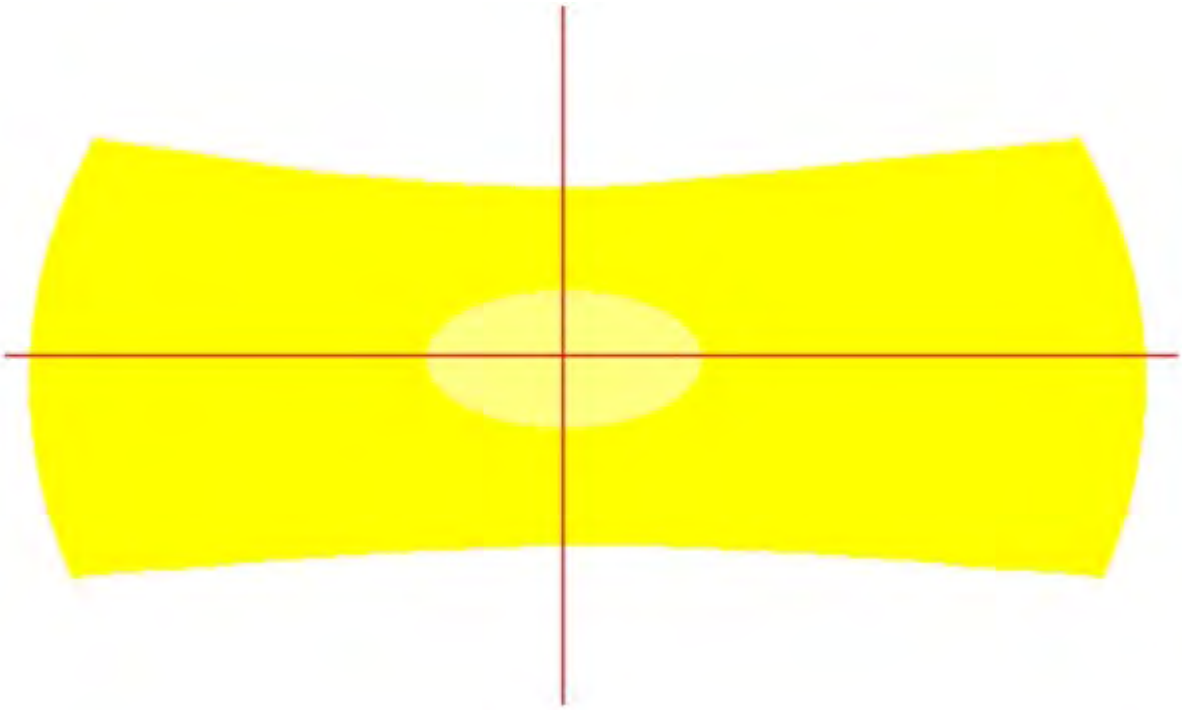
A dipped beam is denoted by either:

- a capital letter ‘C’ above a capital ‘E’.
- a capital letter ‘C’ above an ‘e’.



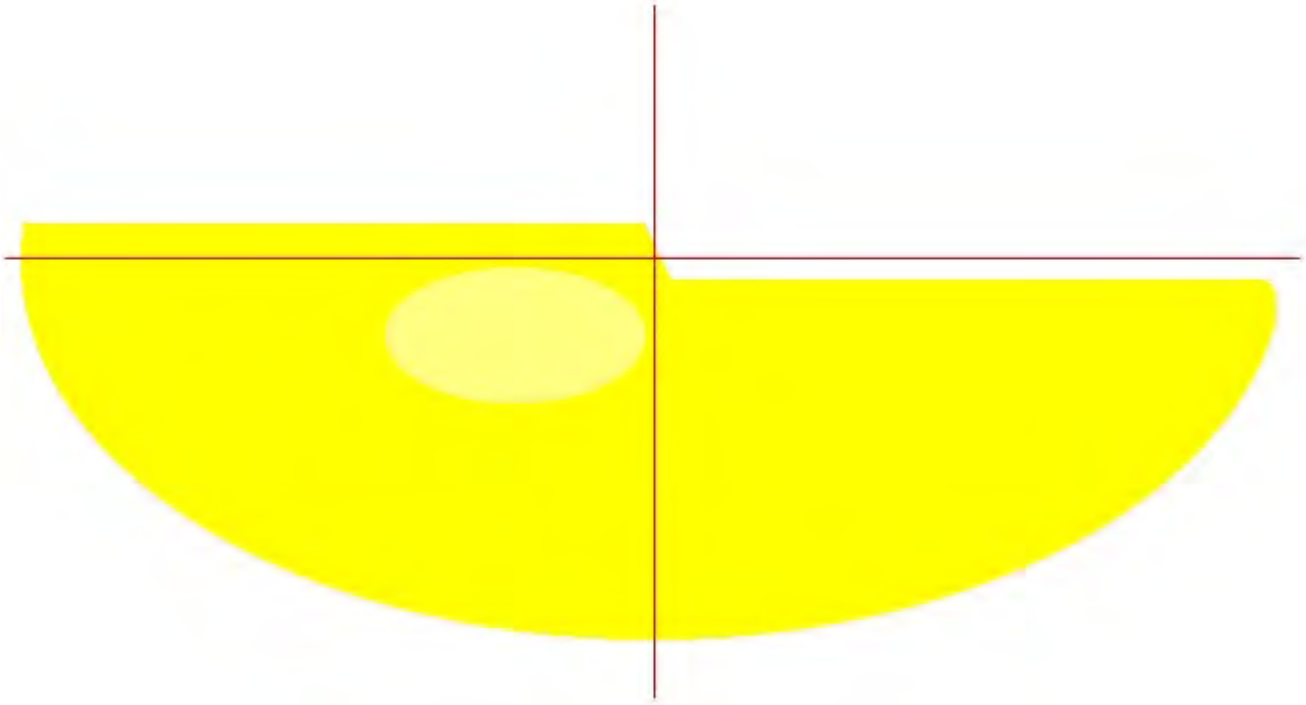
B. British American type (checked on main beam) – Characteristics:

1. Headlamps tested on main beam have a symmetrical main beam pattern with a central area of maximum intensity (hot spot).
2. This type of lamp generally has a circular lens which may be marked with a figure 1 followed by an arrow indicating the direction of dip.



C. British American type (checked on dipped beam) – Characteristics

1. An asymmetric dipped beam pattern with an area of high intensity intended to be directed along the nearside of the road.
2. A circular lens marked with the figure 2 which may also have an arrow showing the direction of dip.



Reasons for Failure

Note: While the reason for failure set out the limit values for each headlamp, these values are pre-programmed into the test equipment, and each headlamp will be passed or failed automatically by the equipment.

A. EUROPEAN (CHECKED ON DIPPED BEAM)

1. In relation to the 0% Horizontal line, the beam horizontal cut-off line is not between the limits listed in the table.

	Headlamp centres up to 850mm high	**Headlamp centres over 850mm high**
Upper limit: All vehicles	-0.5%	-1.25%
Lower limit: Category “A” vehicles. See note below.	-2.0%	-2.75%
Lower limit: Category “B” vehicles. See note below.	-3.25%	-4.0%

2. In any case the image break point is to the right, or more than 2.0% to the left, of the vertical 0% line
3. A Headlamp Dips to the right.

Note:
Category “A” vehicles are any vehicles not covered by category “B”.
Category “B” vehicles are 2 or 3 axled rigid vehicles with a wheelbase of 5m or less (measured to the centre line of the bogie) and all 2 or 3 axled tractor units in either case not fitted with self levelling rear suspension, self leveling headlamps or a driver’s headlamp aim adjustment control.

B. BRITISH AMERICAN (CHECKED ON MAIN BEAM)

1. In relation to the 0% Horizontal line, the centre of the “Hot Spot” is not between the limits listed in the table.

	Headlamp centres up to 850mm high	**Headlamp centres over 850mm high**
Upper limit: All vehicles	0%	0%
Lower limit: All vehicles	-2.0%	-2.75%

2. In any case the centre of the “Hot Spot” is to the right, or more than 2.0% to the left, of the vertical 0% line.
3. A headlamp dips to the right.

C. BRITISH AMERICAN (CHECKED ON DIPPED BEAM)

1. In relation to the 0% Horizontal line, the upper edge of the “Hot Spot” is not between the limits listed in the table.

	All Headlamp heights
Upper limit: All vehicles	0%
Lower limit: Category “A” vehicles. See note below.	-2.75%
Lower limit: Category “B” vehicles. See note below.	-4.0%

2. 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.
3. A headlamp dips to the right.

Note:
Category “A” vehicles are any vehicles not covered by category “B”.

Category "B" vehicles are 2 or 3 axled rigid vehicles with a wheelbase of 5m or less (measured to the centre line of the bogie) and all 2 or 3 axled tractor units in either case not fitted with self levelling rear suspension, self leveling headlamps or a driver's headlamp aim adjustment control.

Lamps Stop, Position, Fog, Registration Plate and Head Lamps

Application

The inspection of front position lamps, head lamps, rear position lamps and registration plate lamps applies to all the obligatory lamps fitted to vehicles and trailers.

Stop Lamps

The inspection of stop lamps applies to any stop lamp fitted to vehicles and trailers.

End Outline Marker Lamps

The inspection of end outline marker lamps applies to the obligatory marker lamps fitted to:

- vehicles first used from 24 January 1996
- trailers manufactured from 24 January 1996

and which in both cases are more than 2.1 m wide.

Side Marker Lamps

The inspection of side marker lamps applies to obligatory marker lamps fitted to:

- Vehicles with an overall length exceeding 6m first used on or after 1 January 1997 excluding Passenger Vehicles.
- Trailers with an overall length exceeding 6m first manufactured on or after 1 January 1997.
- Trailers manufactured before 1 January 1997 exceeding 9.15m long, requires side marker lamps, but only requires one on each side. These must be fitted within 1530mm of the centre of the length of the trailer. The lamp maybe red when viewed from the rear and white when viewed from the front.

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, from 1 November 1980 and trailers manufactured from 1 May 1980

Note: Fog lamps are not needed on modern trailers when drawn by old vehicles (see above for dates).

Procedures and Standards

The check for position should be visual and only vehicles with lamps obviously out of position should be failed for this reason. A summary of the main requirements for each type of lamp is shown on the last page of this section.

End Outline Marker Lamps

- These are not required on vehicles designed to carry demountable bodies if the overall width without the body fitted is less than 2.1 m.
- The front lamp and the rear lamp may be combined as for example on an articulated tractor.
- The rear marker lamps on vehicles such as tippers and tankers and those designed to carry demountable bodies may be fitted at chassis level.

- It is not acceptable for the rear position light to be used additionally as a marker lamp. A separate lamp must be fitted.
- 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 maker lamp to operate as an outline marker lamp.

Side Marker Lamps

Two or more marker lamps must be fitted at each side to ensure that the following is complied with:

- Maximum distance of the foremost marker lamp from the front of the vehicle or trailer, including any drawbar is 4m.
- Maximum distance of the rearmost marker lamp from the rear of the vehicle or trailer is 1m.
- Maximum distance between the light emitting surface of adjacent marker lamps is 3m or if this is not practical 4m.

Rear Fog Lamp

- Inspection of non-obligatory rear fog lamps is restricted to a check of colour, whether operation of the brakes affects the fog lamp.
- No more than two rear fog lamps may be fitted.

Headlamps

The Plain looking covers fitted to some vehicle headlights should be treated as a lens.

Rear Registration Plate Lamp

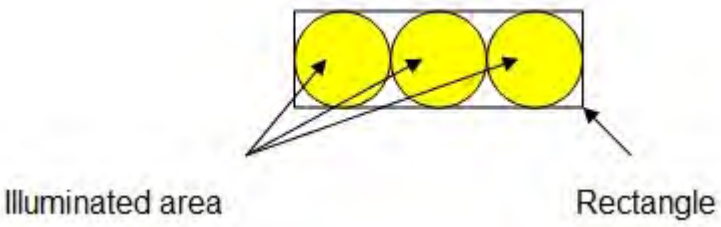
The registration plate lamp must be fitted in a position where it can illuminate the registration plate. A lamp fitted in a position where it cannot do this is not a registration plate lamp and this should be dealt with under Reason for Failure 1 (a).

Note: Obscuration of lamps - provided at least 50% of a lamp is visible this is not a Reason for Failure

Note: Matched Pair

- This 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.
- If there is more than 1 bulb or LED in the lamp at least 50% must work

Note: If more than two 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.



Note: 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.

Note: 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).

Note: 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.

Note: Light that bleeds through from an adjacent lamp is acceptable provided the illuminated light lens does not change colour.

Reasons for Failure

1. For all lamps:
   a. An obligatory lamp missing or insecure.
   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.
2. Fog lamp (in addition to the above):
   a. Tell-tale light not fitted, not working or cannot be seen by the driver.
   b. More than two rear fog lamps are fitted.
3. Stop lamp (in addition to the above):
   a. Does not show a steady red light when the brakes are applied, or does not go out when the brakes are released.
4. Headlamp (in addition to the above):
   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 or
      - extinguish when dipped beam is selected
5. A rear registration plate lamp
   a. Throws direct white light to the rear

Type	Date of first use (Manufacture of Trailer)	Date	Position (in mm)			Colour
			Max distance from side	Max height	Min height	
Front position lamps	Motor vehicle	From 24/01/1996	400	1500 of if impracticable 2100	-	White or yellow if in a headlamp which shows yellow light
		Before 24/01/1996	300	2300	-	-
	Trailers	From 24/01/1996	150	1500 of if impracticable 2100	-	White
		Before 24/01/1996	300	2300	-	-
Front end outline marker lamp	Motor vehicle	From 24/01/1996	400	-	The top of the lamp shall be no lower than the top of	White

					the windscreen	
	Trailers	From 24/01/1996	400	-	As high as possible with regard to the lateral position, being a pair and the use for which the vehicle is constructed	-
Dipped beam headlamp	-	From 1972 (refer to Lighting Regs for earlier vehicles)	400	-	-	White or yellow
Main beam headlamp	-	From 1931	No closer to the side than the dipped beam lamp	-	-	White or yellow
Rear position lamps	Motor vehicles	From 24/01/1996	400	1500 of if impracticable 2100	350	Red
	Trailers	From 24/01/1996	-	-	-	-
	Motor vehicles	Before 24/01/1996	800	2100	-	-
	Trailers	Before 24/01/1996	-	-	-	-
Rear end outline marker lamps	Motor vehicles & Trailers	From 24/01/1996	400	-	As high as possible with regard to the lateral position, being a pair and the use for which the vehicle is constructed	Red
Stop lamps		From 1936 (refer to Lighting Regs for earlier vehicles)	One on each side with a min separation distance of 400	1500 of if impracticable 2100	350	Red
Rear registration	All vehicles & trailers	-	-	-	-	White

plate lamp						
Rear fog lamp	Motor vehicle	From 01/11/1980	One lamp: on centre line or offside of vehicle. No requirement where two lights are fitted. The light emitting surface must be not less than 100mm from the light emitting surface of a stop lamp.	1000	250	Red
	Trailers	From 01/05/1980	-	-	-	-
Side marker lamps	Motor vehicle	From 01/01/1997	-	2300	-	Amber or red if within 1m of the rear of the vehicle
	Trailer	01/01/1997	-	2300	-	Amber or red if within 1m of the rear of the trailer or if fitted before 01/01/1997 one side marker lamp on each side, positioned longitudinally such as that no pat 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 white light to the front and red

						to the rear, or alternatively, amber.

Mirrors and indirect vision devices

Application

This inspection applies to all vehicles and the number and type of mirrors and or indirect vision devices (excluding periscopes) which have to be fitted are shown below.

Item	Vehicle Category	Mirrors required
1	**Any vehicle not listed below**	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.
2	A **Goods Vehicle** first used on or after 01/04/1985 but before 01/01/2000 with DGVW greater than 3.5 tonnes ***not being a vehicle in item 3 or 4.*** A **Bus** first used on or after 01/04/1983	A main exterior mirror on both the offside and nearside.
3	A **Motor Vehicle** first used on or after 01/10/1989 but before 01/01/2000 being a rigid vehicle with DGVW greater than 12 tonnes, not being a bus.	A main exterior mirror on both the offside and nearside. A close proximity mirror on the nearside.
4	A **Motor Vehicle** first used on or after 01/10/1989 but before 01/01/2000 being an articulated vehicle with DGVW greater than 12 tonnes, not being a bus. A **Goods Vehicle** first used on or after 01/01/200 but before 26/01/2007 with a DGVW exceeding 3.5 tonnes **Any other Motor Vehicle** first used on or after 01/01/2000 but before 26/01/2010, with a DGVW exceeding 3.5 tonnes, not being a Goods Vehicle or Bus	A main exterior mirror on both the offside and nearside. A wide angle mirror on the nearside. A close proximity mirror on the nearside. **Note: Wide angle and close proximity mirrors are only required if the close proximity can normally be mounted above 2.1m from the ground. (This is very subjective; therefore vehicles should only be refused on this item if it is obvious that the mirrors are required).**
5	A **Goods Vehicle** first used on or after 26/01/2007 (see note 1) with a DGVW exceeding 3.5 tonnes but not more than 7.5 tonnes. Any other **Motor Vehicle** first used on or after 26/01/2010 with a DGVW exceeding 3.5 tonnes but not more than 7.5 tonnes, not being a bus.	A main exterior mirror on both the offside and nearside. A wide angle mirror on both the offside and nearside. A close proximity mirror on the nearside. **Note 1: There is derogation relating to the fitment of a wide angle mirror on the offside of**

		some Goods Vehicles first used on or after 26/01/2007 but before 26/01/2008. Therefore where Goods Vehicles first used between these dates is not fitted with a wide angle mirror on the offside; it is not a reason for rejection. **Note 2: Wide angle and close proximity mirrors are only requires if the close proximity can normally be mounted above 2.1m from the ground. (This is very subjective; therefore vehicles should only be refused on this item if it is obvious that the mirrors are required).**
6	A **Goods Vehicle** first used on or after 26/01/2007 (see note 1) with a DGVW exceeding 7.5 tonnes. Any other **Motor Vehicle** first used on or after 26/01/2010 with a DGVW exceeding 7.5 tonnes, not being a bus.	A main exterior mirror on both the offside and nearside. A wide angle mirror on both the offside and nearside. A close proximity mirror on the nearside (see note 2) One front mirror **Note 1: There is derogation relating to the fitment of a front mirror and a wide angle mirror on the offside of some Goods Vehicles first used on or after 26/01/2007 but before 26/01/2008. Therefore where Goods Vehicles first used between these dates is not fitted with a front mirror or a wide angle mirror on the offside; it is not a reason for rejection.** **Note 2: A close proximity mirror is not required if its field of vision is covered by the combination of wide angle mirrors and a front mirror.**

“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

Procedure and Standards

The vehicle must be checked to see that the correct number and type of mirrors or other indirect visual devices (e.g. camera & monitor) are fitted. They must be checked for condition, security and position. Indirect visual device monitors used in place of mirrors (indirect visual device monitors cannot be used as an alternative to the main exterior mirrors) should be positioned where mirrors would normally be placed.

Internal mirrors must be checked to see that the edges are surrounded by protective material. This does not apply to vehicles registered before April 1969.

For the purpose of this inspection on a left hand drive vehicle the nearside is at the right and the offside at the left.

Close proximity 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 mirror, this exemption does not include front mirrors.

(Some Mercedes Unimogs fall into this category or the category of not being a forward control vehicle the U300, U400, U500 & U3000, U4000 and U5000 are exempt the front mirror but the U20 is not exempt and requires a front mirror)

A cracked mirror is not a Reason for Failure unless the vision is obscured or it is in such a condition that the glass is likely to fall out.

Reasons for Failure

1. Not fitted with the correct number or type(s) of mirror, or indirect vision device.
2. Part of a close proximity mirror, front mirror or monitor 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 is insecure or structurally deteriorated.
5. An internal mirror edge not surrounded by protective material or with damaged protective material.

Oil and Waste Leaks

Application

This inspection applies to all vehicles and trailers.

Procedure and Standards

- Check for leakage of any type of oil other than fuel oil.
- Check without operating any equipment other than the engine which may be run at tick-over speed.
- 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.
- Temporary means of preventing leaked oil reaching the ground are not acceptable. This does not apply to permanent fittings such as drip trays for feed pipes on tankers.

Additional for Public Service Vehicles

- Oil deposited onto bodywork, exhaust or brake systems should not result in failure unless the leak causing the deposit exists at the time of test.
- “Waste” including effluent from toilets and other devices but does not include water from sinks.

Reasons for Failure

1. Any oil leak, from any assembly, which can deposit oil at a rate of a 75 mm diameter pool in 5 minutes; or a number of leaks, which collectively would deposit oil at the same rate.

Public Service Vehicle (additional)

1. Leakage of waste which is likely to cause unpleasant or dangerous conditions for other road users or damage road surfaces.
2. Leakage's which, when the vehicle is in motion, can heavily contaminate the vehicle such that it causes a health or fire risk.

Manufacturers plate, dimension plate & trailer ID number

Application

Manufacturers Plate
This inspection applies to all wheeled Goods vehicles first used on or after 1 January 1968, and wheeled trailers manufactured on or after 1 January 1968 that has an unladen weight exceeding 1,020 kg. Buses used on or after 1 November 1983.

Procedures and Standards

A visual inspection should be carried out to ensure that a vehicle is equipped with a plate securely attached to the vehicle in a conspicuous and readily accessible position, which either meets the requirements of the Construction and Use Regulations **or** the requirements of the appropriate Community Directive.

Requirements of the Construction and Use Regulations

Particulars to be shown on plates for motor vehicles

1. Manufacturers name
2. Vehicle type
3. Engine type and power

NOTE: (1) The power need only be shown if vehicle is fitted with a Compression Ignition engine, and first used after 1/10/1972)

4. Chassis or serial number
5. Number of axles
6. Maximum axle weight for each axle (design)
7. Maximum gross weight (design)
8. Maximum train weight (design)
9. Maximum weight in UK for each axle (legal)

NOTE: (1) This is not required if first used between 19/7/1999 and 1/11/2002.
NOTE: (2) If first used after 19 July 1999 this may be displayed as 'maximum authorised weight' for each axle (weights determined in accordance with the Motor Vehicles (Authorised weight) Regulations (NI))

10. Maximum gross weight in UK (legal)

NOTE: (1) This is not required if first used between 19/7/1999 and 1/11/2002.
NOTE: (2) If first used after 19 July 1999 this may be displayed as 'maximum authorised weight' (weights determined in accordance with the Motor Vehicles (Authorised weight) Regulations (NI))

11. Maximum train weight in UK (legal)

NOTE: (1) This is not required if first used between 19/7/1999 and 1/11/2002.

Particulars to be shown on plates for trailers

1. Manufacturer's name
2. Chassis or serial number

3. Number of axles
4. Maximum weight for each axle (design)
5. Maximum load imposed on drawing vehicle (design)

NOTE: (1) This is not required if no load is imposed on the drawing vehicle).

6. Maximum gross weight (design)
7. Maximum weight in UK for each axle (legal)

NOTE: (1) This is not required if manufactured before 1/10/1972)

NOTE: (2) If manufactured after 19 July 1999 this may be displayed as 'maximum authorised weight' for each axle (weights determined in accordance with the Motor Vehicles (Authorised weight) Regulations (NI)).

8. Maximum gross weight in UK (legal)

NOTE: (1) This is not required if manufactured before 1/10/1972 or is a semi-trailer)

NOTE: (2) If manufactured after 19 July 1999 this may be displayed as 'maximum authorised weight' (weights determined in accordance with the Motor Vehicles (Authorised weight) Regulations (NI)).

9. Year of manufacture (legal)

NOTE: (1) This is not required if trailer is manufactured before 1/4/1970)

Requirements of the Community Directive

Particulars to be shown on plates for motor vehicles

1. Manufacturers name
2. EEC Type Approval Number

NOTE: (1) Instead this may show a national type approval number, which can either be on the manufactures plate or a separate plate.

3. Vehicle identification Number
4. Maximum axle weight for each axle (design)

NOTE: (1) This is only required if the design weight is higher than the legal weight.

5. Maximum gross weight (design)

NOTE: (1) This is only required if the design weight is higher than the legal weight.

6. Maximum train weight (design)

NOTE: (1) This is only required if the design weight is higher than the legal weight.

7. Maximum weight in UK for each axle (legal)
8. Maximum gross weight in UK (legal)
9. Maximum train weight in UK (legal)

Particulars to be shown on plates for Trailers

1. Manufacturers name
2. EEC Type Approval Number

NOTE: (1) Instead this may show a national type approval number, which can either be on the manufactures plate or a separate plate.

3. Vehicle identification Number
4. Maximum axle weight for each axle (design)

NOTE: (1) This is only required if the design weight is higher than the legal weight.

5. Maximum gross weight (design)

NOTE: (1) This is only required if the design weight is higher than the legal weight, except in the case of a semi-trailer where the design weight must be displayed.

6. Maximum load imposed on drawing vehicle (design)

NOTE: (1) This is only required for semi-trailers.

7. Maximum weight in UK for each axle (legal)
8. Maximum gross weight in UK (legal)

NOTE: (1) This is not required for semi-trailers.

Additional information required for **Public Service Vehicles** manufactured after 19th April 1999:

a. Length of the motor vehicle
b. Width of the vehicle
c. Data for the measurement of the length of vehicle combinations. - the distance between the front of the motor vehicle and the centre of the coupling device.
d. Where this information is displayed on a separate plate from the manufacturers plate, this plate must be securely attached to the vehicle in a conspicuous and readily accessible position and containing the above particulars including the manufacturers name and the vehicle identification number.

Reasons for Failure

a. Plate missing
b. Plate insecure
c. Information on plate illegible
d. Wrong information on plate
e. Plate not complying with relevant legislation

Plates Registration Plates

Information

Unregistered vehicles need not be fitted with registration plates.

Vehicles manufactured before 1 January 1973 may display traditional style “black and white” plates i.e. white, silver or grey characters on a black plate.

Vehicles manufactured on or after 1 January 1973 must display registration plates of reflex-reflecting material, white at the front and yellow at the rear, the characters must be black. The reflex-reflecting material is not part of the inspection.

NOTE:- The following requirements for registration plates fitted to vehicles first registered on or after 1 September 2001 are **not part of the inspection** :-

a. The display of the name and postcode of the registration plate supplying outlet.
b. The display of the BSAU number.
c. The display of the Euro symbol on registration plates which is optional.

Size of Characters

Examiners are not required to physically measure the characters or their spacing and the following information is provided for guidance only. Registration plates should only be rejected for character dimensions or spacing if they are clearly incorrect.

	Vehicles before 1 Sept 2001		**Vehicles on or after 1 Sept 2001**
	Option 1	Option 2	
Character height	89mm	79mm	79mm
Character width (except 1 & I)	64mm	57mm	50mm
Character stroke	16mm	14mm	14mm
Space between characters	13mm	11mm	11mm
Space between groups (horizontal)	38mm	33mm	33mm
Top and bottom margins (minimum)	13mm	11mm	11mm
Side margins (minimum)	25mm	11mm	11mm

Space between groups (vertical)	19mm	19mm	19mm

Note 1: The space permitted between a “1” or an “I” and another character is proportionately greater than the above dimensions.

Borders
Registration plates can optionally display a non-reflective border with a maximum width of 6mm and not closer than 5mm to the characters.

Mandatory Font

Note 1: 3D style letters and figures are permissible, provided the font style is adhered to.
Note 2: There is no difference in ‘0’ and ‘o’ nor is there deference in ‘I’ and ’1’.

Registration Plate Layout

Note: Vehicles registered on or after 1st September 2001, can only use the layout shown above i.e. one or two row. While vehicles registered before 1st September 2001 may also use a three row layout as shown below.

Cherished Plates

Older style registrations must meet the registration plate requirements according to the date of first registration of the vehicle, with a format style similar to that illustrated below e.g. letters on one line, figures on another, or a larger space between the two groups of characters.

Method of Inspection

1. Check that there is a registration plate both at the front and the rear of the vehicle, and check each one for security and condition.
2. On vehicles first registered on or after 1 January 1973, check
   - the colour of the characters and background
   - that the registration plates are fixed vertically, or as close to vertical as is reasonably practical.
3. On vehicles first registered on or after 1 September 2001, check that the registration plates do not display a honeycomb or similar effect background.
4. Check visually that the characters are correctly formed, spaced, and are not obviously likely to be misread due to, for example, badly positioned or uncovered retaining bolts etc.

Reason for Rejection

1. A registration plate
   a. missing or incorrect
   b. so insecure that it is likely to fall off
   c. letter or figure missing or incomplete
   d. faded, dirty, delaminated, deteriorated or obscured, (for example by a towbar) so that it is likely to be misread or is not easily legible by a person standing approximately 20 meters to the front/rear of the vehicle
   e. background overprinted or shadowed with text e.g. vehicle manufacturer name
2. On a vehicle first registered on or after 1 January 1973
   a. a front registration plate does not have black characters on a white background
   b. a rear registration plate does not have black characters on a yellow background

   c. a registration plate not fixed vertically, or as close to vertical as is reasonably practical.
3. A registration plate on a vehicle first registered on or after 1 September 2001 obviously displaying a honeycomb or similar effect background.
4. A registration plate with:
   a. characters which are obviously not the correct height, character width, stroke width, not of equal width along their entire length or incorrectly spaced
   b. a character not correctly formed, sloping, or likely to be misread
   c. any feature that has the effect of changing the appearance or legibility of any of the characters, so that the true identity of the vehicle is less easily established
   d. characters formed using a font which is not substantially similar to the prescribed font
   e. characters formed using broken or multiple strokes
   f. characters laid out in an incorrect format
   g. a margin obviously less than the minimum requirement
   h. a non-reflective border obviously wider than permitted or positioned too close to the characters. See note on Borders.

PSV Accessibility Features

Application

This inspection applies to all Busses, which have been issued with an Accessibility Certificate or a (DDA) Special Authorisation. As an alternative to Schedules 1, 2 or 3 some vehicles with accessibility certificates will be Bus Directive vehicles and will include compliance with Annex VII and the route and destination requirements of Schedule 2 or 3.
Note restraints: Wheelchair and wheelchair user restraints may form part of a combined restraint system.
Note padded backrest: On Annex VII vehicles the backrest need not be padded and, as an alternative to a backrest, a device which acts as a support for the wheels of the wheelchair may be provided.
Note ramp operation: For operation, the ramp or lift can be deployed or lowered to the surface on which the vehicle is sitting. On an Annex VII vehicle a ramp need not lower to the surface on which the vehicle is sitting but must lower to within 150mm above that surface.
Note band of contrasting colour: On an annex VII vehicle this is only required on a powered ramp and it may be red and white striped or a single band of contrasting colour.
Note stowage system: any means to retain the device in the stowed position can easily be released and if the means requires any form of power, the device can be easily released in the event of a power failure, if necessary with the use of a tool carried on the vehicle.
Note portable ramp: Any portable ramp with a positive means to prevent the ramp being easily detached from the vehicle when driven (e.g. locating pins) must comply with this requirement. Portable ramps without this positive means to prevent easy detachment do not have to meet this requirement.
Note power operated lift and ramp: Correct operation, this includes all internal and external controls relating to the operation or stopping of the lift or ramp. Where controls are available adjacent to the lift or ramp check that controls that initiate operation can be isolated by a control in the driver's cab.
Note power operated lift and ramp: If there is more than one lift or ramp only one needs to operate manually.

Note power operated lift and ramp: In the case of a lift, once stopped it must be capable of being reversed. Safety devices are not required for a ramp if the force of the ramp is unlikely to cause injury or a lift if the operating control is adjacent to the lift.
Note Entrance and exits: Where fitted with a power operated lift or ramp that is not within the driver's direct field of vision, and where the operating control is not adjacent to the lift or ramp. The driver when seated in the driver's seat has a clear unobstructed view of the inside and outside of the door area in which the lift or ramp operates either through mirrors or another optical device such as CCTV or optical cable.
Note Signs and markings: For each wheelchair space there is a sign or instruction indicating the direction a wheelchair and user should face during travel. In the case of an Annex VII vehicle a sign need not indicate the direction that a wheelchair should face. There are safety instructions explaining the use of the wheelchair space including any wheelchair restraint system and wheelchair occupant restraint system. Does not apply to Annex VII vehicles.
Note lighting: The operation of this lighting may be operated by the general interior lighting control(s), separate control(s) or automatically by opening the doors.
Note Steps: In the case of a step which projects beyond the body of the vehicle and is likely to injure pedestrians, check that the step can fold or retract and the vehicle is not capable of being driven normally unless the step is folded or retracted. In the case of Annex VII vehicles this last requirement is only for vehicles fitted with power operated steps. In the case of a power operated step check that the step is incapable of being operated with the vehicle in motion and the function of any safety device, which stops the motion of the step to prevent injury. Safety devices are not required if the force of the step is unlikely to cause injury. Kneeling systems (if applicable). This is a visual inspection for obvious defects, there is no requirement to move the vehicle to prove the interlocks work.
Note kneeling suspension: Kneeling requirements apply for the purpose of accessibility on or off the vehicle only.

