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VOSA
Vehicle & Operator Services Agency

Individual Vehicle Approval (IVA) Manual for Vehicle Categories **N2** and **N3**

(Heavy Goods Vehicles)

An executive agency of the Department for **Transport**

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Foreword

This Manual is a detailed guide on the inspection of vehicles submitted to an authorised testing station under the Individual Vehicle Approval (IVA) scheme.

It is produced for the examiners who carry out the inspections and for vehicle presenters and other interested parties who wish to familiarise themselves with the technical requirements and inspection procedures.

Application

The IVA scheme is one of three routes for a road vehicle to gain approval and thereby obtain licensing and registration in UK.
The IVA route is open to vehicles falling under the following categories:
M1, M2, M3,
N1, N2, N3
O1, O2, O3, O4

This manual covers solely the IVA technical requirements for vehicles of the following categories:

Motor vehicles with at least four wheels used for the carriage of goods.

N2: Vehicles used for the carriage of goods and having a maximum mass exceeding 3.5 tonnes but not exceeding 12 tonnes.

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

For information on other vehicle categories, the following VOSA IVA inspection manuals should be consulted.

- The Passenger Vehicle IVA Inspection Manual for vehicle category M1
- The Light Goods Vehicle IVA Inspection Manual for vehicle category N1
- The Trailer IVA Inspection Manual for categories O1, O2, O3 and O4
- The Bus and Coach IVA Inspection Manual for vehicle categories M2 and M3

Obligatory Individual Approval Certificates

The IVA scheme is one of three routes for a road vehicle to gain approval and thereby obtain licensing and registration in UK. For N2 and N3 category vehicles the other two routes are: European Whole Vehicle Type Approval (ECWVTA), and National Small Series Type Approval (NSSTA). Refer to the Road Vehicles (Approval) Regulations 2009 (SI 2009 No. 717 for more information).

Approval to any of these routes is optional from 29 April 2009, and in GB will be accepted as an alternative to GB Goods Vehicle National Type Approval (GB GV NTA) for vehicles submitted for registration. From 29 October 2012, new N2/N3 vehicles built in a single stage (except N2/N3 Special Purpose Vehicles) must comply with one of the 3 above mentioned approval schemes in order to be registered. From 29 October 2014, new N2/N3 vehicles built in more than one stage (multi-stage build) and all N2/N3 Special Purpose Vehicles must comply, in order to be registered. Before these latter two dates, 'new types' (in other words, newly designed vehicles) to be registered in GB will need to comply with one of the new approval routes where GV NTA is applied for and refused due to the vehicle being deemed a new type."
Approval Process

With the IVA inspection, the onus is on the applicant to provide evidence of compliance. This can, for example, be in the form of manufacturer's markings on the vehicle or component, an EC certificate of conformity for an incomplete or base vehicle and details of the systems approved, documentary evidence from the competent authority in the country of origin or the manufacturer, submission of a test report from a Technical Service or a combination of such elements, and it may also include a degree of visual examination and practical tests. Applicants may be required to dismantle certain parts of the vehicle to allow VOSA examiners to carry out a full and meaningful inspection.

Applications and supportive documentation will be assessed prior to the issue of an appointment. Examination of the vehicle will include verification checks to confirm as far as possible compliance with the required standards.

Where evidence of compliance is supplied and no obvious modification has been carried out – assume compliance has been met.

The physical examination criterion for this part of the process is contained in sections 1 to 60 of this manual.

Scope of inspection

The design and construction requirements applicable to new road vehicles are contained within the Road Vehicles (Approval) Regulations 2009. The inspection procedures within this manual have been developed to assess as far as practicable the ability of the vehicle to comply with those Regulations. This manual is however not a legal interpretation of the Regulations.
The issue of an Approval Certificate should not be taken as absolute evidence that the vehicle can legally be used on the road, since there may be other applicable requirements contained in other regulations.

Examiners are not required to carry out a roadworthiness inspection but where obvious safety defects are noted the vehicle may be subject to prohibition action, The IVA certificate will not be issued and where applicable it may be indicated on the IVA 30 (refusal to issue a certificate) that a relevant section of the inspection was "Unable to be assessed fully" due to the condition of an item. i.e. In the case of tyres where any tyre displays cuts or damage.

NOTE: The vehicle will be assessed for compliance in all modes of operation unless otherwise specified, for example

- in the case of a lifting axle, with the axle up and down.
- if dual fuelled, when running on each separate fuel source.

Method of Inspection

The examination will be limited to parts of the vehicle which can be readily seen without dismantling. However, the presenter might be required to open lockable compartments and remove engine covers, inspection/access panels, trims or carpeting, etc and tilt the vehicles cab in order to gain access to items subject to examination.

The visual assessment of certain items e.g. seat belt anchorages (which in Type Approval undergo a physical test) might not always be sufficient to satisfy the examiners that the vehicle complies with the requirements of the regulations. In such circumstances the onus is on the applicant to demonstrate, for example, by the production of satisfactory test result documentation, or (by arrangement), during construction, of the inspection of relevant structural elements, that the vehicle complies with the requirements of the regulations.

In some areas of the inspection, evidence that the vehicle complies with the relevant criteria may be submitted in the form of documentation. This can, for example, be satisfactory evidence that the vehicle complies with the relevant requirements of a European Directive.

In certain cases calculations will be required to prove compliance. Where these are required they should be submitted with the application for inspection to VOSA, The Ellipse, Swansea, for verification prior to the test. Failure to produce these calculations may delay or prohibit the inspection appointment being confirmed.

Use of this manual

The manual has been arranged in chronological order to reflect the Recast Framework Directive (RFD) from which the inspection criteria are derived. Each inspection area broadly covers the requirements that vehicles must meet or exceed based upon the National IVA scheme.

General Construction is a section that does not explicitly exist in the RFD, rather it is implicit that unsafe vehicles are not permitted to be approved.

Note: For areas where documentary evidence is not required all vehicles will be subject to a visual inspection as detailed within the method of inspection

Special Purpose Vehicles. (SPV)

Certain vehicles are classified as Special Purpose Vehicles. If built in a single stage they are given more time to comply with the new approval regime (see above) and they may be subject to additional exemptions from the required standards but only where the special function of the vehicle makes it impossible to comply.

Special Purpose N2/N3 Vehicles are as follows: a) Armoured vehicles, b) Mobile Cranes, c) Snow plough, d) Recovery vehicle, e) Electric vehicle, f) Small road sweeper, g) Abnormal Indivisible Load vehicles, h)

a. Armoured Vehicle

A vehicle intended for the protection of conveyed passengers and/or goods and complying with armour plating anti-bullet requirements.

"anti - bullet requirements" shall be interpreted as meaning: the driver and passenger compartment (front, rear and sides including doors and glazing are capable of withstanding ballistic penetration from small arms fire. E.g. materials to CEN 1029 or an equivalent level of protection.

b. Mobile crane

A vehicle of N3 category not fitted for the carriage of goods, provided with a crane whose lifting moment is equal to or higher than 400kNm

(Evidence from the crane manufacture will be required)

c. Snow plough

A vehicle designed for clearing snow and ice from roads,

d. Recovery vehicle

A vehicle fitted with equipment to lift a vehicle partly off the ground and tow it, and not able to carry any other load other than necessary equipment;

e. Electric vehicle

A vehicle powered purely by electricity,

f. Small road sweeper

A road sweeper with inside track width under 850mm and max speed under 20 mph,

g. Abnormal Indivisible Load vehicle

A vehicle which is designed to carry loads which are over the maximum vehicle dimensions or weights specified in Section 48

Refusal to examine

The examination of a vehicle may be refused for any of the following reasons

- the vehicle is not submitted for examination at the time and place appointed
- the correct fee has not been paid
- the vehicle submitted for examination is of the incorrect category
- the vehicle cannot be driven or has insufficient fuel or oil to enable the test to be completed
- the vehicle is presented in a dirty or dangerous condition such as to make it unreasonable for the examination to be carried out
- a load or items on the vehicle are not secured or removed as requested
- a proper examination cannot be carried out because any door, tailgate, boot lid, engine cover, fuel cap or other device designed to be readily opened cannot be opened
- the condition of the vehicle (in the opinion of the examiner) is such that proper examination of the vehicle would involve a danger of injury to any person or damage to the vehicle or any other property
- the vehicle does not display, permanently, in an accessible position and readily legible, the required stamped - in vehicle identification number
- the presenter does not remain in the vehicle or its vicinity and operate the controls, drive the vehicle or to remove, refit panels as requested to allow a meaningful examination of the vehicle or is uncooperative.

Summarised Table of Directive Requirements for Heavy Vehicles

Section Number	Directive Requirement	As amended by	UNECE Regulations	N2 & N3
1 Noise	70/157/EEC	2007/34/EC		Approval and Inspection
2 Emissions	70/220/EEC / 88/77/EEC 1st Jan 2012 (EC) No. 715/2007	2003/76/EC		
3 Fuel tank & rear under-run	70/221/EEC	2006/20/EC	**58.01**	Approval and Inspection
4 Rear Registration plate space	70/222/EEC			Inspection
5 Steering effort	70/311/EEC	1999/07/EC		Approval
6 Door latches & hinges	70/387/EEC	2001/31/EC	Approval	Inspection
7 Audible warning	70/388/EEC	87/354/EC		Inspection
8 Indirect vision	2003/97/EC		**46.02**	Inspection
9 Braking	71/320/EEC	2002/78/EC		Approval
10 EMC	72/245/EEC	2006/28/EC	**10.03**	Approval
13 Anti-theft	74/61/EEC	95/56/EC		Inspection
15 Seat strength	74/408/EEC	2005/39/EC		Inspection
17 Speedo & reverse gear	75/443/EEC	97/39/EC		Inspection
18 Statutory plates	76/114/EEC	78/507/EEC		Inspection
19 Seat belt anchorages	76/115/EEC	2005/41/EC		Inspection
20 Installation of lights	76/756/EEC	2007/35/EC	**48.03**	Inspection
21 Retro reflectors	76/757/EEC	97/29/EC		
22 End outline, position, stop & marker lights	76/758/EEC	97/30/EC		
23 Direction indicators	76/759/EEC	99/15/EC		

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Inspection

Section Number	Directive Requirement	As amended by	UNECE Regulations	N2 & N3
24 Rear registration plate light	76/760/EEC	97/31/EC		
25 Headlights	76/761/EEC	99/17/EC		
26 Front fog lights	76/762/EEC	98/18/EC		
27 Towing hooks	77/389/EEC			Inspection
28 Rear fog lights	77/538/EEC	99/14/EC		
29 Reverse lights	77/539/EEC	97/32/EC		
31 Seat belts	77/541/EEC	2005/40/EC	Inspection	Inspection
33 Identification of controls	78/316/EEC	94/53/EC	Inspection	Inspection
34 Defrost / Demist			Inspection	
35 Wash / Wipe				
36 Heating system	2001/56/EC	2006/119/EC	Inspection	Inspection
42 Lateral protection	89/297/EEC		Inspection	Inspection
43 Spray suppression systems	91/226/EEC			Inspection >7.5t
45 Safety Glass	92/22/EEC	2001/92/EC		
46 Tyres	92/23/EEC	2005/11/EC	Inspection	
47 Speed limiters	92/24/EC	2004/11/EC	Inspection	
48 Masses & dimensions	97/27/EC	2003/19/EC		
49 External projections of Cabs	92/114/EEC			Inspection
50 Couplings	94/20/EC			Inspection
57 Front under-run protection	2000/40/EC		Inspection Inspection Inspection Inspection	Approval / Inspection

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01 Noise

Application: All Vehicles

Method of Inspection	Required Standard
The examiner will ensure that the evidence is relevant to the vehicle **as presented for test**. **Note 1:** Only a minor modification to the exhaust system is allowed. If modified the noise must be assessed with a static noise test. Minor modification means :– • A change to length of tail pipe after the last silencer of more than 2 metres. (Any change up to 2 metres is allowed and would not require a noise test to be carried out) • Any change in the length of exhaust pipe forward of the last silencer. • Any significant change in the direction the exhaust pipe outlet faces i.e. Original; outlet was to the offside, now positioned to the rear. Any change other than to pipe work length, i.e. new silencer or other equipment, change in pipe diameter etc, means that a new approval test is required. **Note 2:** Manufacturers drain holes are permitted in the system. **Note 3:** Where a modification has been carried out to the air braking system a test report must confirm that the vehicle complies with the directive listed in the front of this manual or an inspection to confirm that air brake silencers are fitted to all additional or modified air brake exhaust outlets.	**1.** The vehicle **as presented** must be accompanied by satisfactory evidence of compliance with the required standard for ”Noise” (See note 1) **2.** The exhaust system must be fitted with a silencer. **3.** The exhaust system must be securely mounted. **4.** Exhaust system components must be secure. **5.** The exhaust outlet must be positioned so that exhaust gases cannot damage other components of the vehicle, or cause a hazard to people in the vehicle **6.** There must be no leaks from the exhaust system (See note 2) **7.** Where an air braking system has been modified, any high pressure brake exhaust outlet must be fitted with a silencer, or satisfactory evidence supplied to show compliance with the required standard. (See note 3) **Where the exhaust system has had a minor modification** **8.** The measured sound level must not exceed 99dbA (See notes 4 & 5)

Method of Inspection	Required Standard
Note 4: Using sound level meter to the manufacturer's instructions, carry out a stationary noise check. • Place the vehicle within the authorized test area. With the sound meter horizontal, set the microphone height so that it is at the height of the exhaust outlet or 200mm from the ground, whichever is higher. • Or in the case of a stack system use the tripod and bracket extended to give the highest possible vertical position. • At an angle of 45 degrees to the exhaust outlet in the direction which gives the greatest distance between it and the vehicle contour • At a distance of 500mm from the exhaust outlet. (Or as close to 500mm as practical for systems whose outlet does not extend to the exterior of the body structure) • With the vehicle at normal operating temperature, run the engine at ¾ of its 'maximum power' speed (see note below), and record the sound level reading obtained. **Note 5:** Some vehicles are designed not to allow the engine RPM to be increased above a certain threshold whilst stationary, with the parking brake applied or in Neutral. In this case the test should be carried out at the maximum RPM achievable if ¾ max power engine speed cannot be achieved. Where the examiner has doubts that the vehicle result obtained may be falsely low then evidence of compliance must be supplied	

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02 Emissions

Application: All Vehicles

Method of Inspection	Required Standard
Ensure that the vehicle **as presented** has satisfactory evidence of compliance to the required standard and has not been subject to modifications that may invalidate the approval An EC type-approval issued to the most representative base vehicle remains valid irrespective of change in reference weight. In the case of **Armoured vehicles** exemption from one or more of the provisions in column 2 is permissible where it can be demonstrated to the satisfaction of the Approval Authority that the special purpose of the vehicle makes it impossible to fully comply. Where evidence of compliance has been provided, subsequent modification to the exhaust system will be permitted providing • it is to the exhaust system after the last silencer; and • the emissions control device is identical to that fitted before the modification.	**1.** An N2 vehicle **as presented** must be accompanied by satisfactory evidence of compliance with the required standard for either “Light duty emissions” **or** Heavy duty “Emissions”. **2.** An N3 vehicle **as presented** must be accompanied by satisfactory evidence of compliance with the required standard for “Heavy duty Emissions”. **3.** The exhaust must not emit excessive smoke or vapour of any colour to an extent likely to obscure the vision of other road users

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03A Fuel Tanks

Application: All Vehicles

Method of Inspection	Required Standard
Ensure that the vehicle **as presented** has satisfactory evidence of compliance to the required standard and carry out an installation check **All Fuel Tanks** Check that an Approval / Test Report is presented with the vehicle and that there appears to be no modifications that would invalidate the evidence. **Note 1:** The required standard for Gaseous Fuels: **ECE 67.01 – LPG fuel systems** • Recognised as an alternative to the EC Directive on fuel systems in the current ECWVTA Directive and in the Recast Framework Directive. **or** **ECE 115.00 – Retrofit LPG fuel systems** • Requires compliance with the installation requirements of ECE 67.01. **or** **An Installation Certificate from an Approved Installation Engineer** **ECE 110.00 – CNG fuel systems** • Recognised as an alternative to the EC Directive on fuel systems in the current ECWVTA Directive and in the Recast Framework Directive. **or**	**1.** The vehicle **as presented** must be accompanied by satisfactory documentary evidence with the required standard for **"Fuel Tanks"** **Installation Check** **2.** A fuel tank must not be located in, or form part of an occupant compartment or other compartment integral with it. **3.** There must not be an aperture in a partition separating the occupant compartment from the fuel tank that would allow fuel to flow freely into the occupant compartment during normal conditions of use. **4.** The fuel filler hole must not be located in the occupant, luggage or engine compartment. **5.** The fuel tank must be securely attached to the vehicle **6.** The fuel tank must be positioned so it is protected from damage from protruding parts or sharp edges in the event of a front or rear impact. **7.** The fuel tank must be mounted so as not to be fouled by moving parts of the vehicle, or likely to be subject to abrasion by adjacent parts. **8.** The tank must not be mounted in a position that would allow any fuel leaking from the tank or pipe work into the occupant compartment.

Method of Inspection	Required Standard
ECE 115.00 – Retrofit CNG fuel systems Requires compliance with the installation requirements of ECE 110.00. **or** **An Installation Certificate from an Approved Installation Engineer** Check that an Approval / Test Report is presented with the vehicle and that there appears to be no modifications that would invalidate the evidence. **Note:** The requirements for liquid fuel tanks apply only to fuel tanks used primarily for the propulsion of the vehicle. **Note:** the cap and venting device must be those approved for the tank such that only the pipe work between them and the tank may be modified.	**9.** Any fuel filler neck or vent must not allow spilt fuel to be able to fall onto the exhaust system. **10.** An approved vent device must be fitted to the fuel tank **11.** An approved fuel filler cap must positively locate to the filler neck and incorporate an adequate sealing arrangement so that a fuel leak is not possible. **12.** The fuel filler cap must either be tethered to the vehicle or be of a lockable type which utilises the ignition key of the vehicle and where the key can only be removed when the cap is locked or an automatically opening and closing, non-removable fuel filler cap

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03B Rear Protective Devices (Under Run)

Application: All Vehicles

Method of Inspection	Required Standard
Tractor units do not require an under-run device Ensure the vehicle or device **as presented** is accompanied by satisfactory evidence in the form of: • a type approval **(If a valid vehicle approval relating to the vehicle in its finished un modified state is provided the installation check is not required)** **or** • a test report witnessed by the Approval Authority (VCA) **or** • evidence that calculations were provided at the time of application to the satisfaction of the Approval Authority. (VCA) **And** in these cases an Installation check is required **Note 1:** Evidence may be for a vehicle, a separate device or that the rear of the vehicle is so designed as to perform the same function. Where the rear body is so designed **the Installation Inspection as appropriate relates to the structure forming the rear of the vehicle.**	**Approval** **1.** The vehicle **as presented** must be accompanied by satisfactory evidence of compliance regarding the protective system (see note1) **2.** Separate devices must be correctly marked and be as specified in the approval / test report or calculation documents. **Installation check (see note 1)** **3.** Where a separate device is fitted it must be fitted as per manufacturer's instructions. **4.** The lower edge of the rear under-run must at no point be more than 550mm above the ground. **5.** The width of the rear under-run must not extend beyond the width of the rear axle. (see notes 2 and 3) **6.** The width of the rear under-run must extend to within 100mm of the width of the rear axle on either side (see notes 2 and 3) **7.** The rear under-run criteria must be met as close to the rear of the vehicle as possible **8.** The section height of the rear under-run must not be less than 100mm

Method of Inspection	Required Standard
Note 2: The width of the rear axle is measured at the outermost points of the wheels including the tyres (excluding any tyre bulging close to the ground). Where more than one rear axle is fitted the width used is that of the widest axle **Note 3:** Where the rear under-run is combined with a tail lift the lift structure may extend beyond the width of the rear axle to the width of the body, the requirements for the rear under run will be considered to be met providing the "device" meets all other dimensions up to the width of the rear axle.	**9.** The outer ends of the rear under-run must be rounded on the outside and have a radius of curvature of not less than 2.5mm. **10.** Rear under run must be securely attached to the rear of the vehicle **11.** Rear under-run mountings must clearly be of adequate strength to perform their function. **12.** In the case of a movable rear under-run, the device must be able to be securely locked into the service position. **13.** In the case of a movable rear under-run, the locking mechanism must be clearly of adequate strength to enable the device to perform its function **Where platform lifts are incorporated into the under-run** **14.** The lateral distance between working elements of the lift and fixed elements of rear under-run must be a maximum of 25mm **15.** Each individual section of the rear under-run must have a rear facing surface area of at least 350cm2

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04 Rear Registration Plate Space

Application: All Vehicles

Method of Inspection	Required Standard
All vehicles must have a suitable place to mount a rear registration plate. **Vehicles which are approved to Directive 70/222/EEC will not require an inspection to this section, providing the vehicle has not been modified.** **Note 1:**.A plate hanging from the vehicle with no structure or support brackets behind it would be considered unacceptable **Note 2:** With an "IVA Test" plate of the required size placed onto the space provided, check that it is visible and that the whole of the yellow shaded portion can be easily seen from a height of 1.5m from all points along a 21.5m line on the ground placed at 10.75m (centralised to the centre of the available rear reg plate space) behind and parallel to the rear of the vehicle. **Note 3:** + 20° is with the plate angled in at the top, - 15° is with the plate angled in at the bottom	**1.** All vehicles must comply with one of the "options" listed in table 1. **2.** The space must permit the mounting of a plate in a position as close to vertical (+ 20° or - 15°) as is permitted by the vehicle structure available. **3.** An external body surface or a purpose-designed mounting system securely attached to the vehicle must be provided to hold the plate in a fixed position.. (see note 1) **4.** The whole of the yellow shaded portion of the "IVA Test plate must be capable of being easily seen from every point along the test line. (see note 2) **Table 1** Euro space: Option 1 — Width 520, Height 120 Option 2 — Width 340, Height 240

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05 Steering Effort

Application: All Vehicles

Method of Inspection	Required Standard
Ensure the vehicle **as presented** has satisfactory evidence of compliance to the required standard Where modifications have taken place a lock to lock check must be carried out to check the system The requirements according to the category of the base or incomplete vehicle based on maximum mass may apply. **Note 1:** A **Mobile crane** may be fitted with a crab steering system and if fitted it would not need approval..	**1.** The vehicle **as presented** must be accompanied by satisfactory evidence of compliance with the required standard for Steering Effort. (see note 1) **2.** The steering system must operate smoothly from lock to lock and without undue stiffness.

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06 Door Latches and Hinges

Application: All Vehicles

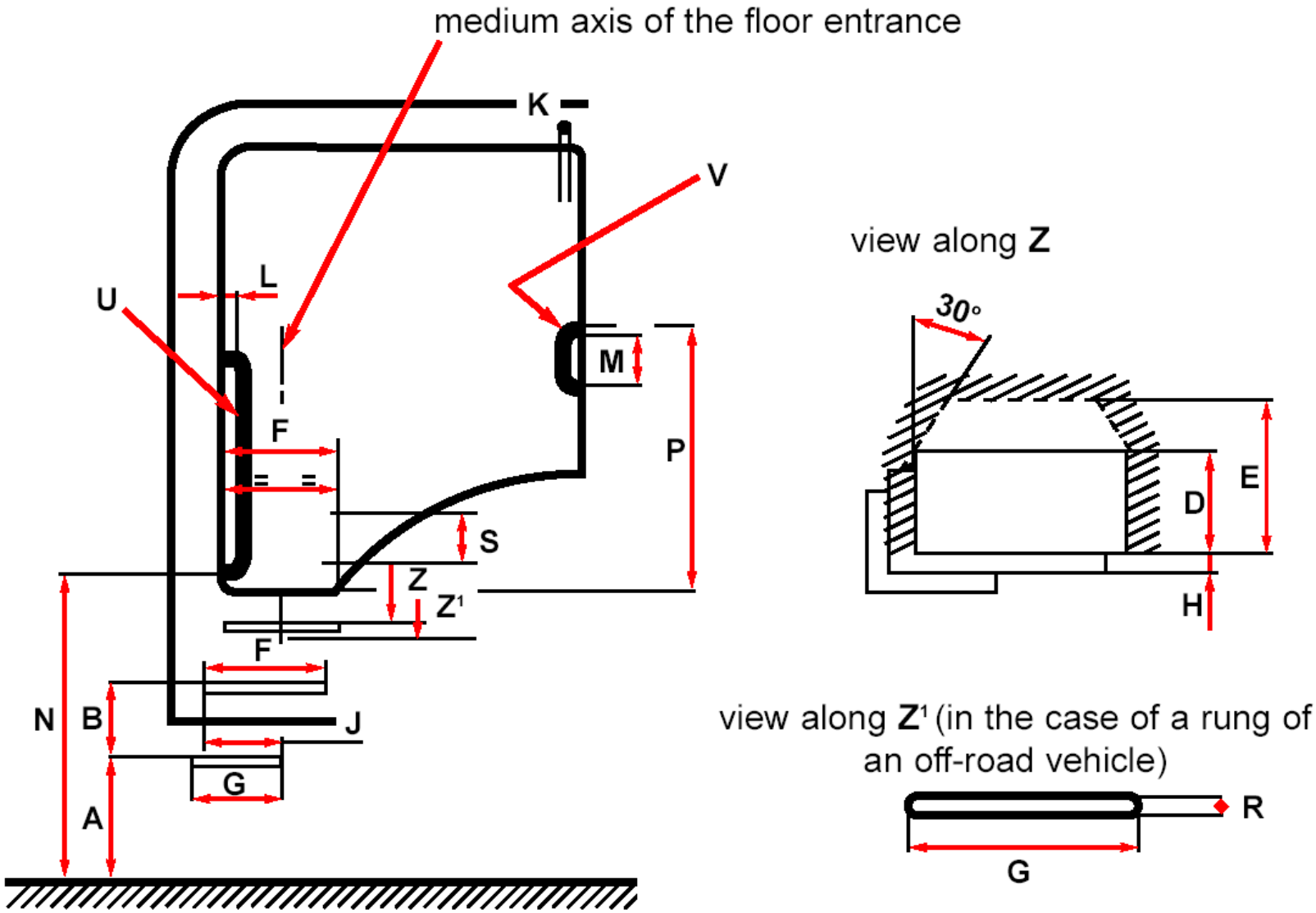
Method of Inspection	Required Standard
All vehicles must provide safe access to and from the drivers and passengers cabin. Compliance may be demonstrated by: A vehicle approval or test report that relates to the vehicle in its finished condition, the vehicle must not display modifications that would affect the validity of the evidence. or An inspection of the vehicle. In the case of a **Mobile crane** exemption from one or more of the provisions is permissible where it can be demonstrated to the satisfaction of the Approval Authority that the special purpose of the vehicle makes it impossible to fully comply. **Note 1:** The steering wheel may be considered as a handhold and as such does not need to meet any dimensional requirements.	**1.** All driver and passenger interior door handles/controls must be easily accessible from the adjacent seating positions. **2.** All doors must be capable of being secured in the closed position. **3.** The hinges of hinge-mounted doors (with the exception of folding doors), when fitted to the sides of the vehicles, must be fixed at the front edge of the doors in the direction of forward travel. In the case of double doors, these requirements apply to the door wing which opens first; it must be possible to secure the other wing of the door. **N2 vehicles with a maximum mass not exceeding 7,5 tonnes** **4.** if the floor entrance to the passenger compartment of such vehicles is more than 600 mm above the ground, the vehicle must have one or more running boards or steps. The dimension is increased to 700mm for an “off road” vehicle. **5.** The running boards or steps must be constructed in such a way as to preclude the risk of slipping. **N2 vehicles with a maximum mass exceeding 7,5 tonnes and All N3 vehicles** **Driver/passenger cabin access step measurements (refer to Figure 1);** **6.** The first step must a maximum of 600mm from the ground (**A**). The dimension is increased to 700mm for an “off road” vehicle.

