

Testing Directive

Changes to vehicle testing: LIGHTING

Introduction

This is the third in a series of Technical Pen Pictures that looks at the changes VOSA will be implementing as a result of the new Testing Directive.

The minimum requirements for MOT testing (Periodic Technical Inspection in Europe) have long been enshrined in European law, which requires that every EU Member State has an equivalent of our own MOT test for vehicles of a testable age. The new Testing Directive introduces a number of mandatory testable items, mainly as a result of the increased number of electrical safety systems fitted to modern vehicles, but also to further harmonise the test across the EU.

We have provided earlier pen pictures relating to proposed changes to Brakes, Steering and Suspension and this document continues to review the items we plan to include in the test relating to lighting.

VOSA has been liaising with the Department for Transport and the European Commission to establish the extent of the changes necessary and to implement them with minimal impact in respect of increase in the time to carry out the test, the maximum test fee and the new equipment necessary.

The majority of these changes must be implemented by each Member State by 31st December 2011, while changes to brake performance requirements can be delayed until the end of 2013.



MOT Changes to Inspection Manual

- Section 1 (Lighting and Signalling)

This Technical Pen Picture gives an overview of the MOT test changes in respect of lighting and signalling checks brought about by an amendment to Annex II to Directive 2009/40/EC and introduced by Commission Directive 2010/48/EU.

These changes will take effect from 1 January 2012.

The first obvious change to this Section is the change of title; it is now called Lamps, Reflectors and Electrical Equipment. This change was necessary due to the introduction of a new sub-section 1.9 on Electrical Wiring and Equipment, but we'll come to that later.



Section 1.1 – Front and Rear Position lamps and Registration Plate Lamps

A new aspect to these checks, but one which does not really add to the test time, is to check that the front and rear position lamps (including end outline marker lamps for Class 5) and the registration plate lamp illuminate with a single operation of the switch.

Checking that lamps are in good condition is a familiar part of the test, but a new Reason for Rejection (RfR) has been added in respect to the lamps being visible from a reasonable distance. 'Products on the lens or light source' is now an RfR as well the previous 'excessive damage or deterioration'. This new RfR also applies to the checks of all other lamps.

It is also worth mentioning another new Reason for Rejection, although it is not related to the Directive. Previously, although the Manual stated that at least 50% of the light sources in a lamp had to illuminate; the lamp could only be rejected if it wasn't working, which wasn't really appropriate. We have therefore added a new RfR to take account of this circumstance.

Sections 1.2 – Stop Lamps; 1.3 – Rear Fog Lamp and 1.4 – Direction Indicators and Hazard Warning

The only changes in these Sections is the addition of 'products on the lens or light source' as an RfR, as well as a failure option for when more than 50% of the light sources are inoperative as detailed above.

Section 1.7 – Headlamps

To keep the test up to date with modern technology, new checks have been added in respect of High Intensity Discharge (HID) and Light Emitting Diode (LED) lamps.

HID lamps use a gas discharge system and require a ballast, igniter and special high voltage circuitry. They do not use a filament in the bulb, but have two electrodes in a glass tube filled with Xenon gas and metal salts.

A high voltage is applied between the electrodes causing an arc to form which ionizes the xenon atoms, vaporises the metallic salts and creates light. A high voltage, typically up to 20,000 volts, is required to strike and maintain the arc.

Compared with halogen headlamps, HID lamps are more efficient, have a longer service life and are much brighter; up to three times brighter in fact. The benefit of this extra brightness is that it enables drivers using HID lights to see approximately 30% further up the road ahead than for a halogen system.

The downside of this extra brightness is the potential to cause excessive dazzle to oncoming traffic. To combat this, HID headlamps often have advanced electronics that control the shape of the headlamp beam to avoid dazzle when the car climbs or descends hills and likewise when the vehicle is accelerating or braking.

Dazzle can also be caused if the lamps are dirty or aimed too high due to, for example, carrying rear seat passengers and/or heavy items in the boot. Vehicles with HID headlamps are therefore required to have a headlamp washing system (a wiper is not required) and be self levelling, which may be achieved either by the use of either headlamp or suspension levelling systems.

The presence and operation of these headlamp cleaning and levelling devices has been added to the test. Therefore, if a mandatory headlamp levelling or cleaning device is missing, inoperative or otherwise obviously defective, the vehicle will fail.

This raises the question of whether these checks apply to vehicles fitted with after-market HID lighting kits. These kits convert conventional halogen headlamps to HID Xenon and they are widely sold and fitted to vehicles used on the road. The Department for Transport considers that after-market systems should be required to meet the same safety standards as that applied in respect of these lamps at vehicle Type Approval. Therefore, in order to pass the MOT test, vehicles fitted with after-market HID systems would also need to be fitted with headlamp cleaning and self-levelling systems. Some high specification estate cars are fitted with a self-levelling suspension system and this would be considered as adequate for the purpose.

It is also worthy of note that a few high performance vehicles fitted with HID headlamps that have barely any luggage space and stiff suspension do not require a self-levelling system.

HID headlamps can be easily recognised as they generally:

- ▶ take a few seconds to reach full intensity
- ▶ have a bluish tinge to the light
- ▶ have an igniter module/inverter behind the headlamp
- ▶ may also have 'DCR' marked on the headlamp lens.

Headlamp washing and levelling systems are mandatory for all vehicles fitted with LED headlamp systems, although these are not yet widely used and only tend to be optional fitment on some executive marques. However, as LED systems improve and because they can be arranged in almost any design configuration, they are sure to become more common.