Procedure and Standards

A. Vehicles which comply with Schedule 1 (Wheelchair Accessibility) of The PSV Accessibility Regulations (NI) 2003 or with Annex VII

1. For each wheelchair space designed for a forward facing wheelchair check:
    a. wheelchair restraints for presence, condition, security and function including ease of release.
    b. wheelchair user restraint for presence, security, condition and function including ease of release. This is not required on Annex VII vehicles if the passenger seats in the vehicle are not required to be fitted with any form of occupant restraint.
2. Check each wheelchair space designed for a rearward facing wheelchair for:
    a. presence, security and condition of a padded backrest.
    b. presence, security, function and condition of any stanchion, fixed rail retractable rail/movable device, partition or panel relating to the wheelchair area.
3. Check boarding lifts and boarding ramps for:
    a. presence, security and condition. (Security should be excluded when considering portable ramps.)
    b. functionality and operation.
    c. sharp edges or other protrusions.
    d. a band of contrasting colour around the abutting edges of the ramp surface.
    e. the surface having an effective device for preventing wheelchairs from rolling off and any device is effective.
    f. operation and safety of the stowage system.

g. an effective safety device to prevent the vehicle from being driven when the device is not correctly stowed (see note).

4. Check power operated lift or ramp for (additional requirements)
   a. correct operation so that it is unlikely to injure passengers, pedestrians or other road users (see note).
   b. operation of an audible warning device.
   c. operation of a yellow warning light on an Annex VII vehicle fitted with a powered ramp.
   d. operation manually in the event of a power failure. Not applicable if a portable ramp is carried.
   e. an effective safety device to prevent the lift or ramp operating whilst the vehicle is in motion. (This is a visual inspection and does not require movement of the vehicle.)
   f. operation of the safety device to stop extension or retraction of a ramp or lift.
5. Check Portable Ramp (additional requirements) for:
   a. suitable position for storage.
6. Check entrance and exit optical device to allow driver to view wheelchair entrances and exits for:
   a. presence, security, condition and operation.
   b. effective
7. Check signs, markings and instructions for:
   a. presence and legibility.
8. Check communication devices:
   a. for any wheelchair space is present and operates. (This may be Visual or audible.)
   b. every entrance for a wheelchair user outside the direct view of the driver must have an external communication device check for presence and operation.
9. Check lighting specifically intended for wheelchair users to board or alight in safety for:
   a. presence and operation

B. Vehicles, which comply with Schedules 2 or 3 (General Accessibility) of The PSV Accessibility Regulations 2000 and Annex VII vehicles

10. Check floors and gangways for:
    a. an effective slip resistant surface.
11. Check steps for:
    a. an effective slip resistant surface.
    b. presence, condition and visibility of a band of contrasting colour on the front edge of each step. Bus Directive and ECE Regulation vehicles will have had this checked under section ‘Interior of Body, Passenger Entrances, Exit Steps and Platforms’.
    c. operation of an interlock
12. Check kneeling suspension for:
    a. any operating controls are adequately marked.
    b. controls which are capable of stopping and reversing the lowering process.
    c. has an effective interlock to prevent the vehicle from being driven at speeds in excess of 5km/h with the vehicle lower than normal height.

Reasons for Failure

1. Wheelchair spaces:
   a. any wheelchair restraint components missing, badly deteriorated, insecure or defective.

b. any wheelchair user restraint components missing, badly deteriorated, insecure or defective.

2. For each wheelchair space designed for a rearward facing wheelchair:
   a. any padded backrest missing, insecure or in a condition which is likely to cause injury to passengers (see note).
   b. any stanchion, fixed rail, retractable rail/movable device, partition or panel relating to the wheelchair area missing, insecure or in a condition which is likely to cause injury to passengers.
3. Boarding lifts and boarding ramps:
   a. a lift or ramp missing, insecure or the strength of the lift or ramp is significantly impaired.
   b. a lift or ramp which does not function as intended or does not operate through the required range of movement.
   c. there are sharp edges or other protrusions on a lift or ramp which are likely to cause injury.
   d. the band of contrasting colour on a lift or ramp surface edge is missing or has deteriorated to the extent that it is visually ineffective.
   e. a lift surface does not have an effective device for preventing wheelchairs from rolling off or the device is ineffective.
   f. cannot be safely stowed or failure or malfunction of any stowage retaining device including failure to release without power supplied where appropriate.
   g. the safety device intended to prevent the vehicle being driven normally when the lift or ramp is not in its intended position for vehicle travel, is ineffective.
4. A power operated lift or ramp (additional requirements):
   a. defective in operation to the extent that it is likely to injure passengers, pedestrians or other road users.
   b. with an audible device missing or inoperative (except an Annex VII vehicle with a powered lift).
   c. on an Annex VII vehicle with a powered ramp the yellow warning lights are missing or defective.
   d. incapable of being operated manually and the vehicle does not have a portable ramp.
   e. without an effective safety device to prevent the lift or ramp from operating with the vehicle in motion.
   f. safety device to stop the extension or retraction of a ramp or lift on meeting an obstruction inoperative and is likely to cause injury.
5. Portable Ramp (additional requirements):
   a. portable ramp with no suitable storage stowage position and likely to cause injury to any passenger or crew.
6. Entrance and exit optical device to allow driver to view wheelchair entrances and exits:
   a. missing, insecure or defective.
   b. ineffective.
7. Signs and markings:
   a. a required sign / instruction or safety instruction missing or illegible.
8. Communication devices:
   a. any internal wheelchair space communication device missing or inoperative.
   b. any external communication device missing or inoperative.
9. Lighting specifically intended for wheelchair users to board or alight in safety:
   a. missing, inoperative or deteriorated to the extent that the illumination is significantly reduced (See note).
10. Floors and gangways:

a. slip resistant material deteriorated to the extent that it is no longer effective.

11. Steps with:
    a. slip resistant material deteriorated to the extent that it is no longer effective.
    b. band of contrasting colour is missing or deteriorated to the extent that it is no longer visually effective.
    c. any interlock and / or safety device applicable to folding, extendable and/ or power steps is inoperative.
12. Kneeling suspension which:
    a. has an operating control, which is inadequately marked.
    b. has controls which are incapable of stopping and reversing the lowering process.
    c. does not have an effective interlock to prevent the vehicle from being driven at speeds in excess of 5km/h with the vehicle lower than normal height.

PSV Exterior of Body, including Luggage Compartment

Application

This inspection applies to all PSV's.

Procedure and Standards

1. Check Body panels, frame members, fittings or components:
    a. security
    b. condition
2. Check Body underparts for:
    a. security, condition and corrosion
3. Check Luggage compartment for:
    a. condition
4. Check Luggage compartment or other access door for:
    a. security.
    b. can be retained in the open and closed position.
    c. not obscuring a position lamp, direction indicator or retro reflector when secured in the open position.

Reasons for Failure

1. Body panels, frame members, fittings or components:
    a. insecure and/or likely to fall from the vehicle.
    b. with jagged edges likely to cause injury.
2. Body underparts:
    a. so insecure, corroded or deteriorated that they are likely to endanger passengers, other road users or affect control of the vehicle.
3. Luggage compartment:
    a. structure defective allowing contents to protrude or fall onto a road, or in a condition to damage or soil luggage.
4. Luggage compartment or other access door:
    a. likely to become detached.
    b. which cannot be secured in open or closed position.
    c. which when secured in the open position obscures a position lamp, direction indicator or rear retro reflector.

PSV Interior of Body, Passenger Entrance and Exit Steps and Platforms

Application

This inspection applies to all buses. Buses which have an accessibility certificate or a DDA special authorisation will have wheelchair facilities and disabled access examined under Inspection Manual Section ‘Accessibility features’.

Note: Manual retractable steps on Bus Directive and ECE Regulation vehicles must be fitted with an audible warning to indicate that the steps have not been fully retracted into the travelling position. Power operated steps on these vehicles must have an interlock to prevent the vehicle being driven with the steps in the down position.
Crew seats should be marked for crew use only or similar. On Bus Directive and ECE Regulation vehicles the seat only needs to be identified for crew use and the wording is not specified.

Removal of a parcel rack from a vehicle will not be a Reason for Failure unless a communication control or grab rail is an integral part of the parcel rack, and there are not sufficient alternatives to these items.

Air ventilation will only be a reason for failure if more than 50% of the system is ineffective. Alternatively if there are side opening windows or roof vents, failure, or partial failure of the forced ventilation system will not be a reason for failure. The requirements for ventilation will not be a requirement for Schedule 6 minibuses, or to the toilet compartment on any vehicle.

Audible and visual devices to request the driver to stop are not required on buses with less than 13 passenger seats or Schedule 6 minibuses. If a visual and an audible system are fitted only one needs to operate, so long as it operates throughout the vehicle. Bus Directive and ECE regulation vehicles which do not have provision for standing passengers do not require a communication device. All Bus Directive and ECE regulation vehicles which carry standing passengers must have at least one illuminated sign which may be text or a pictogram to indicate to passengers that the bus is stopping.

Some early vehicles were fitted with muted bells, these vehicles should not be failed at annual test. (Muted bells only work once until they are reset.)

If the first aid kit receptacle is in a sealed compartment or closed glove box; the compartment or glove box should be clearly marked to indicate the position of the first aid kit. If the first aid kit is behind a glass panel the panel should not be removed for this inspection. If a break glass panel is fitted the shot blasted area should face inward to allow the glass to be easily broken. If it is facing outward this will be a Reason for Failure. An empty first aid box will be considered as missing.

Note: First aid kits are required for all large buses (apart from those used on local services) and on Schedule 6 Minibuses. There is no requirement to inspect the contents of a first aid kit.

If a large bus used on local services is presented for test with markings showing the presence of a first aid kit but no kit is carried this is a reason for failure unless the sign is removed or covered.

Fire extinguishers must contain water or foam and be marked BS 5423 or EN3 and have a minimum fire rating of at least 8A or 21B.

If the extinguisher is behind a glass panel the panel should not be removed for this inspection. A glass panel with a shot blasted area is only readily breakable if the shot blasted surface faces inwards (i.e. towards the fire extinguisher). If a shot blasted area faces outwards this is a reason for failure. If the glass has been shot blasted in accordance with the above paragraph, then no other device for breaking the glass is required. Other acceptable means of gaining access to fire extinguishers or first aid kits covered by a glass panel, that we are currently aware of, are:

- A ring pull which allows the easy removal of the glazing panel, or
- Toughened glass with a break glass hammer provided.

There may be other acceptable methods which have been approved by certifying officers. There is no requirement to check for safety markings on the glass covers of a first aid and fire extinguisher.

There are no requirements with regards to the height at which the fire extinguisher is placed.

Where a gauge is fitted to a fire extinguisher the reading shown should not be used to determine the condition of the extinguisher.

Examine all ‘other facilities’. If any ‘other facility’ is clearly inoperative and is not causing any danger to passengers this is not a Reason for Failure. Those most likely to be seen are:

- Wheelchair lifts and ramps. (If fitted to a bus with an accessibility certificate or a DDA special authorisation examine under Inspection Manual Section ‘Accessibility features’)
- Wheelchair fixings and features. (If fitted to a bus with an accessibility certificate or DDA special authorisation examine under Inspection Manual Section ‘Accessibility features’)
- Combustion heaters.
- Cookers/refrigerators.
- Drinks dispensers.
- Televisions/video monitors.

Note: When inspecting separately fuelled appliances such as combustion heaters or cookers any signs of scorching charring or melting will be a Reason for Failure.
If a vehicle is presented with a different seating arrangement to that of the original approval. (either more seats or less). This is not a reason for refusal to test but may be a failure if the seating arrangements endanger passengers RfF 3b.

Procedure and Standards

1. Check Body Interior for:
   a. unobstructed access to any exit.
   b. the security and condition of steps and stairways, retractable steps, gangways, platforms or floor traps.
   c. condition of any floor and/or covering which is likely to endanger passengers.

    d. a floor trap locking device condition and effectiveness.
2. Check Retractable Steps:
    a. retract and remain retracted.
    b. for operation.
    c. are not in the down/use position without the driver being aware.
    d. audible warning operation when a manually operated step is not fully retracted on Bus Directive and ECE regulation vehicle.
    e. for an effective safety device to prevent the power operated steps from operating with the vehicle in motion on Bus Directive and ECE regulation vehicles. (This does not require movement of the vehicle but inspection of anything obvious which may allow this.)
    f. are secure.
    g. non-slip material condition.
3. Check Seats for:
    a. security and condition.
    b. position.
    c. cleanliness.
4. Check Crew seats:
    a. if a crew seat encroaches into the gangway, it folds automatically when not in use.
    b. have an obligatory notice saying **for crew use only or similar** on or adjacent to the seat or identified as for crew use on a Bus Directive and ECE regulation vehicle.
5. Check grab rails, straps, stanchions, guard rails and barriers for:
    a. presence, security and condition.
6. Check parcel racks:
    a. for security and condition
7. Check ventilation:
    a. forced ventilation equipment is effective. (not Schedule 6 minibuses)
    b. security.
    c. condition.
8. Check engine interior covers for:
    a. presence and condition.
9. Check interior lights for:
    a. illumination of saloon interior, steps, platform, staircase and other facilities. (interior lights only apply to steps for Schedule 6 minibuses)
10. Check passenger communication with driver:
    a. present and operates.
    b. gives a visual indication to passengers that the bus is stopping on Bus Directive and ECE regulation vehicles which carry standing passengers.
11. Check interior surfaces for:
    a. security and condition.
    b. cleanliness.
12. Check first aid kit for:
    a. presence, accessibility and condition.
    b. receptacle marked.
13. Check fire extinguisher for:
    a. presence, accessibility, suitably charged, of the correct type and its condition.
14. Check any other facility (including those listed in 15-19 below) which is: complete, secure and functions correctly.
15. Check wheelchair lifts/ramps:
    a. lift and/or ramp.

b. for sharp edges or other protrusions.
c. operation.
d. non-slip surface.
e. can be secured in stored position.

16. Check wheelchair spaces:
    a. for security of wheelchair floor fittings and that they do not cause a passengers to trip.
    b. padded backrest for presence, security and condition.
    c. any stanchion, retractable rail/movable device, partition or panel relating to the wheelchair area is present, secure and its condition.
17. Check combustion heater:
    a. fuel filler.
18. Check cookers/refrigerators/drinks dispenser for:
    a. condition.
19. Check television/video for passenger entertainment that:
    a. the screen is placed where driver cannot view whilst driving. (Information monitors for driver information are not to be considered as RfF.)

Reasons for Failure

1. Body Interior:
    a. access to any exit obstructed.
    b. steps and stairways, retractable steps, gangways, platforms or floor traps so insecure or in such a condition that they are likely to collapse in normal use.
    c. condition of any floor and/or covering which is likely to endanger passengers.
    d. a floor trap locking device worn or ineffective so that the trap may become displaced.
2. Retractable Steps with:
    a. a step which will not retract or remain retracted.
    b. a step which will not operate or operates incorrectly.
    c. driver able to move vehicle without being aware that the step is in the down position, e.g. direct sight or mirror or warning device or interlock.
    d. driver able to move vehicle without being given an audible warning when a manually operated step is not fully retracted on Bus Directive and ECE regulation vehicles.
    e. driver able to move vehicle when a power operated step is in the down position on Bus Directive and ECE regulation vehicles, without an effective safety device to prevent the power operated steps from operating with the vehicle in motion on Bus Directive and ECE regulation vehicles.
    f. a step insecure.
    g. non-slip material defective.
3. Seats:
    a. A seat insecure, damaged or weakened so that the damaged seat structure or covering could endanger passengers or damage their clothing.
    b. A seat layout which has been changed without approval and which could endanger passengers.
    c. With covering(s) in such a condition that they are likely to soil passengers clothing.
4. Crew Seats:
    a. crew seats which encroach into gangways and do not automatically retract when not in use.

   b. Crew seats without a legible notice saying **for crew use only or similar** on or adjacent to the seat or not identified as for crew use on a Bus Directive and ECE regulation vehicle.
5. Grab rails, straps, stanchions, guard rails and barriers:
   a. missing or insecure or likely to endanger passengers.
6. Constructed in such a manner that allows articles to fall onto the driver or passengers.
7. Ventilation:
   a. Any ventilator, opening windows or roof hatches insecure
   b. More than 50% of the ventilator system (i.e. opening windows, ventilators and roof hatches) inoperative where forced air ventilation is not available.
8. Engine interior covers:
   a. missing, contaminated to a degree which constitutes a fire risk, or which allow fumes to penetrate passenger saloon.
9. Interior lights:
   a. inadequate illumination of saloon interior, steps, platform, staircase and other facilities. (interior lights only apply to steps for Schedule 6 minibuses)
10. Passenger Communication with driver:
   a. missing or inoperative.
   b. does not give a visual indication to the majority of passengers that the bus is stopping on Bus Directive and ECE regulation vehicles which carry standing passengers.
11. Interior surfaces:
   a. insecure or damaged so that it is likely to cause injury to passengers.
   b. contaminated so that they are likely to soil passengers clothing.
12. First aid kit:
   a. missing, inaccessible or in poor or contaminated condition.
   b. receptacle not marked.
13. Fire extinguisher:
   a. missing, inaccessible, discharged, incorrect type or in an obviously poor condition.
14. Any other facility (including those listed in 15-19 below) which is: incomplete, insecure and/or incorrect function and is likely to endanger passengers.
15. Wheelchair lifts/ramps:
   a. the strength of the lift or ramp is significantly impaired.
   b. there are sharp edges or other protrusions on a lift or ramp which are likely to cause injury.
   c. defective in operation to the extent that it is likely to injure passengers, pedestrians or other road users.
   d. non-slip surface on ramp defective.
   e. a lift or ramp which cannot be secured in stored position.
16. Wheelchair spaces
   a. any wheelchair floor fitting loose or likely to cause passengers to trip.
   b. any padded backrest missing (when known to be an original fitting), insecure or in a condition which is likely to cause injury to passengers.
   c. any stanchion, retractable rail/movable device, partition or panel relating to the wheelchair area missing, insecure or in a condition which is likely to cause injury to passengers.
17. Combustion Heater with:
   a. fuel filler inside vehicle.

18. Cookers/refrigerators/drinks dispenser:

a. in such a condition that they are likely to endanger passengers.

19. Television/Video for passenger entertainment with:
    1. the screen placed where driver can view whilst driving.

PSV Passenger Doors, Drivers Doors and Emergency Exits

Application

This inspection applies to all vehicles and includes:

- All drivers and passenger doors including continental doors (for use when coaches are driven on the right hand side of the road)
- all emergency exits including crew emergency exits where there is separate crew accommodation.

Note: On Bus Directive and ECE Regulation vehicles there may not be a primary emergency exit if the vehicle has two service doors and on Bus Directive vehicles the primary emergency exit may be power operated. Floor hatches may be used as emergency exits on Bus Directive vehicles.
Note: For power operated emergency exits only the driver's control will close the exit.
Note: A driver's door with one handle missing is acceptable provided that the door can be opened by the remaining handle(s) from the inside and outside.

Power operated doors should be operated to check that they consistently open fully. If on one occasion the doors fail to open to their fullest extent they should be operated a further 5 times and if the doors fail to open fully on one further attempt this is a reason for failure. Request presenter to perform the additional check if it is required. Ensure that sufficient air is available to allow this check to be carried out correctly.

The above should be done with the engine switched off.

Check the emergency operation of power operated door controls and that markings describing how to open the doors in an emergency are readily visible on or adjacent to the door.
In general safety systems for preventing a passenger from being trapped are required on:

- All schedule 6 minibuses.
- Doors more than 500mm to the rear of the drivers seat on post 1 October 1990 vehicles (other than minibuses). These doors must re-open.
- On any power operated doors without a soft rubber edge large enough to prevent passengers from being trapped.

Power operated doors with safety systems do not need to re-open or stop if they are within 50mm of being fully closed. However PSVs (other than minibuses) used from 1 October 1990 with power operated doors more than 500mm to the rear of the drivers seat MUST re-open within 30mm of being fully closed.
Note: Where sliding doors are fitted the condition of runners, tracks and catches should be checked in both the open and closed positions
Note: The exact wording of exit markings may vary but variations are acceptable as long as it is clear that it is an emergency exit and the means of operation are clear.
Note: There is no requirement for the means of operation for a break glass window to be shown on the outside of the bus.
Note: There is no requirement to mark the exterior of a continental door where an alternative seating plan renders it inaccessible.

Note: Check that if an all over advert has been fitted over a break glass emergency exit, that a gap exists between the advert and the window frame or bonding surface and that no mandatory markings are obscured or no longer contrast with background.
Note: Door or emergency exit open warning devices must be fitted to:

- Schedule 6 minibuses which do not have two stage slam locks.
- Buses with more than 20 passenger seats which are certified for one person operation and used on local services. A warning device must be fitted to each emergency door and hinged emergency window which is outside the driver's direct line of sight.
- Any external door or hinged exit (including any emergency exit) which is outside the driver s direct line of sight on a vehicle certified on or after 1 January 1997. This does not apply to a door of a minibus if that door is fitted with a two stage lock.
- Continental doors
- On any power operated door fitted more than 500mm behind the driver's seat on a vehicle registered after 1 October 1990. This must be a visual device.
- On any emergency door or floor hatch on a Bus Directive or ECE regulation vehicle. This must be an audible device
- On any hinged emergency window which is not clearly visible to the driver on a Bus Directive or ECE regulation vehicle. This must be an audible device.
- On any emergency control for a power operated door fitted to a Bus Directive or ECE Regulation vehicle. This must be a visual and audible Device.
- Service Doors on Bus Directive and ECE Regulation vehicles
- Automatically operated service doors on Bus Directive and ECE regulation vehicles.

The function of activating or deactivating may be done by either operating the door control switches or by an independent switch.
Note: For power operated doors fitted with safety systems to prevent passengers from being trapped. If the vehicle has double leaf type doors the dimension where the doors should stop and reopen should be taken for each door separately.
Note: Break glass hammers enclosed behind glass do not require the glass shot blasted. The requirement is that the glass is easily broken, however, if the glass is shot blasted this area should be on the inside of the glass. RfF7a.
Note: Tethered break glass hammers are required to clear the minimum size for an emergency exit. This size is 910mm x530mm for a secondary exit and 70cm x 50cm with a minimum are of 4,000sq cm for an additional exit. If this is not possible this is a RfF1b
Note: The minimum requirements for an emergency door, window or roof hatch is:

1. Primary or Secondary exit
    a. the emergency exit shall –
        i. be clearly marked as such inside and outside the vehicle.
    b. the means of operation of the doors and hinged windows fitted to the emergency exit shall be clearly indicated.
2. Additional emergency exit situated in either the front, rear face or the roof.
    a. be clearly marked as an emergency exit
        i. on the inside of the vehicle, and
        ii. in a case where the emergency exit can be opened from the outside, must be marked on the outside of the vehicle.
        iii. be clearly marked with its means of operation.

Procedure and Standards

1. Check doors and emergency exits:
    a. are complete and present.
    b. can be opened to its fullest extent.
    c. will remain securely closed and not open inadvertently.

   d. for any device to hold a door, or on a Bus Directive or ECE Regulation vehicle a door or top hinged emergency window open at its fullest extent is effective
   e. hinges and pins for security, wear and fractures and door pillars for security.
   f. supplementary locking devices operation can be overridden by all of the associated interior door controls.
   g. release handle guard for security and presence where originally fitted to prevent accidental opening.
   h. Open warning device is present and operates on vehicles that require them. (See application for details)
   i. break glass windows for correct glazing type.
2. Check sliding doors:
   a. for security and attachments.
   b. for the effort taken to operate.
3. Check a door or emergency exit opening or closing mechanism:
   a. for operation, wear and condition.
   b. control buttons are secure, operate correctly and travel.
4. Check a door and emergency exit marking for:
   a. presence inside and outside the vehicle.
   b. legibility.
   c. method of operation displayed either on or adjacent to the exit.
5. Check power operated doors and emergency exit:
   a. that operation does not deplete the brake system below the level at which the circuit protection operates.
   b. emergency controls will open the door from both inside and outside the vehicle.
   c. Soft edge for presence and condition.
   d. safety system that prevents a passenger from being trapped operates correctly.
6. Check a Plug door:
   a. operates in a smooth and controlled manner and is not likely to injure persons outside the vehicle.
7. Check Emergency Exits:
   a. tools or devices needed to open break glass or ejectable windows are present and secured in a readily accessible position which can be broken or opened by reasonable force.
8. Check automatically operated service door:
   a. that the driver can activate and deactivate the operation.

Reasons for Failure

1. A door or emergency exit:
   a. incomplete or missing.
   b. cannot be opened to its fullest extent. Jammed or secured so that it can not be opened.
   c. will not remain securely closed or is likely to open inadvertently.
   d. with a defective device for holding a door, or on a Bus Directive or ECE vehicle a door or top hinged emergency window, open.
   e. with insecure, excessively worn or fractured hinges or pins or insecure door pillars which could adversely affect operation.
   f. with a supplementary locking device which can not be overridden.
   g. with a release handle guard insecure or missing.
   h. Open warning device missing or inoperative.
   i. a break glass window fitted with laminated glass or other unbreakable glazing.
2. A sliding door:
   a. insecure or likely to become detached from a runner.

    b. cannot be operated without undue effort.
3. A door or emergency exit opening or closing mechanism
    a. defective, excessively worn or damaged so that it is difficult to open or close the door or exit.
    b. control buttons loose, sticking or with excessive movement before operating.
4. A door and emergency exit marking
    a. missing.
    b. illegible.
    c. method of operation not shown. (Not applicable to schedule 6 apart from the emergency door.)
5. Power operated doors and emergency exits:
    a. operation of the doors depletes the braking system(s) pressure below the level at which the circuit protection valve should operate.
    b. cannot be opened from inside or outside the vehicle using the emergency controls.
    c. soft edge missing deteriorated or damaged so that injury could be caused to any person.
    d. safety system does not operate correctly.
6. Plug door:
    a. opens or closes suddenly or with excessive force and is likely to injure persons outside the vehicle.
7. Emergency Exits:
    a. opening tool or device missing or not secured in a readily accessible place.
8. Automatically operated service door:
    a. driver cannot activate or deactivate operation.

Rear Markings, Reflectors and Conspicuity Markings

Application

Rear Markings

This inspection applies to the vehicles and trailers listed below which must be fitted with rear markings. The type of marking which is acceptable is shown in the table below. The type numbers refer to the diagrams on the following pages.

Note: Rear markings are not required where rear conspicuity markings are fitted.

Motor Vehicles with a maximum gross weight exceeding 7500 kg (not articulated tractors and vehicles constructed or adapted for transporting 2 or more boats, vehicles or vehicle bodies). Also it does not apply to passenger carrying vehicles, however it applies to articulated buses over 13m.

Trailers with a maximum gross weight exceeding 3500 kg (not trailers constructed or adapted for transporting 2 or more boats, vehicles or vehicle bodies).

Reflectors

This inspection applies to all motor vehicles and trailers but only obligatory reflectors are to be checked.

- Every motor vehicle and trailer requires 2 red reflectors facing squarely to the rear.
- Trailers manufactured from 24 January 1996 require two white reflectors facing squarely to the front.

Side Reflectors
This inspection applies to a motor vehicle.
- first used before 24 January 1996 with an overall length of more than 8m.
- first used from 24 January 1996 with an overall length of more than 6m.

This inspection applies to trailers with an overall length of more than 5m excluding any drawbar.

Conspicuity markings
This inspection applies to motor vehicles (excluding Passenger Vehicles and Tractor Units) first used on or after 10 July 2011 and trailers first manufactured on or after 10 July 2011.

Rear Conspicuity markings
This inspection applies to:
- Motor vehicles over 7500kg and over 2.1m wide (excluding passenger vehicles and tractor units, however they may be fitted optionally)
- Trailers over 3500kg and over 2.1m wide

Note:- Rear marker plates complying with UNECE 70.01 [Honey Comb effect] can be considered as part of the rear markings. Those complying with UNECE 70.00 [Non Honey Comb] cannot.

Side Conspicuity markings
This inspection applies to:
- Motor vehicles over 7500kg and over 6 metres in length (excluding passenger vehicles and tractor units, however they may be fitted optionally)
- Trailers over 3500kg and over 6 metres (including any drawbar) in length.

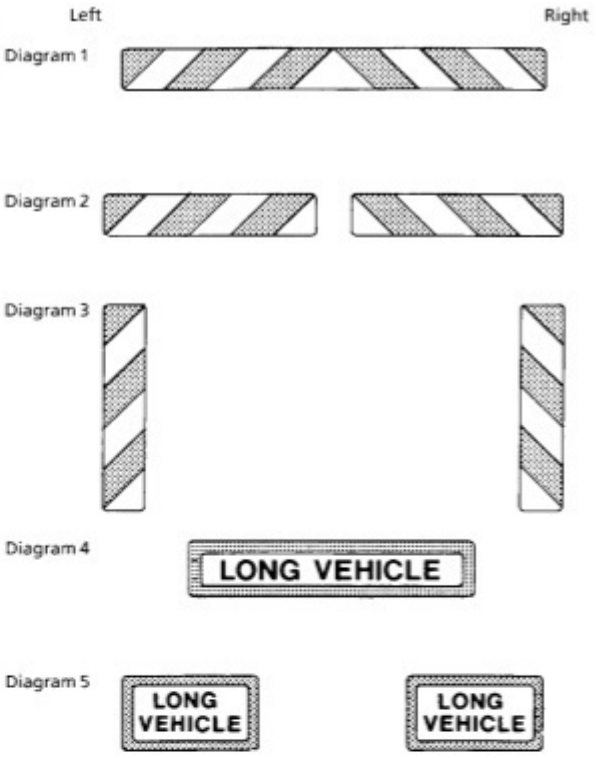
Procedure and Standards

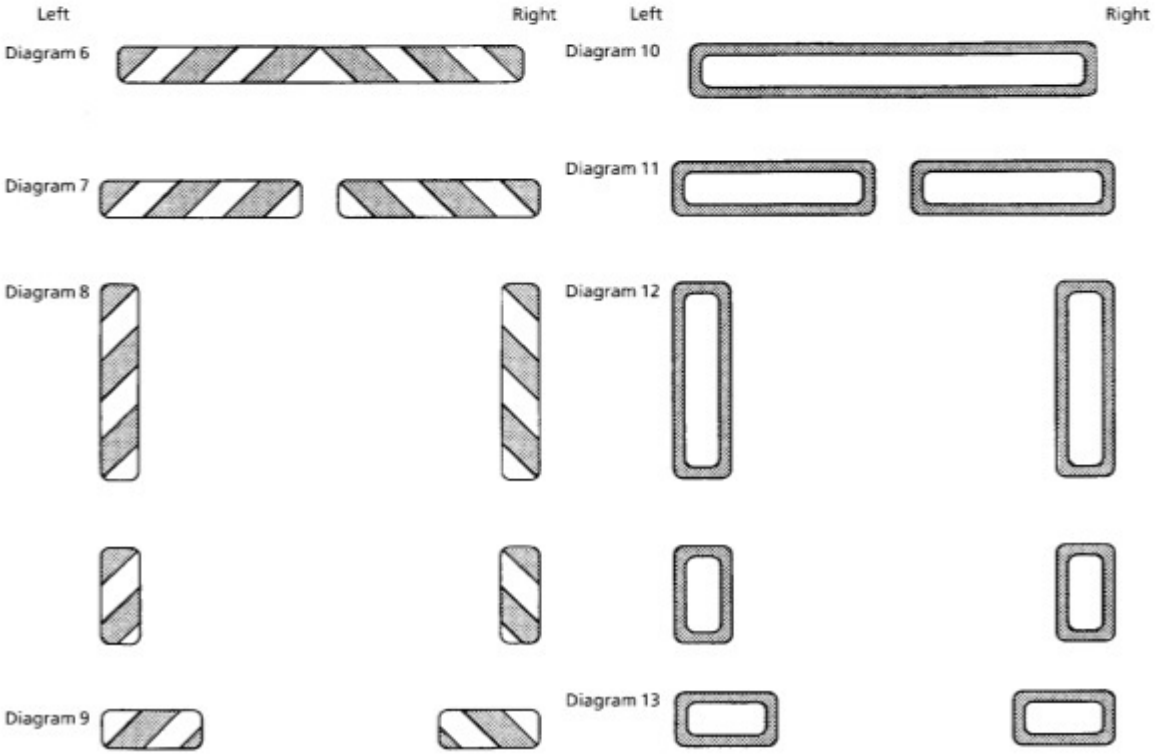
Check for type, position, security and effectiveness

Rear markings
They must be fitted with the lower edge between 400 mm and 1700 mm from the ground. A rear marker must not be more than 10% obliterated or obstructed.
Note: If the rear markings chevrons are fitted the opposite way around than shown below this is not a Reason for Failure.
Note: 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. This would also apply to refuse vehicles, with bin lifting equipment fitted to the rear of the vehicle.
Note: 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.
Note: Acceptable approval marks for rear marker boards are either BSAU152, ‘E’ or ‘e’.