Method of Inspection	Required Standard
	7. The vertical distance (**B**) between upper surfaces of the steps must not be more than 400mm apart. **8.** The vertical distance (**B**) between any two subsequent steps must not vary by more than 50mm. The dimension is increased to 100mm for an “off road” vehicle. (This variance does not apply between the cabin floor and the step immediately below it.) **9.** The depth of the step upper surface must be a minimum of 80mm (**D**) **10.** The step must permit a users foot to safely use the step and must have a minimum of 150mm free space (including step upper surface depth) (**E**) **11.** The width of the upper surface of a step (except for the lowest step) must be a minimum of 300mm. This is reduced to 200mm for an “off road” vehicle (**F**) **12.** The width of the upper surface of the lowest step must be a minimum of 200mm (**G**) **13.** The step height must be a minimum of 120mm **14.** There must not be any transversal offset between steps (**H**) **15.** There must be a minimum of 200mm longitudinal overlap between two subsequent steps in the same flight, or between the uppermost step and the cabin floor (**J**) **In addition, the following minimum geometrical specifications for the steps must be met:** **16.** The lowest step may be designated as a rung if this is necessary for reasons relating to construction or use, and in the case of “off road” vehicles. In this instance the rung depth (**R**) must be a minimum of 20mm.

Method of Inspection	Required Standard
	17. Rungs must not be of a round cross section. **18.** While getting down from the driver's / passenger compartment the position of the uppermost step must be easily “found”. **19.** The upper surface of the steps must be non-slip. In addition, steps exposed to the weather and the dirt during driving shall have adequate run-off (draining surface). **Access to handholds to the driver's compartment (see note 1 and Figure 1)** **20.** One or more suitable handrails, handholds or other equivalent holding devices must be provided for any access normally used to access the driver's / passenger compartment. **21.** The handrail(s) or handholds or equivalent holding devices must be positioned in such a way that they can be easily grasped and do not obstruct access. **22.** Handrails, handholds or equivalent holding devices must not have more than 100mm discontinuity, to allow for items such as intermediate supports/fixings. **23.** In the case of access with more than two steps the handrails, handholds or equivalent holding devices must be located so that a person may support himself at the same time at three points (with two hands and one foot or with two feet and one hand). **24.** Except in the case of a stairway, the design and positioning of the handrails, handholds and equivalent holding devices must be such that operators are encouraged to descend facing the cab.

Method of Inspection	Required Standard
	25. The height (N) of the lower edge of at least one handrail or handhold or equivalent holding device, measured from the ground with the vehicle in running order, shall not be more than 1850 mm. For “off-road” vehicles, the dimension may be increased to 1950 mm. If the floor of the driver's compartment has a height from the ground greater than “N”, the handrail or handhold or equivalent holding device must terminate at the floor of the cab. **26.** The minimum distance of the upper edge of the handrail(s), handholds or equivalent holding devices from the floor of the driver's compartment (P) must be: **a.** handrail(s) or handholds or equivalent holding devices (U) 650 mm, **b.** handrail(s) or handholds or equivalent holding devices (V) 550 mm. **27.** The following geometrical specifications must be met: **a.** gripping dimension (K): 16 mm minimum 38 mm maximum, **b.** length (M): 150 mm minimum, **c.** clearance to vehicle components (L): 40 mm minimum with open door.

Figure 1


medium axis of the floor entrance
K
V
U
L
M
F
P
S
Z
Z¹
F
N
B
J
G
A
view along Z
30°
E
D
H
view along Z¹ (in the case of a rung of an off-road vehicle)
R
G

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

07 Audible Warning

Application: All Vehicles

Method of Inspection	Required Standard
Ensure that the vehicle is fitted with a horn which when operated emits a continuous uniform sound that is capable of giving audible warning of the approach or position of the vehicle to which it is fitted. **Note 1:** For the purposes of this item "horn" means an audible warning device not being a bell, gong or siren. **Note 2:** In the case of an **Armoured vehicle**: Exemption from RS 3 & 4 are permissible where it can be demonstrated to the satisfaction of the Approval Authority that the special purpose of the vehicle makes it impossible to fully comply; and Additional panic alarm devices are permitted.	**1.** The vehicle must be fitted with a horn (see note 1) **2.** The horn must be securely attached to the vehicle **3.** When operated the horn must emit a continuous uniform sound (See note 2) **4.** The horn as installed, must give an equivalent level of warning to other road users as that of an equivalent N2/N3 EC Type Approved vehicle. (See note 2)

Record of Revision

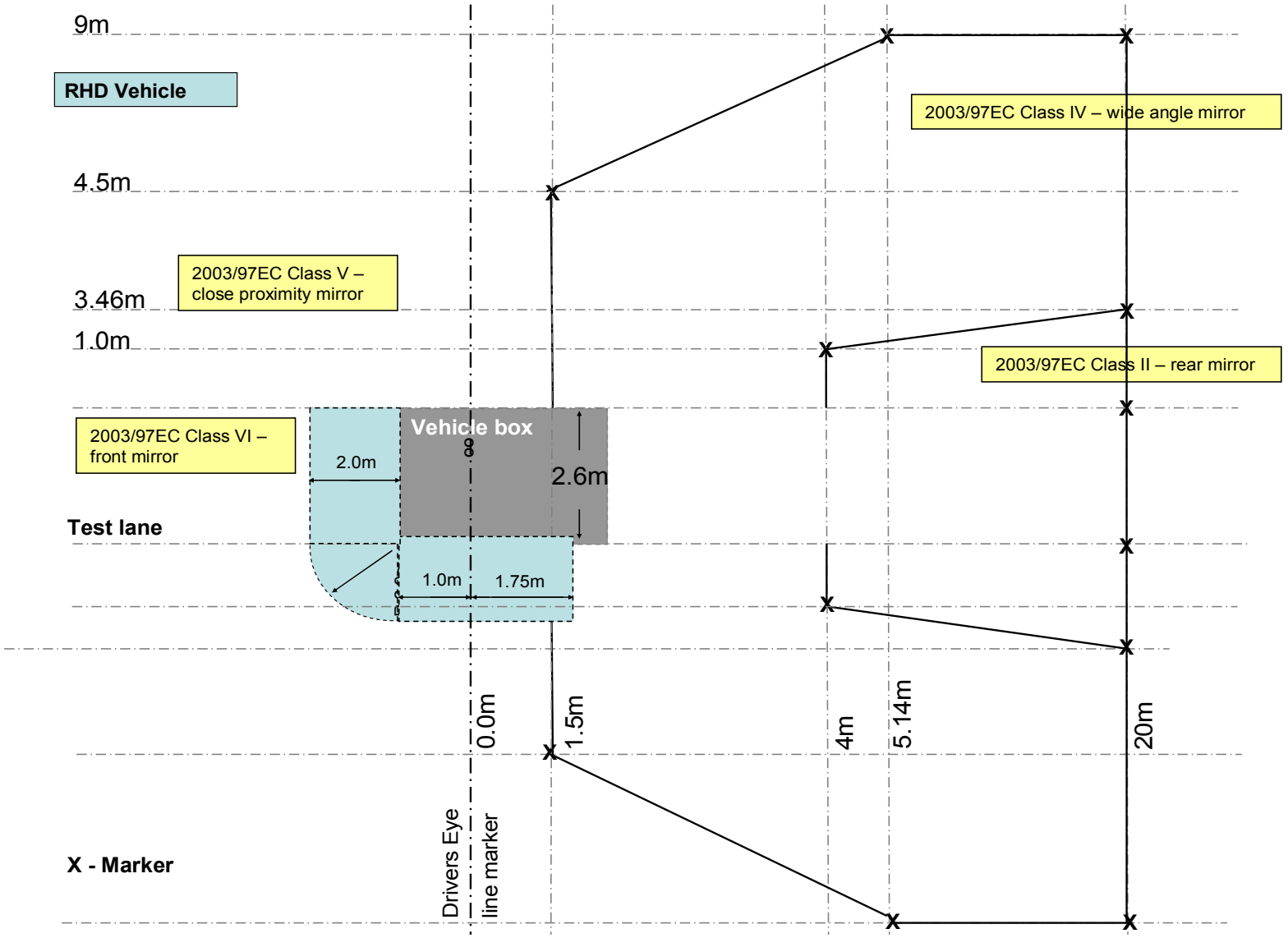
Revision	Date	Description of Change
1	24/04/2009	

08 Indirect Vision

Application: All Vehicles

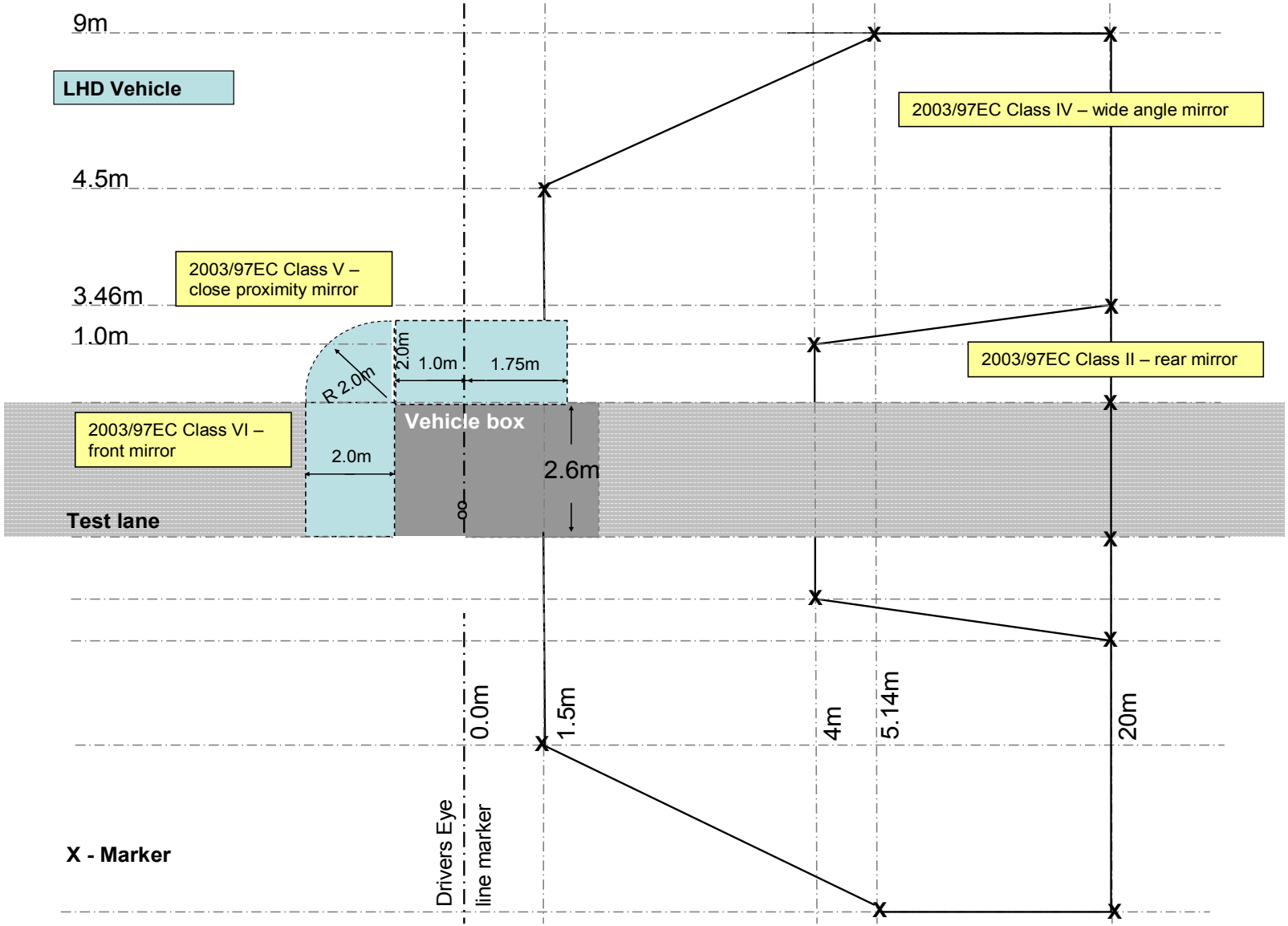
Method of Inspection	Required Standard
The vehicle must be fitted with appropriate mirrors that enable the driver an adequate view to the rear.- Compliance can be demonstrated by component approval **or** the presence of approval marks(for unmodified vehicle cabs) In the case of an **Armoured vehicle**, exemption from one or more of the provisions is permitted where it can be demonstrated to the satisfaction of the Approval Authority that the special purpose of the vehicle makes it impossible to fully comply. **Note 1:** Mirror security should be such that wind deflection when the vehicle is driven at normal road speeds will not cause the field of view to change. It should also be mounted so that the mirror cannot vibrate and cause the driver to misinterpret the image. **Note 2:** Where a valid approval or test report is available which covers the vehicle in its finished state, a field of view check is **not** required. In the case of an **Armoured vehicle**, exemption from one or more of the provisions is permitted where it can be demonstrated to the satisfaction of the Approval Authority that the special purpose of the vehicle makes it impossible to fully comply.	**Installation check** **1.** The vehicle must have all the obligatory mirrors fitted (see Table 1) **2.** All mirrors must be securely attached to the vehicle (see note 1) **3.** All obligatory mirrors must bear an acceptable European approval mark ('E' or 'e') **4.** All obligatory mirrors must bear the appropriate class type (see Table 1) **5.** All mirrors must be adjustable **6.** All obligatory mirrors must meet the field of view requirements. (see note 2 and Figure 1 or 2) **7.** If a class V or VI mirror is mounted then regardless of their position after adjustment, no part of these mirrors or their holders must be less than 2 m from the ground when the vehicle is unladen. **Table1** **Class of Mirror** / **Obligatory Fitment to Vehicle** Side Exterior (Class II) — Offside and nearside Wide Angle (Class IV) — Offside and nearside Side Close proximity (Class V) — Nearside (offside if LHD) Front (Class VI) — Front **(7501kgs or more)**

Figure 1



Indirect Vision 08

Figure 2



Indirect Vision 08

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

09 Braking

Application: All Vehicles

Method of Inspection	Required Standard
Ensure that the vehicle **as presented** has satisfactory evidence of compliance to the required standard In the case of a **Mobile crane** with more than 4 axles derogations are permitted provided that: (a) they are justified by the particular construction; and (b) all the braking performances relating to parking, service and secondary braking are fulfilled.	**1.** The vehicle **as presented** must be accompanied by satisfactory evidence of compliance with the required standard for “Braking”.

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

10 Electromagnetic Compatibility

Application: All Vehicles

Method of Inspection	Required Standard
Ensure the vehicle has satisfactory evidence of compliance to the required standard and has not been modified such to invalidate the approval	**1.** The vehicle **as presented** must be accompanied by satisfactory evidence of compliance with the required standard for “EMC”. **2.** Where any additional equipment has been installed, a written declaration supplied by the Manufacturer, confirming compliance of the additional items must be presented

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

13 Anti – Theft / Immobiliser / Alarm

Application: All Vehicles (Optional Fitment)

Method of Inspection	Required Standard
If the vehicle is fitted with a mechanical anti-theft device, an electronic immobiliser, or an alarm system (including panic alarm) The system or systems must comply with this section. **Note 1:** A “Category 1” installation refers to an immobiliser and an alarm. “Category 2” installation refers to an immobilizer only Ensure that the vehicle is accompanied by documentary evidence of compliance for a category 1 or 2 installation as appropriate. Evidence of compliance can be one of the following: • Documentary evidence from a test laboratory • Documentary evidence from the chassis manufacturer • An original certificate of installation from a Vehicle Systems Installation Board (VSIB) accredited installer • An original certificate of installation from a Mobile Electronics and Security Federation (MESF) accredited installer	**1.** Where an anti theft device incorporates a mechanical part that acts upon a system used to control the vehicle; **a.** It must Deactivate before the engine can be started **b.** It must be deactivated while the engine is running **c.** It must have a actuation which is a distinct and separate function from that of stopping the engine **d.** It must not operate on any part of the braking system **2.** If fitted to the Vehicle, an Immobiliser must be accompanied by evidence of compliance (see note 1) **3.** If fitted to the Vehicle, an Alarm must be accompanied by evidence of compliance (see note 1) **4.** If fitted to the Vehicle, an Panic Alarm must be accompanied by evidence of compliance (see note 1)

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

15 Seat Strength

Application: All Vehicles

Method of Inspection	Required Standard
Check that seats provided for use when the vehicle is in motion are suitable, safe and offer protection from injury to passengers. **Note 1:** This inspection does not apply to any seating intended solely for use while the vehicle is stationary and any such seats must be clearly identified to users by means of a pictogram or a sign with appropriate text. **Note 2:** In respect of a seat that comprises of a "lift-out" backrest and/or squab it will be considered secure providing, when in the operational position, it is located such that there no possibility of accidental lateral or longitudinal movement within the vehicle. **Note 3:** On a seat to which a seat belt is mounted (integral seat belt) consideration must be given to the seat mounting as they are now considered to be seat belt anchorages. The Standards, and guidance on the types of construction acceptable for this type of seat are found in section 19 (Seat Belt Anchorages) **Note 4:** A seat/seat back INERTIA locking device is acceptable, i.e. a device that operates during the deceleration of the vehicle.	**1.** All seats must be securely attached to the vehicle structure, or other obvious suitable load bearing parts of the vehicle (see notes 1, 2, and 3). **2.** Where seats incorporate seat belt anchorages the seat must be approved to at least the category of vehicle to which they are fitted **3.** All seat mountings must be of adequate strength to support the loads likely to be imposed (see notes 1 and 3). **4.** Each moveable seat, seat back adjustment and seat displacement system must incorporate an automatic locking system which operates in all positions provided for normal use (see Note 1 & 4). **5.** All seats which can be tipped forward or have fold-down backs must lock automatically in the normal position and if seats for adults are fitted behind, then the unlocking control must be easily accessible from that position (see Note 1 & 4). **6.** Where seats are intended for use **only** when the vehicle is **not** being driven on public roads, the seats must be accompanied by a pictogram or sign clearly indicating that the seat is not to be used whilst the vehicle is in motion.

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

17 Speedometer and Reverse Gear

Application: All Vehicles having a maximum speed exceeding 25mph

Method of Inspection	Required Standard
A vehicle must indicate an accurate speed to the driver at all times and the vehicle must be capable of travelling in a rearward direction under its own power. **Note 1:** Digital Tachographs do not provide adequate visual indication of speed **Note 2**: Vehicle maximum speed will have to be in the form of vehicle specific documentary evidence **Note 3:** Inspection cannot verify the accuracy of a speedometer and as suitable test facilities will not be available this must be verified by documentary evidence for example a Authorised Tachograph facility, or from a vehicle specific approval, that still covers the vehicle as presented **Note 4:** "Reverse Gear" is a device used to propel the vehicle in a rearwards direction under its own power. This does not have to be in the gearbox, it may be a separate component i.e. electric motor	1. The vehicle must be fitted with an Analogue Tachograph or Speedometer (See note 1) 2. The tachograph or speedometer must be capable of being read at all times of the day or night **If an analogue tachograph is not fitted then:** 3. A speedometer must be fitted and be capable of indicating the vehicle speed in miles per hour (mph) and kilometres per hour (Km/h) at uniform intervals not exceeding 20mph for all speeds up to the maximum design speed of the vehicle. (See note 2) 4. It must be supplied with documentary evidence of accuracy (See note 3) 5. The "rest" position for the needle must lie either on or below the first marked increment **Reverse gear** 6. The vehicle must have a reverse gear which can be selected from the driving position and operates (See note 4)

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

18 Statutory Plates

Application: All Vehicles

Method of Inspection	Required Standard
All vehicles must be provided with a manufacturer's plate. The plate and inscriptions shall be attached either by the manufacturer or by his authorised representative. The Vehicle Identification Number (VIN) must marked on the manufacturer's plate and also be marked on the chassis, frame or other similar structure on the right hand side of the vehicle. Where the vehicle is subject to a multistage build, a plate is required on completion of each stage as appropriate, every plate fitted must display the same VIN as displayed on the chassis, the weight information is only necessary on the chassis manufacturer's plate or on a converters plate if they have altered those weights with any modification. Visually check that the characters used for the Manufacturers Plate and Vehicle Identification Number complies with the required standards. **Note 1:** The manufacturer may give additional information. The engine type and power may be listed below the manufacturers name and the number of axles may be listed underneath the VIN number. Any other information must be outside a clearly marked rectangle which shall enclose only the listed information.	**1.** The vehicle must be fitted with a manufacturer's plate, in a conspicuous and readily accessible position. **2.** A manufacturer's plate must be fitted for each stage of a multistage build. **3.** The manufacturer's plate(s) must be made of a durable material **4.** All plate(s) must be indelibly marked with the Vehicle Identification Number (VIN) which matches the number marked into the vehicle structure. See note 3 **5.** The manufacturer's plate(s) must be securely attached to a part of the vehicle that will not be replaced through normal use. See note 2 **6.** The manufacturer's plate(s) must show the required information in the correct order see below and note 1 VOSA MOTOR INC 3GPG918009BS51312 22000 kg 38000 kg 1 – 7000 kg 2 – 8000 kg 3 – 8000 kg Name of manufacturer Vehicle Identification Number or unique identifier number Maximum permitted laden mass of vehicle Maximum permitted laden mass for the combination where the vehicle is used for towing Maximum permitted laden road mass for each axle, listed in order from front to rear

Method of Inspection	Required Standard
If any of the technically permissible masses are higher than the masses permitted in GB and NI for a vehicle or axle (see Annex 1 for details of the maximum masses permitted in GB and NI), then there should be 2 columns for masses - in the left hand column the maximum permitted masses in GB/NI, and in the right hand column, the technically permissible masses. This does not apply to a vehicle issued with a Plating certificate under the Goods Vehicles (Plating and Testing) Regulations 1988 where only one column, giving the technically permissible masses, is permitted. **Note 2:** 'Firmly attached' means screwed, bolted, riveted or otherwise fixed such that it is not likely to become displaced during the life of the vehicle. **Note 3:** For markings to be considered 'indelible' they should be unlikely to become disfigured or obliterated during the life of the vehicle. Whilst stamping or engraving is preferable it is possible to accept a printed or painted plate providing it has been treated in such a way that it is most unlikely that essential information would be obliterated or defaced during the normal life of the vehicle. **Note 4:-** The spacing of characters must be such that no additional characters could be added at a later date.	**7.** The VIN must be marked on the chassis, frame or other similar structure on the right hand side of the vehicle. (viewed from the rear) **8.** The VIN must be placed in a clearly visible and accessible position by a method such as hammering or stamping so that it can not be obliterated or deteriorate. **9.** The VIN number must consist of 17 digits with the information shown in a single line **10.** Capital letters and numerals must be used for the Manufacturers name and VIN **11.** There must not be any gaps between the characters for the VIN or unique vehicle identifier number shown on the manufacturer's plate or stamped into the vehicle. (see note 4) **12.** The characters on the manufacturer's plate must be at least 4mm high. **13.** The characters used for the VIN number stamped into the chassis, frame or other similar structure must be at least 7mm high. **14.** Use of the letter I, the letter O, the letter Q, dashes, asterisks and other special signs is not permitted.

Annex 1

Maximum permitted weights in Great Britain and Northern Ireland

Motor Vehicles	Maximum Weight
Two-axle	18 tonnes
Three-axle	25 tonnes *
Four-axle	32 tonnes #
* 26 tonnes where the driving axle is fitted with twin tyres and air suspension or suspension recognized as being equivalent, or where each driving axle is fitted with twin tyres and the maximum weight of each axle does not exceed 9.5 tonnes # where the driving axle is fitted with twin tyres and air suspension or suspension recognized as being equivalent, or where each driving axle is fitted with twin tyres and the maximum weight of each axle does not exceed 9.5 tonnes	
Single Axles	**Maximum Weight**
Single non driving axle	10 tonnes
Driving Axle	**Maximum Weight**
Single axle	11.5 tonnes
Tandem axles	The sum of the axle weights must not exceed if
Distance between axle centres is less than 1metre	11.5 tonnes
from 1metre and less than 1.3metres	16 tonnes
from 1.3metres and less than 1.8metres	18 tonnes #
# . 19 tonnes where the driving axle is fitted with twin tyres and air suspension or suspension recognized as being equivalent, or where each driving axle is fitted with twin tyres and the maximum weight of each axle does not exceed 9.5 tonnes	

Record of Revision

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19 Seat Belt Anchorages

Application: All Vehicles

Method of Inspection	Required Standard
Ensure each seating position is fitted with the required number of anchorage points. Assess the anchorage positioning, their strength, and that of the surrounding vehicle structure **Note 1:** Where the vehicle has two driving positions both must meet the minimum anchorage requirements and the second seat satisfies the requirement for the “foremost outboard “passenger seat” **Note 2:** The front centre seat will require 3 anchorages and a 3 point belt where the windscreen is located; a) in the case of a fixed (non-sliding) seat, within 840mm. of the seat reference point or ; b) in the case of a sliding seat, within 840mm. of the seat reference point when the seat is 127mm forward of its rearmost position. (see Annex 3). **Note 3:** Seats require a minimum of 2 point anchorage if they are exposed, i.e. if there is no screen in front of a seat. The screen being no more than 1.3m in front of the H point wide enough to be at least 200mm either side of the H point and high enough to reach 400mm above the H point. The surface area of the screen must be at least 800cm2. A screen or seat forming a screen must meet the following conditions:	**1.** The drivers seating position must have a minimum of 3 anchorages (see note 1) **2.** The foremost outboard passenger seating position must have a minimum of 3 anchorages **3.** A front centre seating position must have a minimum of: **a.** 2 anchorages **or** **b.** 3 anchorages (see note 2) **4.** Rear seating positions must have a minimum of 2 anchorages if required to be fitted with seat belts. (see note 3) **5.** The seat belt anchorage must be correctly located so to ensure the belt will sit correctly on the wearer**.** **6.** The anchorage and surrounding structure must be of adequate strength to withstand the load likely to be imposed by the torso in the event of a vehicle frontal impact. (annex 1)

Method of Inspection	Required Standard
a) The surface must be of suitable strength and showing no discontinuities such that, if a sphere of 165 mm diameter is geometrically projected in a longitudinal horizontal direction through any point of the space defined above and through the centre of the sphere, nowhere in the protective screen is there any aperture through which the geometrical projection of the sphere could be passed. b) A seat is considered to be an ‘exposed seating position’, if the protective screens within the space defined above have a combined surface area of less than 800 cm2.	

Annex 1

Strength of seat belt anchorages.

Seat belt anchorages must comply with the strength requirements for N2 / N3 vehicles in Directive 76/115/EEC
This can be demonstrated in several ways:

1. Evidence of type approval
2. Documentary evidence of testing to the Directive standard
3. Comparison with a type approved vehicle
4. Visual assessment

1. Evidence of type approval
Suitable evidence of type approval will be accepted.

2. Documentary evidence of testing to the Directive standard.
Suitable documentary proof will be accepted.

3. Comparison with a type approved vehicle
Evidence that the vehicle is of identical structure to a vehicle which has been demonstrated to comply with the requirements or which is type approved may be used to confirm compliance.

4. Visual Assessment
In the absence of evidence the examiner will have to determine whether the vehicle complies using a visual inspection. See Annex 2

Annex 2

Seat Belt Anchorages Strength Assessment

In a severe accident, the seated occupant can exert huge loads upon their seatbelts (in the region of 1.5 tonnes for a 75kg person). Seatbelt anchorages together must withstand these large loads from the seatbelts. These loads in turn must be dissipated by the vehicle structure.

In assessing the strength of the anchorages, it is essential to consider

- the vehicle structure in the immediate vicinity of the anchorage, and
- the parts of the vehicle structure into which the loads from the anchorages will be dissipated.

These large loads will act in several directions.

All Vehicles

What to look for:

- Evidence that anchorages in a vehicle of the same, or a very similar type have been subjected to a seatbelt anchorage strength test to “European Standards” by a recognised authority. This may be acceptable where there is clear evidence that the structure is identical to the vehicle originally tested.
- Welding should appear neat and of good quality; whilst it is impossible to judge the quality of a weld just by looking at it, messy welding is rarely strong welding.
- Bolts used in structural areas should be of grade 8.8 or better. Such bolts will be marked 8.8 or 12.9 on the hexagonal head, however, cap-head bolts or 7/16" (11mm) UNF seat belt anchorage bolts (with an anodised finish) not marked in this way may normally be considered to be of equivalent strength. Bolts should be M8 or larger.
- Threaded bushes should be welded (at both ends) through the tube, and not end mounted on the surface. (A threaded bush may be attached by its side surface to a structural component).