Where headlamp levelling or cleaning devices are missing or defective, but there is doubt as to whether they are required, the benefit of the doubt should be given and an advisory notice issued.

Section 1.8 – Headlamp Aim

Because headlamp bulbs are often difficult to change on many vehicles, they are frequently fitted incorrectly and therefore have no discernable beam pattern. A new Reason for Rejection has subsequently been added for such situations.

This Section also has a new page layout, so that it conforms to the general layout used throughout the Manual, although the inspection criteria and RfRs have not changed.

Section 1.9 – Electrical Wiring and Battery

The title of this new Section gives an indication of what it covers and the checks apply to all vehicles, including electric and hybrid vehicles. Also included are checks on trailer electrical sockets.

Checking the battery is simple enough on most vehicles, but where it cannot be readily accessed without the use of tools, it will not be possible to carry out the checks. Vehicles will fail if a battery is leaking electrolyte or is insecure.

All visible electrical wiring must not be in such a condition that it is insecure, inadequately supported or likely to cause a short. Any bare wiring exposed due to damaged insulation will therefore be rejected.

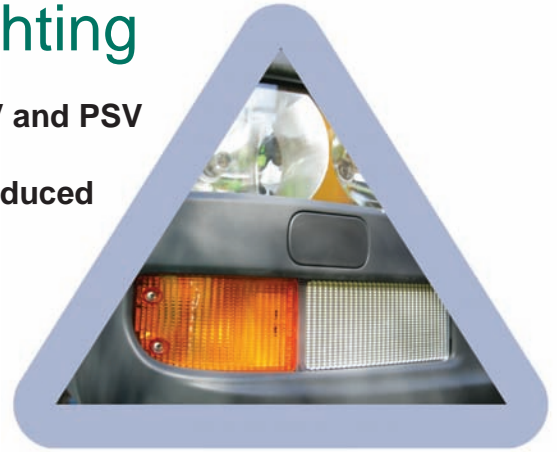
Trailer electrical sockets, where fitted, will need to be secure and not damaged to the extent that the plug could not be securely connected. An additional check of the connectivity of the wiring will apply to 13-pin trailer sockets.

This connectivity check will require an approved device to be plugged into the socket while the position lamps, stop lamps, rear fog lamp and direction indicators are operated. The device will show whether or not each system is wired as per the requirements and clearly any non-compliance will result a failure.

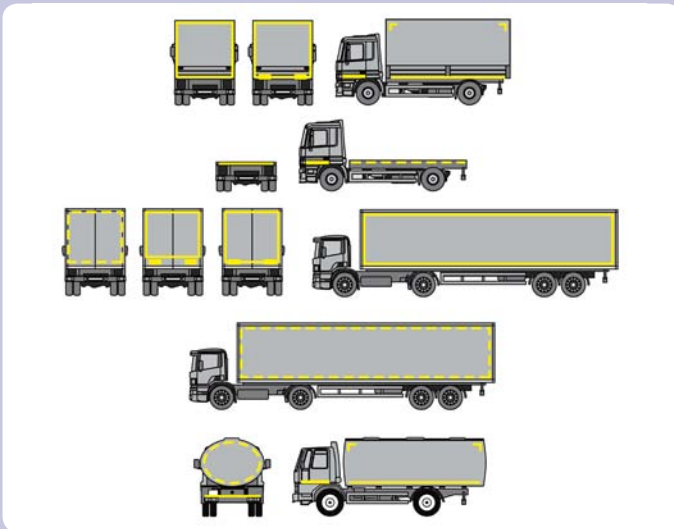
HGV and PSV Changes to Lighting

This Technical Pen Picture gives an overview of the HGV and PSV test changes in respect of lighting brought about by an amendment to Annex II to Directive 2009/40/EC and introduced by Commission Directive 2010/48/EU.

These changes will take effect from 1 January 2012.



IM Section 62 – Rear Markings and Reflectors



This is a large and complicated change that we have made. It introduces **Conspicuity Marking** into the test and appropriate marking on the rear and sides of the vehicle are required.

Goods vehicles with a GVW exceeding 7500kg first used on or after 10th July 2011 and trailers exceeding 3500kg GVW manufactured after 10th July 2011 are required to be fitted with Conspicuity Marking. There are a number of exemptions and these will be detailed in the application text of the Inspection manual

In general, full contour marking on the vehicle's rear is required and partial contour marking on the side. As always, consideration will be given where the shape, structure, design or operational requirements make it impossible to comply and in these cases line marking will be acceptable. Most vehicles will be fully compliant however some vehicle or body types will prove challenging. Guidelines are provided in the FTA Compliance Guide to assist examiners in other body types such as tankers, skip lorries, car transporters and refuse vehicles and you should note that the legislation applies to new vehicles, not retrofit – therefore vehicle and body designers may need to make moderate design changes to enable vehicles to be fitted with Conspicuity marking.

Within this section we shall be including conspicuity marking reasons for failure alongside reflectors and rear markers.

IM Section 63 – Lamps

This section identifies additions to the test that include rear registration plate lamp condition and operation. We have applied a practical approach here and the test will apply to motorised vehicles only.

Another change in this area is the addition of main beam warning light as a new testable item. Vehicle presenters will have to make sure that it illuminates when main beam is selected and extinguishes when de-selected.

Security, damage or deterioration checks will be conducted on trailer electrical sockets and this check will apply to all sockets that are fitted. This will make sure that trailer connection sockets left hanging by the wire now become a testable item.

Some of you may note that we have taken the opportunity to update the diagrams in our Inspection Manual. Don't be surprised if you see a much more modern vehicle diagram rather than our trusty old lorries and rest assured; the standards have not changed.



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