The types of marking shown in diagrams 1-5 are those complying with the British Standard AU152 and the others are approved to ECE Regulation 70

Type 3 may be of a lower height and greater width than shown in the diagram. The minimum height of this is 140mm and it must have an area of at least 980cm².





Note: plates in diagrams 9 and 13 must be fitted to comprise of all 4 plates

Reflectors

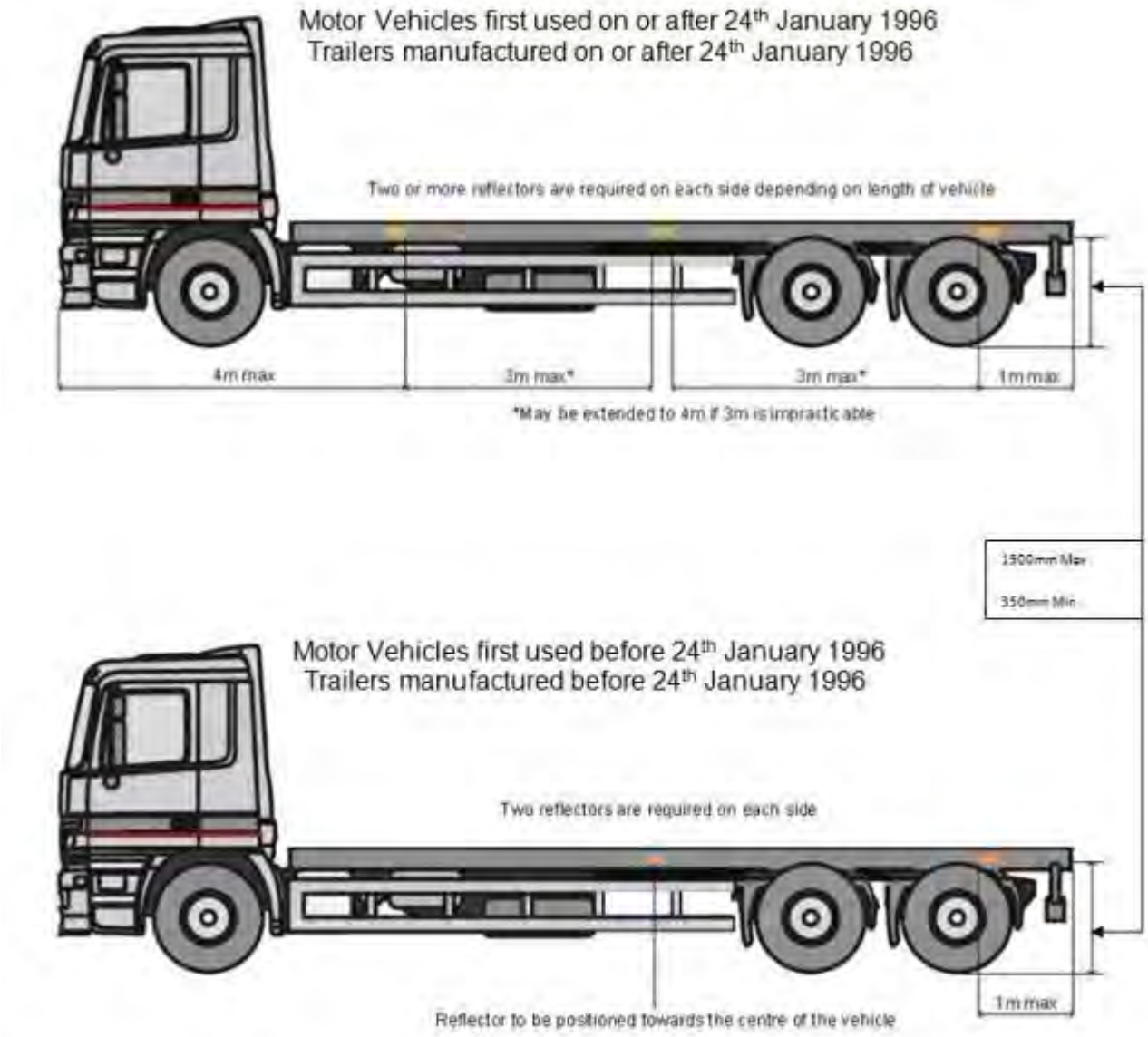
The inspection does not include a check that the reflectors have the appropriate approval mark. Reflective plates or tape are not acceptable as a substitute for a reflector.

Front reflectors [Trailers]
The maximum height from the ground is 900mm, if this is impractical it can be 1500mm.
Note: White front reflectors must be fitted to the front of each section of a combination trailer.

Rear reflectors
The maximum height from the ground is 900 mm. There are some exceptions:

- If 900 mm is impractical it can be 1500 mm.
- For vehicles used before 24 January 1996 and trailers manufactured before 24 January 1996 the maximum height is 1500 mm.
- Trailers must be fitted with triangular reflectors. These are not acceptable on motor vehicles.

Side reflectors
They must be positioned as shown below. They must be amber in colour unless within 1m of the rear of the vehicle or trailer when they may be red.
Note: If less than 50% of any reflector is visible, this is a reason for failure.



Conspicuity markings
Partial contour markings consist of a horizontal line showing the length of the vehicle and 'tick' marks showing the upper corners of the vehicle.

Markings are considered continuous if gaps are less than 50% of the length of adjacent elements (if this is impractical a max gap of 1000mm is acceptable).

Where the shape, structure, design or operational requirements make it impossible to install the mandatory contour marking, a line marking may be installed.

All conspicuity markings must be fitted with

- the lowest edge between 250mm and 1500mm. If 1500mm is not practicable this can be increased to 2500mm.
- the Maximum height as high as practicable but no lower than 400mm from upper extremity.
- the width of the markings being a min of 50mm and a max of 60mm.

Rear Conspicuity markings

The markings must

- be **full** contour markings but where the shape, structure, design or operational requirements make it impossible to install the mandatory contour marking, a line marking may be installed.
- not be fitted within 200mm of a stop lamp.
- be coloured either red or yellow.

and

- Horizontal markings must be at least 80% of the vehicle width and extend as close as practicable to the edges of the vehicle
- Vertical markings to be as close as is practicable to the edge of the vehicle

Side Conspicuity markings

They must:

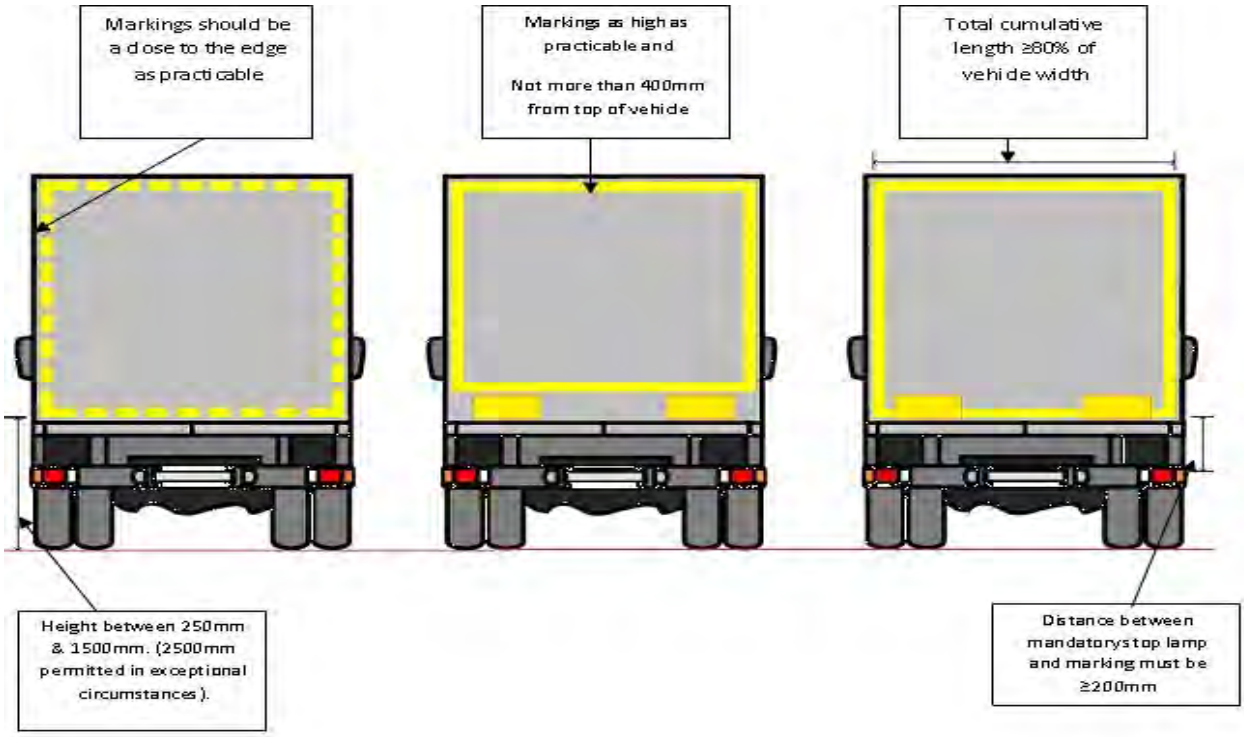
- be fitted with full or partial contour markings but where the shape, structure, design or operational requirements make it impossible to install the mandatory contour marking, a line marking may be installed.
- extend to within 600mm of each end of the vehicle (in the case of a trailer exclude drawbar)
- cover 80% of the vehicle length (excluding the cab and in the case of a trailer any drawbar)
- be coloured white or yellow

Note: Where side conspicuity markings are fitted to a tractor unit (which are optional), they must comply with the above requirements. In the case of a tractor unit the side conspicuity markings should extend to within 600mm of each end of the cab and cover 80% of the cab length.

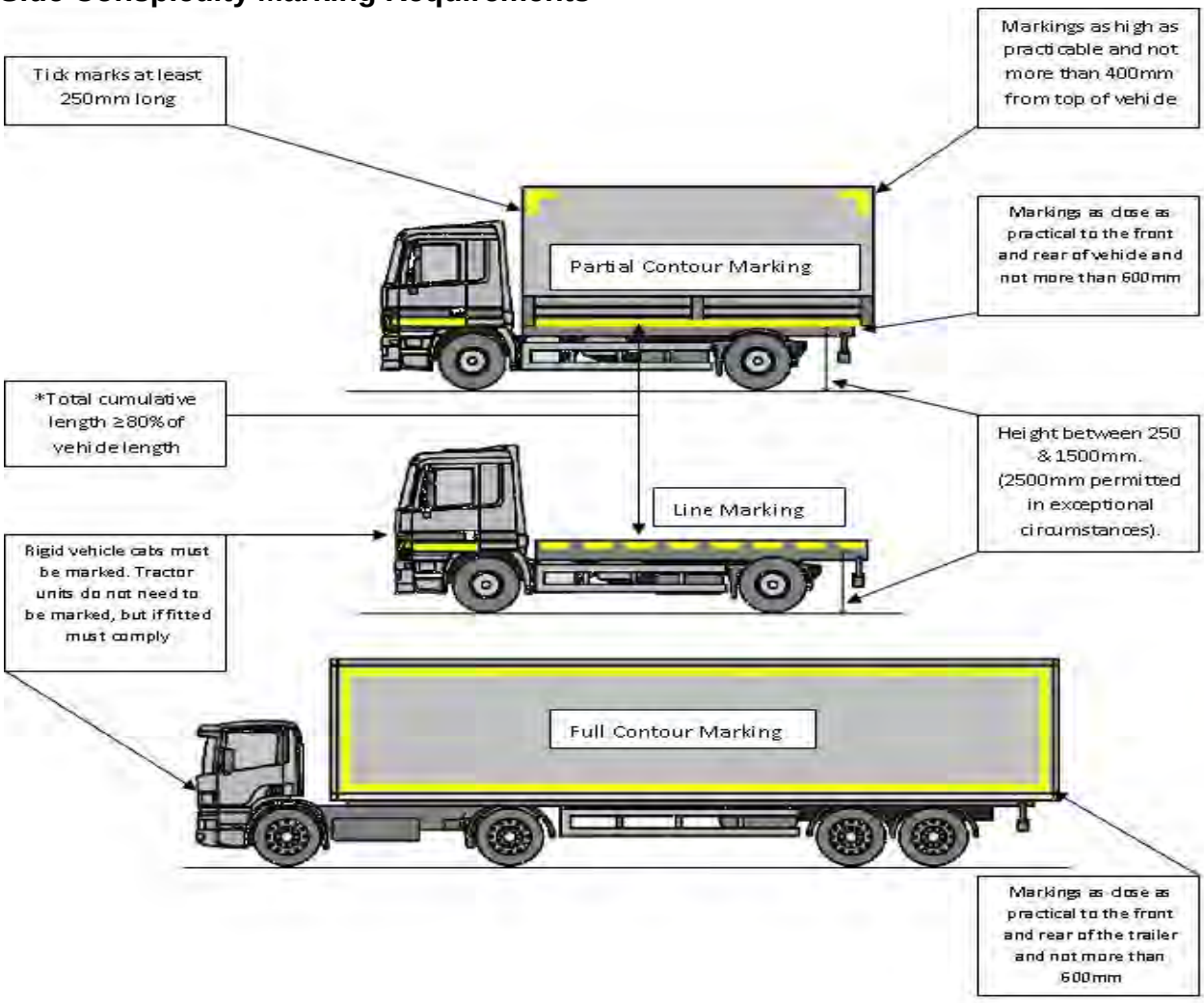
Vehicles which have chassis designed for demountable bodies should, ideally, be treated as skeletals. However they may be presented for test with a body fitted which has conspicuity markings instead of the vehicle. Provided the markings comply with requirements this is acceptable though the presenter should be advised that the vehicle would not meet requirements if used without an appropriately marked body.

Due to design characteristics it may not be possible for some vehicles to comply with all of the requirements and, having satisfied the relevant authority, may have been granted type approval. The diagrams below are only possible examples of this and it is the presenter's responsibility to provide evidence of type approval in these instances.

Rear Conspicuity Marking Requirements



Side Conspicuity Marking Requirements



* Vehicle length excludes the cab but the cab must be marked

Skeletal

Skip Wagon

Refuse Wagon

Car transporter

Concrete Mixer

Tanker

Reasons for Failure

1. Reflectors, markers and/or conspicuity marking:
   a. Incorrectly positioned.
   b. Missing.
   c. Insecure.
   d. Not clearly visible.
   e. Not facing squarely 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.

Road Wheels and Hubs

Application

This inspection applies to all road wheels and hubs apart from spare wheels.

Procedure and standards

- Check all road wheels for carrying capacity, and road wheels, fixings and hubs for condition and security. 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.

  Evidence such as rust marks or elongation of bolt/stud holes must also be taken into account.

- 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 whenever possible, presenters should remove wheel embellishers if they prevent a full examination.

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 4250 kg or 4500 kg and those with part number 813530/813533 with a rating of 4500 kg.

It has been agreed that wheels with these part numbers and maximum load ratings are suitable for a maximum axle weight of 9150 kg.

Capacity limitations 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 issued a notice of refusal.

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

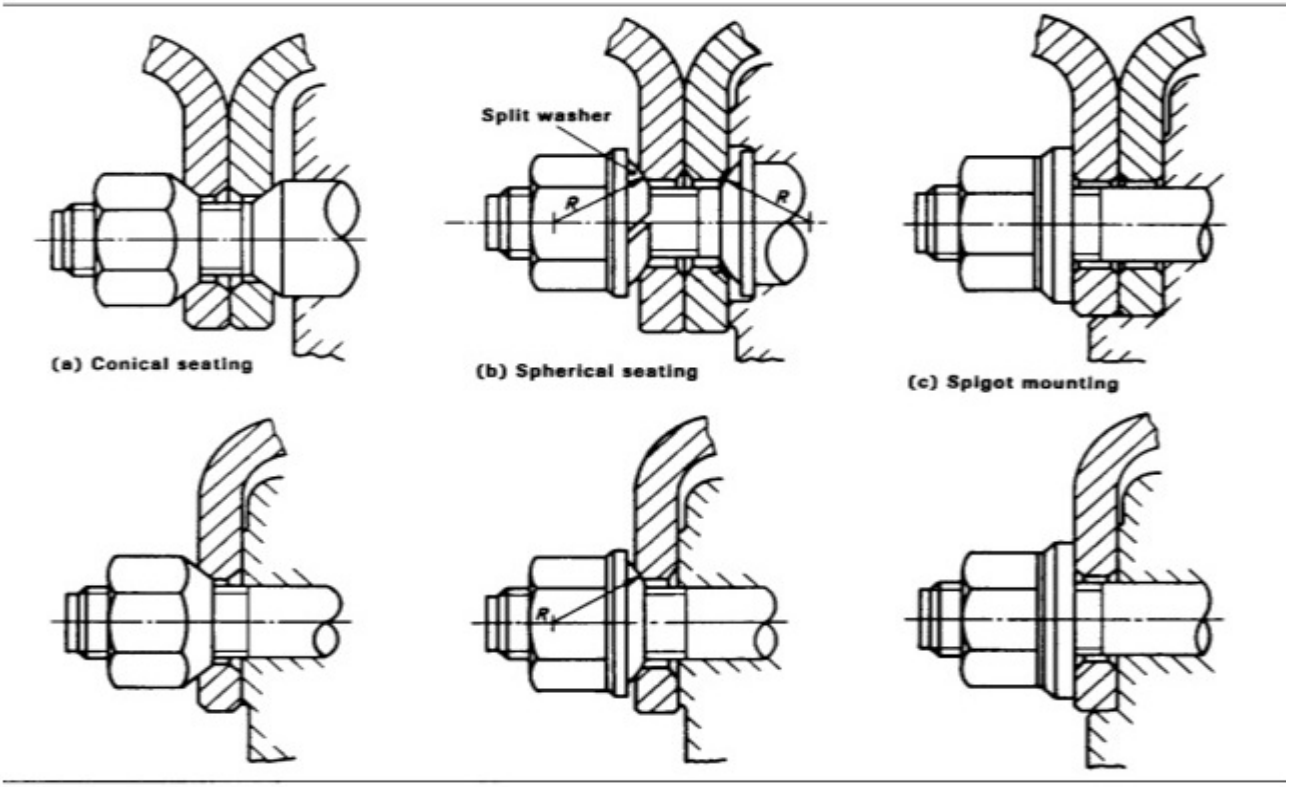
- Vehicles with conical wheel fixings MUST NOT be fitted with wheels from vehicles designed for use with spherical fixings. (British built vehicles normally have conical wheel fixings).

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

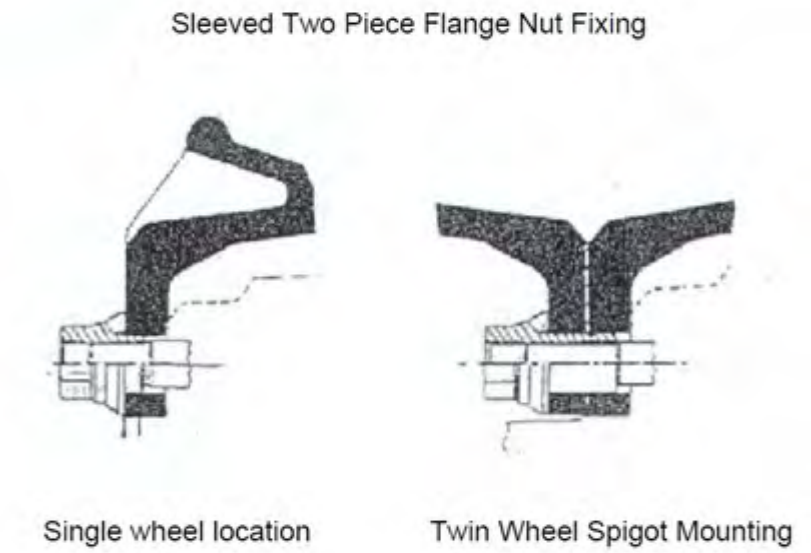
- Volvo wheels of the original spigot-mounting design WILL NOT interchange with another type. Volvo wheels designed for later type spigot mounting may be used in an emergency on British built trailers.

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

- Spigots must extend to the outer wheel centre where twin wheels are fitted.



- 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.

Note: If a wheel trim bracket prevents a wheel nut from seating correctly in the taper of the stud hole the vehicle must be failed under Reason for Failure 2a.

With a spigot mounted wheel provided the bracket is either the same size as the mating face of the retaining nut washer or larger this would be acceptable.

Reasons for Failure

1. Tyre retaining ring
   a. Fractured.
   b. Butting causing the flange to lift more than 1.5 mm from the rim.
2. A wheel
   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 (UK) axle load.
3. A hub
   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.

Seat Belt, Anchorage Point and Restraint Systems

Application

This inspection applies to all motor vehicles exceeding 3500kgs GVW and buses which have seat belts fitted.

Procedure and Standards

MOTOR Vehicles other than Buses (first used from 1 October 1990)

These vehicles are required to be equipped with two belt anchorage's designed to hold securely in position on the vehicle, lap belts for the driver's seat and each forward-facing seat.

MOTOR Vehicles other than Buses (FIRST USED FROM 1 SEPTEMBER 2002)

These vehicles are required to be equipped with a three-point belt or a lap belt for the driver's seat and with respect to every other forward facing front seat with a three-point belt, lap belt or a disabled person's seat.

Date of first use	Seat Position	Type of belt
From 1 October 1990 to 31 August 2002	Drivers seat and each forward facing seat	No seat belts required. Inspection restricted to anchorage points
From 1 September 2002	Drivers seat	Three point belt or a lap belt
From 1 September 2002	Each other forward facing front seat	Three point belt, a lap belt or a disabled persons seat

Note: As far as is practicable without dismantling, check the condition of the vehicle structure around the seat belt anchorage points (ie, within 300mm of a seat belt anchorage). Floor-mounted anchorage points might need to be inspected from underneath the vehicle.

Buses

Certain buses require seat belts regardless of their use (Obligatory belts). These are shown below along with the seat belts which are required. These must be checked to ensure that seat belts are fitted to the seats on which they were determined to be needed at the time of certification

Minibuses with 9-12 seats and first used before 1 October 1990.

Date of first use	Seat position	Type of belt
From 1 January 1965 to 31 March 1982	Driver's and any specified passenger's seat	Three point adult belt or body restraining belt.
From 1 April 1982 to30 September 1990	Driver's and any specified passenger's seat	Three point adult belt.

Minibuses (not 3500kg design GVW) and Coaches first used from 1 October 1990 until 31 August 2002.

Seat position	Minibus (not exceeding 3500 kg gross weight)	Coach
Driver's	Three point adult belt. Must be able to be locked and released by single action. (Exemption for disabled drivers)	Three point adult belt or a lap belt designed for an adult or a disabled person's belt. Must be able to be locked and released by single action. (Exemption for disabled drivers)
Specified passenger's	Three point adult belt. If alongside the driver must lock and release with a single action	
Any other foremost forward facing front seat	Three point adult belt or a lap belt designed for an adult.	Three point adult belt or a lap belt designed for an adult or a disabled person's belt.
Other forward facing (not protected by high back seats) and crew seat(s)		Three point adult belt or a lap belt designed for an adult or a disabled person's belt.

Buses, coaches and minibuses first used from 1 September 2002 which are not authorised to carry standing passengers.

Seat position	Not exceeding 3500 kg design gross weight	Exceeding 3500 kg design gross weight
All forward and rearward facing seats including the driver's seat	An inertia reel 3 point belt or A retractable lap belt (on rearward facing seats only) or A disabled person's belt or A child restraint Seat belts for the driver and specified passenger along side the driver must be able to be locked and released with single action. (Exemption for disabled persons belt)	An inertia reel 3 point belt or A retractable lap belt or A disabled person's belt or A child restraint BUSES Seat belts for the driver and specified passenger along side the driver must be able to be locked and released with single action. (Exemption for disabled persons belt)

		COACHES Driver's seat belt must be able to be locked and released with single action. (Exemption for disabled persons belt)
On vehicles constructed for the secure transport of prisoners the driver's seat and any seat for front seat passengers	An inertia reel 3 point Seat belts for the driver and specified passenger alongside the driver must be able to be locked and released with single action. (Exemption for disabled persons belt)	An inertia reel 3 point Seat belts for the driver and specified passenger along side the driver must be able to be locked and released with single action. (Exemption for disabled persons belt)

Note: A harness belt may be used as an alternative to a three point or lap belt. The requirement for a buckle to lock with a single action does not apply to harness belts.
Note: A coach being a large bus over 7500 kgs GVW with a maximum speed exceeding 60 mph.
Seat belts may be fitted to all types of minibuses, buses and coaches, both single and double decked, and may be in addition to those required above.

Condition Inspection of all seat belts fitted
As far as it is practicable without dismantling, check the condition of the vehicle structure around the seat anchorage point (i.e. within 300mm (12") of the anchorage). Where a seat belt is mounted to a seat frame this will apply to all seat mounting points. The floor-mounted anchorage points might need to be inspected from underneath the vehicle.
Pull each seat belt webbing against its anchorage to see that it is properly secured to the vehicle structure.
Note: For seats with integral seat belts, it might not be possible to examine the fixing of the seat belt to the seat.
Fasten each belt locking mechanism and then try to pull the locked section apart. On retracting seat belts, check that with the mechanism fastened and the seat unoccupied, excess webbing is wound into the retracting unit.
Note: Some types of retracting belts might need manual help before they retract. Operate the release mechanism while pulling on the belt to check that the mechanism releases as required.
Examine flexible buckle stalks for:

a) Signs of corrosion or weakness. Pull the sheaths aside, if this can be done without damage.
b) 'waggle' flexible buckles and listen for a clicking noise indicating broken strands of cable.

Examine the condition of all seat belts webbing for cleanliness, cuts or obvious signs of deterioration. Pay particular attention to webbing around anchorages, buckles and loops.
Examine the condition of the attachment fittings and adjusting on each belt.
Check the seats to which seat belts are attached for security and for cracks or fracture of the leg and frame.
Note: 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.
Note: Floor mounted anchorages may need to be inspected from underneath the vehicle.

Installation Inspection
All belts should be checked for operation and wear, and in the case of vehicles first used prior to 1 September 2002 an installation check is required. The following categories shall only be checked for operation and wear irrespective of the year of first use:

1. Seat belts provided for rear or side facing seats;
2. Disabled person's belts which are permanently attached to the vehicle;
3. Child restraints which are permanently attached to the vehicle;
4. Obligatory seat belts as specified above.

No check is required for disabled person's belts or child restraints which are not permanently attached to the vehicle.

It will be necessary to ask the operator to remove seat cushions and to open any access flap or luggage locker door, which was designed to be capable of being readily opened, to allow as much as possible of the seat belt installation to be seen. Some parts of the installation may only be visible with the vehicle on a pit or hoist.

Where a vehicle is fitted with a type approved belt installation it will not be necessary to carry out an installational check. These belts are at present only likely to be fitted to buses with factory installed belts. Details of the vehicles which are fitted with type approved seat belts are shown at the end of this section.

The seats and seat frames should be checked for security and damage. The seat belt anchorages should be checked for security.

If an operator has been provided with documentary evidence to show that a seat belt installation complies with type approval standards (but has not been fully type approved) or that is traceable to an installation tested and shown to meet the requirements of ECE Regulation 14 or Community Directive 76/115 it should be produced at the time to test. It should show registration number or chassis number of the vehicle and the name and address of the installer. It should also show the test number and the date and location of the test of the installation. Original certificates are required. Photocopies are not acceptable. Presentation of the certificate would not replace the need for the examination to be conducted but it may support the quality of the installation and help resolve differences over the acceptability of the installation, eg, reinforcement plates used.

Diagram 1 at the end of the section shows typical methods of attaching seat belts.

Where the word close is used it should generally be regarded as 50mm or less.

a. Check that on all belts the buckle operates correctly and the seat belt adjusts satisfactorily. Subsequent cutting or reworking of the webbing will be a reason for failure. It is acceptable for the free end of looped belts or static belts to be reworked to the extent of folding and stitching the webbing so that it cannot pass back through the buckle to prevent the buckle from being dismantled. Any knots in the belt webbing are unacceptable.
b. Seat squabs should be removed, to aid the inspection of the condition of the belt and mountings. They must be replaced before the end of the test to allow inspection of the complete belt installation.
c. Check for the presence of any sharp edges which the belt could rub on or pull across during use.

d. Where seat belts, other than looped belts, are anchored to the seat frame or the vehicle floor they must be secured with mounting bolts in accordance with the following:

Minimum Acceptable Size and Grade of Bolts for Seat Belt Anchorage

Type of Anchorage	Minibus	Coach or Large Bus
Single Anchorage	M10 Standard Material	M8 High Tensile SteelM10 Standard Material
Double Anchorage	7/16” Standard MaterialM10 High Tensile Steel	7/16” Standard MaterialM10 High Tensile Steel

Note: Bolt head marks
Standard Material = P, 4.6 or SAE equivalent
High Tensile Steel = S, 8.8 or SAE equivalent
No markings = Standard Material

If the Examiner cannot determine the grade of bolt it must be assumed to be of Standard Grade.

It is paramount that the appropriate sized bolt is used in the seat belt anchorage, ie, an 8mm bolt should not be used in an 11.5mm diameter hole. The only exception to this is where a ‘stepped washer’ or collar is used to eliminate the excessive clearance and a suitable washer is fitted between the bolt head and the anchorage to prevent the bolt pulling through. The use of smaller bolts, self tapping screws or wood screws is not acceptable.

e. It is not acceptable to drill tubular seat frames to allow belts to be bolted to the frame except in the cases where a manufacturer has approved the installation and the operator presents a certificate issued by the manufacturer or his agent declaring that the installation is satisfactory.
f. Clamp type brackets are acceptable provided that they are properly secured (see Diagram 2).
g. On seats constructed with a wooden frame it is unacceptable to mount the belts either directly to the frame or to a metal base which is attached to the frame only by wood screws. Unless there are additional reinforcement brackets fitted that provide a direct load path to the seat leg and side mounting the installation would be rejected. This reinforcement could take the form of steel angle sections or plates, alternative materials may be used provided that they are of comparable strength (see Diagrams 3 & 4 for details of a typical installation).
h. Where seat belts are attached to thin sheet metal seat frames the bolts anchoring the belt must be of the minimum dimensions shown in paragraph D and must be adequately supported by the use of load spreading washers between the frame and the nut. Typically this would be 25mm in diameter and 2mm thick. If two belts are attached at the same point with a single bolt then a larger reinforcement plate 35mm diameter x 3 mm thick (or a rectangular plate of minimum dimensions 21 x 46 x 3mm) must be used. The sizes quoted are for steel reinforcement plates, alternative materials may be used but must provide comparable strength.
i. Where seat belts are fitted to the rear seats of a vehicle check the anchorage to ensure that it is not anchored solely to the thin metal sheet which separates the boot area from the passenger compartment. It is essential that seat belt anchorages are secured to a strong cross member connected to the structural members of the vehicle. The connection should be to such a standard that there is confidence that it will be able to transfer the seat belt loads into the structure

of the vehicle. This may involve the fabrication of an additional framework at the rear of the vehicle. An example of typical reinforcement of this area would be by the use of additional square section tubing 40 x 40 x 3 mm, or angle plate 50 x 50 x 4 mm across the full width of the vehicle. The sizes quoted are for steel reinforcement, alternative materials may be used but must provide comparable strength. A full width reinforcement that is only attached to the thin metal sheet is unacceptable and would be a reason for failure.

j. Three point belts will only be accepted under the following circumstances:
If the seat utilises tubular frames or tubular 'H' pattern legs:
   - The seats have been reinforced as detailed in Paragraph K or
   - A purpose built structure to which belts are attached is fitted to the vehicle, an example is shown in Diagram 5. Alternatively the belts may be attached to solid bodywork.