Cause for Concern:

- Welds of poor appearance, gaps or visible lack of penetration.
- Anchorages in thin and/or flat panels with little stiffness or reinforcing structure or in thin walled tube.
- Low grade bolts (less than grade 8.8).
- Insufficient bolt capacity, e.g. number of bolts and/or diameter of bolts

What to look for:

General requirements for all vehicles

- A test certificate from a recognised test authority must be provided to show that the seat itself or the seat and tracking (where this is fitted) is capable of meeting the strength and anchorage positional requirements of the Directive 76/115/EC as amended. It should typically include at least the following information:

Seat make and model, Vehicle category (N2 or N3), Seat type (single/double or triple), Belts fitted (3-point or lap), Pedestal height, Mounting details (i.e. on tracking or rigidly, mounted to a base plate).

- **ALL** the mounting holes provided in each pedestal for securing the seat to the vehicle or tracking must be utilized.
- **ALL** the mounting holes provided to secure any given length of tracking to the vehicle must be utilised.
- All tracking fasteners should be M8 grade 8.8 or better.
- tracking must be installed in a
- continuous length without joints.
- Seat or tracking mounting bolts that pass through hollow section reinforcing members should be fitted with “anti crush tubes”.

NOTE: Alternative mounting arrangements will be considered satisfactory where satisfactory documentary evidence of compliance can be provided by the vehicle presenter.

Fixed Single Seats

A typical single seat fixed directly to the vehicle floor is likely to require

- load spreading plates at least 100 x 100 x 4mm thick.
- spreader plates fitted between the front legs and the **inside** of the vehicle floor
- spreader plates between the rear leg securing nuts and the **underside** of the vehicle floor.

Where the rear mounting bolts are located within 50mm of a chassis member, the plate may be folded (not reduced in size) to clear the obstruction and the fold should abut snugly against the chassis member.

Where two or more single seats each having separate pedestals are mounted within approximately 200mm of each other, additional reinforcement should be provided as well as the load spreading plates, or the size and thickness of the load spreading plates increased.

NOTE: In many cases the mounting bolts will pass through slotted holes in the load spreading plate to allow for adjustment. Suitable arrangements must be in place (e.g. oversized washers) to prevent the nut or the head of the bolt from pulling through the slot in the plate.

Single seats with integral 3-point belt anchorages attached to the vehicle floor via offset or asymmetrical legs (i.e. to clear a wheel arch,) must be considered on a case-by-case basis. Documentary evidence from the seat manufacturer should be sought to confirm that the seat itself can withstand the forces required by the Directive when tested independently of the vehicle on its offset pedestals.

In vehicles modified to allow rear-access for a wheelchair via a ramp to a lowered central floor section having additional seats fitted either side of the lowered floor section, seats are often mounted directly to the floorpan either with very short pedestals or no pedestals at all. It is common for at least some of the original vehicle's belt anchorages to be used in combination with one or more of the anchorages on the new seat. The inspection should take into account the reduced floor loading resulting both from the shorter pedestals and (if applicable) from the relocation of the upper anchorage from the seat backrest to the vehicle pillar.
Where only **one** lower anchorage is attached to the seat, the effects of the asymmetrical loading should be considered.
Some vehicles, e.g. motor homes and ambulances are equipped with swivel seats which may have some or all the belt anchorages attached to the seat itself. Such seats should only be inspected in their position of normal use when travelling.

Removable Single Seats

Removable single seats may be fitted to either

- Low Profile tracking (this can be regarded as any tracking system with a section depth of up to 30mm) or
- "Heavy Duty" tracking (this can be regarded as any tracking system with an overall depth of 30mm or more) or
- dedicated clamping mechanisms attached to the floor of the vehicle.

Low Profile tracking systems

The seat fittings locate in cut-outs in the tracking and lock with either a plunger or "blade" arrangement.

In general, a typical single seat with three-point integral belt anchorages and mounted on a typical pedestal arrangement that is itself Directive compliant is likely to satisfy the Directive requirements as long as the tracking is

- supported in such a way as to prevent excessive distortion of the floor

Low Profile tracking should be secured:

- attached to the vehicle using 8mm (grade
- 8.8 or better) fasteners no more than approx. 100mm apart.
- either bolted to box or steel channel section and then secured to the vehicle floor, or secured by bolts going through the floor and into channel or box sections on the underside of the vehicle.
- (where secured into steel channel sections) secured into channel section of a minimum nominal size of 50x25x4mm which is orientated with the channel flanges facing downwards.

NOTE: The channel ends must be free of sharp edges, which may tear the vehicle floor under load.

Unless the tracking is secured to internal reinforcing members, a check should be made that the same number of fasteners are present above and below the vehicle floor. In cases where a fastener lies above a box section, heat shield, fuel tank or other obstruction, it must pass into an object of similar strength to the other reinforcing members.

- "Self-tapping" screws and "riv-nuts" are not considered as being of equivalent strength (unless documentary evidence can be provided).
- Seats should not be capable of being positioned such that the front or rear edge of either pedestal lies within 200mm of the end of a length of tracking.

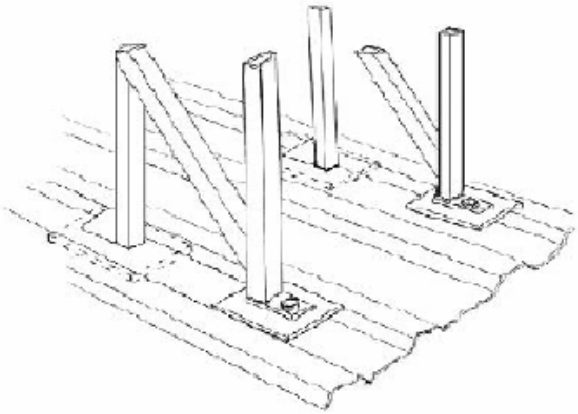
Heavy Duty tracking systems.

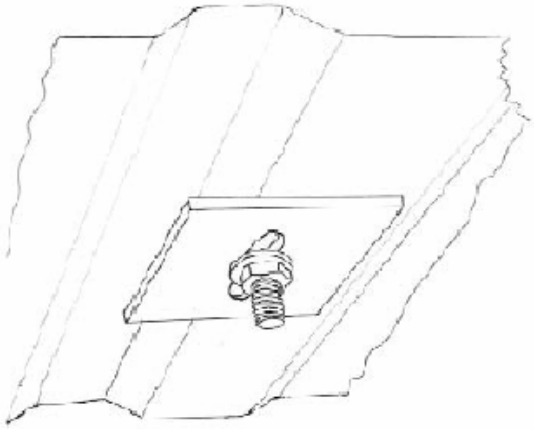
Although these differ in appearance, they all share the same principal feature – i.e. a much deeper section than the "low profile" tracking systems. These lengths of tracking have sufficient depth of section to resist the large bending loads applied during a seat belt anchorage test. As such, they generally require no reinforcement between themselves and the inside of the vehicle floor and only minimal reinforcement beneath the vehicle floor. Typically, such tracking is not secured at precisely defined intervals so that the converter is free to choose the pitch of the fasteners to miss underfloor obstructions such as chassis members. Often the tracking is secured by pairs of fasteners – one on each side of the centerline, rather than individual fasteners along its centerline.

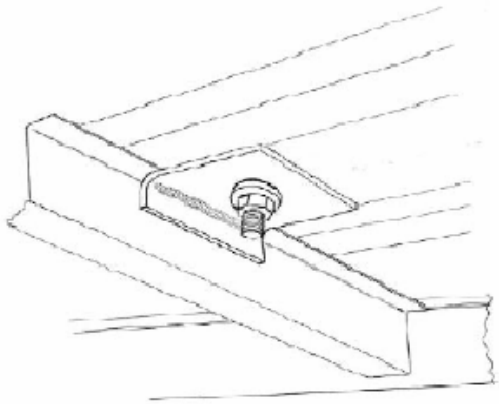
Heavy Duty tracking should be secured:

- with 8mm grade 8.8 (or better) fasteners at intervals of not more than 250mm.
- with fasteners passing through a mild steel load spreading plate at least 50 x 50 x 4mm thick or an equivalent arrangement.
- such that seats are not capable of being positioned with the front or rear edge of either pedestal within less than 200mm of the first or last group of fasteners securing any length of tracking.

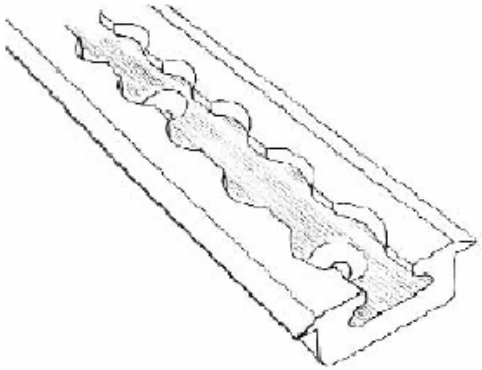
Load Spreading Plates



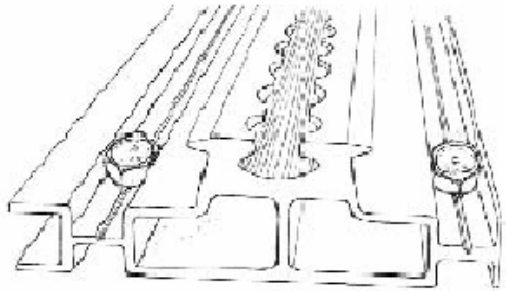




Low Level Tracking



Heavy Duty Tracking



Seat Belt Anchorages 19

Fixed double seats

Double seats fitted with integral three-point belts and **two or three pedestals** impart significantly higher loads into the vehicle floor than a single seat imparts. As a result, it is extremely difficult to restrain such a seat using simple reinforcements alone. Documentary evidence that the installation can satisfy the Directive requirements **in-vehicle** should be sought.

Where a double seat with integral three-point belt anchorages is fitted with **four or more pedestals**, approximately evenly spaced, a spreader plate extending at least the full width of the seat should be fitted between the front legs and the vehicle floor. Such a plate might typically be in the region of 5mm thick, 150mm long and at least the width of the complete seat (including cushions).

Angle or channel sections of similar or greater rigidity than the flat plate may also be used.

Where two pedestals are mounted within approx. 200mm of each other, additional reinforcement must be provided as well as the load spreading plates, or the size and thickness of the load spreading plates increased.

Removable double seats

Removable double seats with three point integral belt anchorages are rare. In general, such a seat fitted with two or three pedestals is unlikely to satisfy the Directive requirements in a vehicle as most currently available tracking systems will not withstand the loads required for a category “M1” vehicle. In all such cases, documentary evidence that the complete seat and tracking assembly has been successfully tested “in-vehicle” should be sought.

Fixed triple seats

It is common to fit triple seats across the rear of many taxi conversions and “people carrier” vehicles. It is not, generally, possible to secure such seats using simple reinforcements alone. If a triple seat is fitted with three-point integral anchorages, documentary evidence that the complete assembly has been successfully tested “in-vehicle” should be sought.

If some of the belt anchorages are located on the body structure (typically the outboard upper and lower anchorages), the load on the seat mountings will be correspondingly reduced. If the centre seating position is only equipped with a lap belt, the loads on the seat mountings are further reduced. In some cases, only the two anchorages from the centre seat belt and one of the lower anchorages from each of the outboard seating positions will transmit their load into the vehicle through the seat pedestals. Seats fitted with this arrangement of belt anchorages must be assessed on a case-by-case basis. In general terms, such a seat fitted with four pedestals (roughly evenly spaced) is likely to prove satisfactory if fitted with simple load spreading plates. If fewer pedestals are fitted (or more anchorages are located on the seat structure), additional reinforcement will be required.

Rear-Facing seats

Rear-facing single seats with integral belt anchorages are only required to withstand loads approximately **one third** of the magnitude of a forward-facing seat. As such, mounting arrangements can be significantly less substantial than those for forward-facing seats. In many cases, rear-facing seats are mounted on a bulkhead rather than free-standing. Often, the bulkhead structure will be impossible to assess due to the presence of trim on both surfaces. In these instances, drawings or photographs of the structure should be sought. The bulkhead structure should be attached to the vehicle at least along its lower edge and sides. An assessment of the strength and number of such mountings should be made. The examiner must satisfy himself (as far as is reasonably practicable) that the attachment(s) of the bulkhead to the vehicle "B" pillars does not compromise the strength of the front seat upper belt anchorages. An inspection of the method used to attach the belt anchorages to the bulkhead (or seats) should also be made. If the belts are attached to the seats, their attachments to the bulkhead will be part of this inspection. It is common to only fit lap belts on rear-facing seats. The removal of an upper belt anchorage significantly reduces the load at the base of the seat during a test. This should be taken into consideration when assessing the structure.

Seats with integral Lap Belts

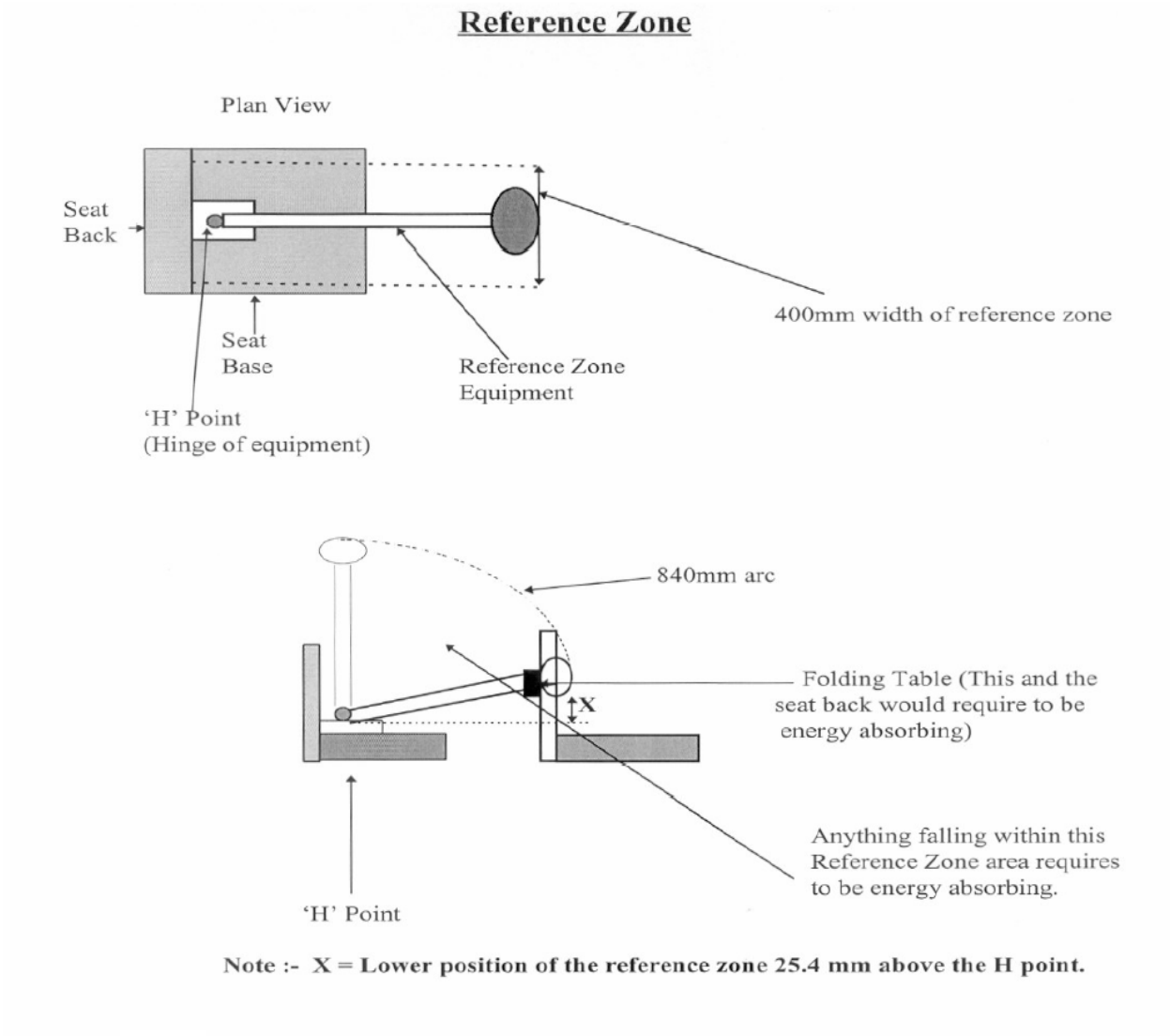
The fitting of a lap belt rather than a three point belt with its upper anchorage on the seat back is likely to lower the loads on the vehicle floor by approximately one third. For a typical "minibus style" single seat, the load acting to pull the rear legs out of the floor when fitted with a three-point belt is likely to be in the region of 6 tonnes. This would reduce to approximately 4 tonnes if the same single seat were to be fitted with an integral lap belt. In view of the reduction in floor loading, less reinforcement is likely to be required than for a seat with three integral anchorages.

NOTE: In cases where three anchorages are provided but only two are attached to the seat, the load on the pedestals could be reduced still further - possibly by as much as half.

Sliding Seats

Some seats are fitted to a system of "runners" so as to allow fore and aft adjustment or to provide two alternative positions of use. Some of the belt anchorages for such seating positions may be attached to the seat. Before making any assessment of the belt anchorages, documentary evidence should be sought to confirm that the seat and runner assembly is capable of satisfying the requirements of the Directive when tested **independently** of the vehicle. Once this has been confirmed, the installation of the seat in the vehicle can be assessed.

Annex 3


Reference Zone
Plan View
Seat Back
Seat Base
'H' Point (Hinge of equipment)
Reference Zone Equipment
400mm width of reference zone
840mm arc
Folding Table (This and the seat back would require to be energy absorbing)
X
Anything falling within this Reference Zone area requires to be energy absorbing.
'H' Point
Note :- X = Lower position of the reference zone 25.4 mm above the H point.

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

20 Installation of Lights

Application: All Vehicles

Method of Inspection	Required Standard
The examiner will perform a visual check of all the optional lamps and reflectors fitted to the vehicle for the correct colour light visible to the front or rear and that no light emitting surfaces are obscured **Note:** Lamp/reflector **lateral position** is measured from the extreme outer edge of the vehicle (disregarding tyres, mirrors, lamps and reflectors) to the edge of the illuminated area (or reflective surface on a reflector) nearest that side of the vehicle. Lamp/reflector **vertical position** is measured from the ground: • In the case of the **minimum** height to the lower edge of the illuminated area (reflective surface on a reflector) • In the case of the **maximum** height to the top edge of the illuminated area (reflective surface on a reflector). **Note:** For the purposes of the test lamps that are intended to illuminate the road forward of the vehicle are considered to be either: a) main beam headlamps (including spot lamps and driving lamps) b) dipped beam headlamps, or c) front fog lamps.	**1.** The vehicle must be fitted with lamps or retro reflective material only capable of showing a white light to the front except for: • an amber light from a direction indicator • a yellow light from a front fog lamp • an amber light from a side marker light • emergency vehicles only, a blue light from a warning lamp or beacon. **2.** The vehicle must be fitted with lamps or retro reflective material only capable of showing a red light to the rear except for: • an amber light from a direction indicator • a white light from a work lamp, reversing lamp, interior lamp, or a registration plate lamp • a yellow light from a rear registration plate • an amber light from a side marker light • emergency vehicles only, a blue light from a warning lamp or beacon.

Method of Inspection	Required Standard
	3. All lamps and reflectors must be securely fitted to the vehicle and not move by swivelling, deflecting, or otherwise while the vehicle is in motion, except for: • any lamp or reflector which by design can be deflected to the side with the movement of the front wheel or wheels of the vehicle when turned for the purpose of steering the vehicle • a headlamp for adjustment or dipping of the beam • a headlamp which can be retracted or concealed • a work lamp, used to illuminate a working area or the scene of an accident, breakdown or road works in the vicinity of the vehicle to which it is fitted. **4** All obligatory and optional lamps, reflectors and rear markers must be fitted to their correct orientation **5** When every door or other movable part is in the fixed open position (any position in which the component will remain, with or without a fixed stay) the • front and rear position lamps • front and rear indicators • rear retro reflectors must fulfil one of the following conditions: **a.** half (50%) of the apparent surface of the lamp or reflector is visible from directly in front of / behind (as appropriate) the vehicle, **or** **b.** additional fully visible lamp (s) / reflectors satisfying all requirements for the above lamps / reflectors are activated / visible, **or** **c.** a notice in the vehicle must inform the user that in certain positions of the movable components, other road users should be warned of the presence of the vehicle on the road (e.g. by laying out a warning triangle).

Installation of Lights 20

Figure 1

Horizontal Angles of Visibility

Each lamp and reflector must be positioned such as to provide an “apparent surface” . At least 50% of the “apparent surface” of each lamp or reflector must be visible from any point within the relevant angles.

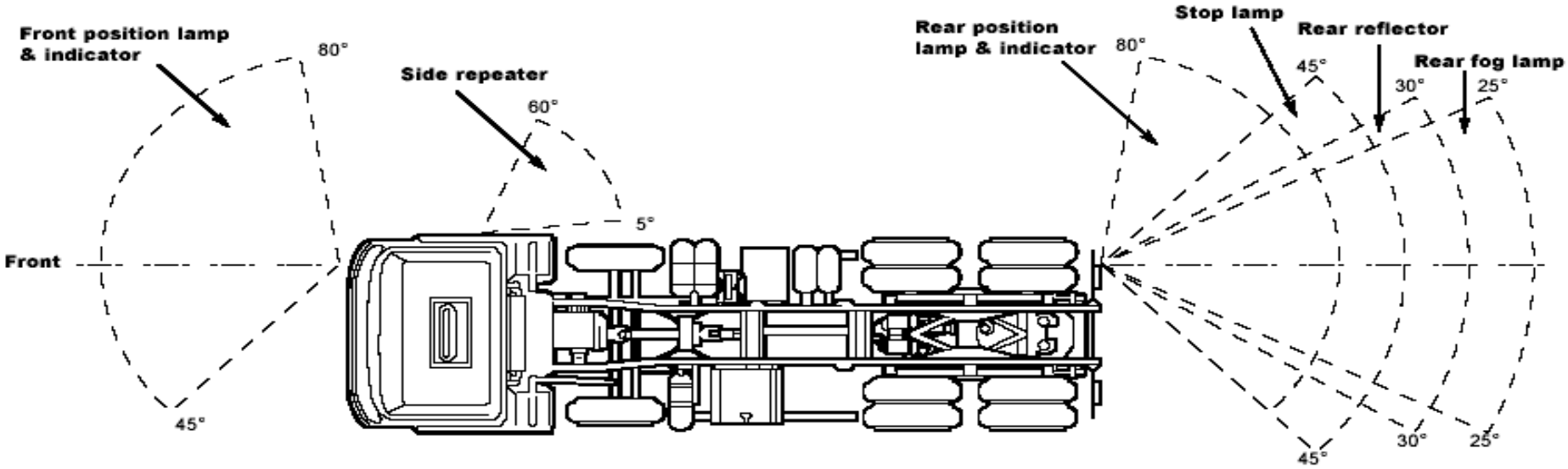


Figure 2

Vertical Angles of Visibility

Front Position Lamps and Indicators (including Side Repeaters)
‘a’ = less than 750mm above ground level.
‘b’ = 750mm or more above ground level.
‘c’ = Rear position lamps and Stop lamps 1500mm or more above ground level. Indicators and Rear reflectors 750mm or more above ground level.
‘d’ = Rear position lamps and Stop lamps less than 1500mm above ground level.
‘e’ = Rear position lamps, Stop lamps, Indicators and Rear reflectors less than 750mm above ground level.
‘f’ = Rear fog lamps.

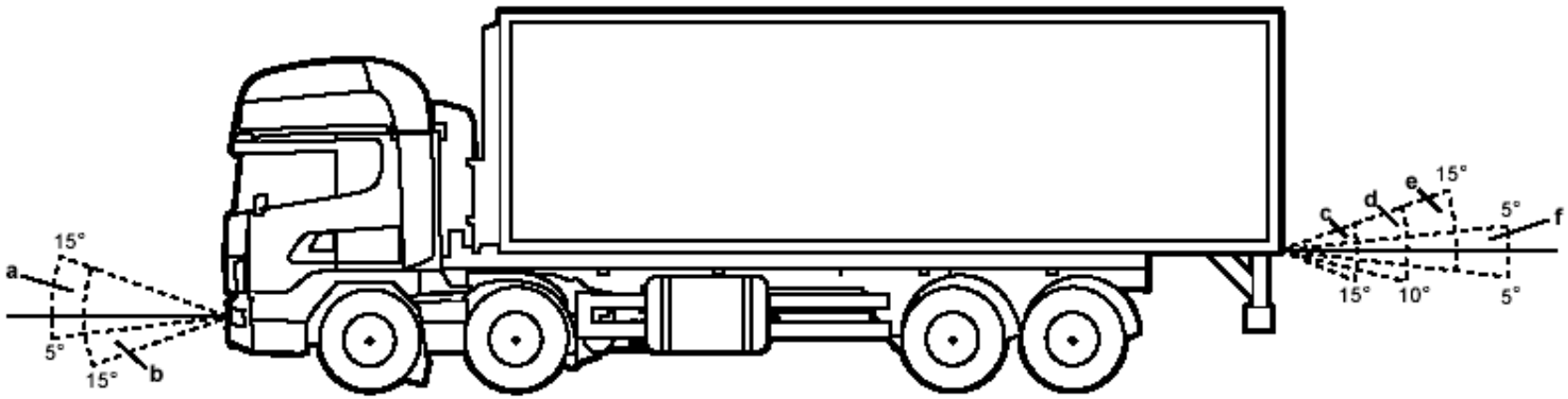
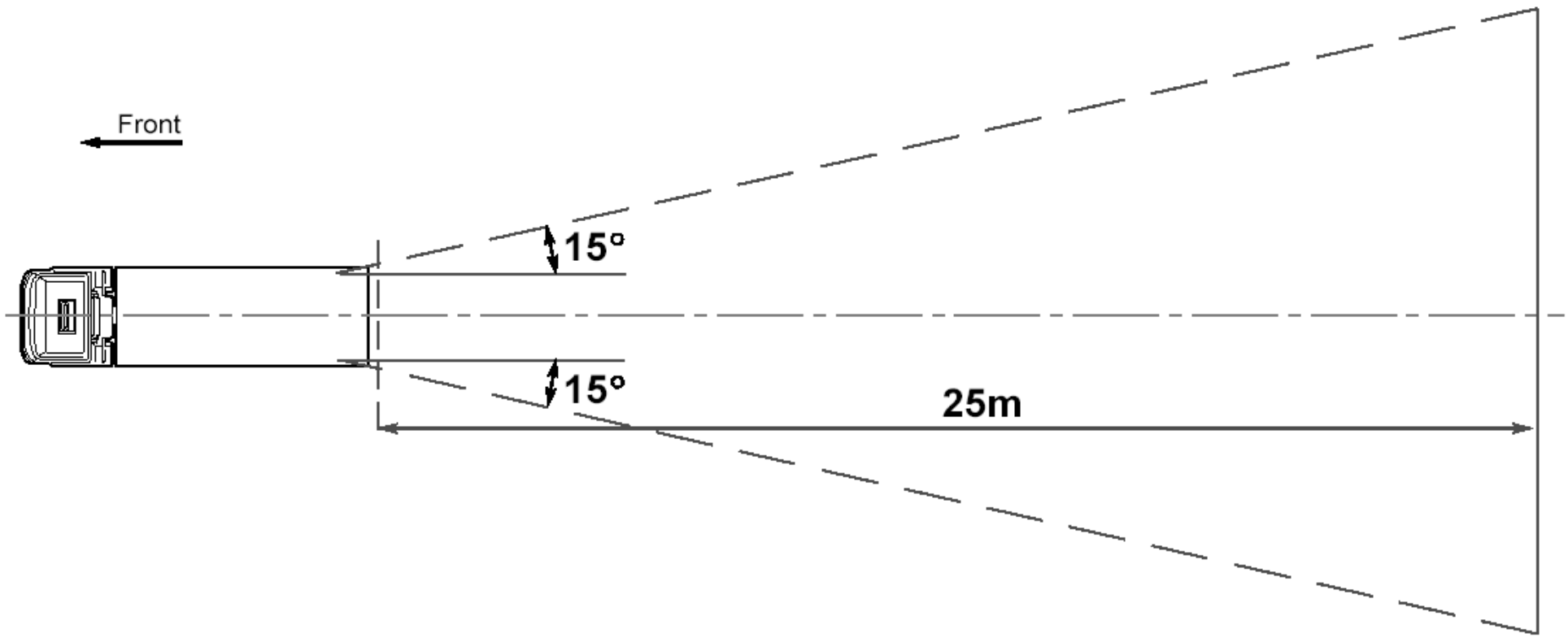


Figure 3

“To the rear” of the vehicle means “in an area the sides of which are at an angle of 15 degrees out from the extreme outer edge of the vehicle, (starting from the rear corner) and extending up to **25m** from the rear of the vehicle (measured along the vehicle longitudinal).



Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

21 Retro Reflectors

Application: All Vehicles

Method of Inspection	Required Standard
Carry out a visual check of all retro reflectors and rear markers fitted to the vehicle for colour, number, approval markings and correct positioning. **Note:** Geometric angles of visibility and positional requirements are not required for all optional reflectors.	**Reflectors;** **1.** All reflectors must be 'e' or 'E' marked, and where applicable, bear the appropriate identity marking as listed in Table 1 **2.** The correct number must be fitted to the vehicle (Table 1) **3.** The correct colour must be fitted to the vehicle (Table 1) **4.** They must be positioned to meet **a)** the positional requirements of Table 1 **b)** the angles of visibility requirements of Table 1 **5.** They must be of the correct shape (Table 1) **Rear Markers; vehicles above 7500kgs** **6.** All rear markers must bear a genuine permanently attached 'e' mark **7.** A minimum of one set of obligatory markers must be fitted to the vehicle (Table 2) **8.** They must be positioned correctly to meet the positional requirements of Table 2 They must be of the correct type (Table 2)

Table 1

TYPE	NUMBER	APPLICATION	COLOUR	POSITION			ANGLES OF VISIBILITY See Figures 1 & 2 of section 20	APPROVAL MARK "E" or "e" Identity Symbol or BS Mark / Notes
				MAX DISTANCE FROM SIDE (mm)	MAX HEIGHT (mm)	MIN HEIGHT (mm)		
Rear Retro Reflectors Non-triangular	Min 2 Max any number Includes optional	Mandatory	Red	400 (Min separation 600 unless vehicle width less than 1300, where Min separation 400)	900 or if impracticable 1500	250	a. Horizontal i. 30^0 inwards and outwards. b. Vertical i. < 750mm above the ground 15^0 above and 5^0 below horizontal. ii. otherwise 15^0 above and below horizontal	I or IA or IB "E" or "e"
Front Retro Reflectors Non-triangular	Min 2 Max any number Includes optional	Mandatory on motor vehicles with concealable front lamps with reflectors. Optional on all other motor vehicles.	White	400	900 or if impracticable 1500	250	a. Horizontal i. 5^0 inwards and 30^0 outwards. b. Vertical i. < 750mm above the ground 15^0 above and 5^0 below horizontal. ii. otherwise 15^0 above and below horizontal	I or IA "E" or "e"
Side Retro Reflectors Non-triangular	See below	Mandatory on all motor vehicles exceeding 6m in length Optional on other motor vehicles	Amber The rearmost reflector may be red	N/A	1500 if the shape of the bodywork makes it impossible 2100	250	a. Horizontal 45° to the front and to the rear b. Vertical i. < 750mm above the ground 15^0 above and 5^0 below horizontal. ii. otherwise 15^0 above and below horizontal	I or IA "E" or "e"

- at least one side-reflector fitted to the middle third of the vehicle
- the foremost side- reflector being not further than 3 m from the front
- the distance between two adjacent side- reflectors shall not exceed 3 m, if the structure of the vehicle makes it impossible to comply with such a requirement, this distance may be increased to 4 m
- the distance between the rearmost side- reflector and the rear of the vehicle shall not exceed 1 m

Table 2

1. Description	
A motor vehicle the overall length of which does not exceed 13m:	A rear marking of a type shown in diagram 1, 2, 3 or 4 in Part III of this Section
A motor vehicle the overall length of which exceeds 13m:	A rear marking of a type shown in diagram 5, 6, 7 or 8 in Part III of this Section
2. Position	
Longitudinal:	At or near the rear of the vehicle
A rear marking of a type shown in diagram 2, 3, 4, 6, 7 or 8 in Part III of this Section:	Each part shall be fitted as near as practicable to the outermost edge of the vehicle on the side thereof on which it is fitted so that no part of the marking projects beyond the outermost part of the vehicle on either side
A rear marking of a type shown in diagram 1 or 5 in Part III of this Section:	The marking shall be fitted so that the vertical centre-line of the marking lies on the vertical plane through the longitudinal axis of the vehicle and no part of the marking projects beyond the outermost part of the vehicle on either side
Vertical:	The lower edge of every rear marking shall be at a height of not more than 1700mm nor less than 400mm above the ground whether the vehicle is laden or unladen
3. Visibility:	Plainly visible to the rear
4. Alignment:	The lower edge of every rear marking shall be fitted horizontally. Every part of a rear marking shall lie within 20° of a transverse vertical plane at right angles to the longitudinal axis of the vehicle and shall face to the rear
5. Markings	An approval mark to ECE Regulation 70
6. Colour:	Red fluorescent material in the stippled areas shown in any of the diagrams in Part III of this Section and yellow retro reflective material in any of the areas so shown, being areas not stippled and not constituting a letter.

Part III

At least one of the rear markings shown in Part III must be fitted to the rear of the following vehicles:

A motor vehicle having a maximum gross weight exceeding 7500 kg;

Diagram 1.

Diagram 2.

Diagram 3.

Diagram 4.

Diagram 5.

Diagram 6.

Diagram 7.

Diagram 8.

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

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22 End-outline, Position (Side), Stop, Side Marker & Daytime Running Lamps

Application: All Vehicles

Method of Inspection	Required Standard
Carry out a visual check of all outline marker, position, stop, side marker and daytime running lamps fitted to the vehicle for operation, colour, number, approval markings and correct positioning. With optional lamps check that fitment is permitted and they do not exceed the maximum number of lamps allowed to be fitted All lamps or reflectors fitted to the vehicle must not move by swivelling, deflecting or otherwise while the vehicle is in motion, except for: • any lamp which by design can be deflected to the side with the movement of the front wheel or wheels of the vehicle when turned for the purpose of steering the vehicle • a work lamp, used to illuminate a working area or the scene of an accident, breakdown or road works in the vicinity of the vehicle to which it is fitted. **Note 1:** The inspection of end-outline marker lamps applies to the obligatory marker lamps fitted to vehicles exceeding 2.10m in width **Note 2:** The inspection of the side marker lamps applies to the obligatory lamps fitted to all vehicles exceeding 6m in length **Note 3:** Geometric angles of visibility and positional requirements are not required for all optional position lamps, stop lamps and end outline marker lamps.	**1.** All lamps must be 'e' or 'E' marked and where applicable, bear the appropriate identity marking as listed in table 1 **2.** The front and rear position lamps, end outline marker lamps and side marker lamps, (if fitted) must be switched on and off by the operation of one switch. **Front and Rear Position Lamps;** **3.** The correct number must be fitted to the vehicle (Table 1) **4.** They must be operational **5.** They must only emit white light to the front / red light to the rear **6.** They must be positioned to meet **a.** the positional requirements of Table 1 **b.** the angles of visibility requirements of Table 1 **Stop Lamps;** **7.** The correct number must be fitted to the vehicle (Table 1) **8.** They must be operational **9.** They must only emit red light

Method of Inspection	Required Standard
Note 4: Both front and rear end outline marker lamps can be combined in one device **Note 5: Daytime running lamps.** The lamps must be connected so that they switch off automatically when the headlamps are on.	**10.** They must only illuminate when the service brake is applied, and must extinguish when the service brake is released **11.** They must be positioned to meet **a.** the positional requirements of Table 1 **b.** the angles of visibility requirements of Table 1 **Side Marker lamps; (if required)** **12.** The correct number must be fitted to the vehicle (in accordance to the positional requirements) **13.** They must be operational **14.** They must emit an amber light (red is acceptable if within 1 metre of the rear) **15.** They must be positioned to meet **a.** the positional requirements of Table 1 **b.** the angles of visibility requirements of Table 1 **End Outline Marker Lamps; (if required)** **16.** The correct number must be fitted to the vehicle (Table 1) **17.** They must be operational **18.** They must only emit red light to the rear / white light to the front **19.** The lights must be a minimum of 200mm from a positional lamp

Method of Inspection	Required Standard
	20. They must be positioned to meet **a.** the positional requirements of Table 1 **b.** the angles of visibility requirements of Table 1 **Daytime running lamps; (if fitted)** **21.** The correct number must be fitted to the vehicle (Table 1) **22.** They must be operational **23.** They must only emit white light to the front **24.** They must be positioned to meet **a.** the positional requirements of Table 1 **b.** the angles of visibility requirements of Table 1 **25.** They must extinguish automatically when headlamps are operated. Note 5

Table 1

TYPE	NUMBER	APPLICATION	COLOUR	POSITION			ANGLES OF VISIBILITY See Figures 1 & 2 of section 20	APPROVAL MARK "E" or "e" Identity Symbol or BS Mark
				MAX DISTANCE FROM SIDE (mm)	MAX HEIGHT (mm)	MIN HEIGHT (mm)		
Front Position Lamps	Min 2 Max any number Includes optional lamps	Mandatory	White	400	1500 or if impractical 2100	350	a. Horizontal i. 45° Inwards ii. 80° Outwards b. Vertical i. 15° Above and below the horizontal (May be reduced to 5° if the lamps are less than 750mm above the ground)	A "E" or "e"
Rear Position Lamps	Min 2. Max any number Includes optional lamps	Mandatory	Red	400	1500 or if impractical 2100	350	a. Horizontal i. 45° Inwards 11. 80° Outwards b. Vertical i. 15° above and below the horizontal (May be reduced to 5° if the lamps are less than 750mm above the ground)	R "E" or "e"
Stop Lamps	Min 2 Max any number Includes optional lamps	Mandatory	Red	One on each side of longitudinal axis (Min separation 440)	1500 or if impracticable 2100	350	a. Horizontal i. 45^0 inwards and outwards b. Vertical i. as rear position lamps.	S1 or S2 "E" or "e"
Stop Lamps (Optional)	Min 1 Max any number	Optional	Red	If 1 is fitted: as close to vehicle centre-line as practicable If 2 are fitted: no requirement	n/a	no lower than the mandatory stop lamps	Must face the rear	S1 or S2 "E" or "e"

TYPE	NUMBER	APPLICATION	COLOUR	POSITION			ANGLES OF VISIBILITY See Figures 1 & 2 of section 20	APPROVAL MARK "E" or "e" Identity Symbol or BS Mark
				MAX DISTANCE FROM SIDE (mm)	MAX HEIGHT (mm)	MIN HEIGHT (mm)		
End Outline Marker Lamp	2 visible from the front and 2 visible from the rear Max any number Includes optional lamps	Mandatory	Front- White Rear - Red	As close as possible to the extreme edge and not more than 400mm from the edge		**Front** No lower than the upper edge of the windscreen **Rear** compatible with the design and operational requirements	a. Horizontal i. 80° Outwards b. Vertical i. 5° Above the horizontal ii. 20° Below the horizontal	A or R "E" or "e"
Side Marker Lamp	(see below)	All vehicles where the length exceeds 6m	Amber (The rearmost marker may be red if it is combined with another rear lamp)	-	1500 or if impracticable 2100	250	a. Horizontal i. 45° to the front and rear (Can be reduced to 30° if fitted as an optional extra) b. Vertical i. 10° Above and below the horizontal (The vertical angle below the horizontal may be reduced to 5° if the side marker lamp is fitted less than 750mm from the ground)	SM "E" or "e"
Daytime Running Lamp (Optional)	Min 2 Max 2	Optional	White	400mm	1500mm	250mm	a. Horizontal i. 20° Outwards and inwards b. Vertical i. 10° Upwards and downwards	"E" or "e"

Side Marker Lamp Spacing

- at least one side-marker lamp must be fitted to the middle third of the vehicle
- the foremost side-marker lamp being not further than 3 m from the front
- the distance between two adjacent side-marker lamps shall not exceed 3 m, if the structure of the vehicle makes it impossible to comply with such a requirement, this distance may be increased to 4 m
- the distance between the rearmost side-marker lamp and the rear of the vehicle shall not exceed 1 m

End-outline, Position (Side), Stop, Side Marker & Daytime Running Lamps 22

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1	24/04/2009	

23 Direction Indicators

Application: All Vehicles

Method of Inspection	Required Standard
Carry out a visual check of all direction indicator and side repeater lamps fitted to the vehicle for operation, colour, number, approval markings and correct positioning. With optional lamps check that fitment is permitted and they do not exceed the maximum number of lamps allowed to be fitted The inspection of hazard warning lamps applies to all the obligatory lamps fitted to all vehicles	**Directional Indicators;** **1.** All lamps must be 'e' or 'E' marked and where applicable, bear the appropriate identity marking as listed in table 1 **2.** They must be operational **3.** The correct number must be fitted to the vehicle (Table 1) **4.** The indicators must flash at a rate of between 60 and 120 times a minute (with all mandatory indicators working, and with the engine running if initially below the requirement) **5.** There must be an audible or visual tell tale fitted to indicate the non-operation of any indicators. **6.** All indicators must emit amber light. **7.** They must be positioned to meet **a.** the positional requirements of Table 1 **b.** the angles of visibility requirements of Table 1

Method of Inspection	Required Standard
	Hazard Warning Lights **8.** They must operate with the ignition switched on and off. **9.** The hazard warning device must operate all of the direction indicators simultaneously **10.** The hazard warning device must have a telltale warning light fitted which is circuit specific

Table 1

TYPE	NUMBER	APPLICATION	COLOUR	POSITION			ANGLES OF VISIBILITY See Figures 1 & 2 of section 20	APPROVAL MARK "E" or "e" Identity Symbol or BS Mark / Notes
				MAX DISTANCE FROM SIDE (mm)	MAX HEIGHT (mm)	MIN HEIGHT (mm)		
Direction Indicators **& Hazard Warning**	Motor Vehicles On each side Front – One Rear – One Side Repeater – One Plus 2 optional all vehicles- Rear only	All Vehicles	Amber	400 (Min separation 600 unless vehicle width is less than 1300, where min separation 400)	1500 or if impracticable 2300 for side direction indicators and 2100 for front and rear direction indicators	Side indicators 500. Other indicators 350	a. Horizontal i. 80^0 outwards 45^0 inwards. ii. (SIDE REPEATER) To the rear between 5^0 and 60^0 outboard. b. Vertical i. < 750mm above the ground 15^0 above and 5^0 below horizontal. ii. Otherwise 15^0 above and below horizontal.	Front 1, 1a, 1b or 11 Front – side 3 or 4 Side Repeater 5 Rear 2a, 2b or 12 "E" or "e"
A side repeater lamp must be fitted within 2600 mm of the front of the vehicle								

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

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24 Rear Registration Lamps

Application: All Vehicles

Method of Inspection	Required Standard
Carry out a visual check of all rear registration plate lamps fitted to the vehicle for operation, colour, number and correct positioning. This includes all optional lamps. With optional lamps check that fitment is permitted and they do not exceed the maximum number of lamps allowed to be fitted **Note:** See section 4 Rear Registration Plate Space in conjunction with position of rear registration plate lamp	**Rear registration plate lamps;** **1.** They must be operational **2.** They must be able to be switched on and off with the front and rear position lights by operating one switch **3.** They must only emit white light **4.** They must be positioned sufficient to illuminate the rear registration plate

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

25 Headlamps

Application: All Vehicles

Method of Inspection	Required Standard
Carry out a visual check of all headlamps fitted to the vehicle for operation, colour, number, approval markings and correct positioning. With optional lamps check that fitment is permitted and they do not exceed the maximum number of lamps allowed to be fitted In the case of a dipped beam headlamp the minimum height is measured to the lower edge of the light emitting surface	**Headlamps;** **1.** All lamps must be 'e' or 'E' marked and where applicable, bear the appropriate identity marking as listed in table 1 **2.** They must be operational **3.** All obligatory and optional headlamps must be fitted as "matched pairs". **4.** They must emit a white light. **5.** When on dip or main beam they must emit sufficient light to be able to illuminate the road in front of the vehicle **6.** The correct number must be fitted to the vehicle (Table 1) **7.** Dipped beam headlamps must be positioned to meet the requirements of Table 1 **Gas Discharge Headlamps** **8.** Must be accompanied by evidence of compliance with the technical requirements if not compliant with the following: • is "E" or "e" marked • dipped beam remains on when main beam is on • is fitted with a wash system • is fitted with an automatic headlamp self levelling system or self levelling suspension

Method of Inspection	Required Standard
Align the headlamp aim testing equipment to the vehicle in accordance with the manufacturer's instructions. With an assistant sitting in the driver's seat, check the alignment of each dipped beam headlamp in association with the appropriate criteria. **Note :** The alignment requirement must be met without the use of masks or beam converters unless they are an integral part of the headlamp as it was approved. Devices or materials applied to the inside of a headlamp which were not present at the time of approval are unacceptable. Some vehicles may be fitted with an in-car driver's headlamp adjustment device. This may be adjusted to enable both headlamps to meet the criteria. **Both** headlamps, however, must comply with the requirements with the device set in **one** position.	**Headlamp Aim** European Type (checked on dipped beam) **1.** The beam image 'kick-up' must not be to the offside. **2.** For headlamps with centres not more than 850mm from the ground, the beam image horizontal cut-off must be between the horizontal 0.5% and 2% lines, i.e. the red tolerance band. **3.** For headlamps with centres more than 850mm from the ground, the beam image horizontal cutoff must be between the horizontal 1.25% and 2.75% lines, ie the blue tolerance band. **4.** The beam image 'break point' must not be to the right of the 0% vertical line, or to the left of the vertical 2% line.

European Type Headlamp
Checked on Dipped Beam

Check the position of the 'break point' and horizontal cut-off.

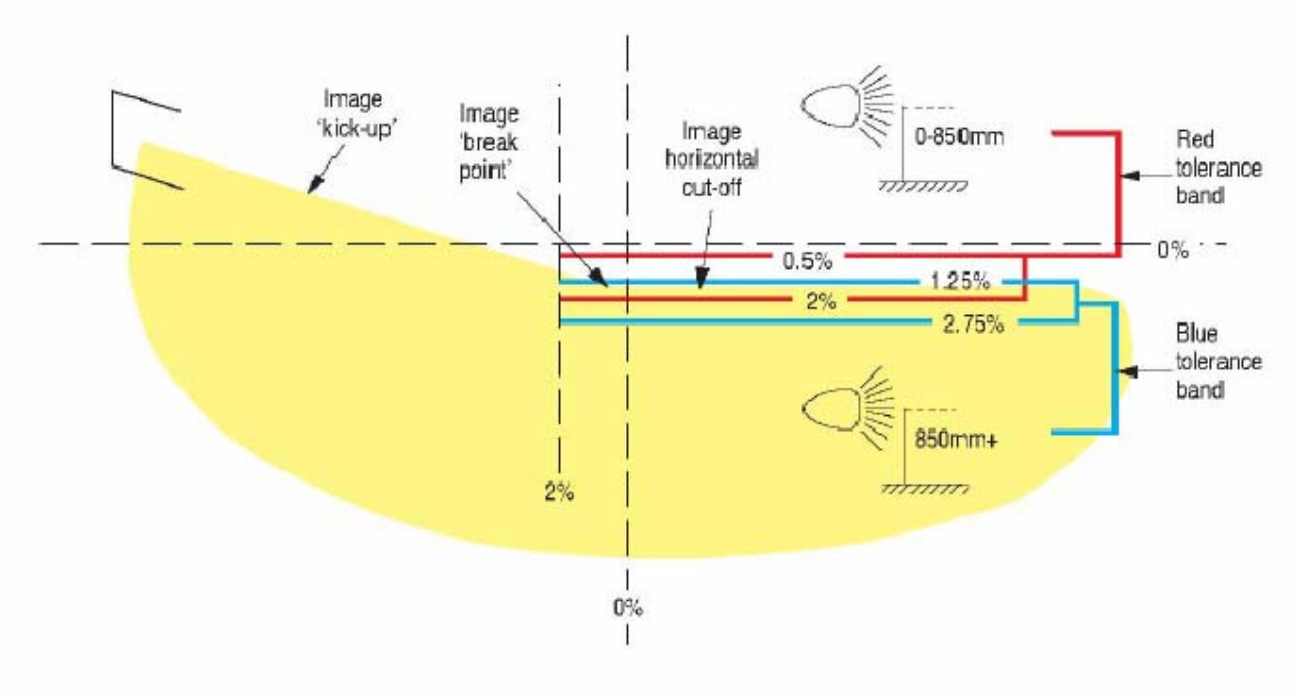

Table 1

TYPE	NUMBER	APPLICATION	COLOUR	POSITION			ANGLES OF VISIBILITY See Figures 1 & 2 of section 20	APPROVAL MARK "E" or "e" Identity Symbol or BS Mark / Notes
				MAX DISTANCE FROM SIDE (mm)	MAX HEIGHT (mm)	MIN HEIGHT (mm)		
Dipped Beam Headlamp	Min 2 Max 2	Motor Vehicles	White	400	1200	500	Angles of Visibility: 45º out 10º in 15º up 10º down	C "E" or "e"
Main Beam Headlamp	Min 2 Max 4	Motor Vehicles	White	May be in the same lamp assemblies as dipped beam but Must not be fitted to the outer side of the dipped beam lamp -	-	-	No requirement	R "E" or "e"

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

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26 Front Fog Lamps

Application: All Vehicles

Method of Inspection	Required Standard
Carry out a visual check of all front fog lamps for operation, colour, number, approval markings and correct positioning	**Front fog lamps;** **1.** All lamps must be 'e' or 'E' marked and, where applicable, bear the appropriate identity marking as listed in Table 1 **2.** The correct number must be fitted to the vehicle (Table 1) **3.** They must be operational **4.** They must be able to be switched on only when the position lights are on and must operate independently of the dipped and main beam headlamps. **5.** They must only emit white or yellow light **6.** They must be positioned correctly to meet the positional requirements of Table 1

Table 1

TYPE	NUMBER	APPLICATION	COLOUR	POSITION			ANGLES OF VISIBILITY See Figures 1 & 2 of section 20	APPROVAL MARK "E" or "e" Identity Symbol or BS Mark / Notes
				MAX DISTANCE FROM SIDE (mm)	MAX HEIGHT (mm)	MIN HEIGHT (mm)		
Front Fog Lamps	Two (Maximum)	optional	White or Yellow	400	800 but no higher than the top edge of the dipped beam headlamp	**250**	Not Applicable	B "E" or "e"

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

27 Towing Hooks

Application: All Vehicles

Method of Inspection	Required Standard
The vehicle must be equipped with a device at the front that enables the vehicle to be towed that can withstand a tractive and compressive static force of at least half the authorised total weight of the vehicle. The device may be in the form of a fixed or screw-in eyelet, welded loop, a holed metal plate, or may be incorporated into the vehicle structure. Removable / retractable towing device eyes or loops will need to be placed into the 'towing position' to be assessed. **Note 1:** Where visually the device or surrounding structure does not appear to be of sufficient strength, the presenter may provide evidence from the manufacturer of the vehicle and/or the device to the requirements of this section.	**1.** The vehicle must have a suitable towing device on the **front** of the vehicle to allow the attachment of a rigid towing bar or rope. **2.** Any towing hook or eye, mounting arrangement, bracket, or surrounding vehicle structure must be able to withstand the loads expected. (see note 1)

Record of Revision

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1	24/04/2009	

28 Rear Fog Lamps

Application: All Vehicles

Method of Inspection	Required Standard
Carry out a visual check of the rear fog lamps fitted to the vehicle for operation, colour, number, approval markings and correct positioning. With optional lamps check that fitment is permitted and they do not exceed the maximum number of lamps allowed to be fitted **Note 1: Rear Fog Lamp separation** distance must be measured between the "illuminating surface" of each lamp.	**Rear fog lamps;** **1.** All lamps must be 'e' or 'E' marked and where applicable, bear the appropriate identity marking as listed in table 1 **2.** They must be operational **3.** The correct number must be fitted to the vehicle (Table 1) **4.** The rear fog lamp(s) must only illuminate when dipped beam, main beam or front fog lamps are lit **5.** The rear fog lamps must not be affected by switching on or off any other lamps (except those above) **6.** Can be switched off independently of any other lamp, may continue to operate until position lamps are switched off and then remain off until deliberately switched back on or a warning, at least audible, additional to the mandatory tell tale is given if the ignition is switched off or the ignition key is withdrawn and the driver's door is opened whilst the rear fog lamp switch is in the 'on' position **7.** They must only emit a red light **8.** They must be positioned correctly to meet **a.** the positional requirements of Table 1 **b.** the angles of visibility requirements of Table 1

Method of Inspection	Required Standard
	9. Must be fitted with an operational "tell-tale" lamp (non-flashing) visible from the driving position **10.** Must not be operated by a brake control **11.** Fitted so that the reflector is facing squarely to the rear **12.** An optional rear fog lamp must form a matched pair with the obligatory lamp. **13.** An optional rear fog lamp must only operate with the obligatory rear fog lamp

Table 1

TYPE	NUMBER	APPLICATION	COLOUR	POSITION			ANGLES OF VISIBILITY See Figures 1 & 2 of section 20	APPROVAL MARK "E" or "e" Identity Symbol or BS Mark / Notes
				MAX DISTANCE FROM SIDE (mm)	MAX HEIGHT (mm)	MIN HEIGHT (mm)		
Rear Fog Lamp	Min 1 Max 2	All Vehicles	Red	At least one must be on centre line or to offside of vehicle (Min separation distance from stop lamp 100 see note 1)	1000	250	a. Horizontal i. 25^0 inwards and outwards; if two lamps are fitted it is sufficient if one lamp (not necessarily the same lamp) – is visible throughout the range b. Vertical i. 5^0 above and below horizontal.	B or F "E" or "e"

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29 Reversing Lamps

Application: All Vehicles

Method of Inspection	Required Standard
Carry out a visual check of the reverse lamps fitted to the vehicle for operation, colour, number, approval markings and correct positioning. With optional lamps check that fitment is permitted and they do not exceed the maximum number of lamps allowed to be fitted	**Reverse lamps;** **1.** All lamps must be 'e' or 'E' marked and, where applicable, bear the appropriate identity marking as listed in table 1 **2.** They must be operational **3.** The correct number must be fitted to the vehicle (Table 1) **4.** They must emit white light. **5.** They must be positioned to face the rear **6.** They must operate by selection of reverse gear or be fitted with a telltale warning device.