OR

If purpose made seats designed with integral three point belts as standard have been fitted.

k. Where seats that are permanently mounted in the vehicle have been fitted with lap belts or 3 point belts integral to the seat, then, if the seat utilises tubular frames or tubular 'H' pattern legs it must be reinforced. This will include welding metal buttresses, of similar thickness material as the foot, between the foot and the leg (see diagram 6). Also the welding of a diagonal brace, either in compression or tension between the foot and the seat base attachment of each leg. Alternatively documentary evidence of compliance with Directive 76/115 or ECE Regulation 14 can be presented.

On quick release seats where the feet are mounted directly to tracking by a coupling it may not be practical to weld a buttress to the leg or a diagonal brace to the foot due to the presence of the coupling (see diagram 7).

The coupling would prevent any reinforcement being placed in an effective position, also the coupling could be damaged if welding occurred close to it. On this type of installation the belts can be attached directly to the tracking with quick release mounts or the legs should be modified to use an alternative method of attachment to the tracking.

On seats where the feet are mounted to a metal bar or tube which is then connected to tracking by a quick release coupling, then the seat has to be reinforced with buttresses and diagonal brace as detailed above.

On vehicles with floor mounted seat belts where the belt is anchored close to the seat mounting bolt then the rear foot of each leg must be buttressed to the leg.

l. If lap belts are fitted and there is the possibility of passengers hitting their heads on any harsh object such as a grab rail or seat stanchion, padding or other suitable protection must be provided on these objects. The protection does not need to cover the full length of a seat grab rail but should cover a length of at least 300mm directly in front of each passenger. Padding must be compressible and of a depth of at least 50mm, measured to the surface of the bar and not compress more than 25mm under reasonable thumb pressure, or 25mm thick and not compress more than 5mm. Ordinary seat foam or pipe lagging foam is unlikely to be of sufficient density for this purpose.

m. Lower anchorages should be at least 320mm apart. This need not be the distance between the anchorage points of the belt but it can be between two structural parts

of the seat that the belt is routed round. If the measurement is between mounting bolts it should be measured between both centres. Check that the belt will not raise or significantly compress the seat cushion when subjected to a load. There will always be a small amount of compression which is acceptable.

n. Where belts are attached directly to a metal floor a load spreading washer must be used between the nut and the floor. The bolts must be at least the sizes specified in paragraph D. Typically this washer would be 25mm in diameter and 2mm thick. If two belts are attached at the same point with a single bolt then a larger reinforcement plate of minimum dimensions 35mm diameter x 3 mm thick (or a rectangular plate of minimum dimensions 21 x 46 x mm) must be used. The sizes quoted are for steel reinforcement plates, alternative materials may be used but must provide comparable strength. Reinforcement plates should follow, as far as practicable, any contours in the floor to which they are attached.
o. Where a belt is attached directly to a wooden floor each anchorage must be reinforced with a plate of minimum dimensions 35 mm diameter x 3 mm thick (or a rectangular plate of minimum dimensions 21 x 46 x 3 mm). If two belts are attached at the same point with a single bolt then the reinforcement plate must have minimum dimensions of 92 mm diameter x 3 mm thick (or a rectangular plate of minimum dimensions 65 x 100 x 3 mm). If two belts are attached in close proximity to each other, then a single reinforcement plate of minimum dimensions of 92 mm diameter x 3 mm thick (or a rectangular plate of minimum dimensions 65 x 100 x 3 mm) should be used ensuring that the bolt holes are not too close to the plate edge. Alternatively two steel reinforcement plates may be used, but they must be of minimum dimensions 52 mm diameter x 3 mm thick (or a rectangular plate of minimum dimensions 46 x 46 x 3 mm). The sizes quoted are for steel reinforcement plates, alternative materials may be used but must provide comparable strength. Reinforcement plates should follow, as far as practicable, any contours in the floor to which they are attached.
p. Where mounting rails designed for the adjustment of seat pitch are fitted and utilise an angled claw type clamp (see Diagram 8) with a clamping face of less than 15 mm wide it is not acceptable for a seat on which a belt is mounted to be merely clamped to the rail. The clamp to the rear foot of each leg must be modified by fitting a bolt through the claw fitting, the rail, floor and a suitable structure member (as in most vehicles). The bolts must have appropriately sized load spreading washers fitted beneath the bolt head and underneath the retaining nut. A single bolt should be not less than 8 mm (5/16”) diameter. Any alternative to this is only acceptable if documentary evidence is provided.
q. Parallel type claw fittings, for a seat on which a belt is mounted, will be considered satisfactory provided that the securing bolts are fully tightened. (See Diagram 9).
r. If a seat, on which a belt is mounted, is bolted to a flat rail the bolts must pass through the leg, rail, floor and a suitable structure member.
s. It is acceptable for seats to be attached to a purpose built tracking (eg, keyhole, ‘T’ slot) designed for securing seats and wheel chairs, providing the tracking is securely attached to the vehicle structure with bolts or fasteners in all the retaining holes or marks provided by the manufacturers.
t. It is unacceptable to fit seats, with seat belts, directly to unsupported wooden floors unless additional reinforcement is provided. This will involve the fitting of steel reinforcement plates of minimum dimensions 92 mm diameter x 3 mm thick (or a rectangular plate of minimum dimensions 65 x 100 x 3 mm), between the underside of the floor and the securing nut below the floor of the rear leg and between the leg and between and the topside of the floor of the front leg. If the area of the foot of the

front leg is greater than 65 x 100 mm, then the front reinforcement plate is unnecessary.

u. A ‘looped’ type seat belt fitting is acceptable provided it is not free to float along any part of the seat structure. Any free movement in excess of 25 mm is a reason for failure.
v. The upper anchorage point should be at least 475 mm above the height of an uncompressed seat cushion. This dimension is to be measured parallel to the backrest. The upper anchorage point should be a minimum of 110 mm from the centre line of the seat back to the side of the seat.
w. A lap belt or the lap section of a 3 point belt must be positioned to lie across the wearer’s pelvis and not the stomach. This is to reduce the risk of abdominal injury and to prevent ‘submarining’. In practice this may result in the belt lying across the top quarter of the thigh.
x. Seat belt components should not be fitted to seats in such a way that they significantly intrude into the gangway space and are likely to cause injury to passengers either by tripping or by hitting the component.

There may be occasions when carrying out the condition check, on a vehicle which had an installational check on a previous test, that obvious defects are found in an installational item. This will be a reason for failure.

Exempt Vehicles

Ford Transits with type approved seat belt installations can be identified as follows.

- 12, 14, 15, 16 and 17 seat (including the driver) Transits manufactured after 1 October 1991 where the fourth character of the VIN Number is ‘E’.
- 17 seat (including the driver) Transits where there is a six figure code EJA *CL or EJJ *CL marked in the box on the top right hand of the manufacturer’s plate (in the type code box). In the code the fourth digit marked * may be any character.

LDV 200 and 400 series models with type approved seat belt installations can be identified as follows.

- Chassis number from 933478 onwards and the seventh character of the VIN number is ‘S’.

LDV Pilot and Convoy models with type approved seat belt installations can be identified as follows.

- Chassis number from 000001 onwards and the seventh character of the VIN number is ‘S’, ‘X’ or ‘Z’.

LDV Maxus models with type approved seat belt installations can be identified as follows.

- The 7th digit of the VIN number is either a ‘6’ or ‘X’.

Land Rover models with type approved seat belt installations can be identified as follows:

- All Defender 110 Station Wagons with either 9,10, 11, or 12 seats with the following chassis numbers.
- Manufactured in 1990 from chassis number 455758 on.
- Manufactured 1991 onwards – all chassis numbers.

Information on other makes will be circulated when it becomes available.

Important Note: To be exempt from the check, vehicles must have been fitted with the seat belt installation by the vehicle manufacturer when new. If you are aware that a vehicle with a chassis number shown above has had any seats/seat belts fitted by any other installer, eg, where it has been adapted to carry wheelchairs and has removable seats on tracking, it will not be exempt and will require an installation check.

Supplemental Restraint Systems

This inspection applies to Supplementary Restraint Systems (SRS) such as airbags, seat belt pretensioners and seat belt load limiters fitted as original equipment.

The SRS malfunction indicator lamp (MIL) may display a symbol similar to that shown below, or one depicting a person wearing a seat belt. Alternatively, the letters SRS or another symbol may be displayed.

Note: A passenger air bag which has been switched off is not a reason for failure

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.

Seat belt pre-tensioners may be fitted to some seat belts. Once activated a warning device may display.

1. As far as practicable, check that all driver and passenger airbags fitted as original equipment are present and not obviously defective.
2. Check the presence and condition of any seat belt load limiters and/or pretensioners fitted as original equipment.

Reasons for Failure

1. Obligatory Seat Belt (see Table)
   a. Missing;
   b. Of an incorrect type;
   c. Is not a lap or lap and diagonal belt fixed at 3 points (vehicle first used from 1 April 1981);
   d. Does not restrain the upper part of the body (vehicle first used before 1 April 1981).
2. Anchorages:
   a. With excessive corrosion, serious deterioration or a fracture in a load bearing member of the vehicle structure within 300 mm (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 the vehicle structure;

c. Missing.

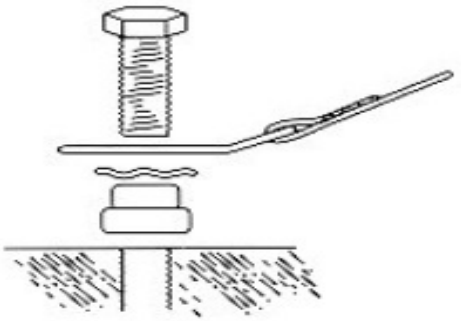
3. Locking Mechanism, Stalks, Retracting Mechanism and Fittings:
   a. Locking mechanism of a seat belt does not secure or release as intended;
   b. An attachment or adjustment fitting fractured, badly deteriorated or not operating effectively;
   c. Corrosion or deterioration of a flexible stalk likely to lead to failure under load;
   d. Broken flexible stalk strands;
   e. A retracting mechanism that does not retract the webbing sufficiently to remove all of the slack from the belt with the locking mechanism fastened and the seat unoccupied.
4. Condition of Webbing:
   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.
5. Seat Belt Fittings:
   a. Any guide, stalk or pivot with obvious signs of structural weakness such that failure is likely.
6. Seat or seats to which seat belts are attached:
   a. Insecure;
   b. With a cracked or fractured leg or frame.
7. An airbag obviously missing or defective.
   Note: A passenger airbag that has been turned off is not a Reason for Rejection.
8. a. A seat belt load limiter or pretensioner obviously missing where fitted as original equipment
   b. A seat belt pretensioner or a ‘folded webbing’ type load limiter obviously deployed.
9. Installational defect found on annual test:
   a. Any obvious installational defect found during the inspection.
10. Installational inspection:
   a. Evidence that original webbing has been cut and/or reworked, (eg, belts knotted, fraying or fluffing removed/sealed by burning etc);
   b. Any part of the installation which has a sharp edge which could or is likely to cut or abrade the webbing.
   c. A directly attached anchorage not secured by standard seat belt mounting bolts and washers as detailed in paragraph D;
   d. An anchorage insecure;
   e. A tubular seat frame that has been drilled for the purpose of attaching a seat belt;
   f. A directly attached anchorage not attached to a load bearing member or without suitable reinforcement;
   g. Retro-fitted three point belt which is not mounted on a suitable structure.
   h. Tubular frame legs or tubular ‘H’ pattern legs which have not been reinforced with buttressing and diagonal bracing, or buttressing where a floor mounted belt is fitted close to a seat leg.
   i. Belt fitted to a seat which has not been suitably reinforced or modified;
   j. Without suitable padding as detailed in paragraph I;
   k. Lower anchorages less than 320 mm apart;

l. In such a position that loading the belt causes the cushion to be raised or significantly compressed thus allowing the occupant to effectively move forward;
m. An anchorage attached to the floor without reinforcement plates of a suitable size and contour;
n. With load spreading washer(s) missing from anchorage bolt;
o. Claw type seat mounting with inadequate means of securing claw;
p. On a seat fitted to a flat rail the bolt does not pass through the leg, rail, floor and a suitable structural member or the floor has not been suitably reinforced;
q. Tracking for securing seats and wheelchairs insecure;
r. Free movement for a looped belt more than 25 mm at the anchorage;
s. Upper anchorage of three point belt less than 475 mm above uncompressed seat cushion measured parallel to the seat back;
t. Upper anchorage of three point belt(s) less than 110 mm from centre line of seat;
u. Incorrect positioning of a lap belt or lap section of a three point belt, ie, the belt lies across the stomach or forward of the top quarter of the thigh;
v. A seat belt component fitted to a seat significantly intrudes into a gangway and is likely to cause injury to a passenger.

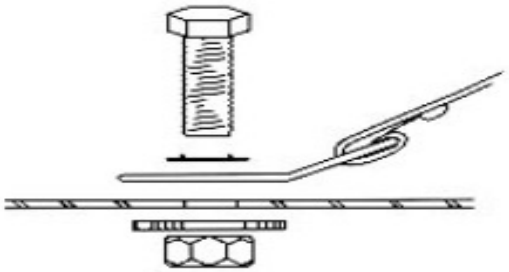
Typical Methods of Attaching Seat belts

Diagram 1

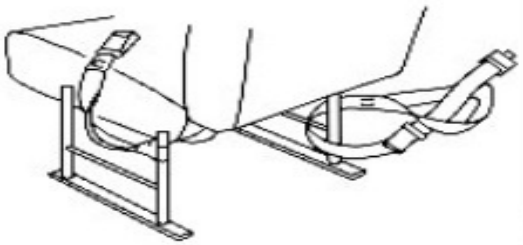
Direct attachment to floor



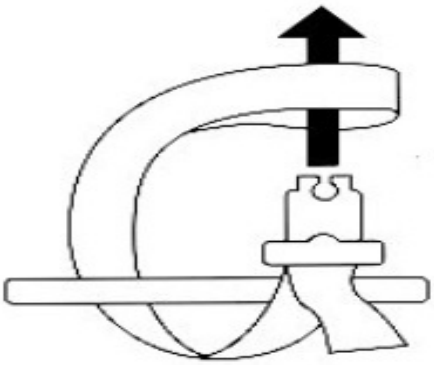
Direct attachment to seat frame



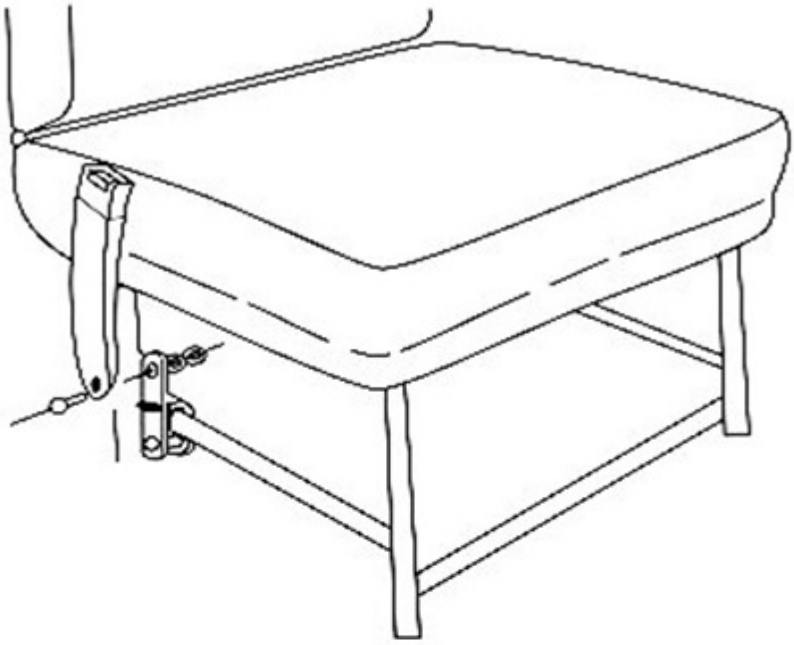
Installation of looped seat belt



Method of attaching looped seat belt



Example of a typical clamp bracket **Diagram 2**



Wooden framed seats with a metal base - rear view **Diagram 3**

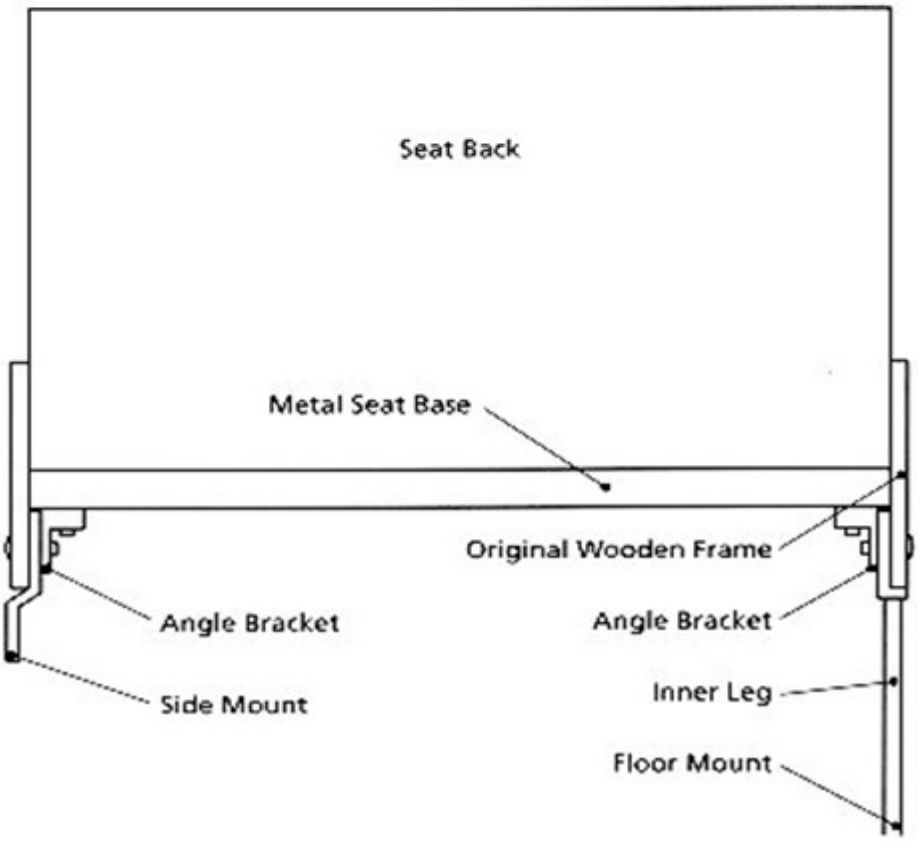


Diagram 4

Wooden framed seats with a metal base - Enlargement of Reinforcement

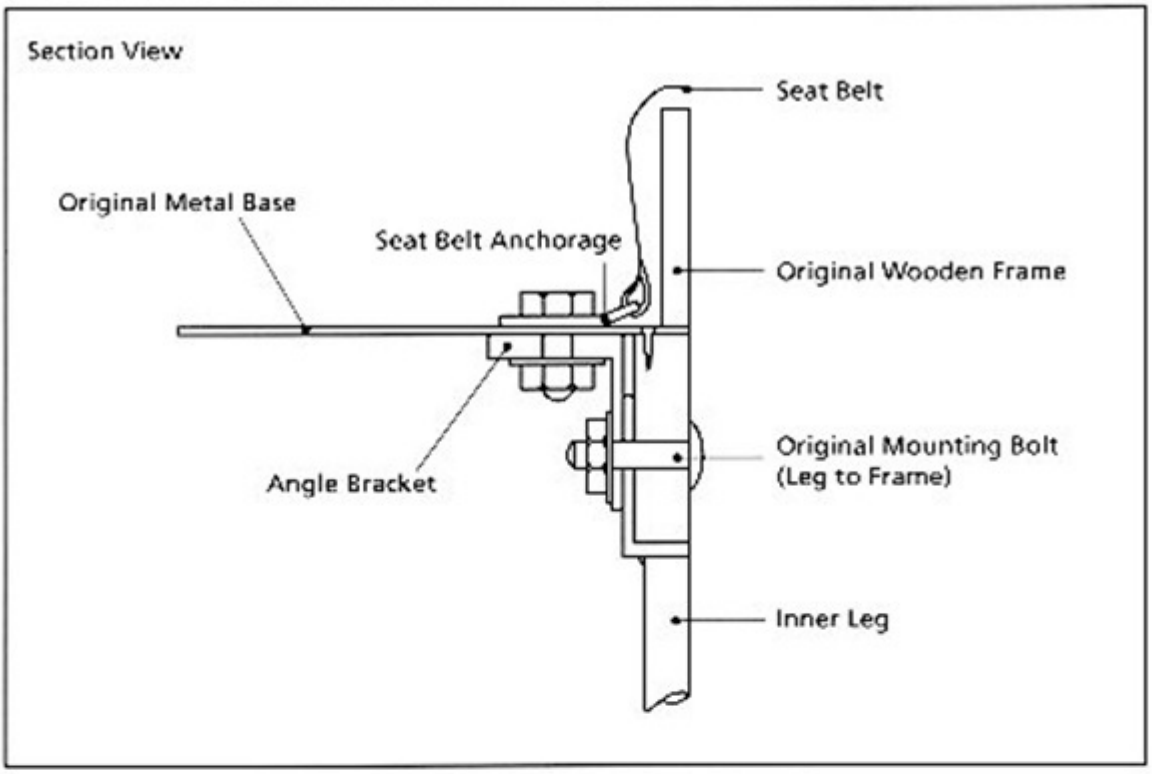
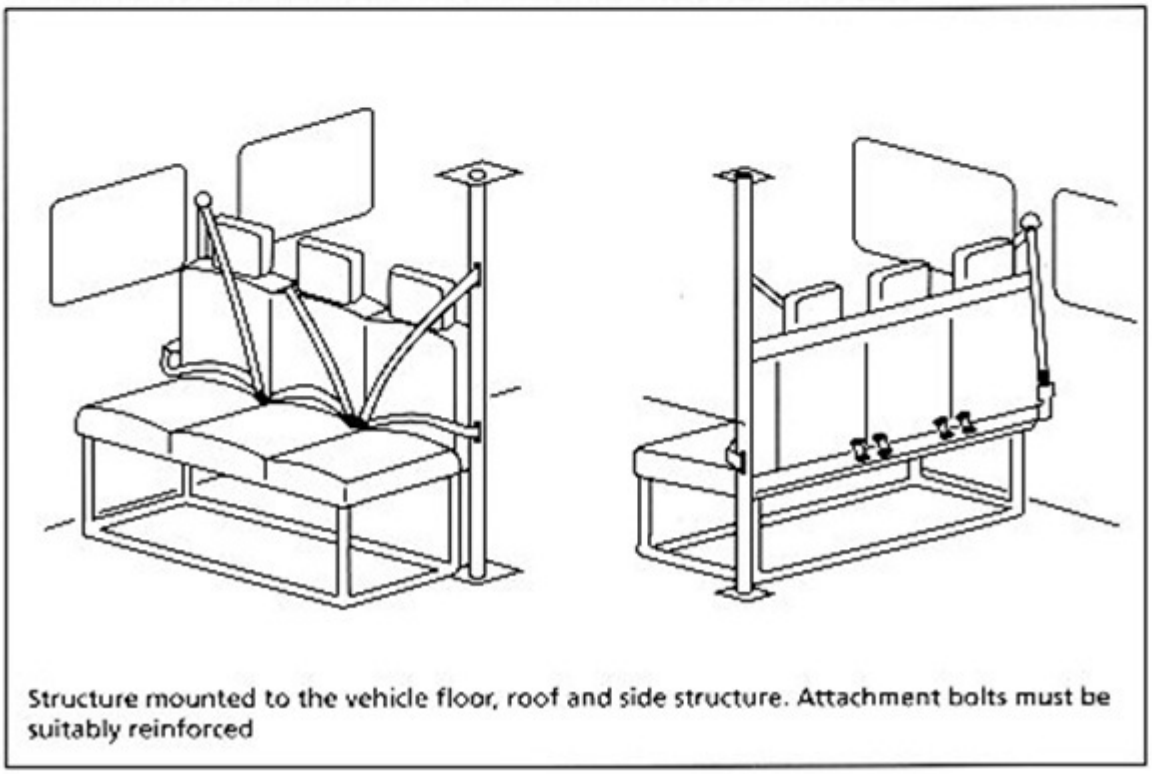


Diagram 5

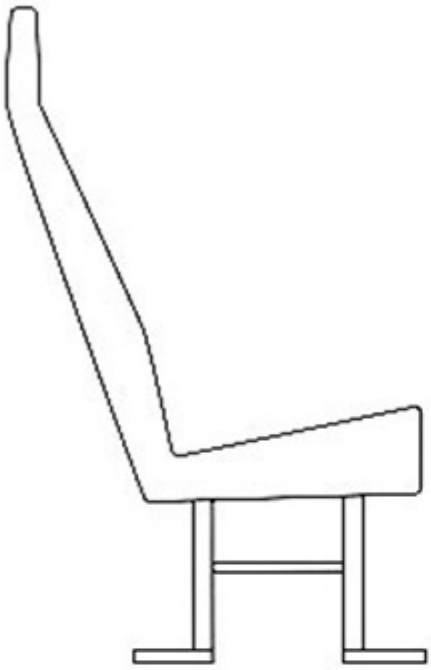
Example of Additional Structure for Support of Upper Anchorage Points



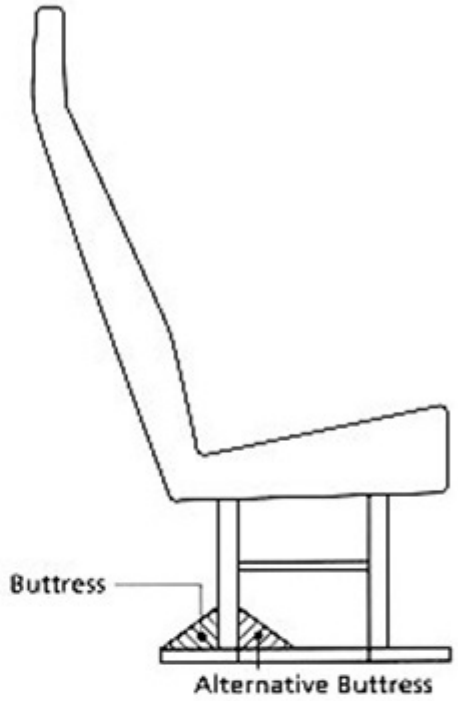
Structure mounted to the vehicle floor, roof and side structure. Attachment bolts must be suitably reinforced

Diagram 6

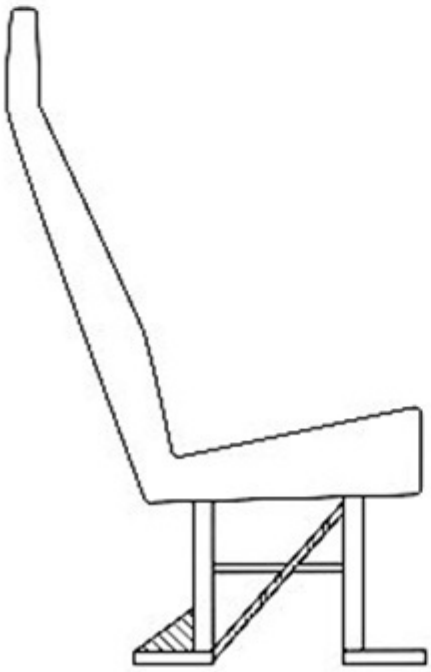
Typical Minibus seat with standard "H" leg



Minibus seat with buttress to "H" leg



Typical example of diagonal brace



Alternative example of diagonal brace

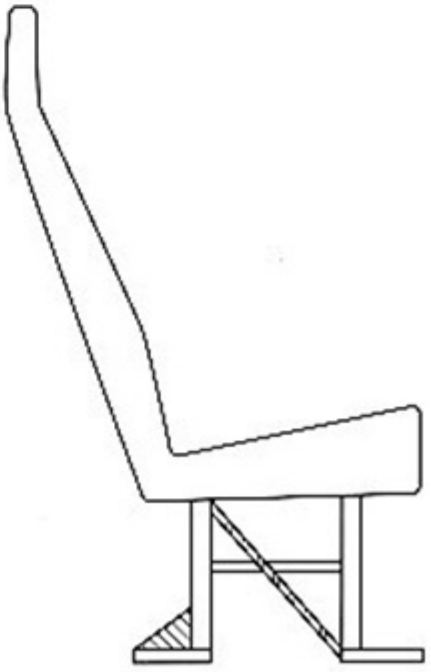
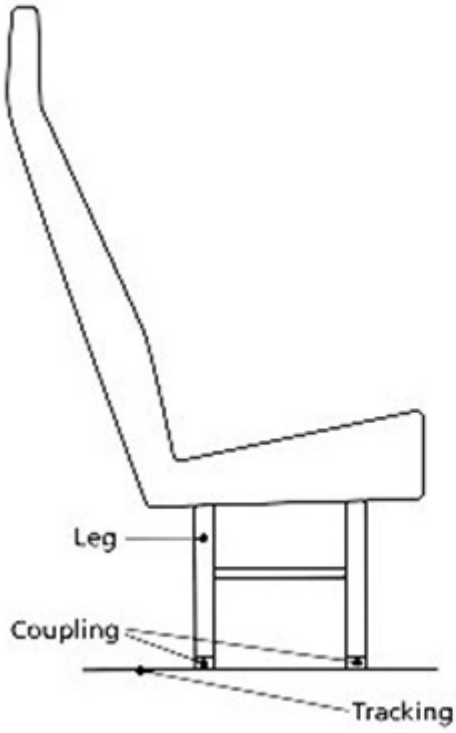


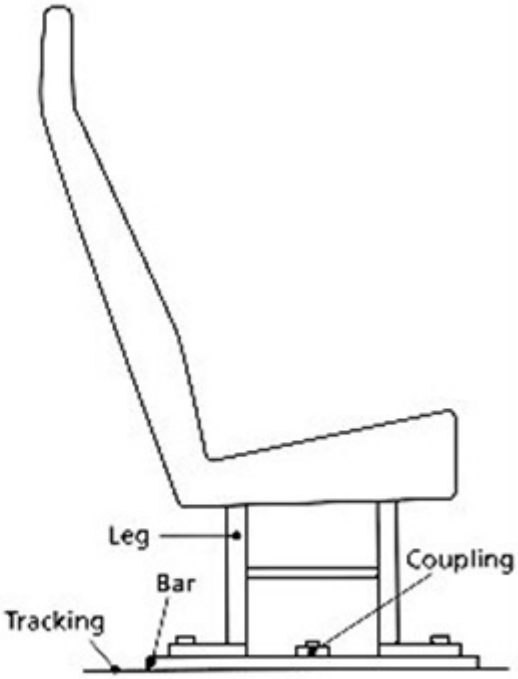
Diagram 7

Example of quick release seats that may not be suitable for reinforcement



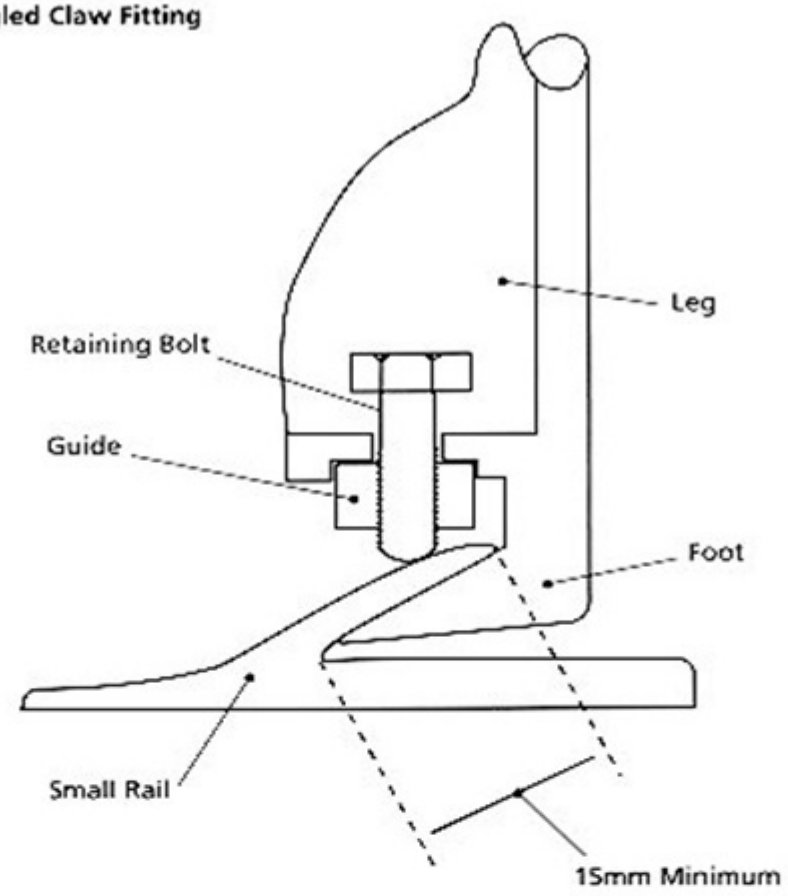
Feet connected directly to tracking.