Table 1

TYPE	NUMBER	APPLICATION	COLOUR	POSITION			ANGLES OF VISIBILITY	APPROVAL MARK "E" or "e" Identity Symbol or BS Mark / Notes
				MAX DISTANCE FROM SIDE (mm)	MAX HEIGHT (mm)	MIN HEIGHT (mm)		
Reversing Lamps	Min 1 Max 2	All Vehicles	White		1200	250	**Figure 3 Section 20**	A or R "E" or "e"

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

31 Seat Belts

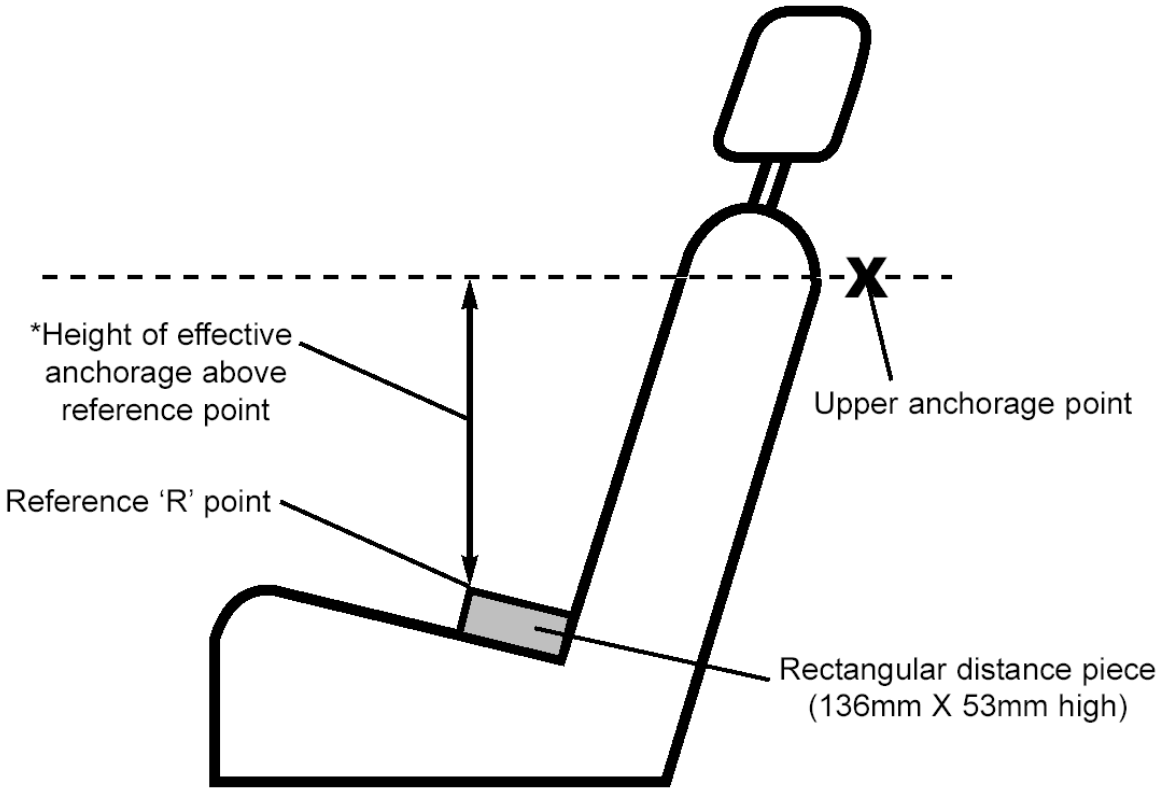
Application: All Vehicles

Method of Inspection	Required Standard
Disabled person belts are seat belts which have been specially designed or adapted for use by an adult or young person suffering from some physical or mental impairment, intended for use solely by such a person and as such are exempt the requirements of this section, however the belt must be securely attached and appear to operate as intended. **Seats not intended for road use** (a) The requirements of this section do not apply to seats intended for use solely while the vehicle is stationary or for when the vehicle is not used on a public road. (b) Any seats which are not for use when travelling on a public road must be clearly identified to users by means of a pictogram or a sign with appropriate text. Where optional belts are fitted they must comply with the requirements of this section In the case of **armoured vehicles** exemption from any requirement of this section is permitted if it can be demonstrated to the satisfaction of the Approval Authority that it is impossible for the vehicle to comply due to its special purpose. **Note 1:** A suitable single bolt fixing of adequate strength would be, for example, a bolt of at least 11mm (7/16") diameter of grade 8.8 (the grade may not be shown on a bolt produced for a seat belt anchorage) Other bolt fixings may be acceptable providing they are of equivalent strength. Two adjacent seat belts may be secured by one bolt. In this case consideration must be given to the additional loads on the anchorage	**1.** Each seat requiring a seat belt must be fitted with a seat belt of the appropriate type. See annex 1 **2.** Each seat belt must bear the appropriate ‘e’ marks. **3.** Where seats are intended for use **only** when the vehicle is **not** being driven on public roads, the seats must be accompanied by a pictogram or sign clearly indicating that the seat is not to be used whilst the vehicle is in motion. **4.** Each seat belt must be attached by an appropriate fixing and be securely fitted (see notes 1 & 2) **5.** There must be no damage to the seat belt structure that would affect its strength. **6.** The lock mechanism must securely lock the belt **7.** The lock mechanism must be able to be released easily, both in normal use and when the belt is under load. **8.** With the seat belt fastened and the seat unoccupied, retractor mechanisms must take up any excess webbing. (see note 3) **9.** An acceptable retractor mechanism must be fitted and correctly positioned to ensure the correct operation of the belt (see notes 4 and 5)

Method of Inspection	Required Standard
Note 2: In order that a seat belt can be separated from the anchorage without causing damage to the anchorage, for example a mounting in the side of a tube or box section, it is a requirement that the bolt is secured into a “fixed” threaded hole or captive nut. (The presenter may be required to demonstrate this condition is met). The bolt may be secured into an alternative fixing, e.g. a lock nut of suitable strength, where access is provided to the “rear” of the mounting to enable separation/re-attachment of the belt. **Note 3:** Some types of retracting belt might need help before they retract. **Note 4:** A belt may be fitted with retractor mechanisms on both lap and diagonal sections. If fitted with a single retractor mechanism it must act initially on the diagonal (shoulder) section. **Note 5:** An “automatically locking” retractor (i.e. one that allows extension of the belt to the desired length and when the buckle is fastened locks on retraction but then prevents subsequent forward movement by the wearer, unlike a typical inertia reel belt), is not permitted unless the feature is only provided after **full extension** of the belt from the retractor, i.e. for use as a child restraint. **Note 6:** The seat belt must be capable of effectively restraining the occupant ▪ by the position of the lap belt (due to anchorage location) passing over the pelvic region ▪ in the case of a harness belt or three point belt, by being positioned across the shoulder so that it does not slip off the shoulder of the occupant. **Note 7:** Where the seat is adjustable, this check must be carried out with the seat secured in the rearmost position and with the back rest in the normal driving position, in any case at a rearward angle of not more than approximately 25˚ from the vertical.	**10.** The seat belt must sit correctly across the wearers torso so as to provide effective restraint in the event of a frontal impact (see notes 6 and 7) **11.** There must not be any sharp edges / objects in the seat belt area likely to cause damage to the belt. **12.** Where an airbag is fitted in front of a passenger position, a warning label for the airbag must be permanently fixed to the vehicle **13.** The warning label for the airbag must be visible in front of a person about to install a rearward facing child restraint  **14.** The warning label for the airbag must be visible when the door is closed otherwise a permanent reference elsewhere that is visible at all times is required. **15.** A harness or three point belt “effective upper anchorage” location must be at least 450mm above the reference point. See note 8 and figure 1 **16.** A lap/diagonal belt “effective upper anchorage” location must be at least 140mm from the longitudinal centre line of the seat. See note 8

Method of Inspection	Required Standard
Note 8: The **effective belt anchorage** is the actual anchorage point to the vehicle unless a change of direction of the belt to the wearer is produced by a fixed intermediate device, for example, a belt guide fitted to the upper part of a seat back or any point where the load from a belt would be applied, consideration should be made to the suitability of the seat to withstand the loads likely to be imposed. The requirements Section 19 Seat Belt Anchorages RS 3 should be applied to the effective anchorage location.	**17.** The lower anchorages must be at least 350mm apart. **18.** The lower anchorages on side facing seats must be at least 350mm apart but no further apart than 500mm

Figure 1



Annex 1

Seat Belts – Minimum Obligatory Requirements see note 3

Vehicle category	Front facing					Rear facing Seat	Side facing Seat
	Outboard Seat			Centre Seat			
	Driver	Front	Other	Front	Other	Other	All
N2	3 Point retractor belt	3 Point retractor belt	None	2 Point lap retractor belt see note 1 below	None	None	None
N3	3 Point retractor belt	3 Point retractor belt	None	2 Point lap belt see note 1 below	None	None	None

TABLE NOTE 1: As determined by Annex 2 the front centre seat will require 3 anchorages and a 3 point belt where the windscreen is located

- in the case of a fixed (non-sliding) seat, within 840mm. of the seat reference point
- in the case of a sliding seat, within 840mm. of the seat reference point when the seat is 127mm forward of its rearmost position.

TABLE NOTE 2: '3 point belt' means a seat belt which,

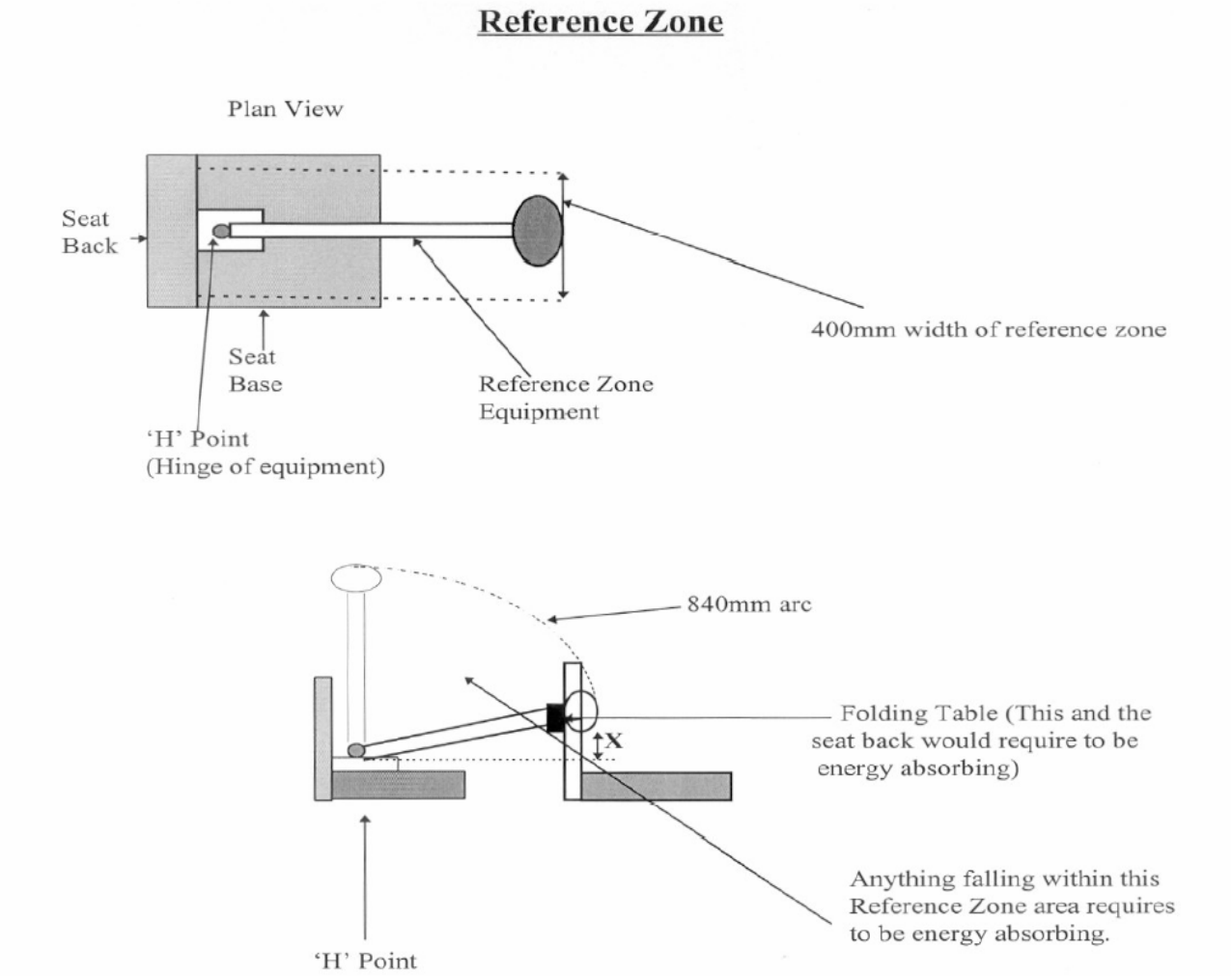
- restrains the upper and lower parts of the torso
- includes a lap belt and a retractor that operates on the diagonal part
- is anchored at not less than three points, and
- is designed for use by an adult.

TABLE NOTE 3: The table lists the minimum required belt type. A 3 point retractor belt may be fitted where the minimum required is a 2 point lap belt and an acceptable alternative to any of the seat belt types listed is an adult harness belt comprising a lap belt and shoulder straps providing the anchorages satisfy section 19

TABLE NOTE 4: Outboard seats are seats closest to the vehicle sides and front seats are those foremost in the vehicle.

Annex 2

Determination of reference Zone



Note :- X = Lower position of the reference zone 25.4 mm above the H point.

Record of Revision

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1	24/04/2009	

33 Identification of Controls

Application: All Vehicles

Method of Inspection	Required Standard
This inspection is to ensure that any controls, tell-tales and indicators fitted to the vehicle are readily identifiable, useable and of the correct colour Where a control, tell-tail or indicator are combined, a common symbol may be used for such a combination. **Note 1**: A **control** means that part of a device which enables the driver to bring about a change in the state or functioning of the vehicle. An **indicator** means a device which presents information on the functioning or situation of a system or part of a system. e.g., fluid level. **A tell-tale** means an optical signal which indicates the actuation of a device, correct or defective functioning or condition, or failure to function. **Note 2:** Controls, tell-tales and indicators listed in Table B are not required to be marked. However, symbols that are present must conform to those listed. **Note 3:** Other controls, tell-tales and indicators may be marked provided there is no confusion with those marked in accordance with those on Table A or B. **Note 4:** An information display device is a device capable of displaying more than one type of message or information. The requirements regarding colour do not apply to tell-tales and indicators appearing on the Information Display Device.	**Symbols as shown in Table A and B** **1.** The controls, tell-tales and Indicators must be identified with the correct symbols of the stated colour: (see note 1,2 and 4) **2.** They must be on or close to the controls, tell-tales and indicators **3.** They must stand out clearly from the background. **4.** The vehicle must not be fitted with other controls, tell-tales and indicators that have symbols that may be confused with the symbols listed Tables A and B. (see note 3) **5.** All symbols must contrast with the background and be identifiable by the driver. **6.** All driver controls must be able to be operated from the drivers seat **Information Display Device Fitted** **7.** It must be able to display simultaneously the warning symbols for brake, main beam and direction indicator **8.** It must provide the relevant information regarding tell – tales and indicators whenever the situation that causes them to operate arises **9.** Must repeat automatically in sequence or indicate in such a manner that it is visible to and identifiable to the driver when two or more messages are given

Table A

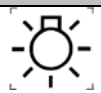
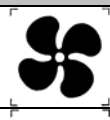
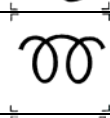
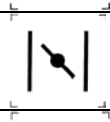
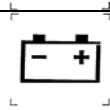
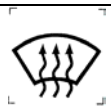
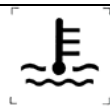
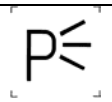
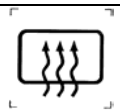
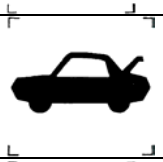
Control, Tell-tale or Indicator	Symbol	Warning light / tell - tale	Control, Tell-tale or Indicator	Symbol	Warning light / tell - tale	Control, Tell-tale or Indicator	Symbol	Warning light / tell - tale
Master Light		Green	Direction Indicators		Green	Ventilating fan		
Dipped Beam Headlamps		Green	Hazard Warning		Red	Diesel Pre-heat		Yellow
Main Beam Headlamps		Blue	Windscreen Wiper			Choke (cold starting device)		Yellow
Position (side) Lamps		Green	Windscreen Washer			Brake Failure		Red
Front Fog lamps		Green	Windscreen Wiper and Washer			Fuel Level		Yellow
Rear Fog Lamps		Yellow	Headlamp Cleaning Device (with separate operating control)			Battery Charging Condition		Red
Headlamp Levelling device			demisting and defrosting (when separate)		Yellow	Engine Coolant temperature		Red
Parking Lamps		Green Windscreen	Rear Window demisting and defrosting (when separate)		Yellow			

Table B

Control, Tell-tale or Indicator	Symbol	Notes	Warning light / tell - tale		Control, Tell-tale or Indicator	Symbol	Warning light / tell - tale
Parking Brake		Where a single tell-tale indicates more than one brake system condition, except brake anti-lock system failure, the symbol for brake failure must be used.					
Bonnet		Outline only may be used.	Horn		Rear Window Wiper		
Boot		Outline only may be used.			Rear window Washer.		
Seat Belt		Outline only may be used.	Red		Rear Window Wiper and washer.		
Engine Oil Pressure					Intermittent Windscreen wiper.		
Unleaded Petrol							

Red

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

34 Defrost / Demist

Application: All Vehicles fitted with a Windscreen

Method of Inspection	Required Standard
Ensure that the vehicle is fitted with a system/systems capable of defrosting and demisting the windscreen (at least the swept area) to allow the driver an adequate view of the road in front and forward of the nearside and offside of the vehicle **Note:** The fitting of a device not permanently incorporated into the vehicle structure i.e. adhered to the windscreen or body surface shall not be considered as a "system fitted to the vehicle."	**1.** The vehicle must be fitted with a system capable of defrosting / demisting at least the swept area of the windscreen. **2.** A system using warm air to clear the screen must employ fan assistance and ducting to direct the air onto the screen, to ensure effective operation of the defrosting system under cold weather conditions. **3.** An electrically heated screen must provide adequate heat and distribution to ensure effective operation.

Record of Revision

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1	24/04/2009	

35 Wash / Wipe

Application: All Vehicles fitted with a Windscreen

Method of Inspection	Required Standard
Vehicles shall be fitted with adequate windscreen washing and wiping devices. Ensure that with the wind screen wet and the engine running, all wipers continue to move automatically over an area of the windscreen sufficient to give the driver an adequate view of the road in front and forward of the nearside and offside of the vehicle. **Note 1:** A “cycle” is the forward and return movement of the windscreen wiper. **Note 2:** Intermittent operation windscreen-wiper systems may be used for the purposes of complying with the requirements of RS4 provided that one of the frequencies obtained when the main frequency is interrupted is not less than10 cycles/minute.	**1.** The vehicle must be fitted with a windscreen washer and wiper system to give the driver an adequate view of the road. **2.** All front wipers must continue to move automatically over the swept area of the windscreen. **3.** All front wipers must have at least two sweep frequencies one of which must be of at least 45 cycles/min (see note 1). **4.** Additional sweep frequencies must be of not less than 10 and not more than 55 cycles/minute (see note 1 & 2). **5.** The difference between the highest and at least one of the lower sweep frequencies must be at least 15 cycles/minute (see note 1). **6.** All front wipers must return automatically to a position of rest which is at or beyond the outer edge of the swept area. **7.** All front wipers must be capable of being lifted from the windscreen to allow for cleaning of the windscreen. **8.** The windscreen washer system must provide enough liquid to adequately clear the windscreen in conjunction with the wipers. **9.** The windscreen washer system must have a reservoir capacity of at least 1 litre.

Record of Revision

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1	24/04/2009	

36 Heating Systems

Application: All Vehicles (optional fitment)

Method of Inspection	Required Standard
Heating Systems must be fitted as to present no danger to passengers or other persons. The heating System may be of the following types and one or more of each may be fitted: **Heater using waste heat from water-cooled engine**. Must comply to RS 1 and 2 **A combustion heater** Requires documentary evidence or an 'E' marked component plus a Installation Check	**1.** There must be no obvious fire risk associated with the heating system (e.g. flammable parts of the vehicle near to a source of heat or a likelihood of users placing objects liable to catch fire on a very hot surface). **2.** There must be no obvious injury risk associated with the heating system (e.g. likelihood of users touching a very hot surface or hot water pipes). **3.** If a combustion heater is fitted then it must be accompanied by documentary evidence **Combustion heater Installation Check** **4.** It must be positioned so not likely to cause injury **5.** A combustion heater utilizing a liquid or gaseous fuel must be fitted to the manufacturer's instructions. **6.** A fuel filling point shared by the heater and the engine must be marked "Turn off Heater before refuelling" **7.** A combustion heater exhaust must be positioned so exhaust gases are not likely to enter the passenger compartment

Record of Revision

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1	24/04/2009	

42 Lateral Protection

Application: All Vehicles

Method of Inspection	Required Standard
A vehicle of category N2 or N3 is not required to be fitted with a separate lateral protection device, providing the sides of the vehicle are so designed and/or equipped that by their shape and characteristics their component parts together meet the requirements in standards 2 to 18 On a vehicle fitted with extendible legs to provide additional stability during loading, unloading or other operations for which the vehicle is designed, the side guard may be arranged with additional gaps where these are necessary to permit extension of the legs. On a vehicle equipped with anchorage points for ro-ro transport, gaps shall be permitted within the side guard to accept the passage and tensioning of fixing lashings. **Exempt Vehicles :** Tractors for semi-trailers, Vehicles designed and constructed for special purposes where it is not possible, for practical reasons, to fit such lateral protection. **Note 1:** The measurement is taken to a vertical plane extending from the surface of the tread closest to the guard or relevant body work.	**1.** Where the side of the body does not meet the requirements, a side guard device must be fitted. **Requirements for both body sides and separate devices:** <u>Required area to be protected</u> **2.** The device or body side must have its rearward edge extended to within 300mm of the tyre on the first rear axle. (see note 1) **3.** The device or body side must have the front edge of the guard within 300 mm from the rear of the tyre on the front wheel (or second wheel if two front axles are fitted) (see note 1& figure 4) **4.** The device or body side must be within 350 mm of the body line (see note 2) **5.** The device or body side lower edge must be no higher than 550 mm from the ground. <u>Within the defined area the following standards must be met</u> **6.** The device or body sides must be constructed of a suitable material and must be of sufficient strength (See note 3) **7.** The device or body side must have a smooth or horizontally corrugated surface (see note 4) **8.** Any external edges including corners must be rounded with a radius of at least 2.5mm

Method of Inspection	Required Standard
Note 2: The 'Body Line' is that part of the structure of the vehicle, cut or contacted by a vertical plane tangential to the outer surface of the tyres, except in the following cases: Where the plane does not cut the structure of the vehicle, the upper edge must be level with the surface of the load-carrying platform 950mm from the ground, OR whichever is the less. Where the plane cuts the structure of the vehicle at a level more than 1.3m above the ground, then the upper edge of the side guard must not be less than 950mm above the ground **Note 3:** The manufacturer must provide satisfactory documentary evidence or a declaration that the device or body side as presented meets or has been designed to meet the following strength requirements. It must be capable of withstanding a horizontal static force of 1 kN applied perpendicularly to any part of its external surface by the centre of a ram the face of which is circular and flat, with a diameter of 220 mm p 10 mm, The deflection of the guard under load must not be more than: and - 30 mm over the rearmost 250 mm of the guard, and - 150 mm over the remainder of the guard. **Note 4:** Any adjacent parts may overlap providing that all overlapping edges face rearwards or downwards.	**9.** There must be no projecting brackets or bolt heads (see note 5) **10.** The device or body side must be continuous in length (see note 6) **11.** The device or body side must not have the rearward end more than 30mm inboard from the outermost edge of the rear tyres over at least the last 250mm of the device / body. (see figure 1) **12.** Where the 300mm dimension required in standard 3 results in the forward edge of the guard being forward of the rear cab panel. The device or body side must be constructed so that the forward end is beneath the cab panel work. Where the vehicle cab is narrower than the body then the side guard must be angled to meet this requirement and be turned inwards through an angle of not more than 45 degrees **Where equipment is incorporated into the side guard,** **13.** The equipment must have a smooth substantially flat or horizontally corrugated outer surface (See note 4) **14.** There must not be a gap of more than 25 mm between it and the guard or body side (see figure 2) **15.** Where necessary the equipment must meet any required dimensional requirement as if it was part of the device. **16.** There must be no projecting brackets or hinges **17.** It must not have protruding bolt heads (see note 5) **18.** Any external edges and corners must be rounded with a radius of at least 2.5mm.

Method of Inspection	Required Standard
Note 5: Dome shaped bolt heads and rivets, or other parts provided they are similarly rounded and smooth protruding to a maximum of 10mm in height are acceptable. **Note 6:** Combinations of surfaces and rails shall be considered as a continuous side guard as long as the gaps between them are no greater than 25mm. **Note 7:** The inward measurement is taken at 90 degrees to the longitudinal plane of the vehicle from the outer face of the guard; the actual face of the portion turned inwards may be between 90 and 45 degrees from the same plane towards the front of the vehicle.	**Additional requirements for separate devices** **19.** The device must be attached securely **20.** The device must consist of at least one horizontal rail (see note 2 and 3) **21.** Where more than one horizontal rail is used, the rails must be not more than 300mm apart. **22.** For N3 vehicles the horizontal rails must have a section height of at least 100 mm (see figure 3) **23.** For N2 vehicles the horizontal rails must have a section height of at least 50 mm (see figure 3) **24.** It must have a forward facing edge of at least 100 mm **25.** The side guard must be no more than 120mm inboard from the outermost plane of the vehicle **26.** It must not increase the overall width of the vehicle **27.** The device must not be used for the attachment of air or hydraulic brake pipes **28.** Where the forward edge lies in open space then the following requirements must be met :- a) There must be a continuous vertical member extending over the whole height of the device b) For N2 vehicles, the outer and forward faces must measure at least 50 mm rearward and be turned 100 mm inwards. (see note 7 & figure 3) c) For N3 vehicles, the outer and forward faces must measure at least 100 mm rearward and be turned 100 mm inwards. (see note 7 & figure 3)