Example of quick release seat that is suitable for reinforcement

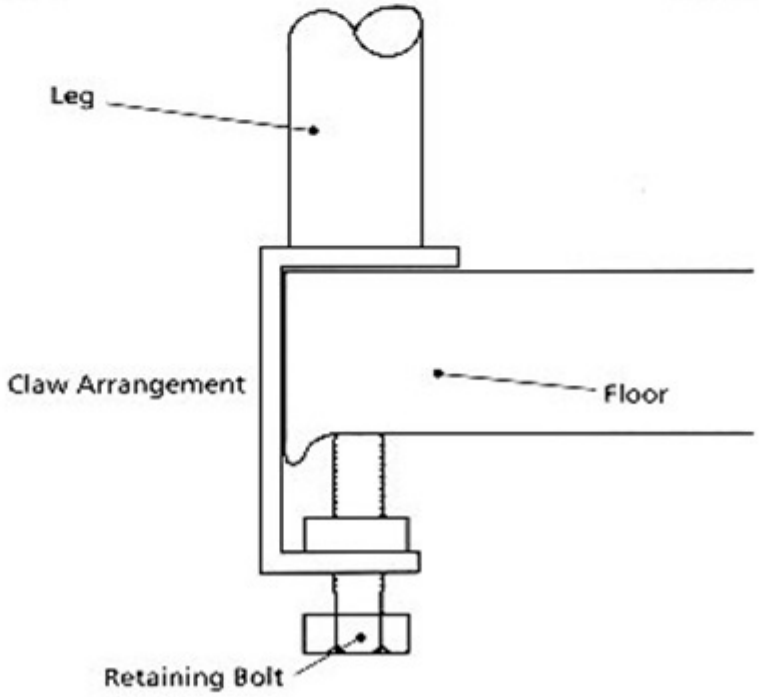


Feet bolted to bar or tube. Quick release mechanism mounted to bar or tube.

Typical Angled Claw Fitting **Diagram 8**



Typical Parallel Claw Fitting **Diagram 9**



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 that any 'memory position' function

Procedure and Standards

- Check all seats for condition and security of the seat, seat back, cushion and adjusting mechanism.
- Where a seat adjustment mechanism is fitted, check that the driver's seat position can be adjusted forwards and backwards and secured in the selected positions.
- A seat adjusting mechanism which has been deliberately made inoperative or has seized is not a Reason for Failure. This also applies when inspecting passenger vehicles with 12 or less passenger seats.

Reasons for Failure

1. A seat, mounting or adjusting mechanism insecure or in such a condition that it could potentially cause injury to an occupant.
2. A driver's seat, mounting or adjusting mechanism so insecure or in such a condition that it could cause the driver to lose control of the vehicle.
3. The driver's seat fore and aft adjustment mechanism not functioning as intended.

Sideguards, rear under-run device and bumper bars

Application

Sideguards

Goods Vehicles first used from 1 April 1984 with a maximum gross weight exceeding 3500 kg and where the distance between the centre of any two consecutive axles exceeds 3 m;
Trailers manufactured from 1 May 1983 with an unladen weight exceeding 1020 kg and where the distance between the centre of any two consecutive axles exceeds 3m; or in the case of a semi-trailer where the distance between the centre of the king pin position and the centre of the foremost axle exceeds 4.5m.
Semi-trailers manufactured before 1 May 1983 which have a maximum gross weight exceeding 26000 kg and which form part of an articulated vehicle with a gross train weight exceeding 32520 kg and where the distance between the centre of the kingpin and the centre of the foremost axle exceeds 4.5m. Where more than one king pin is fitted, it is the distance from the rearmost position which is taken into account.
Sideguards can be manufactured & tested to any of the following standards:
The Road Vehicles (Construction and Use) Regulations (NI) 1999 as amended.
Directive 89/297/EEC or
The technical requirements of the Directive 89/297/EEC

Exempted Vehicles:

- A vehicle constructed so that it can be unloaded by part of the vehicle being tipped side-ways or rearwards.

- A vehicle designed solely for use in connection with street cleaning, the collection/disposal of refuse or the contents of gullies/cesspool. (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 specially designed and constructed, and not merely adapted, to carry other vehicles loaded onto it from the front or rear. **(Vehicles with a standard flat body fitted with a "beaver tail" are not exempt.)**
- A trailer with a load platform which is not more than 750 mm 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.
- A **rigid motor vehicle** or **trailer** designed for and constructed for the special purpose of carrying long (but not exceptionally long) timbers from an off road location in a forest.

To fulfil this definition the vehicle must meet the following criteria:-

- It must be of skeletal construction.
- It must have a minimum of two upright side supports (sidebolsters) fitted to each side of the vehicle.
- 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:

- Loading equipment, i.e., a Hiab crane or similar device.
- Cross bearers that do not have upright side supports.

Note: This list is not exhaustive but covers the vehicles likely to be encountered within the test hall.

Note: Some 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.

Note: 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.

Rear Under-Run Devices

Goods Vehicles with a maximum gross weight exceeding 3500 kg and first used from 1 April 1984; or

Trailers manufactured from 1 May 1983 with an unladen weight exceeding 1020 kg.

Exempted Vehicles:

- Tractor Units
- A vehicle fitted at the rear with apparatus specially designed for spreading material on a road.

- A vehicle so constructed that it can be unloaded by part of the vehicle being tipped rearwards.
- A vehicle specially designed and constructed, and not merely adapted, to carry other vehicles loaded onto it from the rear. (Vehicle 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 fitted with a tail lift so constructed that a lift platform, with a minimum length of 1 m, forms part of the floor of the vehicle.
- A vehicle specially designed, and not merely adapted, for the carriage and mixing of concrete.

Note: This list is not exhaustive but covers the vehicles likely to be encountered within the test hall.

Bumper Bars

This Inspection applies to all Vehicles and Trailers.

Procedure and Standards

Sideguards

Check Sideguards for:

1. Fitted to a vehicle required to have them.
2. Check a sideguard or bracket for:
   a. security.
   b. condition
   c. surfaces which are smooth
   d. external edges that are radiused
   e. correct dimensions visually.
   f. being continuous along the vehicle length in other than accepted circumstances. (See note)
   g. overall width.
   h. the height from the ground to the lowest edge of the guard. (not applicable to semi trailers while attached to a tractor unit, there is no requirement to separate the trailer from the tractor).

Notes:-Trailers manufactured before 1 May 1983 will not be failed if sideguards are not fitted, but the driver/operator notified that they may be required under certain circumstances.

Sideguards fitted to vehicles/trailers that do not require them will only be checked for items (a), (c) and (h) above.

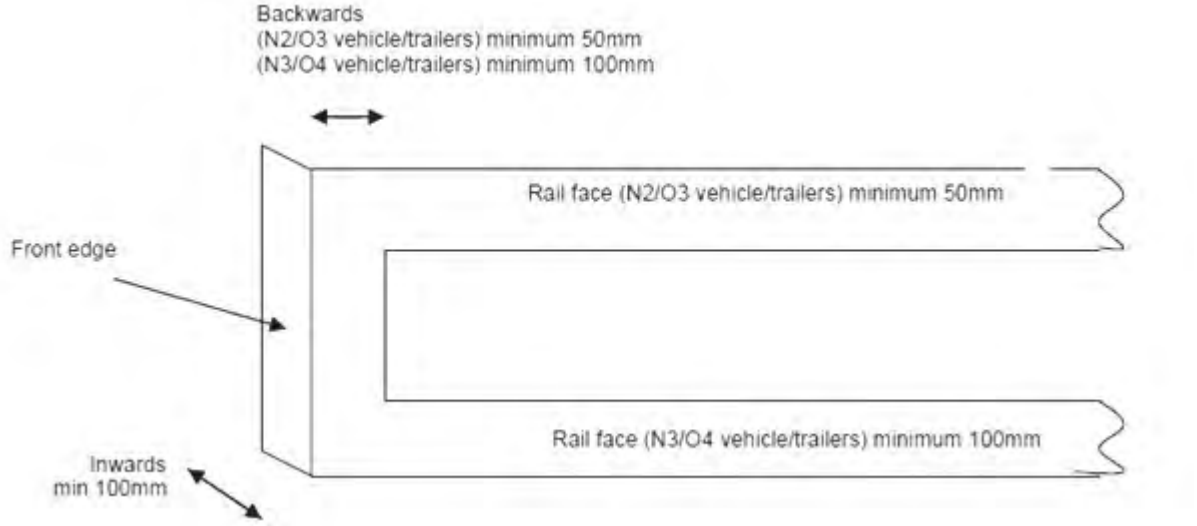
Note: The continuous vertical rail or turn in may not be required if the front edge of the sideguard is within 100mm of a permanent structure of the vehicle (vehicle cab/wheelarch).

Construction

- 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.

N2 vehicles are vehicles over 3500kg but does not exceed 12000kg DGVW.
N3 vehicles are vehicles that exceed 12000kg DGVW.
O3 trailers are trailers over 3500kg but does not exceed 10,000kg TAW.
O4 trailer are trailers which exceed 10,000kg TAW.
DGVW = Design Gross Vehicle Weight TAW = Total Axle Weight



Distance of Guard from Front Wheels (or landing legs) and Rear Wheels

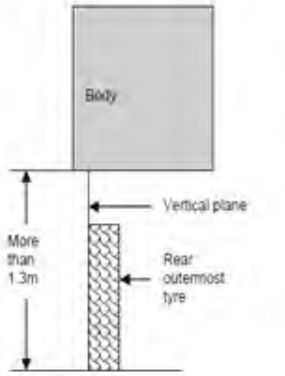
Motor Vehicles
The front edge of the guard must not be more than 300mm from the tyre on the front wheel (or second wheel if two front axles) and the guard must extend to within 300mm of the tyre on the first rear axle.

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.

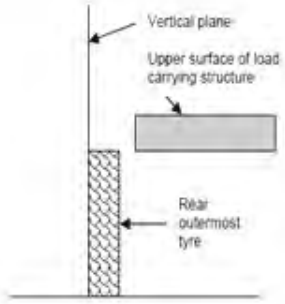
Semi-Trailer
The front edge of the guard can be up to 250mm behind the centre line of the landing legs, but never more than 3m behind the centre of the king pin (in its rearmost position) and the guard must extend to within 300mm of the tyre on the first rear axle.

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.

Lateral Projection

The guard must not project beyond the outside edge of the vehicle, and it must not be more than 120mm 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

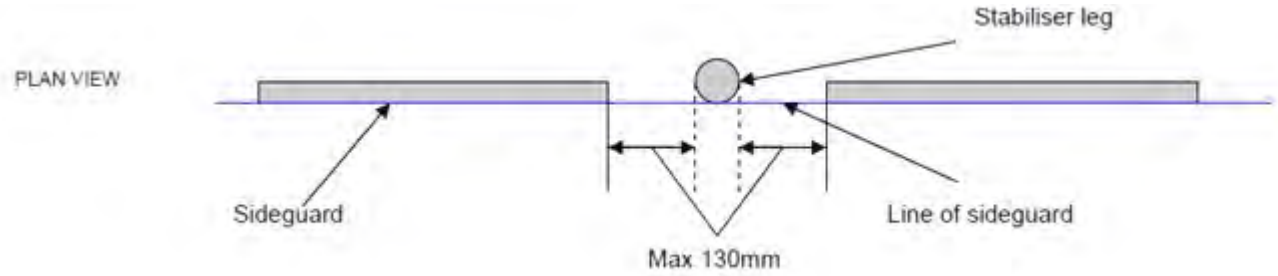
In general the regulations do not allow for the sideguard run to be broken if components such as fuel tanks and air reservoirs intrude. The components should be sited such that they do not interfere with the sideguard run. However, components may be incorporated if, by virtue of their shape and characteristics, 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 25 mm measured longitudinally may be left, provided that the rearward part does not protrude outboard of the forward part.

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.

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 explained on in notes under ‘Application’ section



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.

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.

Protrusions
Protrusions such as rivet or bolt heads are acceptable provided that they do not exceed 10 mm 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 10 mm.

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.

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:

Trailers

Make Model	
Hellbender	EUT, KIP, KIS, TSA, MUL, CONC.
Magyar	All models type approved.

Vehicles

Make Model	
Mercedes-Benz	Atego

Tankers
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".

A. Tankers which Convey Dangerous Substances

- 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

B. Skeletal Trailers carrying Frameless Tanks

(i.e. a tank or container which does not have a lower side rail or rave).

- 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

C. Milk Tankers with External Cylindrical Tubes for Stowage of Hoses.

- 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.
- 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.

D. Hose Racks

- 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.
- It is however permissible for the hose rack to be taken as part of the sideguard if it meets the dimensional requirements.

Rear Under-Run Devices

1. Fitted to a vehicle required to have one.
2. Check the rear under-run device for:-
   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.

Note: 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.
Note: 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.
Note: Vehicle 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.
Note: Vehicle not required to be fitted with a rear under-run device but have one fitted are only to be inspected as if it was a bumper bar.
Note: 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 a Reason for Failure.
Note: 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.

Note: Vehicles with bodies that satisfy the dimensional requirements for rear underrun devices are considered acceptable.
Note: 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.

Bumper Bars

Bumper bars and their mountings should be checked for:-

a. Security,
b. Jagged or projecting edges likely to cause injury.

Note: Vehicles are not required to have separate bumper bars and these may be incorporated with the body in some cases.

Figure 1

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

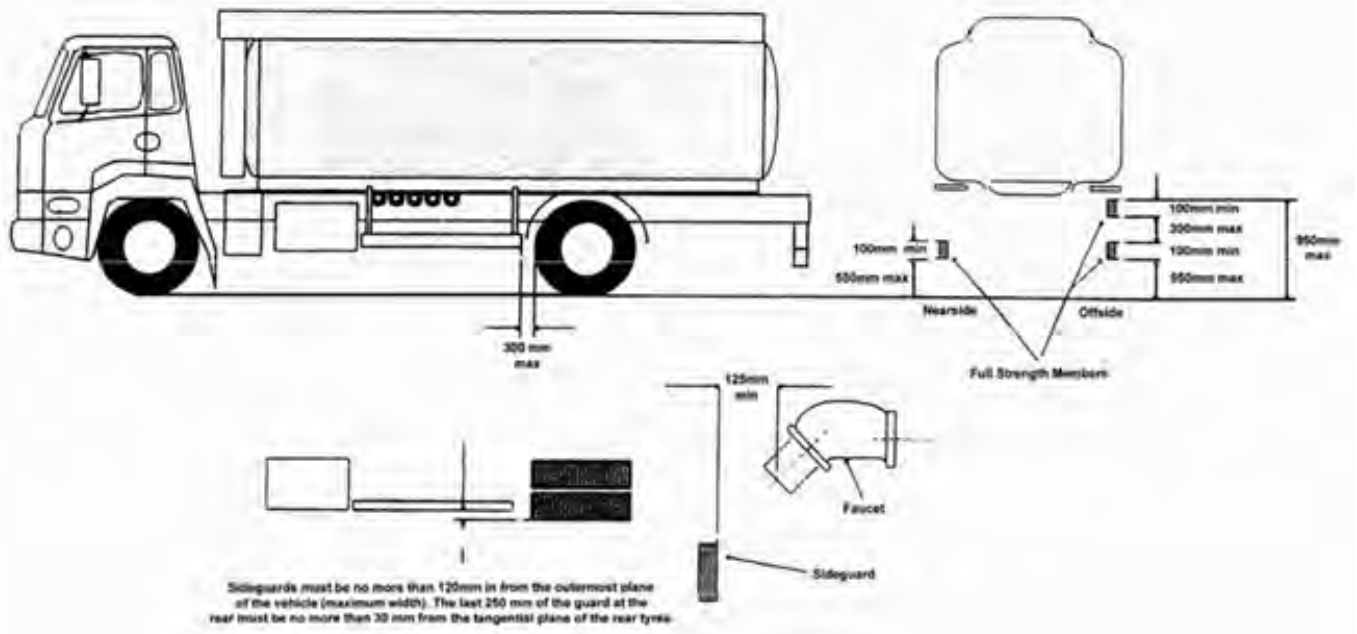


Figure 2
Fitting Sideguards - Maximum Section Tanks - Side Outlets

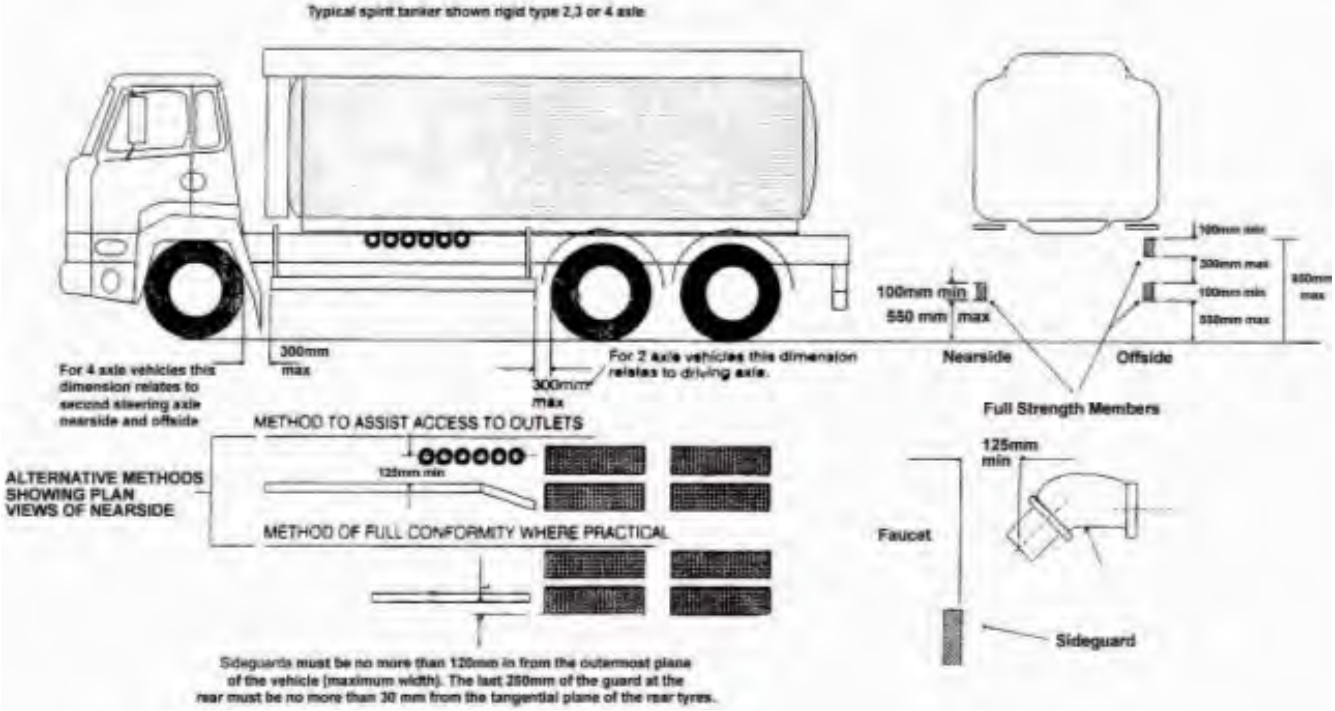


Figure 3
Fitting Sideguards — Maximum Section Tanks — Side Outlets — Side Ladder — Meter Box and Reel

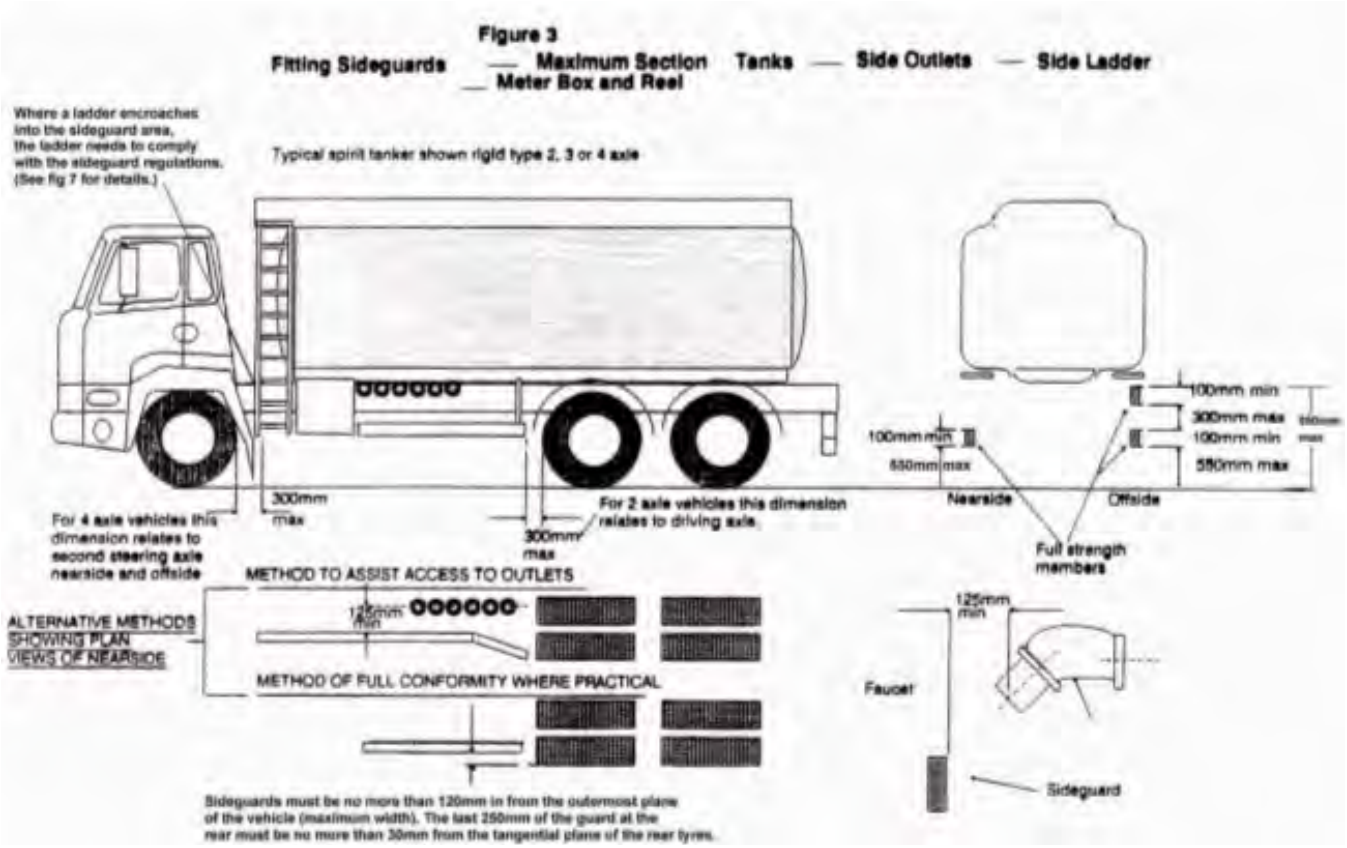


Figure 4

Fitting Sideguards — Maximum Section Tanks — Side Outlets — Rear Ladder — Meter Box and Reel

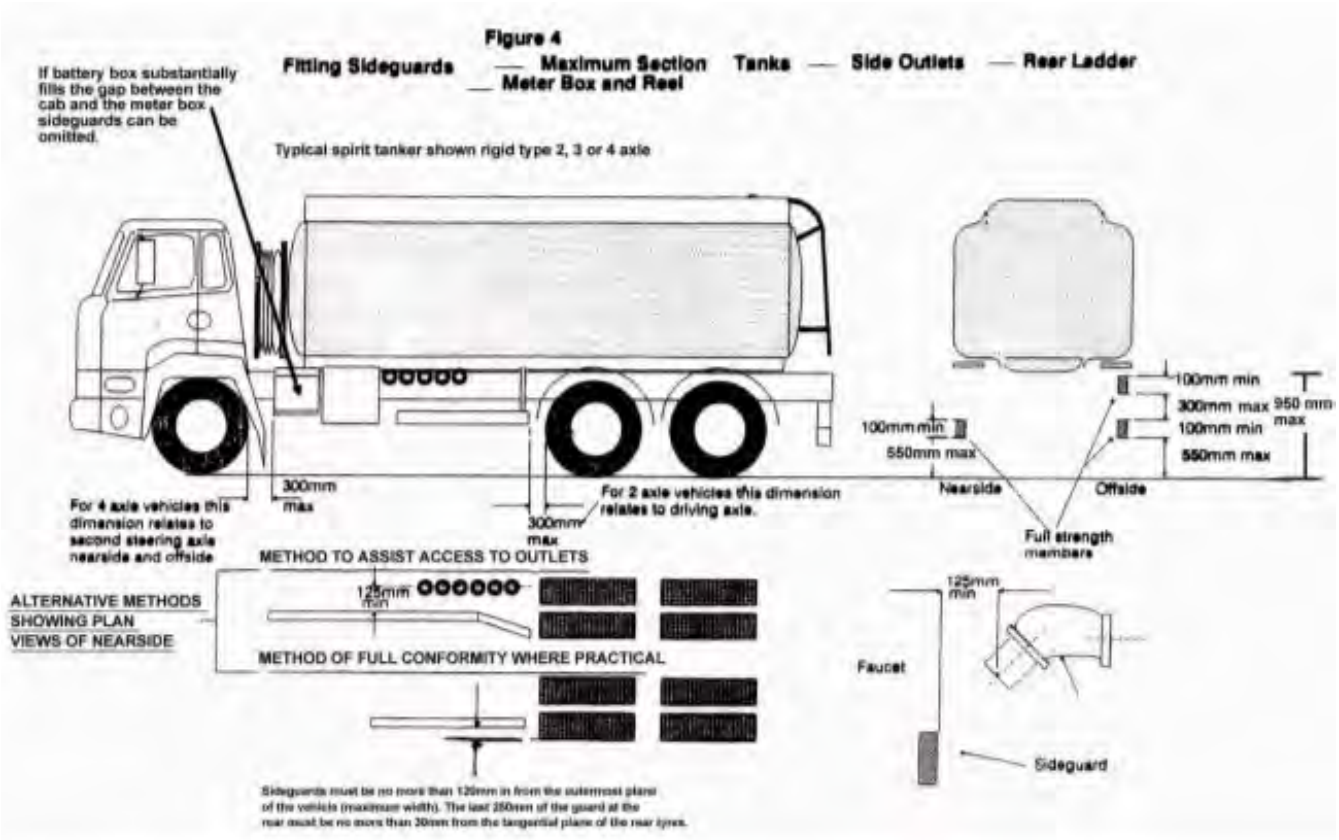
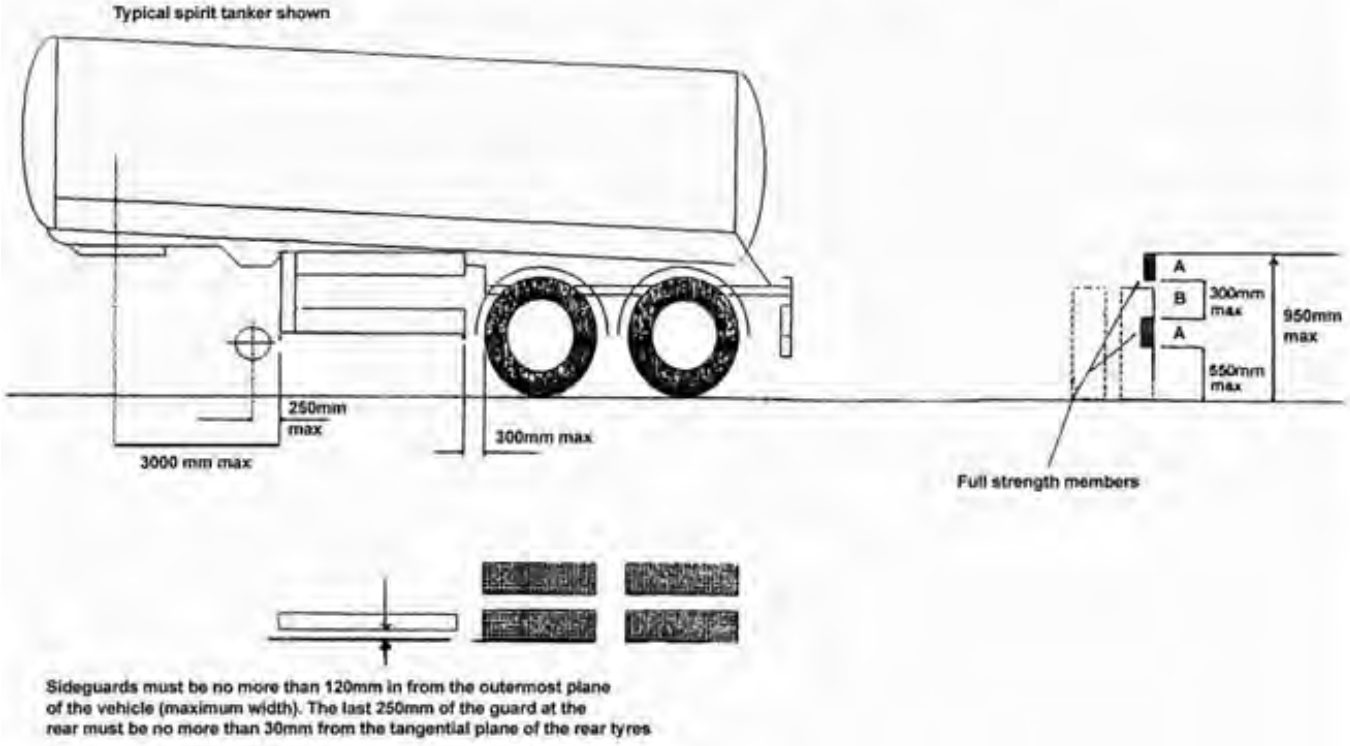
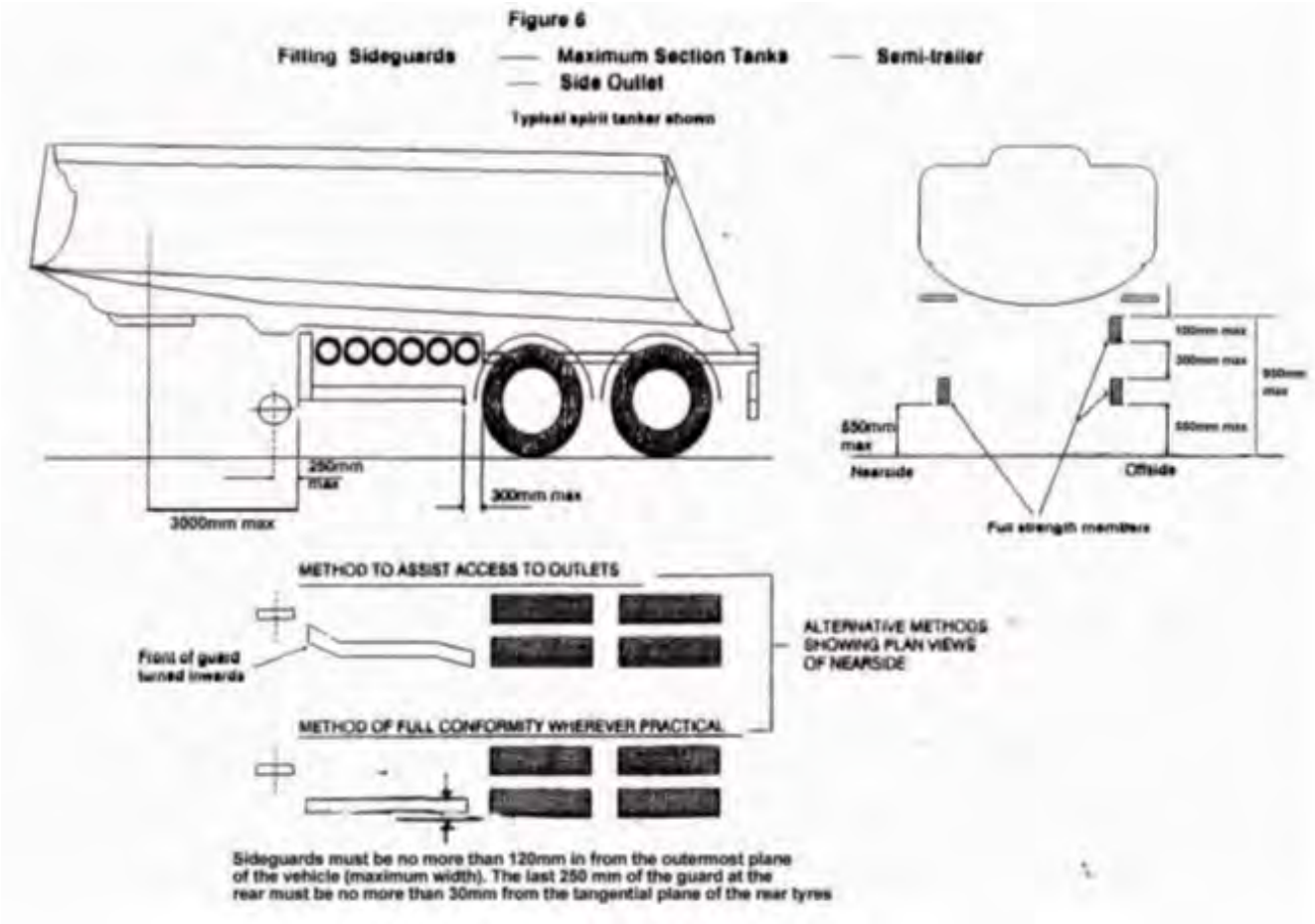


Figure 5

Fitting Sideguards — Narrow Section Tanks — Semi-trailer





Reasons for Failure

Sideguards

1. Sideguards not fitted to a vehicle required to have them fitted.
2. A sideguard or bracket:
   a. Insecure.
   b. Cracked, fractured, corroded or damaged so that its effectiveness is reduced.
   c. With exposed surfaces which are not smooth (e.g. projecting brackets, jagged edges, bolt heads that are not dome shaped).
   d. With external edges that are not radiused.
   e. With incorrect dimensions.
   f. That is not continuous along the vehicle length in other than accepted circumstances.
   g. That increases the overall width of the vehicle.
   h. With more than 550 mm height from the ground to the lowest edge of the guard. (vehicle unladen or semi-trailer load platform horizontal).