Figure 1

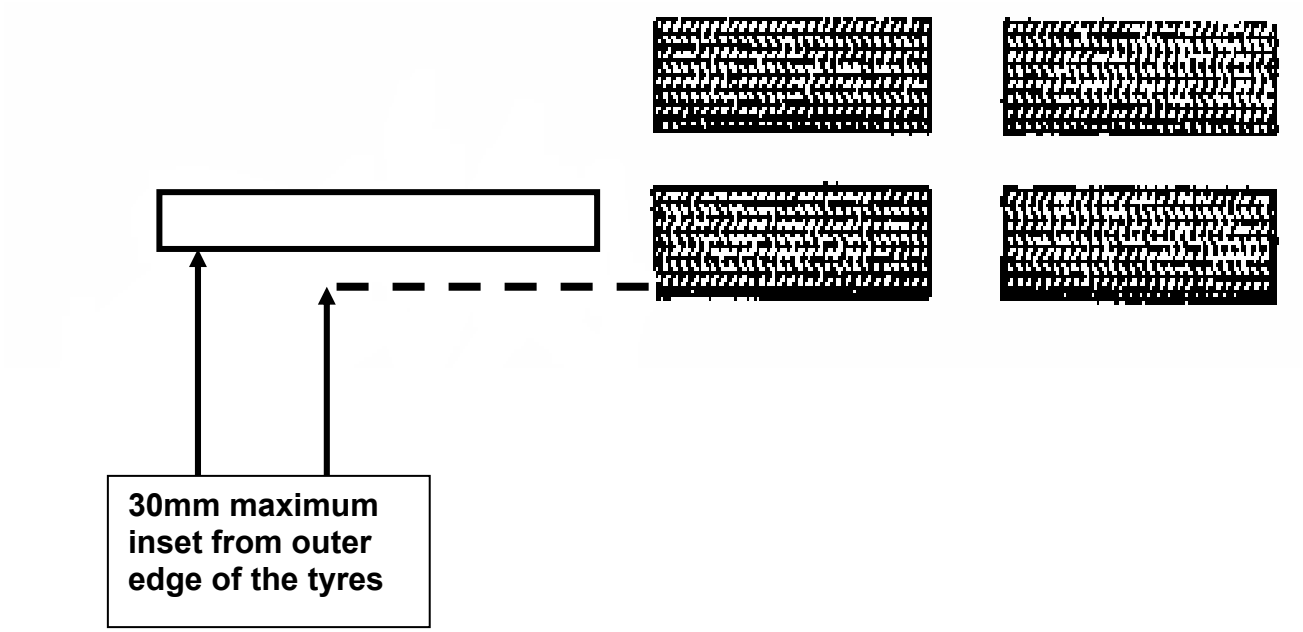
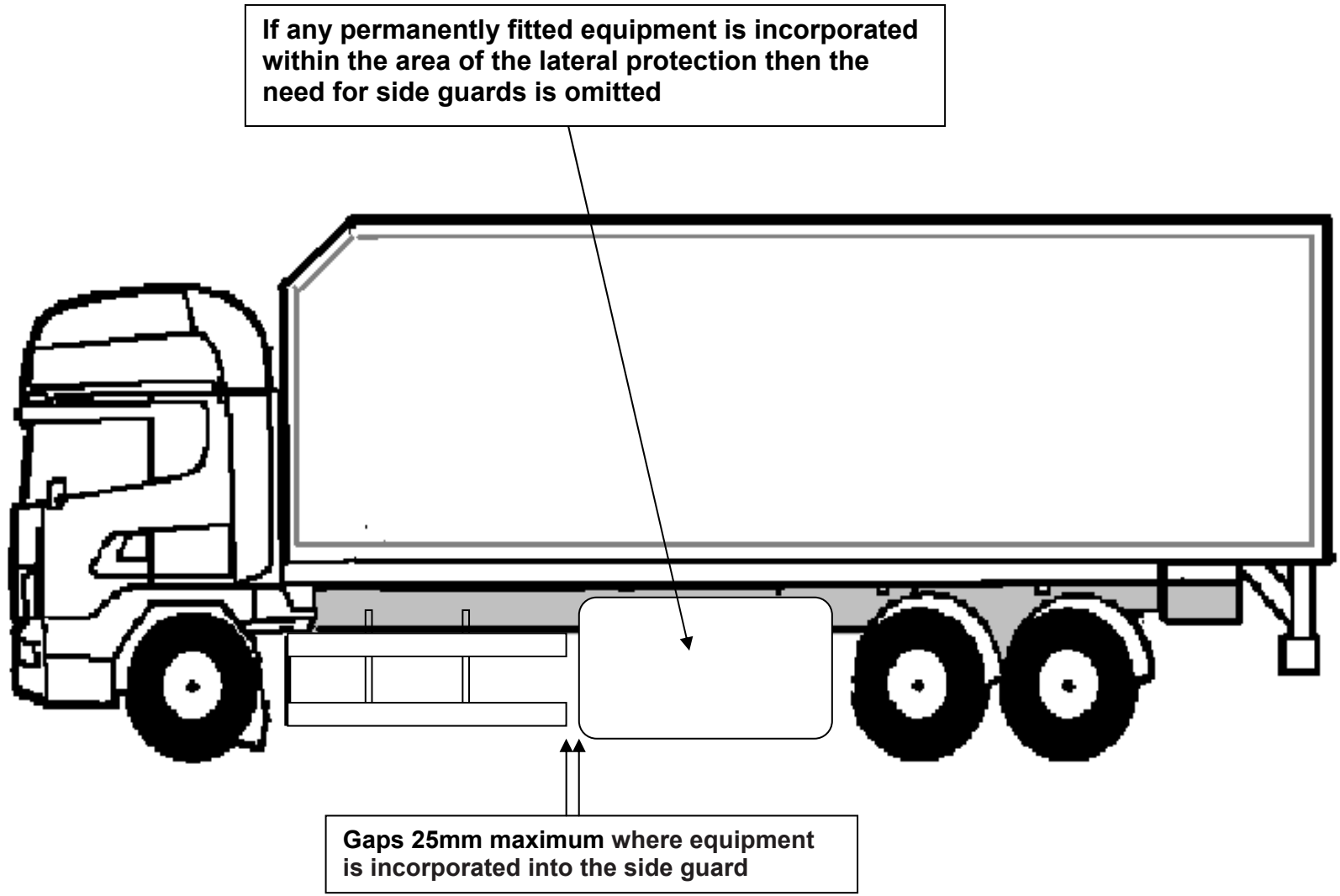


Figure 2



Lateral Protection 42

Figure 3

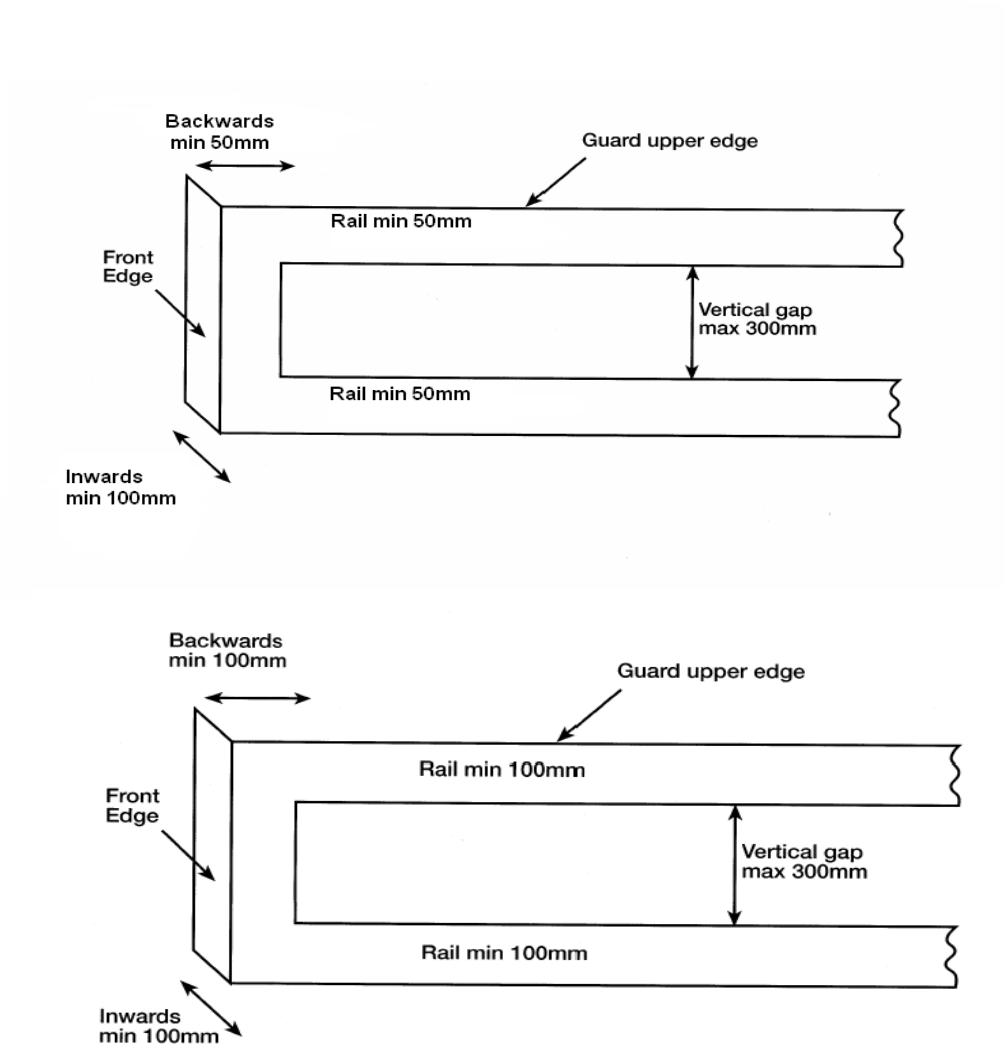
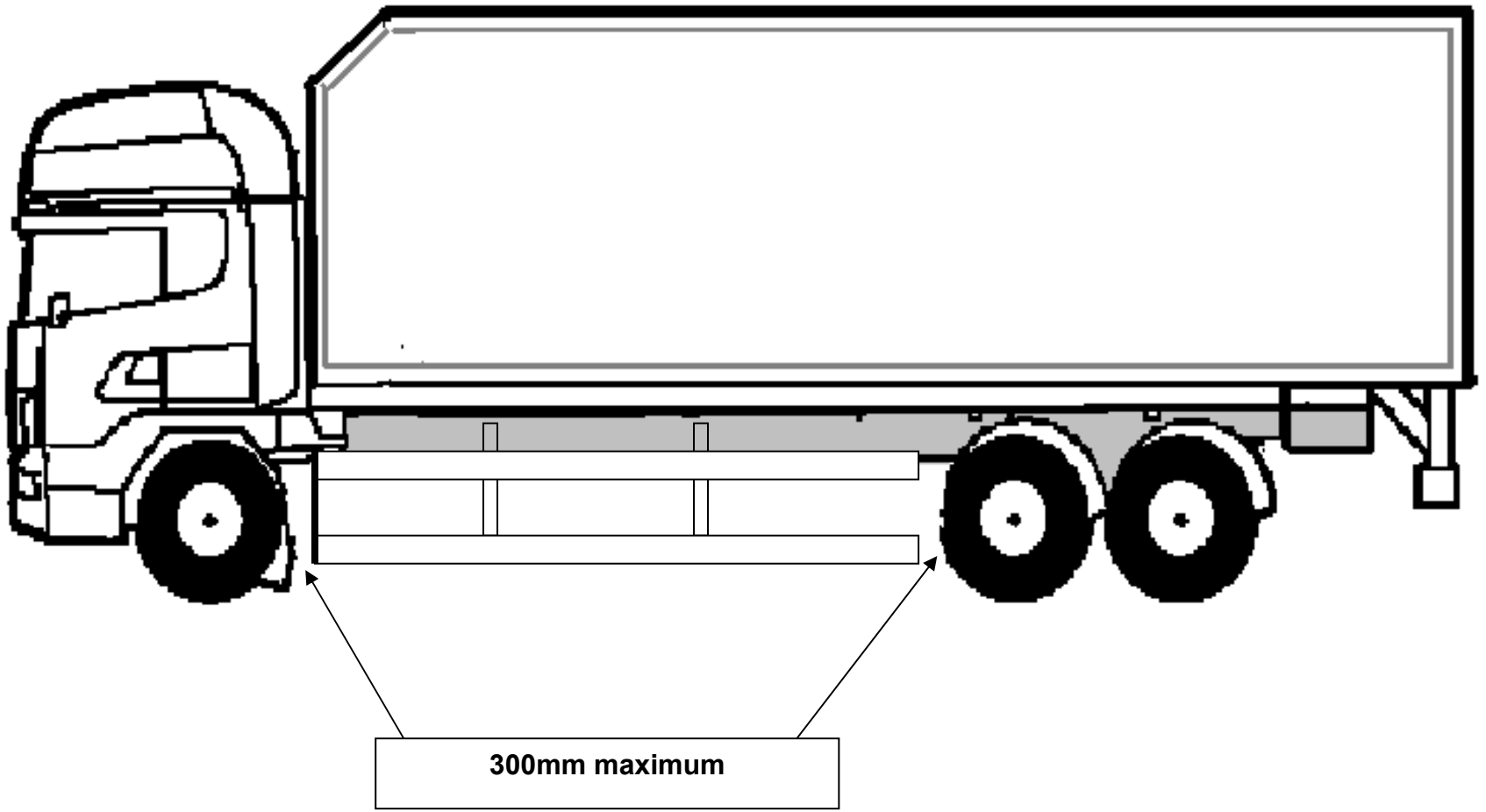

Backwards
min 50mm
Guard upper edge
Rail min 50mm
Front
Edge
Vertical gap
max 300mm
Rail min 50mm
Inwards
min 100mm
Backwards
min 100mm
Guard upper edge
Rail min 100mm
Front
Edge
Vertical gap
max 300mm
Rail min 100mm
Inwards
min 100mm

Figure 4



Lateral Protection 42

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

43 Spray Suppression

Application: All Vehicles > 7500kgs Except :- Off-Road Vehicles

Method of Inspection	Required Standard
All road wheels must be fitted with Spray Suppression devices. **Mudguard** Is a device to prevent as far as practical mud or water being thrown from a tyre. They may be formed using parts of the body or they may be an entirely separate unit. **Outer Valances** Are usually strips of material that are fitted longitudinally across a wheel space attached at one end to a rain flap to form an outer wheel arch lip, a vertical downward face that closes off what would be an open area. **Rain flaps** Can be a flexible extension to a wing or it may form the rear most vertical face of a wing in conjunction with the body, in this latter case it must be treated as a wing and be securely fixed to prevent excessive movement. **Lifting axles** Where a vehicle is fitted with one or more lifting axles, the spray-suppression system must cover all the wheels when the axle is lowered and the remaining wheels which are in contact with the ground when the axle is raised **Self-tracking axles** Where a vehicle is fitted with a self-tracking axle, the spray-suppression system must satisfy the conditions applicable to non-steered wheels if mounted on the pivoting part. If not mounted on that part, it must satisfy the conditions that are applicable to steered wheels.	**Component Check** **1.** Every road wheel must be fitted with a Spray Suppression system. **2.** All Spray Suppression material must be of an approved type. (see note 1 and 2) **3.** All components must be secured so that they perform their function. **Installation Check** **Mudguards (fitted in combination with energy absorption materials).** **4.** must fully cover the zone immediately above, ahead and behind any part of the tyre or tyres see Figure 1 2 and 3 **5.** in the case of non steered wheels must have the lower front edge no more than 20 degrees above the horizontal line of the axle (**A** on figure 1) **6.** in the case of steered wheels must have the lower front edge no more than 30 degrees above the horizontal line of the axle (**A** on figure 1) **7.** must have the lower rear edge no more than 100mm above the horizontal line of the axle (**C** on figure 1) **8.** must have Spray Suppression material fitted to the front face of the rear of the guard facing the tyre tread, complying with the dimensional requirements of figure 1. and 3

Method of Inspection	Required Standard
Note 1: All spray suppression materials must be either e marked or be accompanied by an e marked sample of the material to permit the examiner to make a comparison. **Note 2:** 'Spray-suppression device' means part of the spray-suppression system, which may comprise: Air/water separator: This is a component forming part of the valance and/or of the rain flap through which air can pass whilst reducing pulverized water emissions. **or** Energy absorber: This is a component forming part of the mudguard and/or valance and/ or rain flap which absorbs the energy of water spray, thus reducing pulverized water spray. **Note 3:** Where rope hooks are fitted the outer valance may meet the requirements of figure 6 as an alternative.	**9.** that consist of several components must have no gaps between or within individual parts when assembled that will permit the exit of spray when the vehicle is in motion. **Additional standard where Separate Mudguards are fitted (in combination with air/water separation to multiple axle configurations).** **10.** where the distance between the tyres on adjacent axles does not exceed 300 mm the mudguards must also conform to the model shown in Figure 7. **Alternative Standards from standards 4-10 where the body forms the mudguards (and energy absorption systems are fitted).** **11.** must cover the zone above the tyre or tyres from the front edge of the tyre to the rain flap located behind the wheel see figure 5 **12.** must have their inner faces made from or be fitted with a spray suppression material. **Outer Valances (with energy absorption Spray Suppression systems installed).** **13.** fitted to steered and self-steered wheels must have its vertical face within 100mm of the tyre wall (**D** on figure 2) see note 3 **14.** fitted to non -steered wheels must have its vertical face within 75 mm of the tyre wall (**D** on figure 2)see note 3 **15.** must have a depth of at least 45mm, at all points behind a vertical line passing through the centre of the wheel see Figure 2 **16.** fitted to steered wheels must have the lower edge within1.5 x tyre radius at points A,B and C as shown in Figure 4

Method of Inspection	Required Standard
	17. fitted to non - steered wheels must have the lower edge within1.25 x tyre radius at points A,B and C as in Figure 4 **18.** must have no openings in them or between them and other parts of the mudguard enabling spray to emerge. **Alternative standards (to 13 -18) for Outer Valances (where the body forms the mudguard over non steered or self steering wheels and a energy absorption spray suppression system is installed).** **19.** must be located above each wheel of multiple axles where a rain flap is fitted between each wheel. See figure 5 . **20.** must have the entire inner surface fitted with an energy-absorption spray-suppression material. **21.** must be a minimum of 100mm high **22.** must have no openings in them or between the outer valance and the inner part of the mud guard enabling spray to emerge. . **23.** must be continuous where rain flaps are not fitted behind each wheel, they must extend between the outer edge of the rain flap and a vertical plane passing through the front edge of the tyre. See figure 5 **Outer Valances (with air/water separation Spray Suppression systems installed).** **24.** must have air/water separator spray-suppression devices fitted to the lower edges. **25.** must have a depth of at least 45mm, at all points behind a vertical line passing through the centre of the wheel

Method of Inspection	Required Standard
	26. fitted to steered wheels must have its lowest edge within 1.05 x tyre radius see figure 7 **27.** fitted to non-steered wheels must have its lowest edge within 1 x tyre radius see figure 7 **28.** must have no openings in them or between them and the mudguard enabling spray to emerge **Rain Flaps : (where energy absorption Spray Suppression systems are installed)** **29.** must be at least equal to the full width of the tyre/s **30.** must be vertical **31.** must have the lower edge no more than 200 mm above the ground **32.** must be no more than 300 mm from a vertical plane passing through the rearmost edge of the tyre **33.** must have no openings between the rain flap and the lower edge of the wheel guard enabling spray to emerge. **34.** must have the whole face made of spray suppression material. **35.** must be fitted to the rearmost axle of multiple axles where distance between the tyres on adjacent axles is less than 250 mm, **36.** must be fitted behind each wheel of multiple axles when the distance between the tyres on adjacent axles is 250 mm or greater.

Method of Inspection	Required Standard
	Rain Flaps: (where the body forms the mudguard and energy absorption Spray Suppression systems are installed) **37.** must extend to the lower part of the mud guard and comply with standards 29 to 36 **Rain Flaps (where air/water Separation Systems are installed)** **38.** must be at least equal to the full width of the tyre/s **39.** must be vertical **40.** must have no openings between the rain flap and the lower edge of the wheel guard enabling spray to emerge. **41.** must be fitted to the rearmost axle of multiple axles where distance between the tyres on adjacent axles is less than 250 mm. **42.** must be fitted behind each wheel of multiple axles when the distance between the tyres on adjacent axles is 250 mm or greater. **43.** must not be more than 200 mm from the rearmost edge of the tyre, measured horizontally. **44.** must be at least 100 mm deep.

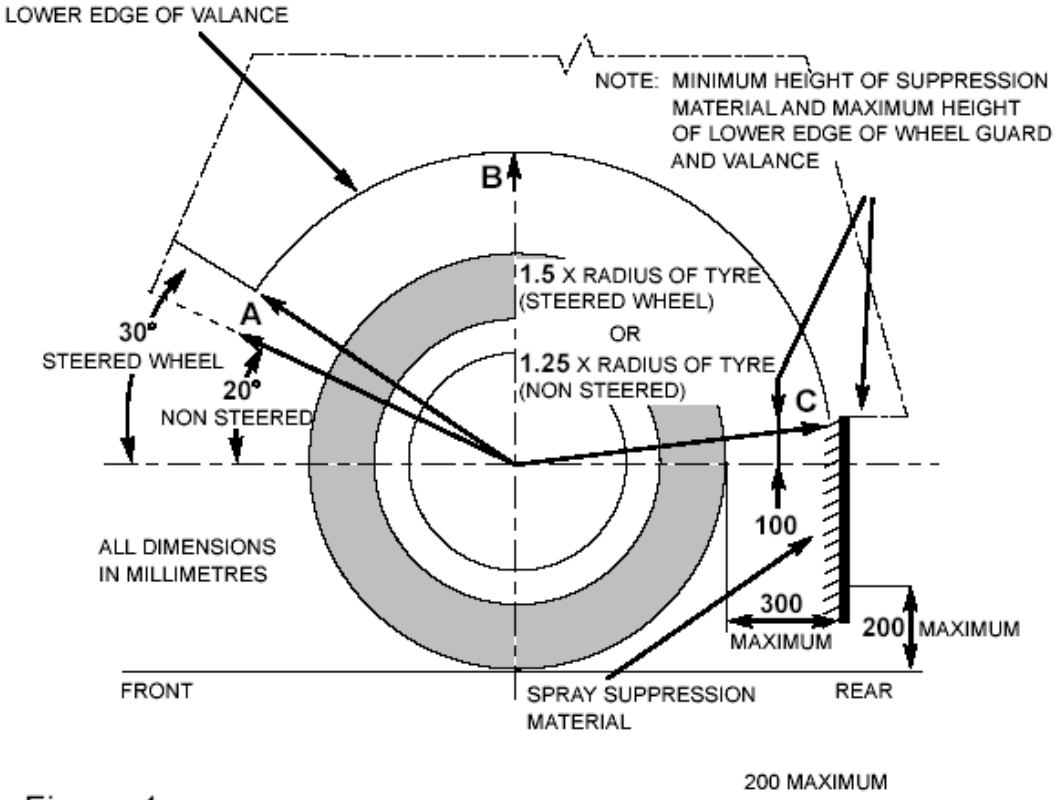


Figure 1

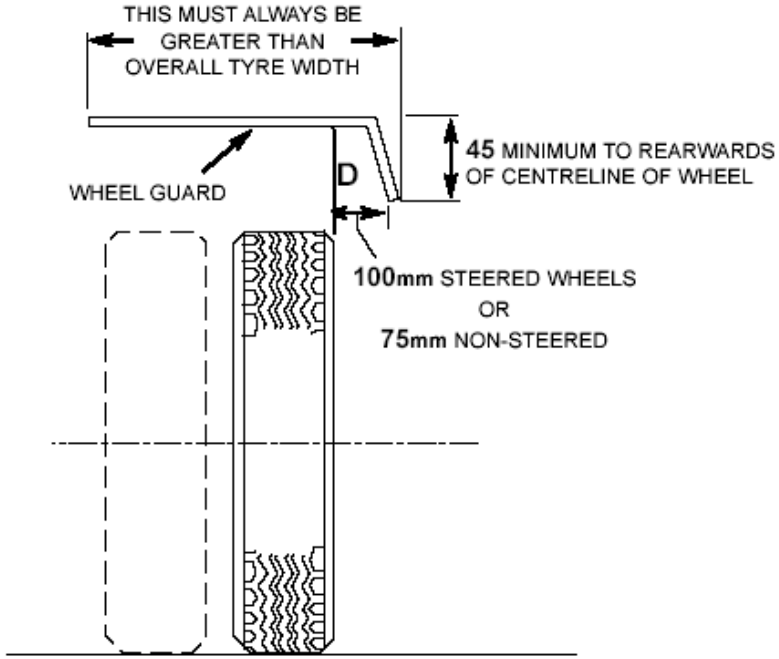


Figure 2

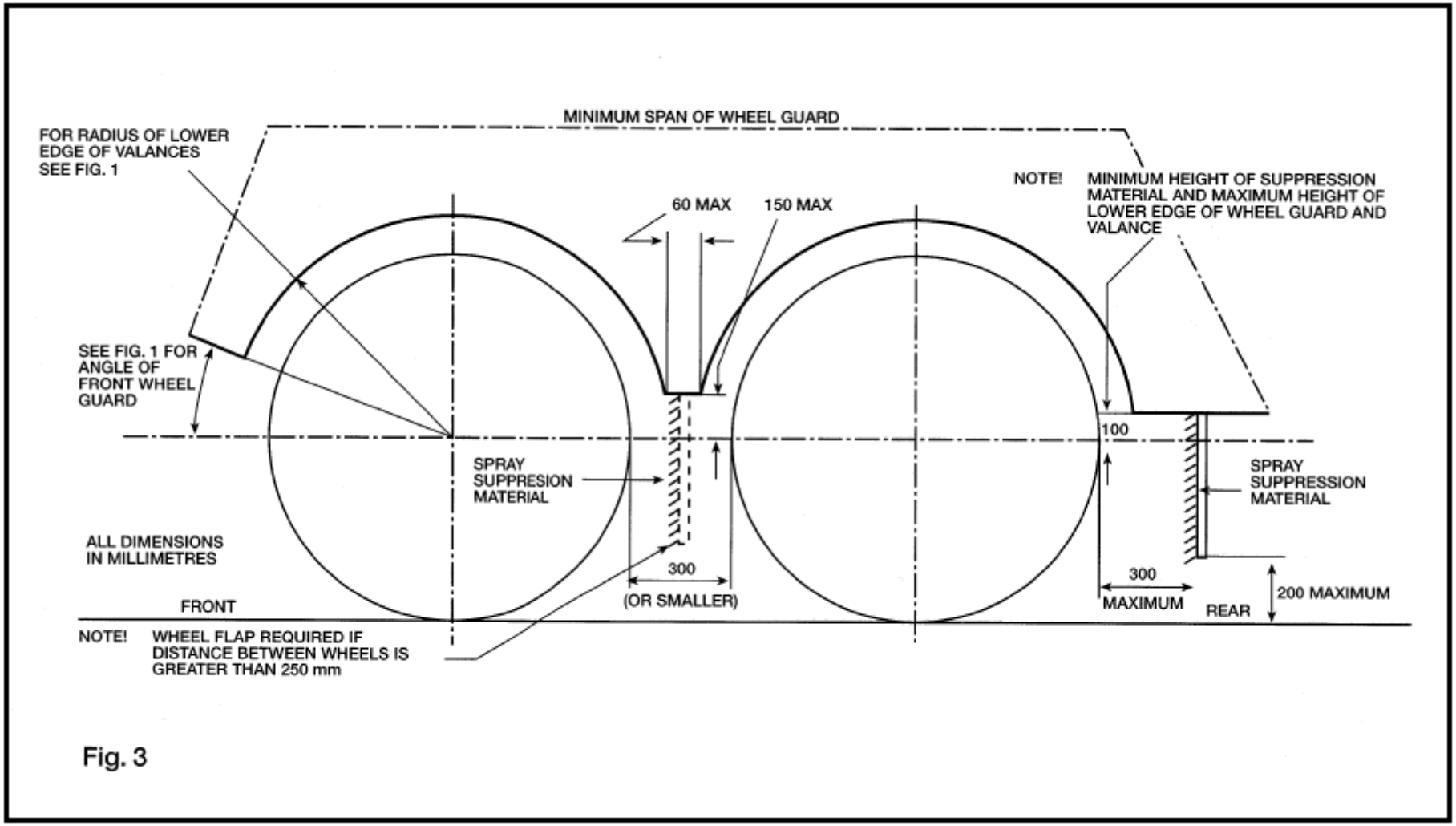

MINIMUM SPAN OF WHEEL GUARD
FOR RADIUS OF LOWER EDGE OF VALANCES SEE FIG. 1
NOTE! MINIMUM HEIGHT OF SUPPRESSION MATERIAL AND MAXIMUM HEIGHT OF LOWER EDGE OF WHEEL GUARD AND VALANCE
60 MAX
150 MAX
SEE FIG. 1 FOR ANGLE OF FRONT WHEEL GUARD
SPRAY SUPPRESION MATERIAL
100
SPRAY SUPPRESSION MATERIAL
ALL DIMENSIONS IN MILLIMETRES
300
(OR SMALLER)
300
MAXIMUM
200 MAXIMUM
FRONT
REAR
NOTE! WHEEL FLAP REQUIRED IF DISTANCE BETWEEN WHEELS IS GREATER THAN 250 mm

Fig. 3

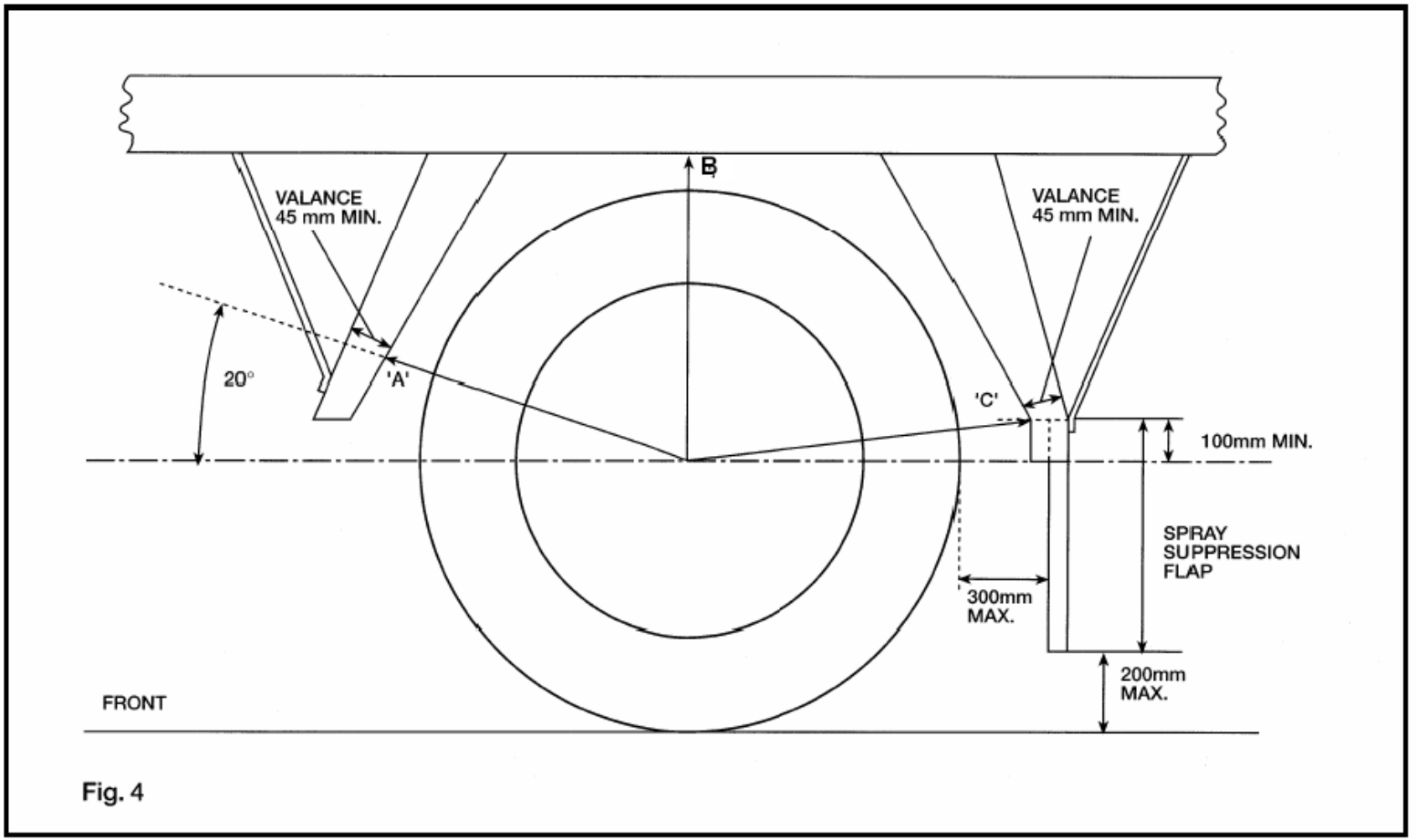


Fig. 4

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.

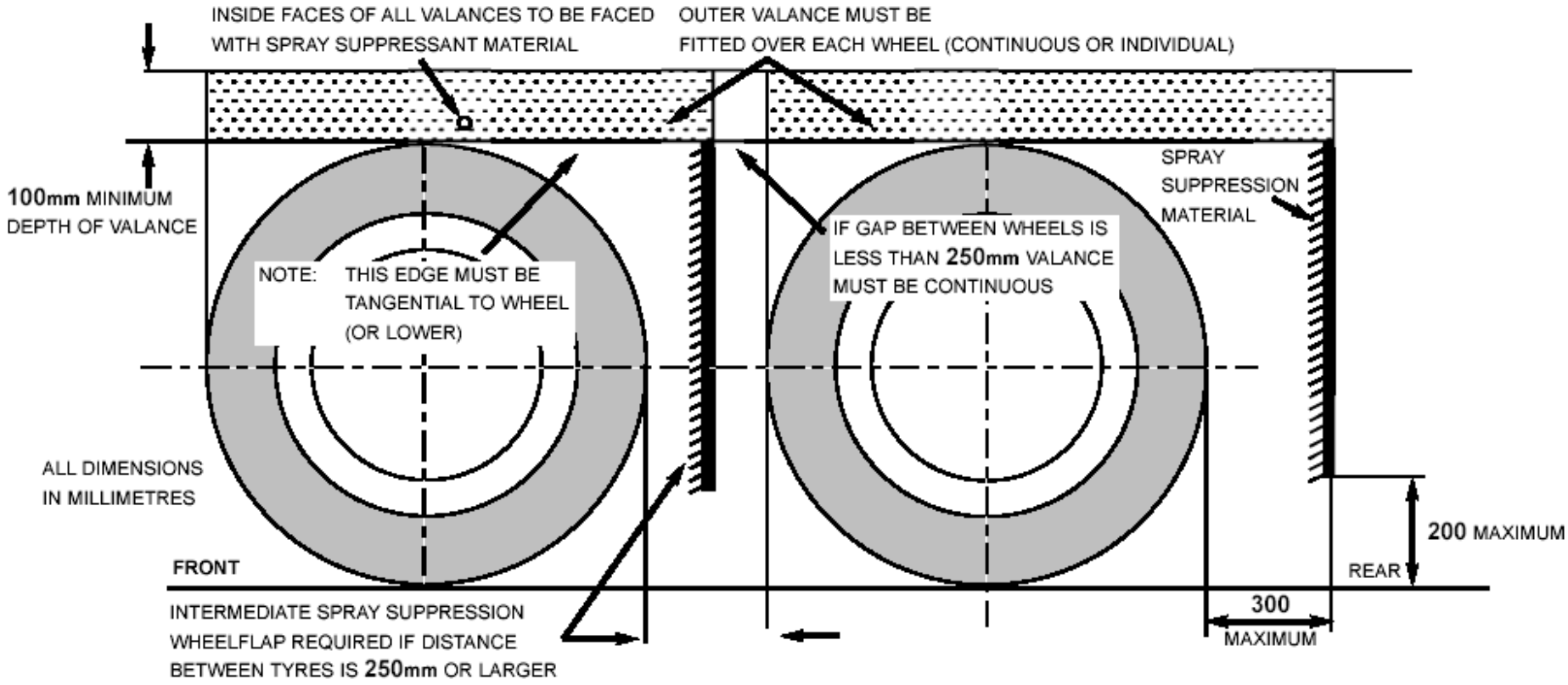
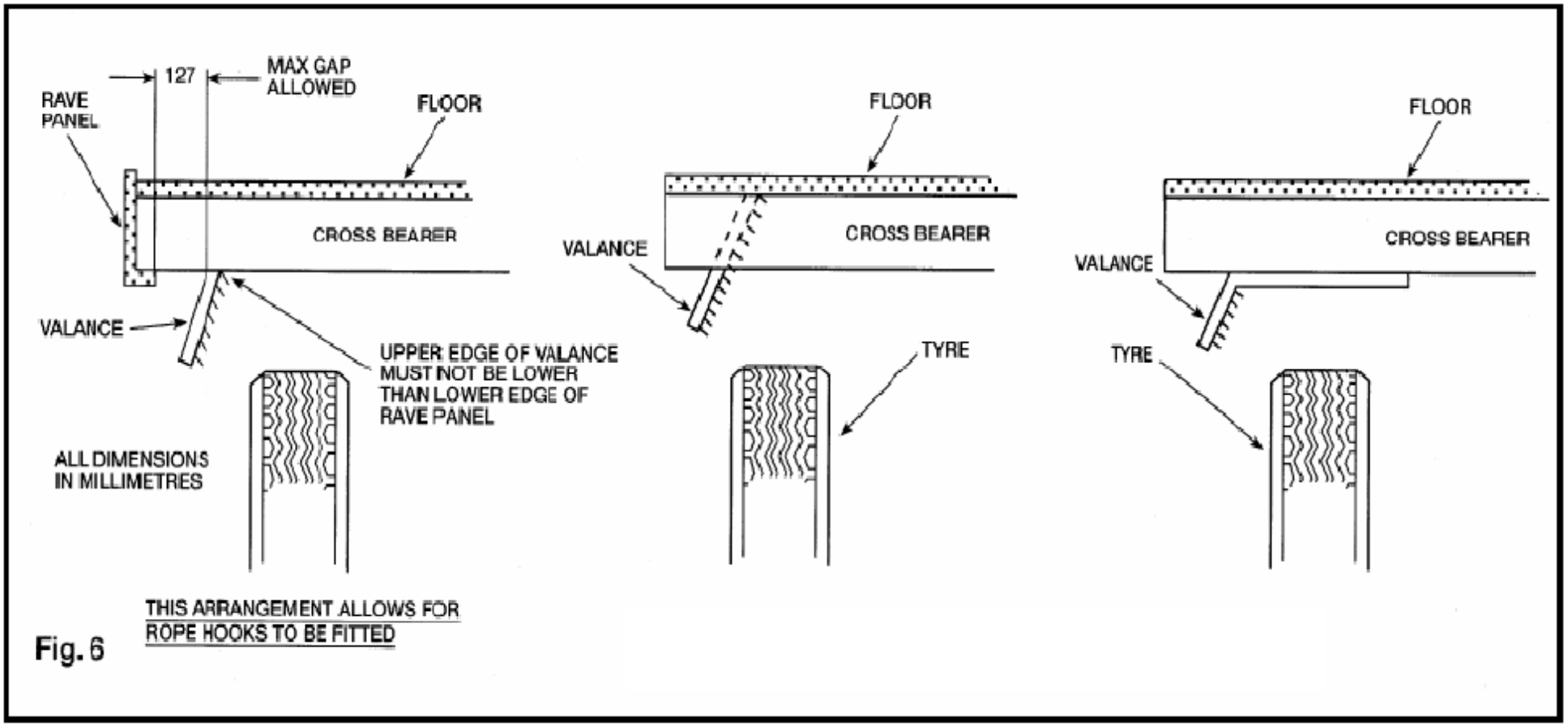

INSIDE FACES OF ALL VALANCES TO BE FACED WITH SPRAY SUPPRESSANT MATERIAL
OUTER VALANCE MUST BE FITTED OVER EACH WHEEL (CONTINUOUS OR INDIVIDUAL)
100mm MINIMUM DEPTH OF VALANCE
NOTE: THIS EDGE MUST BE TANGENTIAL TO WHEEL (OR LOWER)
IF GAP BETWEEN WHEELS IS LESS THAN 250mm VALANCE MUST BE CONTINUOUS
SPRAY SUPPRESSION MATERIAL
ALL DIMENSIONS IN MILLIMETRES
FRONT
REAR
200 MAXIMUM
300 MAXIMUM
INTERMEDIATE SPRAY SUPPRESSION WHEELFLAP REQUIRED IF DISTANCE BETWEEN TYRES IS 250mm OR LARGER

Figure 5



THIS ARRANGEMENT ALLOWS FOR ROPE HOOKS TO BE FITTED

Fig. 6

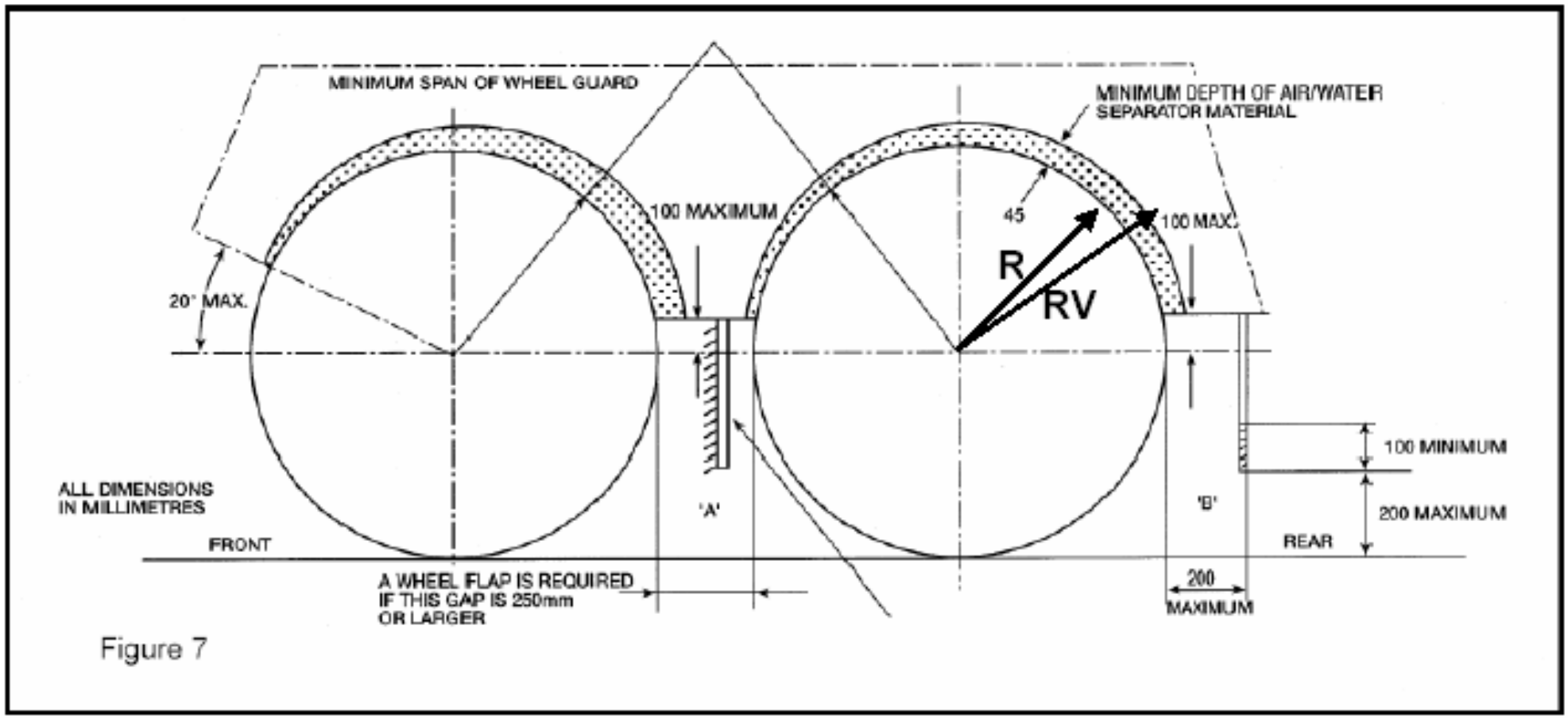


Figure 7

where R = is the radius of tyre fitted to the vehicle;
RV = the radial distance from the lowest edge of the outer valance to the centre of the wheel.

$RV \leq 1.05$ on steered wheels

$RV \leq 1.00$ on non-steered wheels

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

45 Safety Glass

Application: All Vehicles

Method of Inspection	Required Standard
Ensure that all windscreens, windows, internal glazed panels and side screens are securely attached to the vehicle and are constructed from approved materials. Armoured vehicles do not have to display approval markings. **Note 1:** "Safety Glazing" made from glass must be so constructed or treated that if fractured it does not fly into fragments likely to cause severe cuts. Each piece of glass must display the following relevant permanent marking applied by the glass manufacturer. ECE Regulation 43  **Note 2:** "Safety Glazing" made from plastic means material which is so constructed or treated that if fractured it does not fly into fragments likely to cause severe cuts. "Safety glazing" made from plastic must have an "e" mark applied by the material manufacturer. **Note 3:** This only applies to those windows or parts of window affording the driver a view of the road	**1.** Windscreens, windows, internal glazed panels and side-screens where fitted must be securely attached to the vehicle. **2.** Windscreens, windows, internal glazed panels and side-screens where fitted must be suitable for its use. (see Table 1) **3.** Windscreens and windows wholly or partly on either side of the drivers seat must be "Safety Glazing" made from glass and display the relevant markings. (see note 1 and table 1) **4.** All other windows (including sunroofs internal glazed panels and removable glass panels) and side-screens must be "Safety Glazing" (which may be made from glass, or from plastic) and display the relevant markings. (see notes 1,2 and table 1) **5.** Windscreens and windows wholly or partly on either side of the drivers seat must allow a visual transmission of at least 70%, or 60% in the case of an armoured vehicle. (see note 3)

Table 1

Type of window	Relevant Markings (Mandatory) In addition to "e" approval	Markings (Not Allowed)
Windscreen	**II** -for ordinary laminated glass **III** -for treated laminated glass **IV** -for glass-plastics glazing.	**V** - safety glazing having a regular light transmittance less than 70 per cent. **VI** - double-glazed unit **VII** - uniformly-toughened glass which can **only** be used as windscreens for slow-moving vehicles which, by construction, cannot exceed 40 km/h. **VIII** -In the case of rigid plastic glazing.
Windows wholly or partly on either side of the drivers seat	**VIII** -In the case of rigid plastic glazing. In addition the appropriate application will be signified by: **/B** for side, rear and roof glazing	**V** -in the case of safety glazing having a regular light transmittance less than 70 per cent. **VII** - uniformly-toughened glass which can **only** be used as windscreens for slow-moving vehicles which, by construction, cannot exceed 40 km/h. **VIII** -In the case of rigid plastic glazing. In addition the appropriate application will be signified by: **/A** for forward facing panels, **/C** in locations where there is little or no chance of head impact.
Other windows and other glazed panels	None	**VII** - uniformly-toughened glass which can **only** be used as windscreens for slow-moving vehicles which, by construction, cannot exceed 40 km/h.

These symbols may be marked down in a different format i.e. ***II - IV***

Laminated-glass
Means a glass pane consisting of two or more layers of glass held together by one or more interlayers of plastics material; it may be:

"ordinary", when none of the layers of glass of which it is composed has been treated; **or**

"treated", when at least one of the layers of glass of which it is composed has been specially treated to increase its mechanical strength and to condition its fragmentation after shattering;

Glass-plastics glazing
Means a pane of laminated glass having one layer of glass and one or more layers of plastics material, at least one of which acts as interlayer. The plastics layer(s) shall be on the inner face when the glazing is fitted on the vehicle;

Rigid plastic glazing
Means a plastic glazing material which does not deflect vertically more than 50 mm in the flexibility test

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

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46 Tyres

Application: All Vehicles

Method of Inspection	Required Standard
Check each tyre for correct fitment, structure and that it has the correct markings to confirm compliance with the required standards. (Where it is not possible to check markings, a declaration will be required from the applicant). In the case of an **Armoured vehicle**, or **Mobile crane**, exemption from one or more of the provisions is permitted where it can be demonstrated to the satisfaction of the Approval Authority that the special purpose of the vehicle makes it impossible to fully comply. In the case of a **Mobile crane** the provision in the above paragraph applies on condition that the requirements in ISO 10571 – 1995 (E) or ETRTO Standards Manual 1998 are fulfilled. (Satisfactory documentary evidence would be required) **Note 1:** Structure means the technical characteristics of the tyres carcass, such as diagonal or bias ply, bias belted, Radial, reinforced. **Annex 1**	**1.** Each tyre fitted to the vehicle, including any spare or temporary use spare, must have the correct approval marks. (Annex 1) **2.** The tyre must also be marked with the following information :- Manufacturer's name or trade mark, tyre size designation, category of use (special, snow tyre etc), speed category, load capacity index and tyre cross section. **3.** Each of the tyres fitted to a vehicle, must have the same structure. (see note 1) **4.** Each of the tyres fitted to any one axle must be of the same type. (see note 2) **5.** Each tyre must have the correct load indices, speed ratings and use markings as appropriate, taking into account the vehicle to which it is fitted, and the type of use for the vehicle will be subject to. (See note 1,2,3 and 4 and tables 1,2 & 3) **6.** Each wheel and tyre must have sufficient room to revolve so as to ensure that it is unlikely to foul on any part, taking into consideration the suspension and steering constraints provided by the manufacturer **7.** Tyres must be fitted in accordance with the manufacturer's instructions as indicated on the side wall of the tyre **8.** The grooves of the tread pattern must be at least 1mm in depth through a continuous band comprising of at least ¾ of the original breadth of the tread pattern (excluding wear indicators)

Method of Inspection	Required Standard
EC Type Approval Mark Box should be a minimum of 12mm x 8mm  Letters and numbers, minimum of 4mm high UNECE Type Approval Mark Circle with a minimum diameter of 12mm  Number 4mm high and serial number alongside **Note 2:** Type of tyre means tyres which do not differ in such essential respects as manufacturer's name or trade mark, tyre size designation, category of use (special, snow tyre etc), speed category, load capacity index and tyre cross section **Note 3:** Tyres with no category of use designation (special, snow tyre etc), will be deemed to be Normal Use Tyres **Note 4:** Operators may display a 50mph sticker on the rear of there vehicle, they must have documentary evidence to claim the vehicle is one with a restricted speed.	

Table 1

The Minimum required speed ratings are:

Class of vehicle	Permitted Speed MPH	Minimum Speed Symbol Required
Rigid goods vehicles with a maximum laden weight not exceeding 7.5 tonnes	70	L
Rigid goods vehicles with a maximum laden weight exceeding 7.5 tonnes	60	J
Articulated Vehicles	60	J
Goods vehicles operating under 2J or 2M tyre use conditions	40	D
Restricted speed vehicles operating under 2R tyre use conditions	50	F

Alternative Speed Ratings

Certain vehicles can be fitted with tyres showing a lower speed rating than those shown above but the maximum axle loads will be reduced as shown below.

Table 2

Class of Vehicle	Normal Speed Rating	Alternative Speed Rating	Reduction in Axle Load
Motor vehicles not exceeding 7500kg plated weight	L	J	7%
		K	3%

Table 3

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	11600	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	5600	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			

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47 Speed Limiter

Application: All Vehicles

Method of Inspection	Required Standard
Ensure the vehicle is fitted with a speed limiting device **or** that speed limitation is achieved through the actual design of the vehicle **Note 1:** Vehicles incapable of the speed where a speed limiter is required to be set, are exempt, a confirmation (as listed below) that vehicles claiming to be incapable of 85km/h ARE incapable of it will be required; • Documentary evidence from the manufacturer/converter that the vehicle is unable to reach the speed due to the overall gearing of the drive train, **or** • Documentary evidence from a speed limiter or Tachograph calibration centre, **or** • Exempt by nature of its use, **or** • For certain ages of vehicle exempt by certain emission approvals **Note 2:** It is acceptable for the plate to be fitted in the driver's door jamb. If fitted on a window and facing outward the details must be able to be read by a person of average height. **Note 3:** The required set speed for the UK is 85 kph (90 may be displayed) or 53 mph (56 may be displayed)	**Vehicles claiming to be incapable of the speed where a speed limiter is required to be set** **1.** The vehicle **as presented** must be accompanied by satisfactory evidence confirming that the vehicle is incapable of 85km/h (See note 1) **Vehicles requiring a Speed Limiter** **2.** The vehicle must be fitted with a speed limiter **3.** Speed limiter wiring must be secure and the speed limiter device and wiring connectors must be either sealed, or require special tools to access, so as to prevent unauthorised access to adjust the settings or interrupt the power supply **4.** The speed limiter calibration plate must be securely fitted in the driver's compartment (see note 2) **5.** The speed limiter calibration plate must be clearly and indelibly marked with the speed at which the limiter has been set (the speed may be set in mph or kph) (see note 3)

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48 Masses and Dimensions

Application: All Vehicles

Method of Inspection

Vehicles complying with the Road Vehicles (Authorisation of Special Types)(General) Order 2003 or the Motor Vehicles (Authorisation of Special Types) Order (Northern Ireland) 1997 are exempt from any of the standards which they are unable to comply with due to their special purpose.

Note 1: Where applicable a Plating examination under the Goods Vehicle (Plating and Testing) Regulations 1988 must be carried out during the IVA examination. This does not apply in the case of vehicles exempted from Plating and testing or vehicles intended for registration in Northern Ireland. In these cases the Statutory Plate prescribed in Section 18 of this manual must have 2 columns, one for maximum GB/NI weights and one for maximum technically permissible weights (if different).

Note 2: Vehicles submitted for test will be un-laden and should be well within the permissible weights set out in Annex 1 to section 18. However, if it seems likely that the vehicle or an axle (as presented) exceeds any of these weights, the vehicle must be weighed where possible or a weight ticket must be requested.

Note 3: Check that the vehicle is able to manoeuvre a complete circular trajectory of 360 degrees inside an area defined by two concentric circles, without any of the vehicles outermost points projecting outside the circumferences of the circles (See figure 1). This must be completed on both steering locks

Required Standard

Dimensions:

1. The vehicle must not exceed the maximum authorised dimensions for width and length.

Category	WIDTH (see Annex 1)	LENGTH (see Annex 1)
N2	2550mm #	12000mm
N3	2550mm #	12000mm
#2600mm for the superstructure of vehicles designed for transport of goods under controlled temperatures		

Masses:

2. In the case of a vehicle subject to Plating, the vehicle or axle weights (as presented) must not exceed the maximums authorised for the Plating certificate. (See note 1)

3. In the case of a vehicle not subject to Plating, the vehicle or axle weights (as presented) must not exceed the maximums marked on the Statutory Plate prescribed in section 18 of this manual. (See note 1)

4. Where the Maximum permissible trailer towing weight exceeds 3500kg or the vehicle is equipped to tow a semi-trailer, it must be verified that the vehicle has a facility to operate power brakes on the trailer.