Rear Under-Run Devices

3. A device not fitted to a vehicle required to have one fitted.
4. A Rear Under-Run device:
   a. Insecure.
   b. Cracked, fractured, corroded or damaged so that its effectiveness is reduced.
   c. That has a jagged edge.
   d. With more than 550 mm minimum ground clearance. (unladen).
   e. Which extends beyond the outer edge of the outermost rear tyre. (see note in procedures).

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

Bumper Bars

5. A bumper bar or bracket which is:
   a. Insecure.
   b. Has a jagged or projecting edge likely to cause injury.

Spare wheel and carrier

Application

This inspection applies to all vehicles and trailers fitted with a spare wheel or carrier.

Procedure and Standards

Check the carrier and spare wheel for security.

Reasons for Failure

A spare wheel or carrier so insecure, damaged or positioned so that with likely to fall from the vehicle.

Speed Limiter

Application

Speed Limiter Requirements (Goods Vehicles)

This inspection applies to Goods Vehicles that are required to be fitted with a speed limiter unless they are exempt.

A vehicle is exempt from needing a speed limiter if the vehicle construction means it cannot exceed 90km/h. If this is the case, the declaration on the application form must be completed.

Goods vehicles requiring a speed limiter:-

a. A vehicle with a design gross weight of more than 12 tonnes, and first used on or after 1 January 1988 requires a speed limiter.

b. A vehicle fitted with a diesel engine and having a design gross weight exceeding 3.5 tonnes, first used from 1 October 2001 require a speed limiter

c. A vehicle with a design gross weight exceeding 3.5 tonnes first used on or after 1 January 2005.

Speed Limiter Requirements (Buses, Minibus and Coaches)

This inspection applies to all vehicles that are required to be fitted with a speed limiter unless they are exempt.
A vehicle is exempt from needing a speed limiter if the vehicle construction means it cannot exceed 100km/h. If this is the case, the declaration on the application form must be completed.

Bus/Coach requiring a speed limiter:-

a. A Bus/Minibus/Coach with a design gross weight exceeding 10 tonnes, and first used after 1 January 1988 requires a speed limiter.
b. A Bus/Minibus/Coach fitted with a diesel engine first used on or after 1 October 2001 requires a speed limiter.
c. A Bus/Minibus/Coach used on or after 1 January 2005 requires a speed limiter.

Specific Exemptions

The following goods vehicles and buses are exempt from speed limiter fitment if first used from 1 October 2001 to 31 December 2004:

- Any petrol engine or petrol engine converted to run on LPG
- Citroen Relay 2.0 litre and 2.2 litre HDi engines
- DAF 45, 7.5 ton vehicles (all) except DAF 45 marked as LF. (LF is marked on the N/S of the radiator grill.)
- Fiat Ducato with 2.0 engines (engine code RHV)
- Ford Transit (all)
- Isuzu models NPR, NQR and NKR with T, V, W, X or 1 (one) as the 10th VIN character.
- Iveco Cargo all, except vehicles with engine code F4AE---.
- Iveco Daily all, except vehicles with engine codes F1CE---, 8140.43B, 8140.43N and 8140.43S with PIC code 'G.' (the PIC code is applicable to the 8140.43S only, the PIC code can be found on the ID plate on the shut panel for the bonnet identified by the third character.)
- LDV (all)
- Mitsubishi Canter with 'R' as the 12th VIN character
- Nissan Interstar all, except vehicles with engine codes ZD3-A202, G9U-A754, S9W-A702 & G9U-A724. All Primastar.
- Peugeot Boxer 2.0 litre and 2.2 litre HDi engines
- Renault Master all except vehicles with engine codes ZD3-A202, G9U-A754, S9W-A702 & G9U-A724. All Trafic
- Vauxhall/ Opel Movano with E,F,G,J,K,L,M,N,P,T or W as 7th VIN character
- Vauxhall/ Opel Vivaro (all)
- Volkswagen (all except 2.5lt/2.8lt 109bhp/158bhp engine codes AVR & AUH respectively.)

These vehicles have either been fitted with a Euro 2 engine or comply with the engine type approval/emission requirements of EC Directive 70/220*. It is possible that other vehicle types first used between the specified dates may be similarly exempt, however customers must produce documentary evidence issued by the manufacturer, before this can be accepted. This documentary evidence should be forwarded to ROM's.*

Procedure and Standards

Check that a speed Limiter plate is securely fitted in the driver's compartment. It is acceptable for the plate to be fitted in a doorjamb. If fitted on a window and facing outward the details must be able to be read by a person of average height standing on the same ground as the vehicle.

Check that the plate is clearly and indelibly marked with the speed at which the speed Limiter has been set (the speed may be shown in mph or km/h).

Note: The character and composition of the plate and size of the lettering are not important provided the details are legible.

Check the presence and security of the device, the actuating mechanism, wiring and the tamperproof devices such as seals or lock nuts. This inspection is only for the parts that are visible without dismantling.
Note: It is acceptable for the Limiter to be wired through the "ignition" switch but any other device which would allow disconnection of the speed Limiter whilst driving is unacceptable.

SPEED LIMITER INTEGRITY CHECK USING ELECTRONIC DEVICE

Vehicles fitted with a Digital Tachograph
The functional speed limiter test cannot be carried out on those vehicles fitted with a digital tachograph. Therefore, examiners are advised to restrict the relevant speed limiter tests to a visual inspection only; customers are not required to produce any supplementary evidence to confirm the vehicle's restricted speed.

Vehicles Fitted with Tachographs Other than Digital
Open tachograph head. If seals need to be removed from within the tachograph head then do so. Plug the speed simulator jack plug into the tachograph head and close the head. Seals can only be removed and replaced by approved tachograph sealing centres or DVA staff.

The machine will establish the pre set K factor. Check that this is within + or – 50 digits of the K factor displayed on the tachograph calibration plaque.

Select "automatic mode" on the machine, select type of vehicle e.g. > 12000(Goods Vehicle) or Pub > 1/1/88 (Bus or Coach). Start engine and note whether engine can be revved up. If the speed limiter has restricted the engine revs to a noticeable degree the test is complete. Should the engine behaviour not have been noticeably affected by the automatic test a manual test will be necessary as follows;

- Start engine and run at 1200-1500rpm. Input a simulated speed to 80km/h. Check that the tachograph indicates the same speed. Gradually increase the simulated speed in 1 km/h steps. Note the speed indicated on simulators digital display when the speed limiter operates. This can be identified by a reduction in the engine RPM, or a change in the engine note, or vibration indicating that the fuel supply is being reduced.

On some vehicles the electronic device will be unable to proceed through its set programme (possibly due to no/poor earth connection or because the vehicle senses road speed from another source such as ABS systems). Under these circumstances tachograph chart evidence of the vehicle while in service can be used to verify the operation of the speed limiter. The submission of 5 consecutive tachograph charts from the previous 28 days can be used to establish the maximum operational speed. The vehicle should be failed for Reason 3a or 3b if the tachograph chart shows a speed trace of more than 95km/h for vehicles in category A and of more than 110km/h for vehicles in category B. The vehicle must have exceeded this speed for at least ten minutes.

If the speed simulator is unable to be used, and there are no tachograph charts available for inspection, confirmation of the functionality of the speed limiter from an authorised speed limiter fitment centre issued within the preceding 28 days will be acceptable.

A simulated response will reflect in service road speed. The vehicle types and speed limiter test applications standards are as follows.

Vehicle Type	Response speed at which vehicle will be failed
A. Goods Vehicle	More than 92km/h
B. Bus or coach	More than107km/h

Reasons for Failure

1. Speed Limiter Plate:
   a. Missing.
   b. Insecure.
   c. Not in a conspicuous position.
   d. Not clearly and indelibly marked with the required particulars.
2. Set speed marked on Speed Limiter Plate greater than:
   a. 90 km/h (56 mph) for a relevant goods vehicle.
   b. 100km/h (62.14 mph) for a relevant bus/coach.
3. Response speed of
   a. More than 92 km/h for a vehicle described in paragraph A in the application section,
   or
   b. More than 107 km/h for a vehicle described in paragraph B in the application section.
4. Speed Limiter:
   a. Not fitted.
   b. Insecure.
   c. Actuating rods/cables disconnected or damaged so that the operation is obviously affected.
   d. Wiring disconnected or can easily be disconnected by unauthorised means.
   e. Tamperproof device missing or defective or showing obvious signs of interference.

Speedometer - Tachograph

Application

This inspection applies to all vehicles; i.e. all buses (except minibuses NOT for hire or reward) and vehicles over 3500kg GVW.
A vehicle must have a Tachograph fitted unless the presenter claims that it is exempt from the tachograph regulations. Exempt vehicles may have either a tachograph or a speedometer fitted.

Vehicles first used on or after 1st May 2006 requiring a tachograph, must be fitted with a digital tachograph.

Vehicles first used before 1st May 2006 requiring a tachograph, may have an analogue or a digital tachograph fitted.

Procedure and Standards

All vehicles

Check that a tachograph or speedometer is fitted, operative and is complete.
Check for condition and that it can be illuminated.
Where only a speedometer is fitted, it must indicate speed in MPH and KPH (if used on or after 1/4/1984
Note: If the dial glass is cracked and this does not affect operation this is not a Reason for Failure but the presenter should be advised of the defect.

If the tachograph head cannot be opened or if the calibration plaque does not match the vehicle to which it is fitted it should be treated as if the plaque and any relevant seals were not there.
A non matching registration number may refer to a previous registration, the vehicles technical records should be checked before failing.
Note: If the time clock is inoperative this is a reason for failure under 1b.

For vehicles required to be fitted with a tachograph
Check that the correct type of Tachograph is fitted.
Check that tachograph scale is marked in KPH – there is no requirement for a tachograph to be marked with MPH increments.

Analogue tachograph
The tachograph head must only be opened with the steering wheel in the straight ahead position and with the engine switched off.

Check the presence of the tachograph manufacturers serial number/data plaque. This can be located on the back cover or on the edge of the head. Check for “e” marking.

Check tachograph DIL switch covers and all seals. It will be sufficient to check that they have an approved marking. It is not necessary to identify the sealer.

Check tachograph installation/calibration plaque for presence and condition, and the date of calibration is clearly visible.

Check that the size of road tyres (on an axle used for the calibration of the tachograph) comply with the calibration plaque.
Note: On analogue tachographs the installation/calibration plaques expire after 6 years.
It is acceptable for plaque to contain additional information (e.g. Reg No, tyre pressures etc.). The plaque is designed to be tamper proof and should show signs of damage if it has been tampered with. The 2 year check is not part of the inspection. However if the examiner notices this plaque is not displayed the presenter must be advised.
Check the “K factor” plaque for presence and condition, and the “K factor” is clearly visible.
The electronic check of the K factor should not differ from the prescribed factor by more than + or – 50.
Note: On a manual tachograph (cable driven) the “K factor” is set by the manufacturer and will be displayed on the manufacturer’s plate.

Digital tachographs
Check tachograph installation/calibration/K factor plaque for presence and condition, and the date of calibration is clearly visible.
Note: On digital tachographs the installation/calibration plaque expires after 2 years.
Due to the design of the digital tachograph the installation/calibration plaque cannot be inserted inside the unit. Therefore it is generally located around the driver’s door aperture or seat mounting area (easily accessible structural area unlikely to be subject to replacement).

It is acceptable for plaque to contain additional information (e.g. Reg No, tyre pressures etc.). The plaque is designed to be tamper proof and should show signs of damage if it has been tampered with.

Check tachograph dill switch covers and all seals for presence and condition and that they are the correct type. It will be sufficient to check that they have an approved mark. It is not necessary to identify the sealer.

Check that a printout can be obtained from the digital tachograph.

Check that the size of road tyres (on an axle used for the calibration of the tachograph) comply with the calibration plaque.

From the printout check the tachograph has the same ‘K’ factor as that which is displayed on the tachograph plaque (There is no allowance/tolerance as with analogue type tachographs). Also check the date shown on the printout is the same date on the plaque; this is to ensure that the plaque relates to the calibration of the tachograph.

A speed limiter functionality check cannot be carried out when a digital tachograph is fitted.

For vehicles not required to be fitted with a tachograph where a tachograph is used as a speedometer.

If a tachograph is used in place of a speedometer (even if the vehicle is tachograph exempt) it is only required to be marked in KPH, although it may be dual marked in MPH
Check installation/calibration plaque for presence and condition, and the date of calibration is clearly visible.

Note: There is no requirement for a re-calibration of these systems provided that the system has been initially calibrated and sealed, **and that the calibration plaque and necessary seals remain intact.**

Check tachograph dill switch covers and seals for presence and condition and that they are the correct type. It will be sufficient to check that they have an approved mark. It is not necessary to identify the sealer.

Note: Digital Tachographs do not require a ‘K’ factor check (as is the case with analogue tachographs) or a paper printout.

Note: If a speed limiter is NOT required, or the speed limiter does not receive the speed signal from the tachograph head, it is only necessary to check the seal inside the tachograph head. There is no requirement for the gearbox sender unit to be sealed.

Vehicles fitted with Modular Tachographs.

There are presently two types of Modular Tachograph using encrypted sender units. They are VDO Keinzel 1324 and Stoneridge Electronics (formerly TVI) and are easily identified as they are shaped like a car radio.

Vehicles fitted with Modular Tachograph systems have received type approval that permits the use of a 4 wire data transmission cable instead of an armoured cable provided it is used to connect an encrypted sender unit to the tachograph. When used in this arrangement the approval also does not require the cable connections to be sealed. However, the sender unit itself is still required to be sealed to the gearbox.

Identification of Encrypted Sender Units

These appear similar to other sender units and can be positively identified by the cream/beige colour of the sender unit 4 pin bayonet connector. This colour is the same whether the sender unit is the rotating type or a proximity type. It should be noted that when the cable is connected that only a small part of the cream/beige coloured connector is visible.

Note: For the VDO Keinzel 1324 that there is an exception to the above colour code when the vehicle is fitted with a TELMA retarder, the socket housing will be red.

If during the speed limiter check the electronic check of the K factor differs from the prescribed factor by more than + or – 50 it may be a reason for failure

Note: If a vehicle is fitted with more than one tachograph and a speed limiter, the speed limiter should operate off all tachographs.

Note: Plastic sleeve seals are acceptable but will requires an embossed identification, (see example below).

Tachograph plaques are required to be tamperproof, this is not a reason for Failure at annual test if they are not tamperproof.

Reasons for Failure

1. For all Vehicles, a speedometer or tachograph:
   a. Not fitted.
   b. Incomplete, clearly inoperative, or with the dial glass broken or missing.
   c. Cannot be illuminated.
   d. Speedometer does not indicate speed in MPH and KPH (this only applies to vehicles not fitted with a tachograph used on or after 1 April 1984)

2. For all vehicles fitted with a tachograph
   a. Tachograph installation/calibration plaque missing, damaged
   b. DIL switch cover missing, broken or damaged through interference.

3. For vehicles required to be fitted with a tachograph:
   a. Wrong type of tachograph fitted
   b. Tachograph scale not marked in KPH (Kilometre's per hour).
   c. Tachograph manufacturers serial number/data plaque missing or not showing an "e" marking.
   d. Tachograph installation/calibration plaque out of date or details not relating to the calibration of the tachograph fitted.
   e. Size of road tyres does not comply with calibration plaque
   f. "K" factor plaque missing.
   g. Seal missing, broken or where a clearly "non mandatory" seal has been fitted in place of an "official" seal.
   h. An analogue or modular tachograph where the electronically indicated figures differs from prescribed K factor by more than + or – 50.
   i. Unable to obtain a printout from a digital tachograph.
   j. A digital tachograph that displays a 'K' factor reading different to that shown on the calibration plaque. (There is no allowance/tolerance as with analogue type tachographs).

4. For vehicles not required to be fitted with a tachograph, where a tachograph is fitted in place of a speedometer.

If a speed limiter is required (which is sensed from the tachograph head):

a. Seal missing, broken or where a clearly “non mandatory” seal has been fitted in place of an “official” seal.

If a speed limiter is NOT required:

b. A seal (within the tachograph head) missing, broken, or where a clearly “non mandatory” seal has been fitted in place of an “official” seal. There is **no** requirement for the gearbox sender unit to be sealed.

Spray Suppression, wings and wheel arches

Application

Wings and Wheel Arches

This inspection applies to all vehicles and trailers

Spray Suppression

This inspection applies to Goods Vehicles shown below unless listed as exempt.

Motor Vehicles

- Exceeding 12 tonnes design GVW, and
- First used from 1 April 1986.

Trailers

- Exceeding 3.5 tonnes design GVW and manufactured from 1 May 1985
- exceeding 16 tonnes design GVW with 2 or more axles, whenever manufactured.

Exempted Vehicles:

- Motor vehicle where the driving power of its engine is, or can by use of its controls be, transmitted to all wheels driving on at least one front axle and one rear axle.

- Vehicles with a high ground clearance (400 mm minimum).

- A vehicle specially designed and not merely adapted for the carriage and mixing of concrete.

- 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, not merely adapted, to carry round timber, beams or girders being items of exceptional length.

- A rigid motor vehicle or trailer designed for and constructed for the special purpose of carrying long (but not exceptionally long) timbers from an off road location in a forest.

To fulfil this definition the vehicle must meet the following criteria:

- It must be of skeletal construction.
- It must have a minimum of two upright side supports (side bolsters) fitted to each side of the vehicle.
- 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:

- Loading equipment i.e. a Hiab crane or similar device.
- Cross bearers that do not have upright side supports.

Tractor units towing timber carrying trailers must comply with the spray suppression requirements.

Note: Tractor units drawing exempt trailers are not themselves exempt.

This list is not exhaustive but covers the vehicles likely to be encountered within the testing scheme.

Procedure and Standards

Wings and Wheel Arches

Roadwheels 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.

Notes: Tractor Units and Skeletal Vehicles/Trailers.

With regard to the requirements for wings and wheel arches, a vehicle may be passed without wings if it is known that in normal use a semi-trailer/body/ container is carried which fulfils the requirements of a wing. It is important to note however that this does not apply to spray suppression and therefore vehicles subject to the spray suppression requirements must have complete wings.

Mudflaps

If a mudflap is an extension to a wing or similar fitting, a missing or damaged mud flap is not a Reason for Failure, unless the vehicle is required to have one to comply with spray suppression requirements.

Where a mudflap 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.

Spray Suppression

The test includes only a basic visual check for general compliance and it will normally not be necessary to take measurements. A simple gauge has been issued to assist staff in cases of doubt on certain key dimensions.

Notes:-

Tractor units and Skeletal Vehicles/Trailers

- They must be fitted with complete wings to fulfil the spray suppression requirements.

Lifting axles

- Are not exempt from the requirements and are therefore treated as a normal axle.

Vehicles/Trailers with Demountable Bodies

- These are not exempt from the requirements. In some cases it will therefore be necessary for the body to be in place since the mudwing or valance is often attached.

- Some demountable bodies can be unloaded by tipping, using a conventional ram attached to the vehicle. These are classed as tippers and are therefore exempt from the spray suppression requirements.

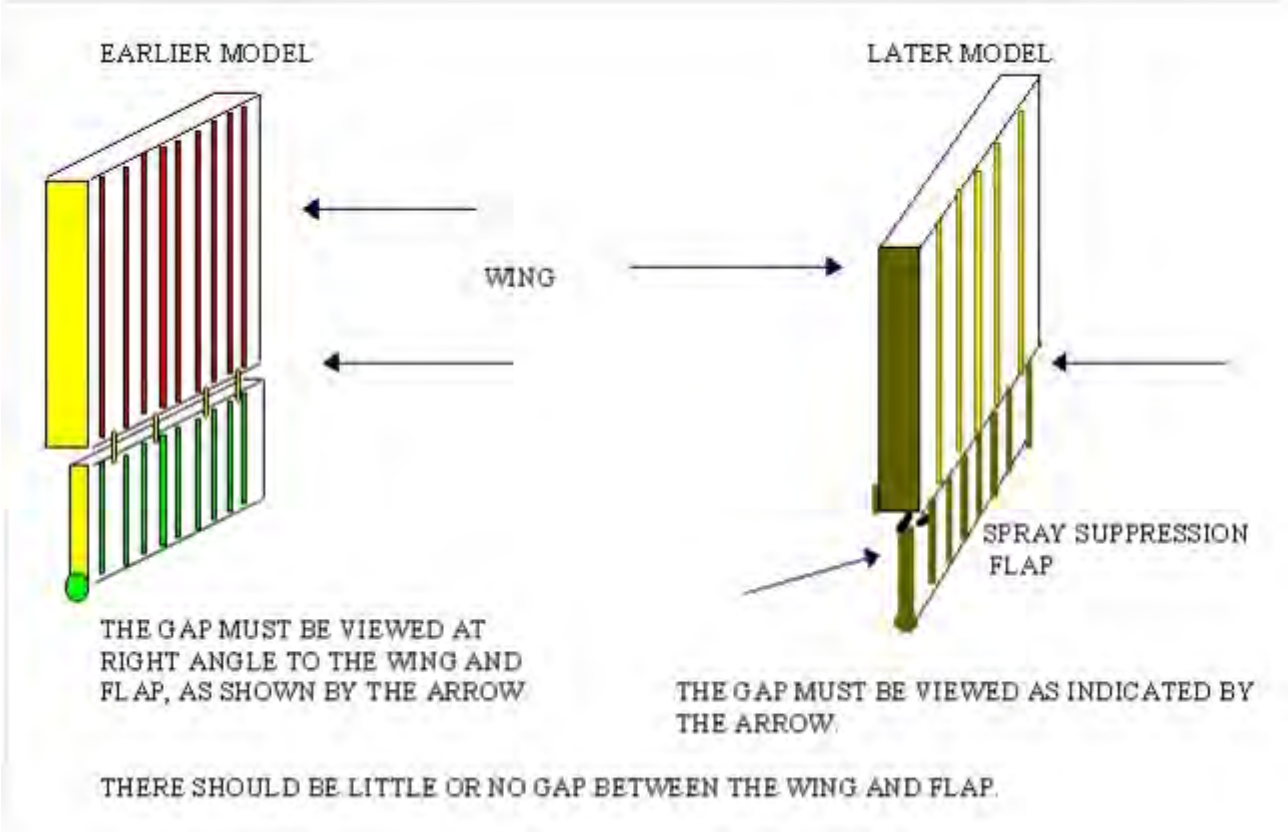
When assessing the flap width on spray suppression the whole flap is to be taken into account and not just the spray suppression material on the front face.

- The **width** of the flap should cover the full breadth of the tyre(s).
- The 200 mm rearmost flap height can be increased to 300 mm for trailers claimed to be used on **Ro-Ro ferry operations.**
- The 200 mm flap height can be increased to 300 mm for any axle where the radial dimension to the lower edge of the valancing, or wheel guard, is not greater than the radius of the tyre.

Deliberate modifications for attachment points for rope hooks are not acceptable and should fail as incomplete.

Vehicles/trailers first used from 1 April 2000 must have spray suppression that covers the whole width of the tyres. It is acceptable for vehicles/trailers before 1 April 2000 that the spray suppression will only cover the tyre tread breadth.

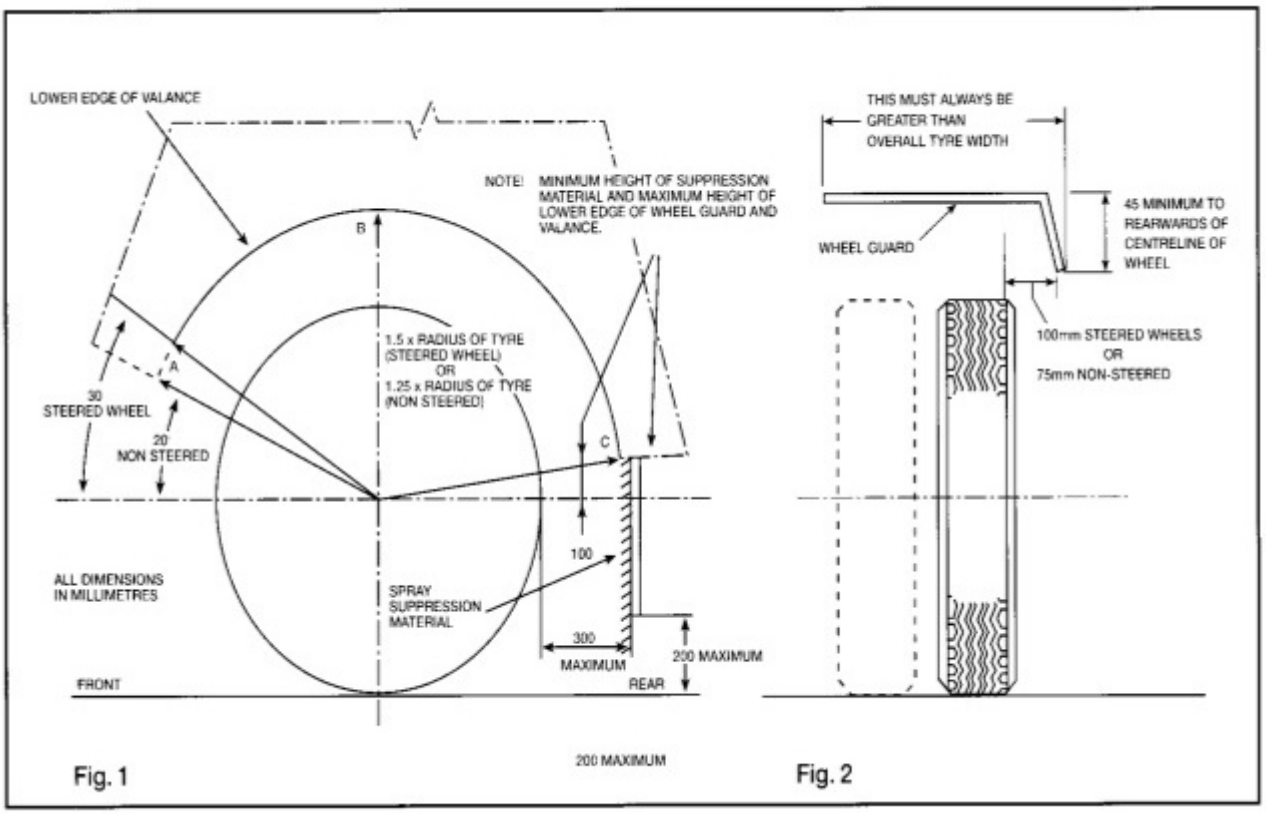
Earlier Mercedes Actros model ranges had gaps between the top spray suppression flap and the bottom of the mud wing these do not comply with the spray suppression requirements and should be failed. The later models do comply because the gap is at the same level as the mud wing thus containing the spray thrown up by the rotation of the wheel.



On trailers where all the wheels steer, it may appear to be incompatible to fit spray suppression, these vehicles are not exempt but spray suppression only needs fitting as far as it is practicable.

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.



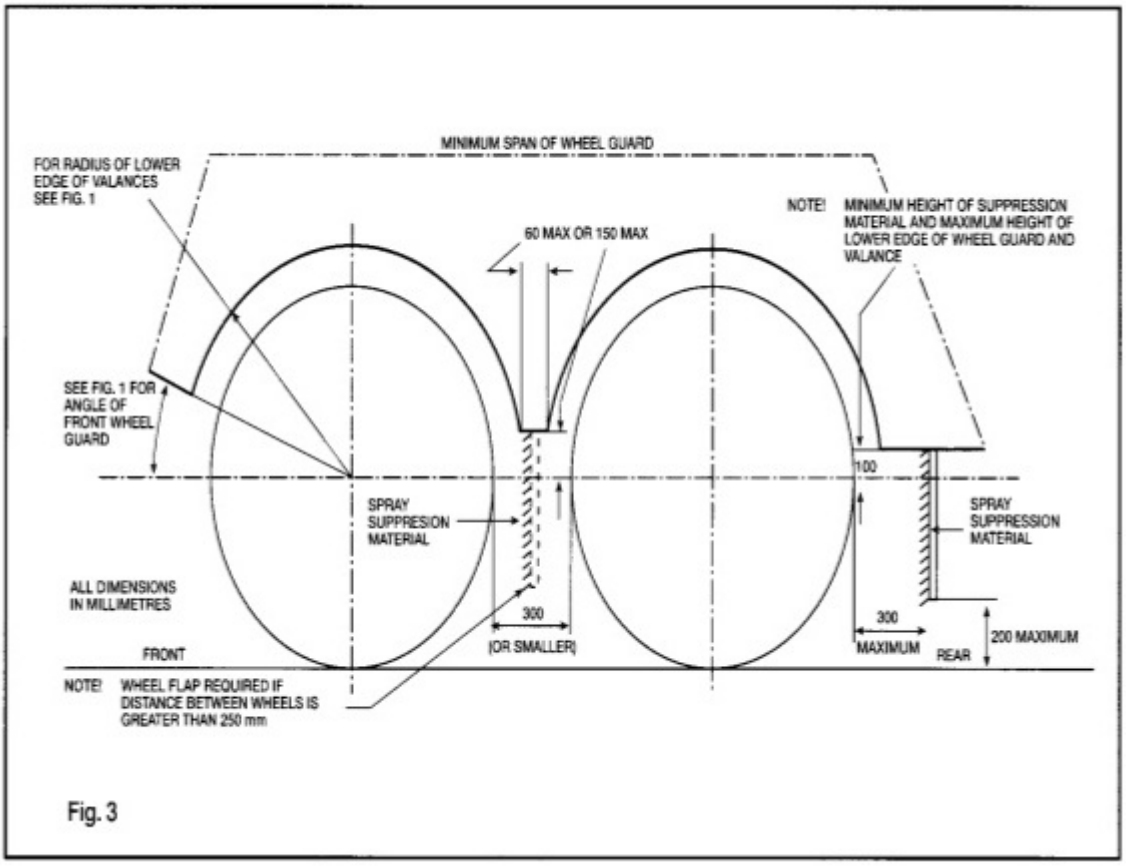
Wheel Flaps
Wheel flaps must be fitted behind each wheel and should cover the full breadth of the tyre(s) and be mounted to the wing without gaps that would permit the exit of spray.

Suppression material must be fitted to:-

- The forward face of the flap; and
- To the forward face of that part of the wing (guard) if it reaches below a line 100 mm above a line projected from the wheel centre line.

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.

Conventional Mudwing Types of Wheel Guards
Multi-axle arrangements where distance between wheels is 300 mm or less.



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 as in the single axle diagram.

Wheel Flaps
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 250 mm or more. Up to 290 mm can be accepted where it is clear that the limit of 249 mm is exceeded only by tyre wear.

Where the distance between tyres on a group of axles is less than 250 mm, wheel flaps are only required on the rearmost axle of each group.

Suppression material must be fitted to:

- The forward face of the flap; and
- To the forward face of that part of the wing (guard) if it reaches below a line 100 mm above a line projected from the wheel centre line.

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.

Single or Multi-axle arrangements using Half Wing and Valances

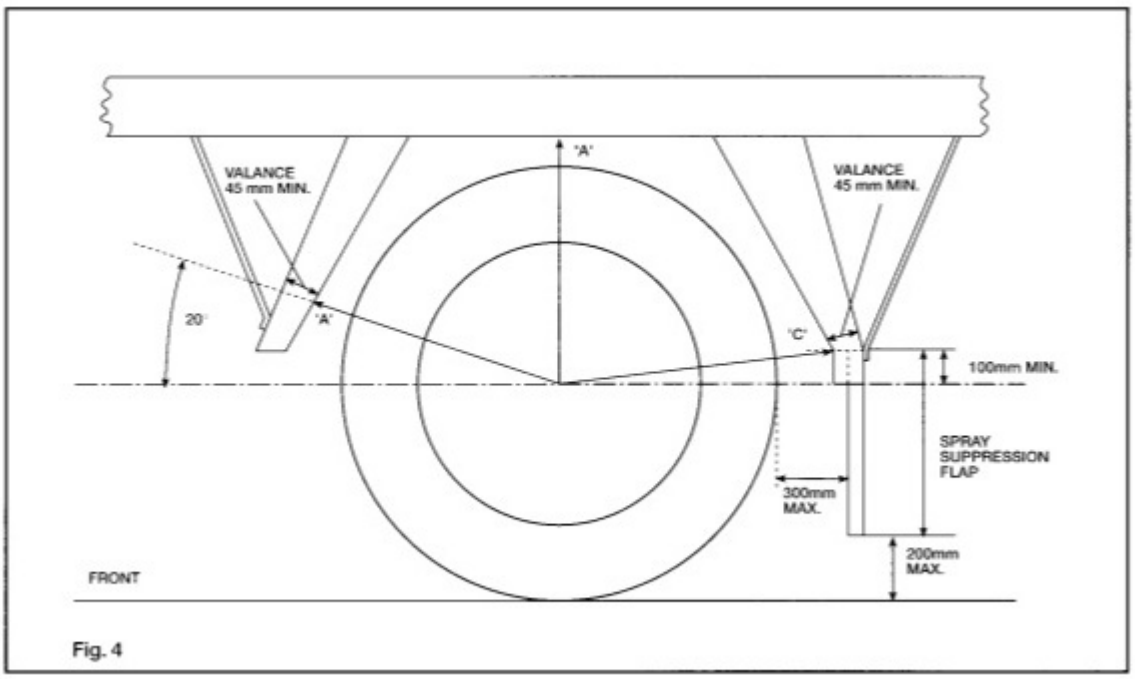


Fig. 4

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.

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.

Where the distance between tyres on a group of axles is less than 250 mm, wheel flaps are only required on the rearmost axle of each group. Up to 290 mm can be accepted if it is clear that the limit of 249 mm is exceeded only by tyre wear.

Suppression material must be fitted to:-

- The forward face of the flap; and
- To the forward face of that part of the wing (guard) if it reaches below a line 100 mm above a line projected from the wheel centre line.

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.

Note that in the case of steerable wheels the 20 Deg. angle is increased to 30 Deg.

The breadth of the wing valance at points A and C must be at least 45 mm as must be the body valance depth at point B.

Flap and Valance Systems for Non-Steerable Axles

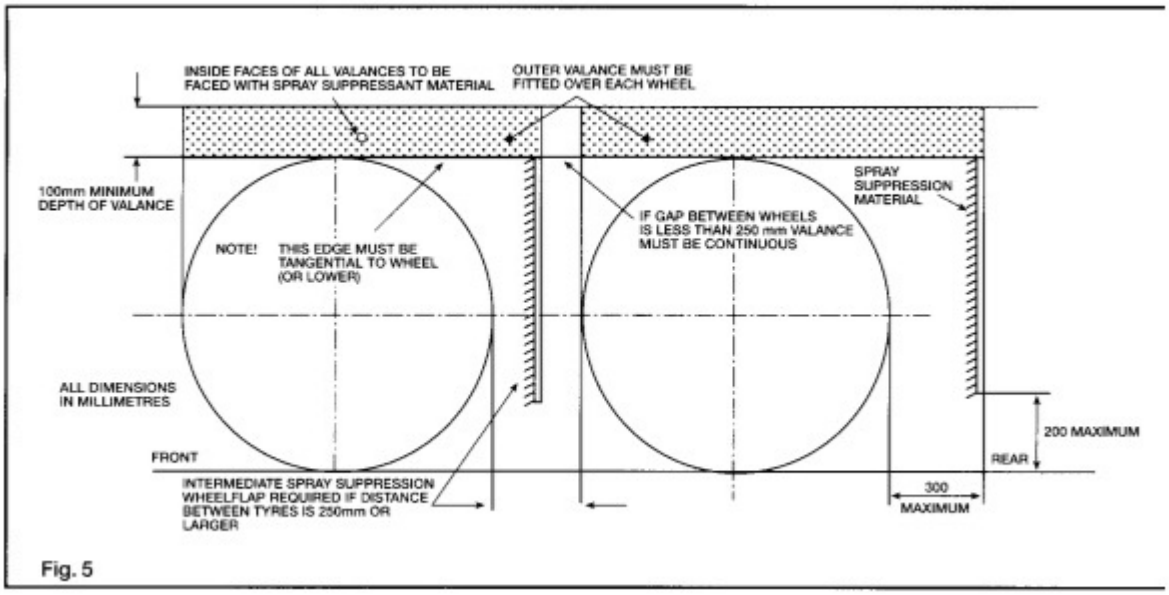


Fig. 5

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.
The whole inner face of the outer valance, the depth of which should not be less than 100 mm, must be fitted with a suppression material.

Wheel Flaps

Wheel flaps should extend to the underside of the vehicle structure. The whole of the forward facing part of the wheel flap should be fitted with a suppression material or device. There should be no gaps that would permit the exit of spray.

Suppression material must be fitted to:

- The forward face of the flap; and
- To the forward face of that part of the wing (guard) if it reaches below a line 100 mm above a line projected from the wheel centre line.

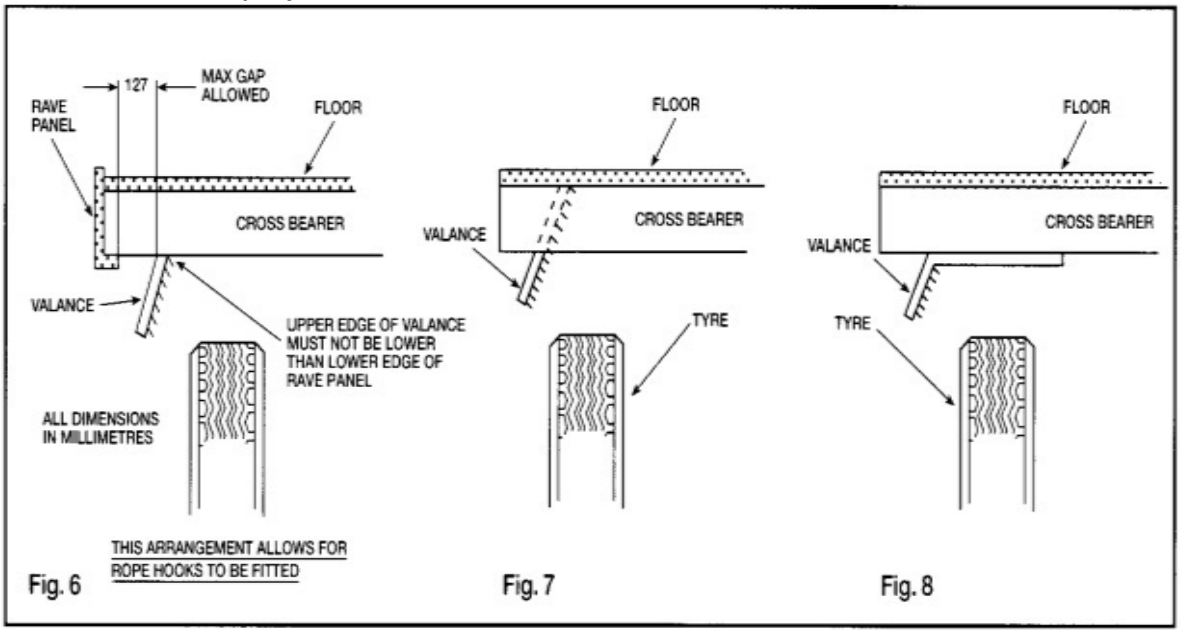
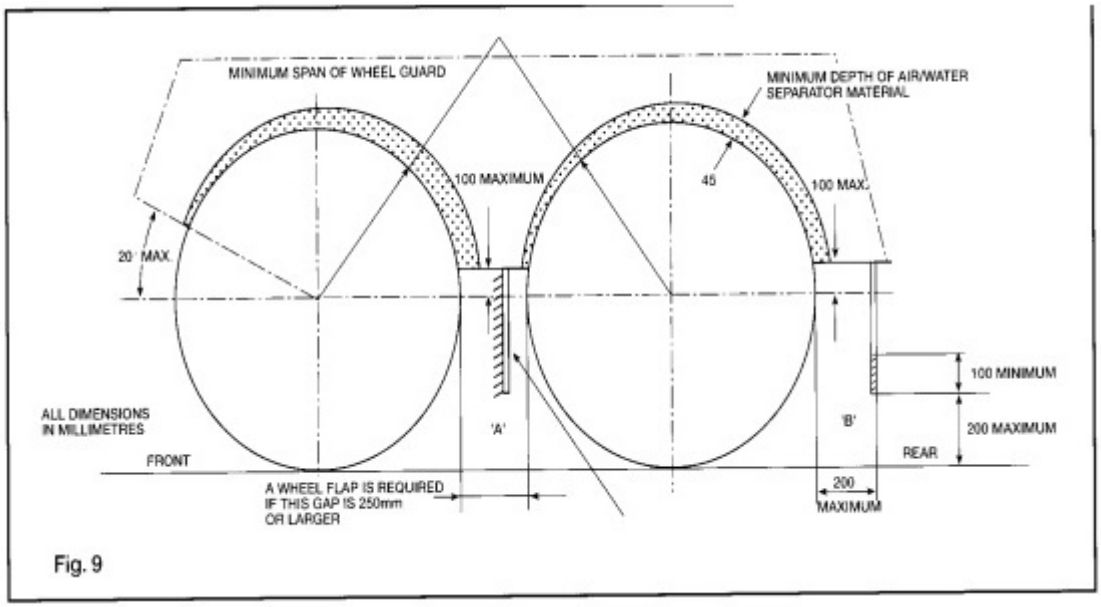


Fig. 6 Fig. 7 Fig. 8

Spray Suppression Systems with Air/Water Separation Devices on the Lower Edge of Valances ("Cats Whiskers" or "Netion") Single axle and Multi-axled arrangements



The **Wheel Guards** should comply in all respects with the requirements given for the conventional mudwing system.

Valances should have air/water separating material on their lower edge to a depth of not less than 45 mm to the rear of the vertical centre line of the wheel. This depth may be progressively reduced forward of the centre line.
There should be no openings in outer valances or between outer valances or wheel guards that would allow spray to be emitted.
For non-steered wheels, the radius of the lower edge of the valance, including the air/water separating device, must not be greater than the radius of the tyre. With steered wheels however the radius of the lower edge can be up to approximately 25 mm larger than the radius of the tyre.

Wheel flaps must be either
Fitted with suppression material to

- The forward face of the flap; and
- To the forward face of that part of the wing (guard) if it reaches below a line 100 mm above a line projected from the wheel centre line (as at "A" in the diagram above).

or

- the lower part should consist of an air/water separator,the length of which shall be at least 100mm. The maximum height of the bottom edge should not exceed 200mm and the maximum distance behind the tyre is reduced to 200mm (as at “B” in the diagram above).
- Where the distance between tyres on a group of axles is less than 250 mm, wheel flaps are only required on the rearmost axle of each group. Up to 290 mm can be accepted if it is clear that the limit of 249 mm is exceeded only by tyre wear.

Reasons for Failure

Wings and Wheel Arches.

1. A Wing or Wheel Arch:
   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.

Spray Suppression.

2. Spray Suppression:
   a. Insecure or not fitted where required.
   b. Incomplete or seriously defective.
   c. Dimensions do not comply with requirements.
   d. With a wheel flap not restrained or stiff enough to stop excessive movement or wind lift in normal use.
   e. With more than 25% of the minimum required wheel flap or spray suppression material area clogged with mud or debris.

Steering

Application

This inspection applies to all vehicles and to trailers with steered axles.

Procedure and Standards

- 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 may 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 Examiner they should be tested without the engine running. Examples are belt driven refrigeration compressors and air conditioning.
- The hydraulic fluid level check only applies to those reservoirs which can be checked without removing the reservoir cap.

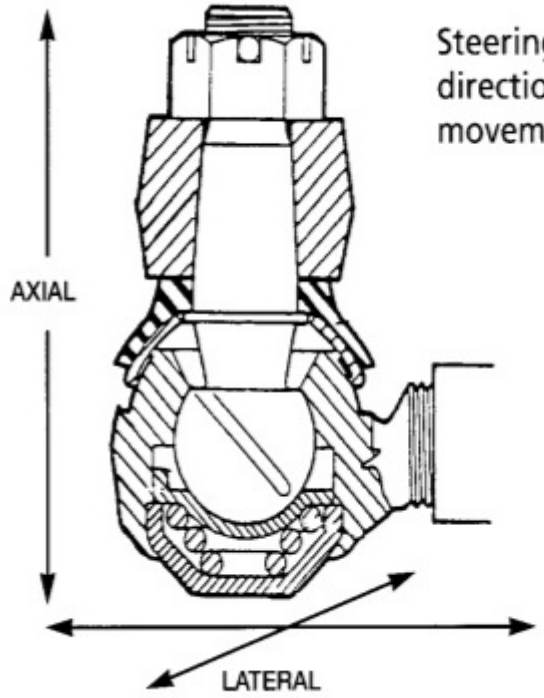
Exposure of structural cords on power steering hoses is acceptable provided that these cords are not damaged.

Note: 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.
- 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.
- With road wheels off the ground, 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.

Note: Common means of acceptable locking devices are:
Anti-rattle washers, Split pins, lock wire, spring washers, nyloc nuts and liquid locking compounds.

Volvo FE model range only. The ball joint has been designed only to swivel fore and aft and not side to side. If 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. Any lateral movement detected must always be confirmed that the axial movement exceeds 2mm before failure.
Note: Vehicles with independent front suspension should be checked with the suspension in the normal running position.



Steering ball joint showing direction of axial and lateral movement.

Reasons for Failure

1. Power steering:
   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 an inappropriate repair or modification
2. Electronic power steering:
   a. malfunction indicator lamp indicates a fault
3. Steering with:
   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 loose.
   d. Any abnormal lateral movement in a ball 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 not fitted or insecure.
k. A steering lock stop insecure or missing or not fulfilling its function
l. A component repaired by welding 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 sector shaft.
q. Sector shaft cracked, twisted or splines twisted.
r. Excessive wear in steering rack
s. Excessive movement of rack housing in mounting bushes.
t. A rack gaiter (if rack originally fitted with gaiters) split, damaged, missing or displaced.
u. A dust cover missing or excessively damaged, deteriorated or insecure to the extent that it would no longer prevent the ingress of dirt etc
v. Oil leak
w. Gear casing fractured.

Steering Control

Application
This inspection applies to all vehicles.
Procedure and Standards

- 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.
- Check the movement between the steering wheel column and shaft by rocking the steering and applying upward and downward pressure at the wheel's rim and also by pushing and pulling at the rim.
- Check steering wheel for condition. Cracks in the plastic covering do not necessarily mean that a spoke is fractured.
- 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.

Rack and Pinion Steering

Wheel Diameter	Conventional	With steering wheel ahead of the rack and with a number of joints	Other types of steering
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")

Note: Unless specified by the manufacturer vehicles fitted with power steering must be checked with the engine running.

"Free Play" must not be confused with movement caused by the compression of steering joints, etc.
Certain types of steering column might show some movement not due to excessive wear, e.g., those fitted with universal joints or flexible couplings.

Reason for Failure

1. Steering column:
   a. With excessive movement of centre of steering wheel in line with column (end float).
   b. With excessive side play indicating a badly worn top bearing or in top mounting bracket.
   c. Flexible coupling or universal joint deteriorated, with excessive wear or insecure.
   d. Coupling clamp bolt or locking device loose or missing.
   e. With an adjustment device worn to such an extent that it would render the column insecure.
2. Steering Wheel:
   a. Loose.
   b. Hub, spoke, or rim fractured or cracked.
   c. Cover torn with jagged edges which may injure the driver.
   d. Hub retaining device not fitted or loose.
3. Free play in system which is outside the prescribed limits

Suspension

Application

This inspection applies to all vehicles and trailers.

Procedure and Standards

- Check all suspension components for condition and security.
- Insecurity of attachment points can best be assessed when the steering and/or brakes are operated.

Leaf spring systems:

- Check correct alignment of leaves.
- The fail criteria is that the leaves are so misaligned that each leaf is not taking a reasonable proportion of the load, or that they are likely to foul other parts of the vehicle.
- 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.
- 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.

Spring Pins:

- Wear in pins & bushes: The maximum permissible wear in a pin and/or bush is 2 mm for a 12 mm 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 6 mm . This does not apply to a threaded pin and bush assembly or to rubber bushes or to single spring bogie suspensions.

- Security of spring pins: Where an anchor/shackle pin is secured at one end the maximum amount of movement at the free end should not exceed 1 mm for smaller assemblies, increasing to 2 mm for larger assemblies.

Slipper brackets:

- Rebound pins where fitted as standard should be correctly located.
- Worn slipper brackets are a Reason for Failure 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).

Air/Fluid systems:

- 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.
- An air bag for holding a lift axle in the raised position must be considered against the same pass, fail criteria as any other suspension air bag.

Note: A fractured and or repaired air bag pedestal if performing satisfactorily and not damaging the air bag is not a Reason for Failure.
Note: Independent suspension should be jacked (where practical) to remove the weight from the suspension joints (suspension hanging freely).
Note: Trailers fitted with Heavy Duty shock absorbers are not required to be fitted with check straps.
Note: Scania vehicles with air suspension, have attachment points for a retaining chain, the omission of the chain is not a Reason for Failure.
Note: 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.
Before failing a vehicle, two operations should be tried which may re-inflate the bellows:

a. by using the driver control to raise/lower the vehicles suspension before resetting the suspension to the normal ride height, or
b. placing a load on the vehicle with the load simulator while performing a brake test.

If neither operation re-inflates the bellows then the vehicle should fail.

Coil Springs:

- Check for correct location.

Adjustable radius and panhard rods:

- Check clamp bolts for security.

Shock Absorbers/Anti Roll Bars:

- Check shock absorbers for leaks. 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.
- Check for the presence of shock absorbers and/or anti roll bars where fitted as standard equipment.
- Anti roll bar bushes repaired with resin are acceptable providing the repair is adequate resulting in the removal of the excess wear.

Reasons for Failure

1. All suspension types.

An attachment point and/or bracket including linkages, balance beams, panhard rods, spring saddle etc.:

a. Insecure.
b. Disconnected.
c. Fractured or cracked.
d. So damaged, 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. Wear in a pin, bush or mounting exceeding the prescribed limit.
j. A dust cover missing or excessively damaged, deteriorated or insecure to the extent that it would no longer prevent the ingress of dirt etc.

2. Leaf Springs and Fixings
   a. Wear in a pin and/or bush 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 weakned that it is likely to fail.
   j. An insecure or missing locking device from a shackle or anchor pin.
3. Coil Springs and Torsion Bars:
   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.
4. Air/Fluid Suspension Systems.
   Valve, Pipes, Valve linkage, Bellows and Displacer/ Accumulator Unit:
   a. Displaced, deflated, so damaged/deteriorated that it is likely to fail.
   b. Fouled by other parts or leaking.
   c. With check strap missing or defective. (where fitted as standard)
   d. Insecure.
   e. Pipe insecure.
   f. Leaking.
   g. Modified in such a way that it would adversely affect the functioning of the system
5. Bonded Suspension Units:
   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.
6. Shock Absorber:
   a. Missing from a vehicle on which it is a standard component.
   b. With an anchorage fractured or unit insecure.
   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.

f. With a sleeve damaged so that the unit is not functioning correctly.

7. Anti roll bar:
   a. Missing from a vehicle on which it is a standard component.
   b. Insecure.
   c. Fractured, cracked or severely distorted.
   d. So corroded or worn that its strength is seriously reduced.
8. Anti roll bar linkage/bracket or bushes:
   a. Missing.
   b. Fractured or cracked and likely to fail, or excessively worn.
9. All suspension types
   a. 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 laden.

Trailer Landing Legs

Application

This inspection applies to all trailers fitted with landing legs.

Procedure and Standards

Check for security of the landing leg or any component part.
Note: If any leg or part of a leg is missing it is not a Reason for Failure.

Reasons for Failure

1. A landing leg or any component part so insecure that it is likely to fall from the vehicle.

Transmission

Application

This inspection applies to all vehicles and to trailers with driven axles.

Procedure and Standards

- Check all relevant transmission components, where possible, for wear, security and condition.
- Check for contamination and deterioration of flexible coupling
- 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.
- Propeller shaft spline wear is not a Reason for Failure.

Reasons for Failure

All vehicles with:

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.
j. Dust cover missing or excessively damaged, deteriorated or insecure to the extent that it would no longer prevent the ingress of dirt etc.

Front Wheel Drive with:

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 gaiter protecting a constant velocity joint split, missing or insecure.

Tyre Condition

Application

This examination applies to all tyres fitted to vehicles and trailers apart from spare tyres.

Procedure and Standards

Check each tyre for:

- Cuts.
- Lumps, bulges or tears.

Note: Lifting of the tread rubber is a Reason for Failure. 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.

A probe maybe used when checking a cut in a tyre provided that care is taken that no further damage is caused to the tyre.

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.

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.

- Exposed ply or cords.
- Damaged cords.

Check that tyre is seated correctly on the wheel and that it does not foul on any part of the vehicle or make wall contact with another tyre on a twin wheel.

Note: Some tyres with flexible side walls may make wall contact under load. This is not a Reason for Failure.

Check any tyre that appears to have been recut and determine whether it has been recut to the manufacturers 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.

Note: Recut tyres can only be fitted to motor vehicles with an unladen weight of 2540 kg or more and to trailers with an unladen weight of more than 1020 kg.

Check the tread pattern of each tyre and ensure that the base of any groove of the original tread pattern is visible. This does not apply to vehicles with GVW 3500 kg or less.

Note: The original tread pattern means:

- 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.

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.
The following should be disregarded when deciding which grooves need to be checked in regard to the "original tread pattern".

- grooves which wear out before the main grooves are worn to a depth of 5 mm in the case of a truck tyre and 3 mm in the case of a car tyre.
- other minor features such as sipes, small lateral extensions to the circumferential grooves and minor lateral grooving on the shoulders.

Check the tread pattern grooves to ensure that the minimum tread depth standards shown below are met.

Maximum gross weight of vehicle or trailer	**Over 3500kg or a bus of any weight**	**3500kg or less**
Minimum tread depth	1mm, excluding any tie bar or tread wear indicator	1.6mm, excluding any tie bar or tread wear indicator
Position of minimum tread depth band	Form a continuous band covering at least any ¾ of the breadth of the tread around the entire circumference	Form a continuous band covering the central ¾ of the breadth of the tread around the entire circumference

The following diagrams show acceptable positions of the minimum tread depth band, for vehicles over 3500 kg 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 3500 kg or less the band is the central ¾ of the breadth of tread and it is not necessary for tread depth to be visible on the remainder.

Figures (1), (2), (3) and (4) T = Breadth of Tread
¾ T = Minimum width of continuous band.

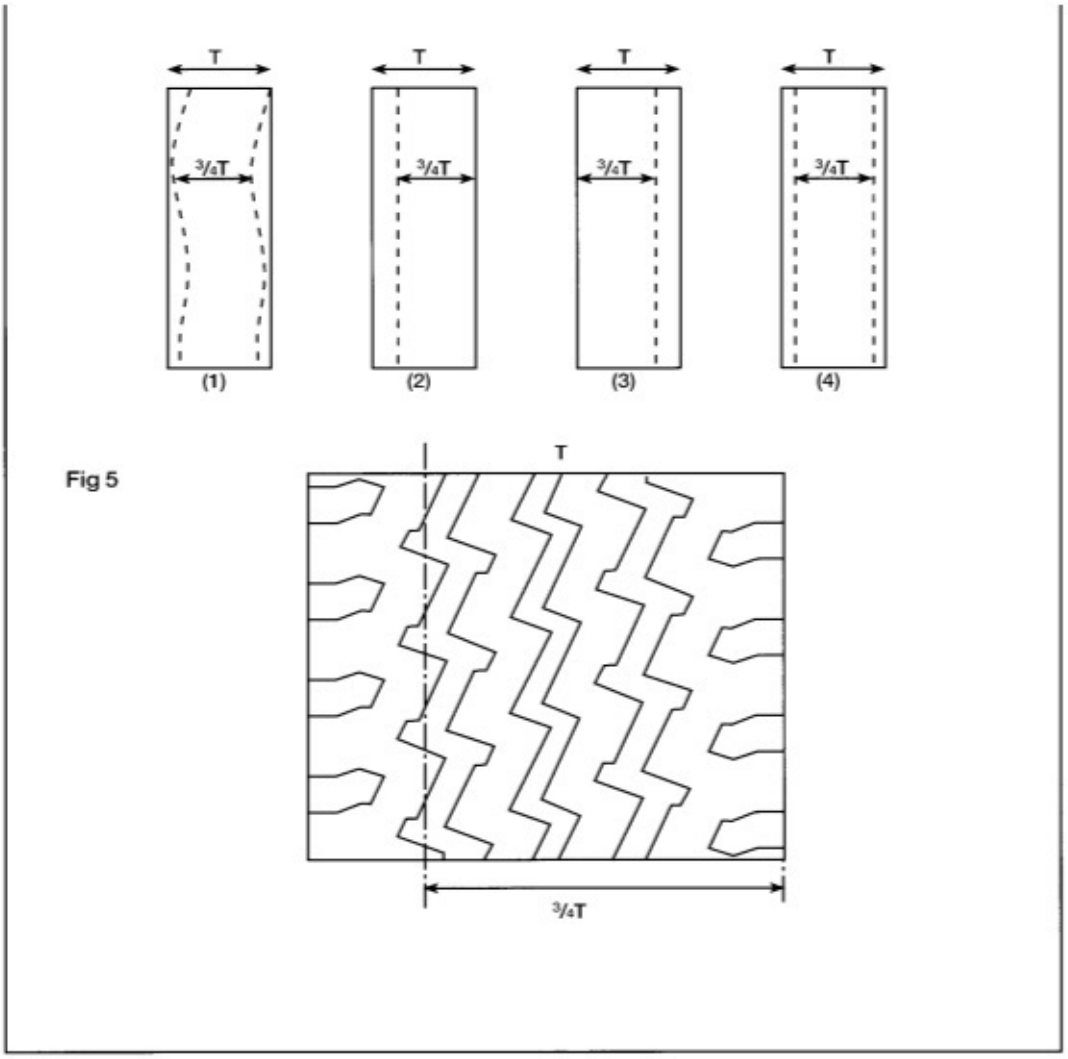


Fig 5

In this case the lateral grooves are the same depth as the circumferential grooves and are included in the ¾ measurement.

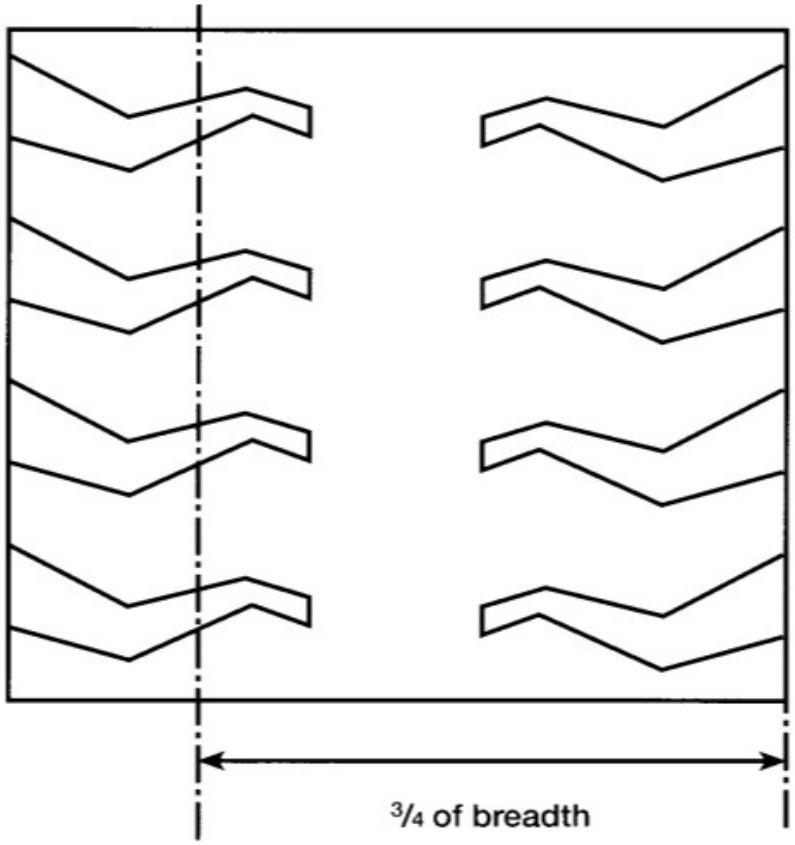
The breadth of the tread is 'T'.

The ¾ of 'T' measurement can be taken over 'T' as in figures 1 to 4.

Figure 6 shows that for certain cross country tyres that it may be necessary to accept that the band of acceptable tread pattern may include a plain portion in the centre.

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 a depth of 1 mm.

Fig 6



This tyre has only lateral grooving.

Reasons for Failure

Tyre:

a. With a cut which is deep enough to reach the ply or cords, and is more that 25 mm 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 GVW greater than 3500 kg).
h. Where the minimum tread depth and tread band requirements shown in the table are not met.

A recut tyre:

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.

Tyre Size and Type of Tyres

Application
This inspection applies to all tyres, apart from spare tyres.