Method of Inspection	Required Standard
The outer circle having a radius of 12.50 metres The inner circle having a radius of 5.30 metres **Note 4:** When the vehicle is stationary facing the circle establish a vertical plane and mark this on the ground along side the vehicle. (see figure 2) When the vehicle enters the circle as described above no part of it shall move outside of this by prescribed limits in required standard 7. This procedure must be carried out on both sides	**Installation of retractable or loadable axles:** **5.** If a vehicle is fitted with one or more loadable axles, satisfactory evidence must be provided stating that under all driving conditions, the axle will lower to the ground automatically when the front axle or the nearest axle of a group of axles is loaded. **Turning Circle Requirements:** **6.** The motor vehicle must be able to manoeuvre for a complete circular trajectory of 360 degrees within the defined area (with the exception of the protruding parts prescribed for the vehicle width shown in Annex 1) (See note 3 & figure 1) **7.** Any part of the vehicle must not move outside of the vertical plane by more than 0.8 metres, or for vehicles with retractable axles in the lifted position, or loadable axles in the un-laden condition, the figure of 0,80 m is replaced by 1,00 m. (For vehicles with an axle-lift device this requirement also applies with the axle(s) in the lifted position) (See note 4 & Figure 1)

Figure 1

Vehicle has to remain in between the 2 circles for a full 360 deg

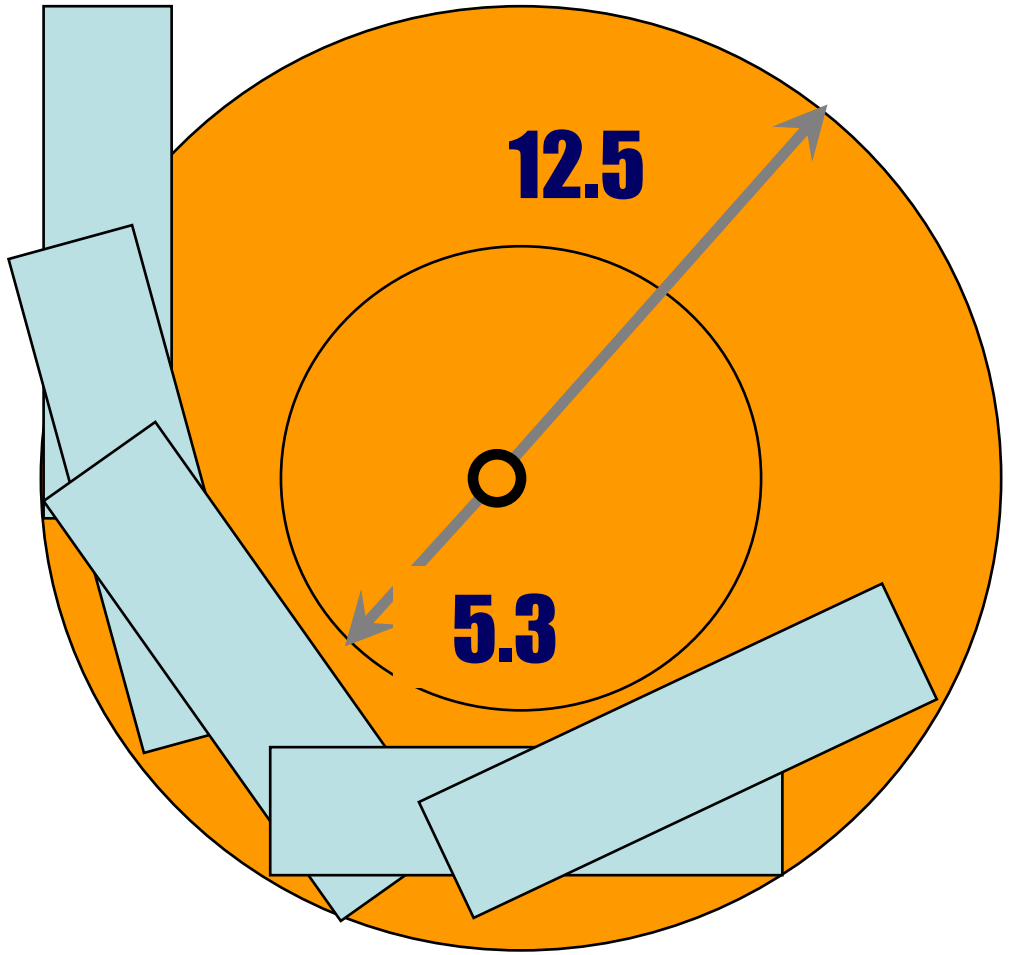
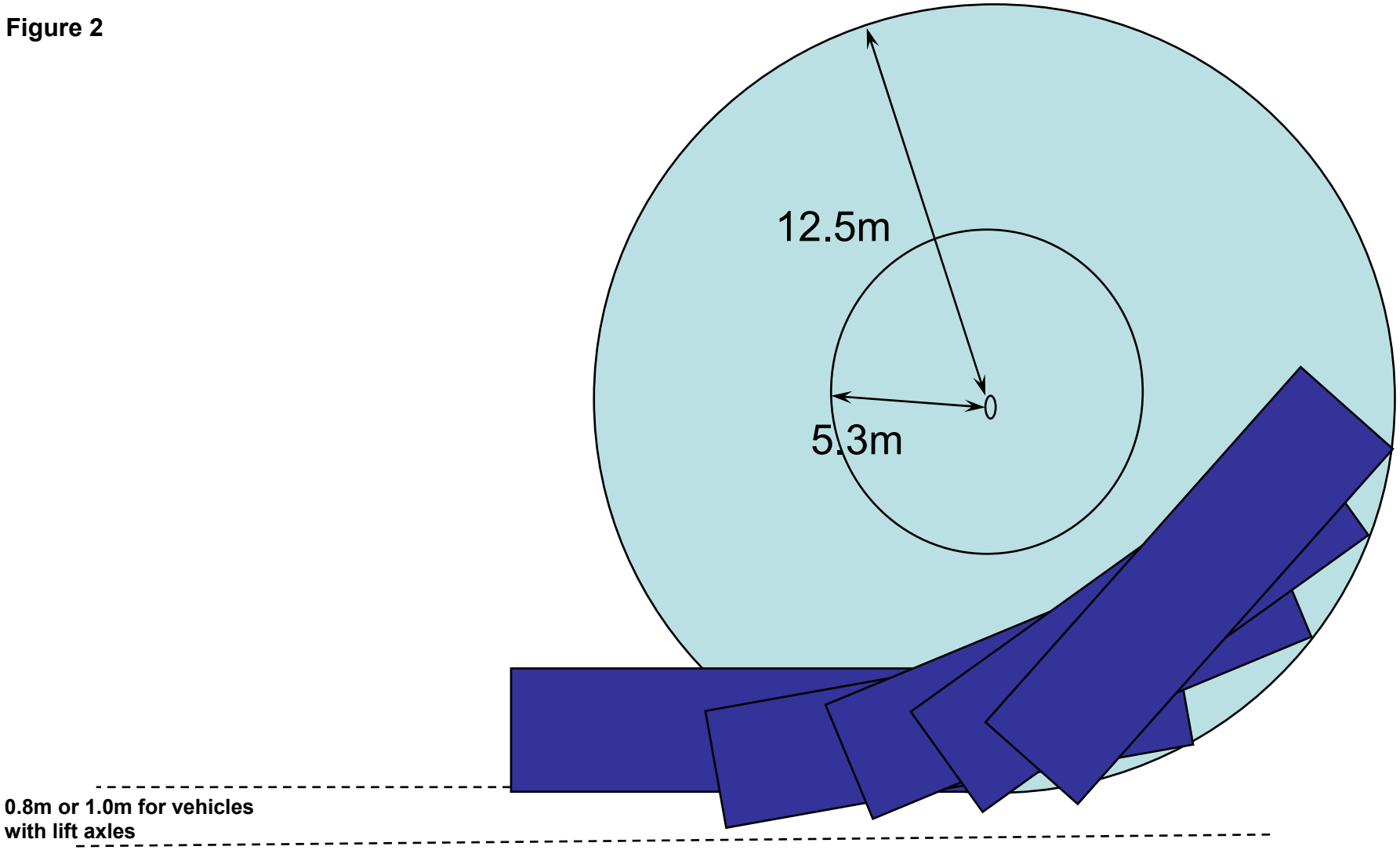


Figure 2



Annex 1

Items to be excluded from measurement of length and width.

A - Items to be excluded when measuring Length	B - Items to be excluded when measuring Width
— wiper and washer devices, — front or rear registration plates, — lighting equipment, — mirrors and other devices for indirect vision, — access steps and hand-holds, — lifting platforms, access ramps and similar equipment in *running order* (i.e. in the position they would be on a moving vehicle), not exceeding 300 mm, provided that the loading capacity of the vehicle is not increased, — coupling devices, — trolley booms of electrically-propelled vehicles, — external sun visors	— tyre-pressure or tyre failure indicators, — protruding flexible parts of wheelguards — lighting equipment, — mirrors and other devices for indirect vision, —access ramps in *running order* (i.e. in the position they would be on a moving vehicle), provided that they do not exceed 10 mm from the side of the vehicle and the requirements of section 16 (Exterior Projections) are met, — retractable steps, — the deflected part of the tyre walls immediately above the point of contact with the ground, — handles and hinges of external lockers, — trim protruding not more than 10mm from the bodywork,

Annex 2

Maximum permitted weights in Great Britain and Northern Ireland

Motor Vehicles	Maximum Weight
Two-axle	18 tonnes
Three-axle	25 tonnes *
Four-axle	32 tonnes #
* 26 tonnes where the driving axle is fitted with twin tyres and air suspension or suspension recognized as being equivalent, or where each driving axle is fitted with twin tyres and the maximum weight of each axle does not exceed 9.5 tonnes # where the driving axle is fitted with twin tyres and air suspension or suspension recognized as being equivalent, or where each driving axle is fitted with twin tyres and the maximum weight of each axle does not exceed 9.5 tonnes	
Single Axles	**Maximum Weight**
Single non driving axle	10 tonnes
Driving Axle	**Maximum Weight**
Single axle	11.5 tonnes
Tandem axles	The sum of the axle weights must not exceed if
Distance between axle centres is less than 1metre	11.5 tonnes
from 1metre and less than 1.3metres	16 tonnes
from 1.3metres and less than 1.8metres	18 tonnes #
# . 19 tonnes where the driving axle is fitted with twin tyres and air suspension or suspension recognized as being equivalent, or where each driving axle is fitted with twin tyres and the maximum weight of each axle does not exceed 9.5 tonnes	

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49 Exterior Projections of Cabs

Application: All Vehicles

Method of Inspection	Required Standard
The cab area of Vehicles must not display any features likely to increase the risk of injury to other road users. In considering if an item meets the requirements of this section, the examiner will compare the materials and methods used to those employed by a Major Vehicle manufacturer or to examples found on Approved vehicles. Items such as covers (rubber or otherwise) that are held in place by being stretched on, or attached by double sided tape or other inadequate means, rubber hosing, pipe lagging etc are not considered acceptable methods or materials. This is not an exhaustive list but provided as guidance as to the type of item considered to be un acceptable. In the case of an **Armoured vehicle**, exemption from one or more of the requirements is permitted where it can be demonstrated to the satisfaction of the Approval Authority that the special purpose of the vehicle makes it impossible to fully comply. Exterior projections will be assessed between the 'floor line' and a height of 2 metres from the ground extending rearwards to a plane passing across the rear of the cab (see note 1) and includes damaged, modified or repaired bodywork. The theoretical floor line is determined by the series of contact points formed between the vehicle and the application of a curved area of a cone segment. The curved area is at an angle of 30 degrees from the vertical. The points of contact are used as a guide to judge the actual floor line. I.e. Certain items that the cone contacts are likely to move or offer little resistance prior to detaching and are therefore excluded from the actual floor line. In addition where	**1.** A mascot, emblem or other ornamental object must retract or detach when a reasonable force is applied, **and** leave a base or mounting free from sharp edges that does not protrude from the surface by more than 10mm. **2.** All 'hard' parts contactable with a 100mm sphere, which form an external surface or protrude 5mm or more from the external surface must have a radius of curvature of at least 2.5mm. (see notes 2 3 and 4) **The criteria of Standard 2 DOES NOT apply to the following, which must be checked to their individual requirements:** **3.** Protrusions less than 5mm but more than 1.5mm contactable with a 100mm sphere must have blunted edges. (see notes 2 3 and 4) **4.** Wheel arches must be 'turned inwards', or have a radius of curvature of at least 2.5mm **5.** Grills, gaps, slots, grooves, channels, recesses and holes that have a width of 10mm or less as determined by the contact points of a 100mm sphere must be blunted. (see note 5) **6.** Grills, gaps, slots, grooves, channels, recesses and holes which have a width of more than 10mm, and up to 25mm determined by the contact points of a 100mm sphere must have a radius of curvature of at least 0.5mm. (see note 5)

Method of Inspection	Required Standard
the cone contacts 2 or more points and cannot contact other items that may determine the floor line a judgement will be made as to where the cone would contact the other items. Jacking points, exhaust pipes (**only** where the tail pipe protrudes from under the body – side mounted exhausts may actually provide the points of contact that form the floor line) and wheels are not taken into consideration when the floor line is being determined. Wheel arches are assumed to be filled in exempting any projection inboard of the turned in edge of the wheel arch. **Note** the floor line its self is subject to the requirements of RS2 i.e. the 2.5mm radius requirement applies. **'Radius'** refers to the external radius of curvature. '**Blunted edges'** are those which under finger and thumb pressure alone would not be likely to cut the skin. **Note 1:** Rear of cab is defined as; "Cab rear panel" means the rearmost transverse panel of the external surface of the driver and passenger compartment. Where it is not possible to determine the position of the cab rear panel it would be deemed to be the vertical transversal plane situated 50 cm to the rear of the R point of the drivers seat, with the drivers seat, if adjustable, located at its rearmost driving position. If the cab is fitted with more than one row of seats, the rearmost passenger seat in its rearmost position has to be taken into account for the definition of the rear cab panel. The rear panel is excluded from the requirements of this section. **Note 2:** The measurement of a protrusion is taken from the "external surface". The external surface is the first surface that the 100mm sphere can contact nearest to the protrusion in question. Where the sphere does not touch a surface (possibly due to the length of the projection) or contacts a further projection, a simple measurement from the projections mounting surface will be made	**7.** Grills, gaps, slots, grooves, channels, recesses and holes which have a width of more than 25mm, and up to 40mm determined by the contact points of a 100mm sphere must have a radius of curvature of at least 1mm. (see note 5) **8.** Grills, gaps, slots, grooves, channels, recesses and holes which have a width of more than 40mm determined by the contact points of a 100mm sphere must have a radius of curvature of at least 2.5mm (see note 5) **9.** Where contactable with the 100mm sphere sheet metal edges must be folded back on themselves (180 degrees) **10.** Where contactable with the 100mm sphere a glass/fibre reinforced plastic panel edge must have a radius of curvature of at least 1.5mm. **11.** Wiper blades and their support arms must be at least blunted. **12.** Wheel nuts, hub caps and protective devices must not exhibit any fin-shaped projections. **13.** Protective device(s) with a radius of curvature of at least 5mm must be fitted to wheel securing bolts, nuts or hubs if they protrude beyond the upper half of the tyre surface. The protective devices which cover wheel nuts and hubs may project beyond the body plan by no more than 30 mm. **14.** The upper half of a wheel must not protrude beyond the cab body plan form (disregarding tyres). **15.** The edges on lateral air and rain deflectors and window anti-smear air deflectors, capable of being directed outwards must have a radius of curvature of not less than 1 mm'

Exterior Projections of Cabs 49

Method of Inspection	Required Standard
	16. Aerial shafts must be blunted and fitted with a' fixed end capping' with a radius of curvature of at least 2.5mm. **17.** Flexible plastic or rubber parts must at least have a blunted edge.
Note 3: The dimensions of the projection of a part mounted on a convex panel may be determined either directly or by reference to a drawing of an appropriate section of the part in the fitted position. If the projection of a part mounted on a panel other than convex cannot be determined by simple measurement, it is determined by the maximum variation in the distance between the reference line of the panel and the centre of a sphere of 100 mm diameter when the sphere is moved in constant contact with the part. For grab handles the projection is measured in relation to a plane passing through the points of attachment. The IVA test plate (referred to in Section 4 Rear Registration Plate Space) will be placed on any number plate mountings provided. This will allow the area around the plate and its mountings to be assessed correctly. **Note 4:** A 'hard' feature is a feature which has a hardness of at least 60 Shore A (as a guide, deemed to be harder than the average pencil eraser). **Note 5:** The distance between parts of a grille is the distance between two planes passing through the points of contact of the sphere and perpendicular to the line joining the points of contact.	**The following Standards must be met IN ADDITION to Standard 2:** **18.** The ends of front protective devices (bumpers) must be turned inwards towards the external surface of the body. **19.** The components of bumpers projecting 5mm or more must be so designed that all rigid surfaces facing outwards have a radius of curvature of not less than 5 mm. The edges of devices projecting less than 5 mm must be blunted. **20.** Equipment such as towing hitches and winches must not protrude beyond the foremost surface of the bumper. However, winches may protrude beyond the foremost surface of the bumper provided they are covered when not in use by a suitable protective covering having a radius of curvature of not less than 2.5 mm. **21.** Push buttons must not protrude more than 30mm. **22.** Handles (other than grab handles), hinges, and fuel tank filler caps must not protrude more than 50mm. **23.** Grab handles and bonnet fasteners must not project more than 70mm. **24.** Headlight visors and rims must not project more than 30mm beyond the lens surface (measured horizontally from the point of contact of a 100mm sphere touching lens and visor/rim or the adjacent bodywork and the visor/rim if the lamp is recessed). **25.** Handles that rotate or pivot outwards must be enclosed in a protective surround or be recessed, unless they cannot in any circumstance project beyond the extreme outer edge of the cab.

Method of Inspection	Required Standard
	26. Handles that rotate parallel to the plane of the panel must be turned inwards towards the plane of the panel. **27.** The open end of any handle that rotates parallel to the plane of the panel **and** protrudes beyond the extreme outer edge of the cab must face rearwards. **28.** Any handle that does not protrude beyond the extreme outer edge of the cab must have: **a.** The open end facing rearwards, or **b.** the open end shielded to the front by a protective surround, or **c.** the open end recessed into the bodywork, or **d.** a gap measuring a maximum of 2mm between the open end of the handle and the vehicle body. **29.** Handles that pivot outwards must have the open end facing rearwards or downwards, unless they have an independent return mechanism which in event of failure will not allow the handle to project more than 15mm. **30.** An exhaust tailpipe must not project beyond the floor line or the vertical projection of the intersection of the reference plane with the external surface of the vehicle lying directly above it by more than 10mm, unless it terminates in a radius of curvature of at least 2.5mm.

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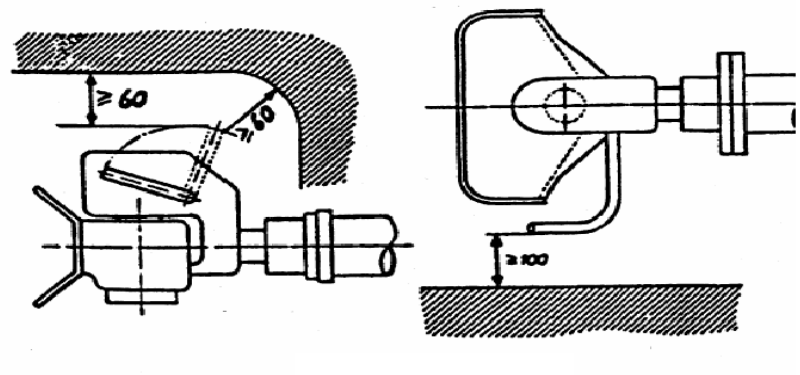
50 Couplings

Application: All Vehicles (if fitted)

Method of Inspection	Required Standard
Every coupling device must be accompanied by installation and operating instructions to ensure it is correctly installed and can operated safely. This inspection process checks for the correct 'e' or "E" markings. Only automatic coupling devices (which allow an automatic coupling procedure on motor vehicles) are permitted for the coupling of trailers having a maximum mass of more than 3.5 tonnes. Compliance may be demonstrated by: • A vehicle approval; or • A vehicle test report; or • An installation check **Note 1:** Where the relevant "e" markings are not visible due to the installation method, the presenter may provide evidence that the coupling used is appropriately marked, **Note 2:** Other than in the case of a 50mm ball coupling, the coupling must be of sufficient strength/rating to attach a trailer relevant to the displayed train weight on the vehicle. **Note 3:** If it is mounted in this area, then a coupling ball that can be dismantled without special tools has to be used	**All Couplings** **1.** If a coupling device is fitted then the vehicle must be provided with a Gross Train Weight, which must satisfy the requirements of Section 48. (masses & dimensions) **2.** The coupling devices must be of an approved type and have the correct markings.(see note 1) **3.** The coupling must display its load capacity. **4.** The coupling must be of sufficient capacity. (see note 2) **5.** The chassis and coupling manufacturer's installation / operating instructions must be presented with the vehicle. **6.** The coupling must be installed in accordance with the instructions provided, paying particular attention to : **a.** The number and grade of securing bolts required **b.** Whether any reinforcement of the fixing area is required **7.** There must be sufficient free space around the coupling to enable the coupling to operate safely when a trailer is attached.

Method of Inspection	Required Standard
Figure 1  	**Draw bar couplings** **8.** A drawbar coupling must have a safe area in which a person can operate the coupling, this area must be free from any points of possible danger, any sharp edges or corners must be protected so that injury is unlikely **9.** The way of escape from the coupling area for draw bar couplings must be free from restriction and not be barred on either side by any attached objects. **10.** A manually operated draw bar coupling must have sufficient clearance for the hand lever to operate easily. (see figure 1) **11.** The distance from the centre of the coupling pin to the rear of the bodywork must not exceed 420mm except: **a.** providing the easy and safe actuation of the drawbar coupling is not adversely affected, this distance may be extended up to 650mm for vehicles with tipping bodies or rear mounted equipment **b.** or up to 1320 mm if the unobstructed height is at least 1150mm. **c.** Car transporters with at least two loading levels when the trailer / vehicle is not separated during normal operation may have the coupling set further back than the 420mm.

Method of Inspection	Required Standard
Table 1 **Minimum Height** | **Maximum Height** 350 mm | 420 mm Coupling height requirements measured to the centre of the ball from the ground	**50 mm Ball couplings** **12.** The coupling ball must be installed to the correct height in table 1 **13.** There must be a suitable attachment point(s) for secondary coupling or breakaway cable. The tow ball is not considered suitable for this attachment. **14.** Where a 50mm ball coupling is fitted the ball must not be mounted so as to obscure the place or visibility of the rear licence plate. (See note 3)

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57 Front Under Run

Application: All Vehicles except Off-Road Vehicles, and vehicles where fitment would not be compatible for their use

Method of Inspection	Required Standard
Ensure that the vehicle has approved / tested front under-run protection, this may be in the form of a separate front under run device, or be part of the normal structure at the front of the vehicle For vehicles having a separate front under run device ensure that an approved device is fitted and that it complies to the installation requirements found in **standards 2 - 7** **Note 1:** For vehicles of category N2 not exceeding 7.5t maximum mass as an alternative to the fitment of a device, can meet the requirements for front under run protection if: • The ground clearance at the front of the vehicle does not exceed 400mm between two points set at not more than 200mm inwards from the outer edge of the tyre on each side; and • Outside these points the height may increase towards the outside of the vehicle at an angle of not more than 15 degrees from the horizontal.	**1.** The device must be accompanied by satisfactory evidence of compliance with the required standard for " Front Under Run Protection" (see note 1) **Installation Check** **2.** The device must be attached securely to the front of the vehicle **3.** The device must have a ground clearance not exceeding 400 mm **4.** The device must not extend beyond the width of the front axle (measured at the outermost part of the tyres excluding the bulging of the tyres close to the ground): **5.** The device must be no shorter than the width of the front axle by more than 100 mm on either side (measured at the outermost part of the tyres excluding the bulging of the tyres close to the ground): **6.** The device must be no shorter than the outermost point of the access steps of the drivers cabin by more than 200 mm on either side **7.** The device must not be bent to meet the requirements of standard 5 or 6

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General Construction

Application: All Vehicles subject to IVA requirements

Method of Inspection	Required Standard
The following section assesses the vehicles suitability for use under all normal operating conditions, including when it is laden to its maximum permitted axle/gross vehicle weight and considers the effects of vibrations and the forces imposed by its design speed, acceleration characteristics, braking and cornering. The vehicle must at all times present no danger to the occupants or other road users. . **Note 1:** A television monitor which can be seen from the driving position and capable of operation when the vehicle is in motion is not acceptable, unless if it provides visibility to the rear of the vehicle, a navigation map, vehicle specific information or a combination of these items. **Note 2** This assessment includes the attachment of any component/assembly of any structure, the strength and suitability of materials used, (including pipes etc), all fastenings, (welding, brazing, bonding, rivets, nuts and bolts etc) are to be assessed for suitability, completeness and security. **Note 3** When assessing a component for leaks the original design of the component will be taken into consideration.	**1.** **All** aspects of the design and construction of the vehicle must be such that no Immediate danger is caused or likely to be caused to any person in the vehicle or to other road users (see Note 1) **2.** When driven, the safe control of the vehicle must not be impaired or likely to be impaired, due to a design or construction feature of characteristic. **3.** The vehicle structure and all components including their attachment must be suitable and of adequate strength. (see note 2) **4.** A transmission/braking component which rotates during vehicle operation, electrical component, steering or suspension component, wheel or tyre must not foul on another component, or be likely to foul under normal operating conditions. **5.** Fuel and electrical components must not be subject to either a corrosive environment or be exposed to heat sources likely to cause premature failure. **6.** All steering, suspension, brake and fuel system components must not be leaking. (See note 3) **7.** All electrical cables/wires must be free from chaffing and secured at intervals of **at least** every 300mm unless contained in a secure hollow component. **8.** All electrical components must be secure be of adequate capacity and insulated as required as to prevent short circuiting during operation.

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Glossary of Terms

Air Bag
A flexible bag fitted to a vehicle designed to be filled with gas under pressure in order to protect the driver or front seat passenger in the event of a collision involving the front of the vehicle.

Blunted Edge
An edge not likely to cause injury whatever the circumstances under finger/thumb pressure (contact is not likely to puncture the skin)

Body Plan Form
The area resulting from the vertical projection of the complete body onto a horizontal surface. For the purposes of this definition “complete body” means all parts of the bodywork and chassis, including any separate wheel guards but not including running gear such as wheels, axles, suspension, brakes and steering.

Brake Efficiency
Maximum total brake force expressed as a percentage of maximum gross weight.

Breakaway Cable
A legally required safety device that activates the brakes if car and trailer become separated in transit. It works by pulling the brakes on then snapping.

CNG
Compressed Natural Gas

Date of Manufacture
In the case of an Amateur Built Vehicle is, unless otherwise stated in the regulations or Inspection Manual:

- the date on which the vehicle is presented for examination;

or

- a date prior to the date the vehicle is presented for examination if there is conclusive evidence the vehicle was completed and included all the parts which it needs to comply with the prescribed requirements and was in such a condition as to be acceptable to test on that date.

Designated Seating Position
A position where there is a seat designated for normal use while the vehicle is travelling on the road.

Disabled Person's Belt
A seat belt which has been specifically designed or adapted for use by an adult or young person suffering from some physical defect or disability and which is intended for use solely by such a person.

Extreme outer edge
In relation to the side of a vehicle, the vertical plane parallel with the longitudinal axis of the vehicle and coinciding with its lateral outer edge, disregard the protection of

a. distortion of any tyre due to the weight of the vehicle

b. connections for tyre pressure gauges

c. anti-skid devices mounted on the wheels

d. rear view mirrors

e. lamps and reflectors

f. custom seals and devices for securing and protecting such seals

g. special equipment

h. in respect of Section 49 (Exterior Projections) only: windows, handles, hinges, push buttons and fuel tank filler caps.

Front under-run protection
Means the presence at the front of the vehicle of either:

A special front under-run protection device;

or

Body work, chassis parts or other components, such that by virtue of their shape and characteristics, these elements can be regarded as fulfilling the function of the front under-run protection device;

Hard Parts
Parts made of a material of hardness exceeding 50 shore A.

Harness Belt
Means an adult belt which is a harness belt compromising a lap belt and shoulder straps.

Ignition Switch
A key operated switch normally used to start the engine.

In Running Order
In relation to the vehicle weight, means

- with all fluids (such as oils and engine coolant) necessary for the vehicle to be driven, the fuel tanks, a spare wheel and tool kit
- carrying a driver weighing 68kg but no other passenger or load.

Illuminating Surface
Should be taken to be the area of the “reflector” to the rear of the bulbs. Where lamps are mounted in a common housing and are “E” marked, the separation criteria should be assumed to be met.

Insecure
A component or its fixing is, due to its design or a construction feature, not completely attached to the vehicle structure or to another associated component as intended.

Kerbside Weight
The weight of the vehicle with no driver or passengers, a full fuel tank, an adequate supply of the necessary oils, water, fluids etc and no load other than tools and equipment normally carried.

Lap Belt
A seat belt which passes across the front of the wearer’s pelvic region and which is designed for use by an adult.

Longitudinal Plane
A vertical plane parallel to the longitudinal axis of the vehicle.

LPG
Liquid Petroleum Gas.

Major Manufacturer
A vehicle manufacturer that provides vehicles approved to EC Whole Vehicle Type Approval standards.

Manufacturer's Plate
A piece of durable material e.g. metal or plastic that is likely to last the life of the vehicle and which is permanently marked with the required markings.

Off–Road Vehicle

Vehicles in Category N2
Are to be considered to be off-road vehicles either if the wheels are designed to be driven simultaneously, including vehicles where the drive to one axle can be disengaged, **Or**

If the following three requirements are met

1) At least one front and at least one rear axle are designed to be driven simultaneously, including vehicles where the drive to one axle can be disengaged.
2) There is at least one differential locking mechanism or at least one mechanism having a similar effect.
3) They can climb a 25% gradient calculated for a solo vehicle

Vehicles in category N3
Are to be considered to be off-road vehicles either if the wheels are designed to be driven simultaneously, including vehicles where the drive to one axle can be disengaged,

Or

if the following requirements are satisfied:

- At least half the wheels are driven,
- There is at least one differential locking mechanism or at least one mechanism having a similar effect,
- They can climb a 25 % gradient calculated for a solo vehicle,
- At least four of the following six requirements are satisfied:

1) The approach angle must be at least 25°,
2) The ramp angle must be at least 25°,
3) The ground clearance between the axles must be at least 300 mm,
4) The departure angle must be at least 25°,
5) The ground clearance under the front axle must be at least 250 mm,
6) The ground clearance under the rear axle must be at least 250 mm.

Production Vehicle
A vehicle of a make, model and type mass produced by the vehicle manufacturer.

Rigid Material
A material that has a hardness of no less than 50 shore A.

Seat Displacement Device
A device to permit forward tipping of a seat or the back rest to fold down.

Secondary coupling
This cable attaches the trailer to the towing vehicle whilst towing and provides a secondary link. A secondary coupling is a legal requirement for all unbraked trailers.

Servo Assisted
A system where the muscular energy of the driver is supplemented by another energy source

Stairway
A passageway incorporating a flight of steps, from one floor or level to another

Vehicle cab
Constitutes the driver and passenger compartment, including the doors.

Record of Revision

Revision	Date	Description of Change
1	24/04/2009	

Glossary of Terms