Procedure and standards

Check that sizes, ply ratings, load indices, speed ratings and use markings of tyres are appropriate, bearing in mind

- published data on tyre capacities.
- the load on each axle when the vehicle is fully laden (Legal weight).
- the type of axle and vehicle to which the tyre is fitted.

Note: 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.
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.
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 maybe marked D20 or 4-20 (a full list of these tyres is given at Table 1).
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 6000 kg in single formation and 10900 in twin formation.
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.
The ‘Motor Vehicle (Construction and Use) Regulations (Northern Ireland) 1999’ permits a variation of load capacity of tyres when fitted to certain vehicles and trailers with speed restrictions applied. These are:-

- ‘Municipal vehicles’ - a motor vehicle or trailer limited at all times to use by a district council, or a person acting in pursuance of a contract with a district council, for road cleansing, road watering or the collection and disposal of refuse, night soil or the contents of cesspools.
- 'Multi-stop local collection and delivery vehicles’ – being a motor vehicle or trailer used for multi-stop collection and delivery service to be used only within a radius of 25 miles from the permanent base at which it is normally kept.
- ‘Low platform trailers’ – being a trailer fitted with tyres with rim diameter size code less than 20 and displaying a rectangular plate which is at least 225mm wide and at least 175mm high, with a white background and bears two black letters “L” at least 125mm high and 90mm wide with a stroke width of 12mm.
- ‘Restricted speed vehicles’ - a vehicle displaying at its rear a plate in a prominent position accordance with the following:-

a) the plate must be in the form shown in the diagram below;
b) the plate must be at least 150mm wide and at least 120mm high;
c) the figures “5” and “0” must be at least 100mm high and 50mm wide with a stroke width of at least 12mm, the figures being black on a white background; and
d) the border must be black and between 3mm and 5mm wide.

In the unlikely event of any of these vehicles being presented for test with tyres bearing a load index less than the vehicle’s plated (Legal weight in UK) axle weight, contact the regional manager’s office for guidance.

SPEED SYMBOLS

The speed capability is represented by a letter which is displayed adjacent to the LI marking e.g. 146/143J. This indicates the speed at which the tyre can carry the load(s) indicated by the LI marking(s). In the above example the tyres carry a load of 6000/10900kg at 62 mph.

The minimum required speed ratings are:

Class of vehicle	Permitted Speed (MPH)	Minimum Speed Symbol Required
• Rigid vehicles with maximum laden weight not exceeding 7.5 tonnes. • Rigid bus not exceeding 12 meters (irrespective of weight).	70	L
• Rigid vehicles with maximum laden weight exceeding 7.5 tonnes, • Articulated vehicles, • Trailers. • Bus exceeding 12 meters (irrespective of weight).	60	J
• *Municipal vehicles, • *Multi-stop local collection and delivery vehicles, • *Low platform trailers, • Motor tractor.	40	D
• *Restricted speed vehicles.	50	F

* It is important that a vehicle presented for test fully complies with the definition of these classes before applying the minimum speed symbol. (Class definition given above).

ALTERNATIVE SPEED RATING

Certain vehicles can be fitted with tyres (excluding retreaded tyres) showing a lower speed rating than those shown above but the maximum axle loads will be reduced as shown below. This does not apply to any additional load index and speed symbol marked on the tyre, known as 'Unique Point'.

CLASS OF VEHICLE	NORMAL SPEED RATING	ALTERNATIVE SPEED RATING	CALCULATED LOAD INDEX WEGIHT
Motor vehicles with maximum laden weight not exceeding 7.5 tonnes,	L	J	-7%
Rigid bus not exceeding 12 meters		K	-3%
Trailers	J	F	-15%
		G	-5%
Restricted speed vehicles.	F	J or Higher	+10%

Details of the reduced axle loads which tyres can carry are shown in Table 4.

Speed Category	Corresponding	Speed
Symbol	Km/H	MPH
D	65	41
E	70	44
F	80	50
G	90	56
J	100	62
K	110	68
L	120	75
M	130	81
N	140	87
P	150	93
Q	160	99
R	170	106
S	180	112
T	190	118
U	200	124
H	210	130
V	240	149
W	270	168
Y	300	186

STRUCTURE

- Examine all the tyres fitted and note the type of structure (radial, cross-ply or bias-belted) and the nominal size of tyres.

- All tyres on an axle must be of the same structure and nominal size.

- Tyres on an axle may be of different structures and nominal sizes to those on another axle with the following exceptions.

- 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.

AXLE 1	AXLE 2
Cross-ply	Bias-belted
Cross-ply	Radial
Bias-belted	Radial

This does not apply to an axle on which wide single tyres with a road contact width of more than 300 mm are fitted.

Reasons for Failure

1. A tyre:
   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 (Legal weight),
   b. which has a tyre use marking inappropriate for the type of axle or vehicle to which it is fitted,
   c. of a different nominal size to another on the same axle,
   d. of a different structure to another on the same axle,
   e. on a steerable axle which is not of the same structure as any other tyre on any steerable axle,
   f. on a driven axle which is not of the same structure as any other tyre on any driven axle.
2. On a two axle motor fitted with single tyres on both axles a combination of tyres with structures which are not shown as acceptable in the table

Table 1

CODE	TYRE SIZE
A16 or 1-16	750-16-12PR
B16 or 2-16	925-16-14PR
C16 or 3-16	900-16-15PR
B17 or 2-17	825-17-14PR
A20 or 1-20	750-20-12PR
B20 or 2-20	825-20-14PR
C20 or 3-20	900-20-14PR
D20 or 4-20	1000-20-16PR
E20 or 5-20	1100-20-16PR
F20	1200-20-18PR
G20	1400-20-22PR
E22 or 5-22	1100-22-16PR
B22.5 or 2-22.5	9-22.5-14PR
C22.5 or 3-22.5	10-22.5-14PR
D22.5 or 4-22.5	11-22.5-16PR
E22.5	12-22.5-16PR
C24 or 3-24	900-24-14PR
E24	1100-24-16PR

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	110	2120	4240	150	6700	13400
71	690	1380	111	2180	4360	151	6900	13800
72	710	1420	112	2240	4480	152	7100	14200
73	730	1460	113	2300	4600	153	7300	14600
74	750	1500	114	2360	4720	154	7500	15000
75	774	1548	115	2430	4860	155	7750	15500
76	800	1600	116	2500	5000	156	8000	16000
77	824	1648	117	2570	5140	157	8250	16500
78	850	1700	118	2640	5280	158	8500	17000
79	874	1748	119	2720	5440	159	8750	17500
80	900	1800	120	2800	5600	160	9000	18000
81	924	1848	121	2900	5800	161	9250	18500
82	950	1900	122	3000	6000	162	9500	19000
83	974	1948	123	3100	6200	163	9750	19500
84	1000	2000	124	3200	6400	164	10000	20000
85	1030	2060	125	3300	6600	165	10300	20600
86	1060	2120	126	3400	6800	166	10600	21200
87	1090	2180	127	3500	7000	167	10900	21800
88	1120	2240	128	3600	7200	168	11200	22400
89	1160	2320	129	3700	7400	169	1160	23200
90	1200	2400	130	3800	7600	170	12000	24000
91	1230	2460	131	3900	7800	171	12300	24600
92	1260	2520	132	4000	8000	172	12600	25200
93	1300	2600	133	4120	8240	173	13000	26000
94	1340	2680	134	4240	8480	174	13400	26800
95	1380	2760	135	4360	8720	175	13800	27600
96	1420	2840	136	4480	8960	176	14200	28400
97	1460	2920	137	4600	9200	177	14600	29200
98	1500	3000	138	4720	9440	178	15000	30000
99	1550	3100	139	4860	9720	179	15500	31000
100	1600	3200	140	5000	10000			
101	1650	3300	141	5150	10300			
102	1700	3400	142	5300	10600			
103	1750	3500	143	5450	10900			
104	1800	3600	144	560	11200			
105	1850	3700	145	5800	11600			
106	1900	3800	146	6000	12000			
107	1950	3900	147	6150	12300			
108	2000	4000	148	6300	12600			
109	2060	4120	149	6500	13000			

Table 3

		Maximum Axle Load (Kg)	
Normal Tyre Size	**Ply Rating**	**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	1200	2300
185-14	Rad	1340	2560
185-14	4	1340	2560
185-14C	6	1550	2920
185-14C	8	1700	3200
195-14	Radial Reinforced	1300	2490
195-14	Rad	1500	2870
195-14C	6	1700	3210
195-14C	8	1900	3600
205-14	Radial Reinforced	1420	2720
205-14	Rad	1650	3160
205-14C	6	1850	3510
205-14C	8	2060	3900
215-14C	8	2240	4240
590-14C	6	1170	2240
600-14C	8	1260	2400
640-14C	6	1330	2550
650-14	650-14	970	1860
650-14C	650-14C	1300	2460
650-14C	650-14C	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	3460

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
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
1400-16	18	7880	-
1400-16	20	8390	-
1400-16	22	9150	-
9.50-16.5	6	2130	3750
825-17	10	3260	5950
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	5240
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
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	29	*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
9-22.5	10	3560	6610

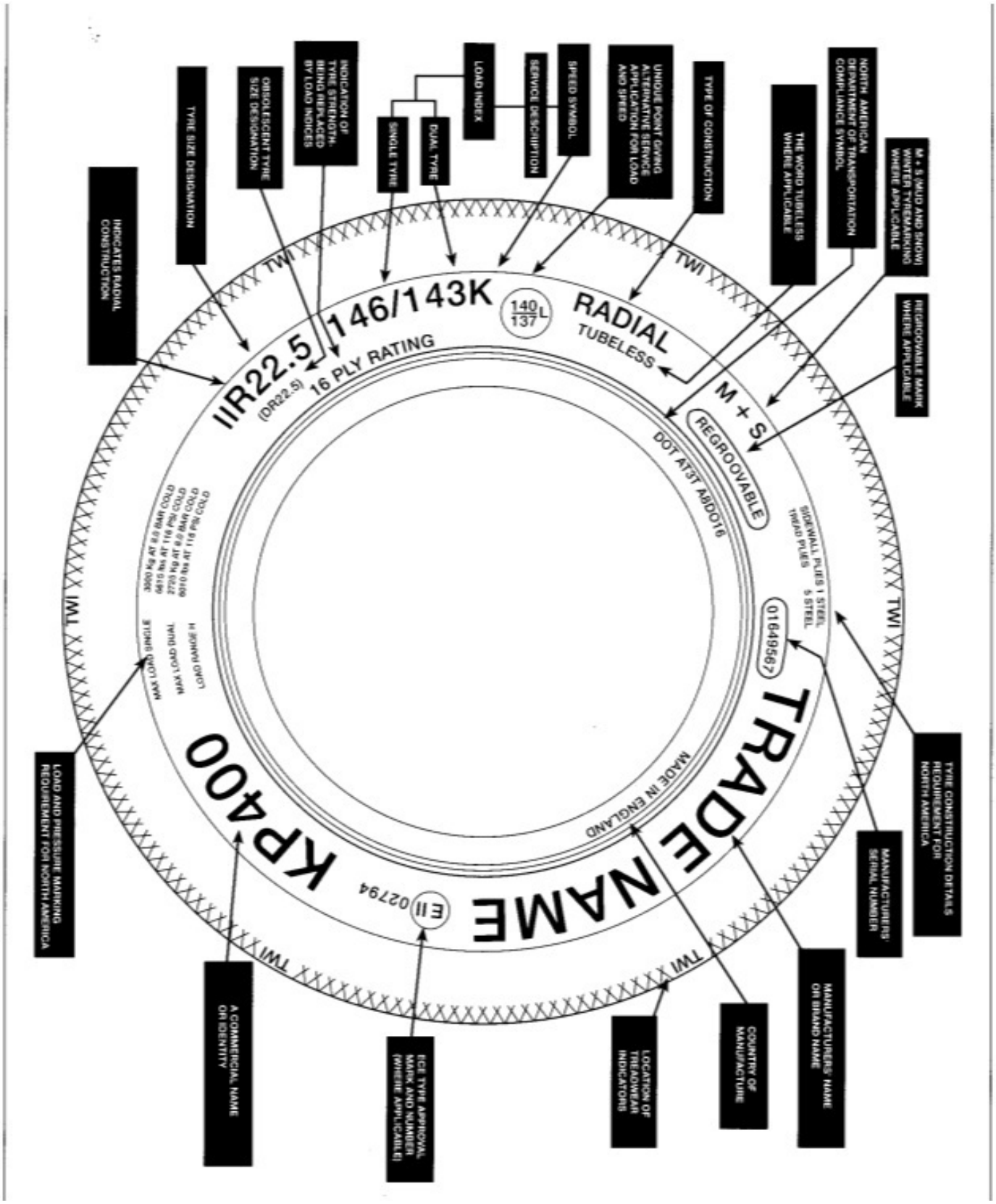
9-22.5 9-22.5	12 14	3820 4120	7200 7800
10-22.5 10-22.5 10-22.5	10 12 14	4070 4580 5000	7630 8240 9200
11-22.5 11-22.5 11-22.5	12 14 16	4830 5340 6100	8640 9720 10900
13-22.5	18	7500	13000
10/70-22.5	14	5000	9200
11/70-22.5 11/70-22.5 11/70-22.5	12 14 16	5300 5600 6100	9720 10300 10900
12/70-22.5	16	6610	11600
13/70-22.5	18	7630	13010
275/70-22.5 275/70-22.5	Radial 16	5000 6100	9200 -
315/70-22.5	16	6610	11600
900-24 900-24	12 14	5090 5240	9150 10170
1000-24	14	6100	10500
1100-24 1100-24 1100-24	12 14 16	5850 6610 7120	10300 11200 12300
1200-24 1200-24 1200-24 1200-24	14 16 18 20	6610 7370 8130 9000	- - - -
1400-24 1400-24	18 22		- -
11-24.5	14		10800

Table 4

Tyre Load Index	Trailers permitted to exceed 50mph (up to 60mph)				Motor vehicles permitted to exceed 60mph (up to 70mph)			
	Speed Symbol F (-15%)		Speed Symbol G (-5%)		Speed Symbol J (-7%0		Speed Symbol K (-3%)	
	Single Kg	Dual Kg	Single Kg	Dual Kg	Single Kg	Dual Kg	Single Kg	Dual Kg
70	570	1140	640	1280	630	1250	650	1300
71	590	1180	660	1320	650	1290	670	1340
72	610	1210	680	1350	660	1330	690	1380
73	630	1250	700	1390	680	1360	710	1420
74	640	1280	720	1430	700	1400	730	1460
75	660	1320	740	1480	720	1440	760	1510
76	680	1360	760	1520	750	1490	780	1560
77	700	1410	790	1570	770	1540	800	1600
78	730	1450	810	1620	800	1590	830	1650
79	750	1490	830	1670	820	1630	850	1700
80	770	1530	860	1710	840	1680	880	1750
81	790	1580	880	1760	860	1720	900	1800
82	810	1620	910	1810	890	1770	930	1850
83	830	1660	930	1860	910	1820	950	1890
84	850	1700	950	1900	930	1860	970	1940
85	880	1760	980	1960	960	1920	1000	2000

86	910	1810	1010	2020	990	1980	1030	2060
87	930	1860	1040	2080	1020	2030	1060	2120
88	960	1910	1070	2130	1050	2090	1090	2180
89	990	1980	1110	2210	1080	2160	1130	2250
90	1020	2040	1140	2280	1120	2240	1170	2330
91	1050	2100	1170	2340	1150	2290	1200	2390
92	1080	2150	1200	2400	1180	2350	1230	2450
93	1110	2210	1240	2470	1210	2420	1270	2530
94	1140	2280	1280	2550	1250	2500	1300	2600
95	1180	2350	1320	2630	1290	2570	1340	2680
96	1210	2420	1350	2700	1330	2650	1380	2760
97	1250	2490	1390	2780	1360	2720	1420	2840
98	1280	2550	1430	2850	1400	2790	1460	2910
99	1320	2640	1480	2950	1450	2890	1510	3010
100	1360	2720	1520	3040	1490	2980	1560	3110
101	1410	2810	1570	3140	1540	3070	1610	3210
102	1450	2890	1620	3230	1590	3170	1650	3300
103	1490	2980	1670	3330	1630	3260	1700	3400
104	1530	3060	1710	3420	1680	3350	1750	3500
105	1580	3150	1760	3520	1730	3450	1800	3590
106	1620	3230	1810	3610	1770	3510	1850	3690
107	1660	3320	1860	3710	1820	3630	1900	3790
108	1700	3400	1900	3800	1860	3720	1940	3880
109	1760	3510	1960	3920	1920	3840	2000	4000
110	1810	3610	2020	4030	1980	3950	2060	4120
111	1860	3710	2080	4150	2030	4060	2120	4230
112	1910	3810	2130	4260	2090	4170	2180	4350
113	1960	3910	2190	4370	2140	4280	2240	4470
114	2010	4020	2250	4580	2200	4390	2290	4580
115	2070	4140	2310	4620	2260	4520	2360	4720
116	2130	4250	2380	4750	2330	4650	2430	4850
117	2190	4370	2450	4890	2390	4780	2500	4990
118	2250	4490	2510	5020	2460	4910	2570	5130
119	2320	4630	2590	5170	2530	5060	2640	5280
120	2380	4760	2660	5320	2610	5210	2720	5440
121	2470	4930	2760	5510	2700	5400	2820	5626
122	2550	5100	2850	5700	2790	5580	2910	5820
123	2640	5270	2950	5890	2890	5770	3010	6020
124	2720	5440	3040	6080	2980	5960	3110	6210
125	2810	5610	3140	6270	3070	6140	3210	6410
126	2890	5780	3230	6460	3170	6300	3300	6600
127	2980	5950	3330	6650	3260	6510	3400	6790
128	3060	6120	3420	6840	3350	6700	3500	6990
129	3150	6290	3520	7030	3450	6890	3590	7180
130	3230	6460	3610	7220	3540	7070	3690	7380
131	3320	6630	3710	7410	3630	7260	3790	7570
132	3400	6800	3800	7600	3720	7440	3880	7760
133	3510	7010	3920	7830	3840	7670	4000	8000
134	3610	7210	4030	8060	3950	7890	4120	8230
135	3710	7420	4150	8290	4060	8110	4230	8460
136	3810	7620	4260	8520	4170	8340	4350	8700
137	3910	7820	4370	8740	4280	8560	4470	8930
138	4020	8030	4490	8970	4390	8780	4580	9160
139	4140	8270	4620	9240	4520	9040	4720	9430

140	4250	8500	4750	9500	4650	9300	4850	9700
141	4380	8760	4900	9790	4790	9580	5000	10000
142	4510	9010	5040	10070	4930	9860	5150	10290
143	4640	9270	5180	10360	5070	10140	5290	10580
144	4760	9520	5320	10640	5210	10420	5420	10870
145	4930	9860	5510	11020	5400	10790	5630	11260
146	5100	10200	5700	1140	5580	11160	5820	11640
147	5230	10460	5850	11690	5720	11440	5970	11940
148	5360	10710	5990	11970	5860	11720	6120	12230
149	5530	11050	6180	12350	6050	12090	6310	12610
150	5700	11390	6370	12730	6240	12470	6500	13000
151	5870	11730	6560	13110	6420	12840	6700	13390
152	6040	12070	6750	1490	6610	13210	6890	13780
153	6210	12140	6940	13870	6790	13580	7090	14170
154	6380	12750	7130	14250	6980	13950	7280	14550
155	6590	13180	7370	14730	7210	14420	7520	15040
156	6800	13600	7600	15200	7440	14880	7760	15520
157	7020	14030	7840	15680	7680	15350	8010	16010
158	7230	14450	8080	16150	7910	15810	8250	16490
159	7440	14880	8320	16630	8140	16280	8490	16890
160	7650	15300	8550	17100	8370	16740	8730	17460
161	7870	15730	8790	17580	8610	17210	8980	17950
162	8080	16450	9030	18050	8840	17670	9220	17430
163	8290	16580	9270	18530	9070	18140	9460	18920
164	8500	17000	9500	19000	9300	18600	9700	19400
165	8760	17510	9790	19570	9580	19160	10000	19990
166	9010	18020	10070	20140	9860	19720	10290	20570
167	9270	18530	70360	20710	10140	20280	10580	21150
168	9520	19040	10640	21280	10420	20840	10870	31730
169	9860	19720	11020	22040	10790	21580	11260	22510
170	10200	20400	11400	22800	11160	22320	11640	23280
171	10460	20910	11690	23370	11440	22880	11940	23870
172	10710	21420	11970	23940	11720	23440	12230	24450
173	11050	22100	12350	2470	12090	24180	12610	25220
174	11390	22780	12730	25460	12470	24930	13000	26000
175	11730	23460	13110	26220	12840	25670	13390	26780
176	12070	24140	13490	26980	13210	26420	13780	27550
177	12410	24820	13870	27740	13580	27160	14170	28330
178	12750	25500	14250	28500	13950	27900	14550	29100
179	13180	26350	14730	29450	14420	28830	15040	30070


TYRE CONSTRUCTION DETAILS REQUIREMENT FOR NORTH AMERICA
MANUFACTURERS SERIAL NUMBER
MANUFACTURERS NAME OR BRAND NAME
COUNTRY OF MANUFACTURE
LOCATION OF TREADWEAR INDICATORS
ECE TYPE APPROVAL MARK AND NUMBER (WHERE APPLICABLE)
A COMMERCIAL NAME OR IDENTITY
LOAD AND PRESSURE MARKING REQUIREMENT FOR NORTH AMERICA
INDICATES RADIAL CONSTRUCTION
TYRE SIZE DESIGNATION
OBSOLESCENT TYRE SIZE DESIGNATION
INDICATION OF TYRE STRENGTH BEING REPLACED BY LOAD INDICES
LOAD INDEX
SINGLE TYRE
DUAL TYRE
SERVICE DESCRIPTION
SPEED SYMBOL
UNIQUE POINT GIVING ALTERNATIVE SERVICE APPLICATION FOR LOAD AND SPEED
TYPE OF CONSTRUCTION
THE WORD TUBELESS WHERE APPLICABLE
NORTH AMERICAN DEPARTMENT OF TRANSPORTATION COMPLIANCE SYMBOL
M + S (MUD AND SNOW) WINTER TYREMARKING WHERE APPLICABLE
REGROOVABLE MARK WHERE APPLICABLE
TWI
IIR22.5
(DR22.5)
16 PLY RATING
146/143K
140/137L
RADIAL
TUBELESS
M + S
REGROOVABLE
DOT AT3T A9DO16
01649587
SIDEWALL PLIES 1 STEEL
1 HEAD PLIES 5 STEEL
MADE IN ENGLAND
TRADE NAME
KP400
E11 02794
MAX LOAD SINGLE
MAX LOAD DUAL
LOAD CHANGE H
3000 Kg AT 8.0 BAR COLD
6615 lbs AT 116 PSI COLD
2725 Kg AT 8.0 BAR COLD
6010 lbs AT 116 PSI COLD

Vehicle Dimensions

Application

This inspection applies to all vehicles and trailers.

Procedures and Standards

Check vehicle dimensions by means of a measuring tape and record for the first inspection. For inspections thereafter, visually check that no alterations have been made to the vehicle body and the dimension still remain the same. If the body has been altered the vehicle should be measured again and the record up dated.
The main dimensions to be checked are: -

- Length
- Width
- Overhang

Note: The information below is given for guidance only. Before refusing a vehicle refer to the 'Motor Vehicles (construction and Use) Regulations (Northern Ireland)', as there are several exemptions.

Maximum length of vehicles

Item	Class of Vehicle	Maximum length (meters)
1	A wheeled motor vehicle, not being a bus	12
2	A semi-trailer manufactured on or after 1 May 1983 which does not meet the requirements of the note below and is not a low loader.	12.2*
3	A trailer (not being a semi-trailer or composite trailer) with at least 4 wheels which is drawn by a motor vehicle having a maximum GVW exceeding 3,500kg.	12*
4	Any other trailer not being a semi-trailer.	7
5	An articulated bus	18.75
6	A bus with 2 axles	13.5
7	A bus with more than 2 axles	15

* Trailers which are constructed and normally used for the conveyance of indivisible loads of exceptional length are exempt from the requirements of the above table and the note below.

Note:

a. The distance from the King-pin to the rear of the semi-trailer must not exceed –
   i. 12.5m in the case of a car transporter, or
   ii. 12 m in any other case; and
b. the distance from the King-pin to any point forward of the semi-trailer must not be more than –
   i. 4.19 m in the case of a car transporter, or
   ii. 2.04 m in any other case

Where a semi-trailer has two King-pins or more than one King-pin position, the distance is taken from the rearmost King-pin or King-pin position. Trailers manufactured after 20 July 1999 this distance should be taken from the foremost King-pin or King-pin position.

Maximum width of vehicles

Item	Class of Vehicle	Maximum width (meters)
1	A locomotive	2.75
2	A refrigerated vehicle	2.6
3	Any other vehicle	2.55
4	A trailer drawn by a motor vehicle having a maximum GVW exceeding 3500kg	2.55
5	Any other trailer	2.3

Maximum Overhang

Item	Class of Vehicle	Maximum overgang	Exemptions
1	Motor tractor	1.83m	
2	Heavy motor car and motor car	60% of the distance between the centre of the foremost axle and the foremost point from which the overhang is to be measured. (see note below).Or A heavy motor car may comply with Community Directive 97/27.	• A refuse vehicle • A motor vehicle which is an ambulance • a vehicle designed to dispose of a load to the rear, if the overhang does not exceed 1.15m • a vehicle first used before 2 January 1933 • a vehicle first used before 1 January 1966 if – The distance between the centre of the rearmost and foremost axles does not exceed 2.29m, and The distance specified in column 3 is not exceeded by more than 76mm.

Note: Motor vehicles with one rear axle, the overhang is measured from the centre of this axle to the rearmost point of the vehicle. Where a motor vehicle has two rear axles, the overhang is measured from a point 110 mm behind the centre point between these two axles to the rearmost point of the vehicle.

Reasons for Failure

a. Motor vehicle or trailer exceeds maximum length
b. Motor vehicle or trailer exceeds maximum width
c. Motor vehicle exceeds maximum overhang

Vehicle to Trailer Coupling

Application

This examination applies to all vehicles fitted with a trailer coupling and to all trailers. This inspection also covers fifth wheel couplings mounted on converter dollies.

Procedure and Standards
Where tractor units are presented for inspection, they must be accompanied by a semi-trailer.

Where a trailer or semi-trailer is coupled to a drawing vehicle at the time of the inspection disconnect the red Susie (i.e. the breakaway protection line) and request the driver to move the drawing vehicle back-wards and forwards. Check for excessive movement between drawing vehicle and trailer or semi trailer. If the Examiner is not satisfied that the couplings are in order he should have the driver uncouple the trailer or semi-trailer in order that the towing mechanism on the drawing vehicle and trailer or semi-trailer may be examined more-effectively. Having carried out the required examination request the driver to reconnect the drawing vehicle.

Where a trailer or semi-trailer is presented for test in combination, a defect in the drawing, vehicle will not be a, reason for failing the trailer. However, the owner of the vehicle should be made aware of any such defect.

This inspection applies only where a vehicle is fitted with equipment for towing trailers or semi-trailers.

Care should be taken to ensure that an automatic tow hitch on a drawing vehicle is suitably matched to the towing eye on-the accompanying trailer (where a combination of vehicles is presented) and that adequate provision is made for oscillation of the hitch/eye assembly.

Security including bed plates and sub-frames on fifth wheel couplings, check also the coupling is secure to the trailer. (Note: many manufacturers determine gross train weights by the number and size of bolts fitted to fifth wheel bed plates and sub-frames, these bolts are therefore considered to be mandatory.)

Normal safety precautions should be taken when examining semi-trailer king pins.

Check the trailer coupling on the drawing vehicle and the trailer for; **distortion, cracking and excessive wear** in components.

Note: 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 compressed is taken from the main plate directly onto the mounting bracket and therefore some degree of controlled lift, up to 8 mm in some units is acceptable in the trunnion pin and bush. (Up to 12 mm 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 10 mm). Wear should be considered excessive if a drawing hitch, bar, hook, eye, ball or ball socket has the metal reduced to 3/4 of its original thickness.

DRAWING VEHICLE

Drawing Coupling

Where visible examine the drawing vehicle coupling jaws/pin/hook/eye/ball. Note the condition of these components and ensure that they are free from distortion and/or fracture.

- Check the hook/ball or pin/bushes for wear.

- Check the body of the coupling for wear, distortion or cracks.

Examine the cross member to which the coupling is mounted paying particular attention to the inner face of the cross member for security and cracks.

- Note that the coupling assembly is securely attached to the vehicle.
- Check that locking or safety devices are in position and working correct
- Check any rubber components for deterioration (e.g., wear/cracks or swellings)

Fifth Wheel Coupling

- Examine the security of the fifth wheel assembly to the chassis.
- Where possible examine the jaws of the fifth wheel coupling for wear.
- Where possible examine the fifth wheel coupling plate for cracks or wear.
- Examine the safety locking device of the fifth wheel assembly for presence, cracks or damage.
- Examine the articulating brackets of the fifth wheel assembly for cracks or damage.
- Check any adjustable mechanism (e.g., sliding mechanism) for wear and security

Note: Examples of locking devices are-

a. A dog clip. (a chain or wire missing or damaged is not a Reason for Failure as its only purpose is to prevent loss of the dog clip).
b. Spring loaded pin between the operating handle and the body of the 5th wheel housing.
c. Lever dropped behind the operating handle.

Automatic Coupling

- Examine the coupling hooks and operating members for wear and security.

TRAILER OR SEMI-TRAILER

Drawbar Trailer

- Examine the drawbar and note its condition and that it is free from distortion and/or fracture.
- Examine the drawbar assembly for security.
- Examine the drawbar eye and bushes for wear and provision for vertical articulation.
- Note that safety devices are in position and working correctly.

Fifth Wheel Coupling

Where possible examine the rubbing plate for cracks. Examine the king pin for security, damage, cracks or excessive wear using a king pin gauge if uncoupled.
Examine the rubbing plate attachment to the semi-trailer. If it is possible to examine the attachment of the king pin to the chassis/rubbing plate (e.g., via a hatch in the floor) check that the king pin "mushroom" is securely attached to the trailer framework/rubbing plate.
Note:
Where more than one king pin is fitted or used all are required to be checked.

Automatic Coupling

Check the condition of the operating members for wear and security.
Note that safety devices are in the correct position.

Articulated Buses

Examine the coupling and operating members for condition and security. The examination is limited to those parts which can be seen without dismantling or uncoupling. However the presenter must part the bellows and lift trap doors and the turntable floor as far as is necessary to gain sight of the coupling. Ensure that these are replaced before the vehicle leaves the test centre.

Examine the condition and security of the turntable floor and of the concertina bellows and the presence and condition of sheathing on safety chains.
Examine locking or safety devices and warning lamps intended to automatically limit the angle of articulation on articulated buses. It will probably be necessary to reverse the vehicle on an area outside the test lane to check that these devices are working correctly.

Reasons for Failure

A drawing hitch, bar, hook, eye, ball or ball socket; or a fifth wheel king pin and its mounting or a turntable which:

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 tractor and trailer.
f. A turntable which has no clearance between mating surfaces, i.e. evidence of contact between surfaces.
g. Has a missing, damaged, seized and or inadequate safety or locking device.

A Fifth Wheel Coupling with:

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.

Articulated buses

Coupling articulating bracket, operating member or safety device:

a. Insecure
b. Excessively worn
c. Defective
d. Load bearing member cracked or fractured

Bellows:

a. Insecure
b. Torn
c. So damaged or deteriorated
d. that injury to passengers is likely
e. With safety chains sheathing so damaged or deteriorated that injury to passengers is likely.

Turntable floor:

a. Insecure
b. Covering in such a condition that it could cause slipping or tripping.

Windscreen Wipers and Washers

Application

This inspection applies to all vehicles except those with an opening windscreen or where an adequate view can be obtained by some other means.

Procedure and Standards

Check the operation of the washers and wipers.

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.
Washers must provide enough water to enable the wipers to clear the screen effectively.

Reasons for Failure

1. Switches:
   a. Missing or defective.
2. Wipers:
   a. Do not move over an adequate area.
   b. Do not work continually when switched on.
   c. A blade missing, insecure or so deteriorated that it cannot clear the screen effectively.
3. Washers:
   a. Ineffective.