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REGULATION No.46
(Devices for indirect vision. N2 and N3 vehicles)

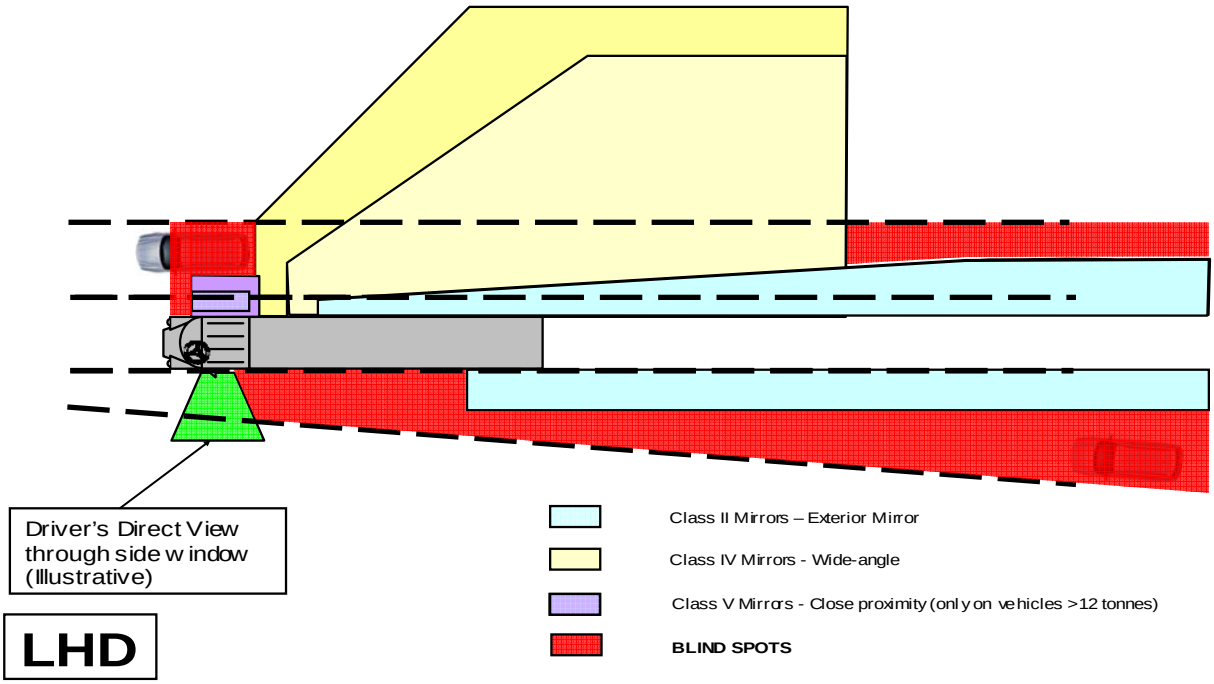
Improving Vision from N_2 and N_3 Vehicles

INTRODUCTION

This is a preliminary informal paper drawing attention to a blind spot on Heavy Goods Vehicles (HGV's) which the UK would like to see urgently remedied, and on which the UK intends to submit formal proposals at the next meeting of the Group.

BACKGROUND

HGV's have a blind spot on the passenger side of the cab which makes it impossible for the driver to see an adjacent smaller vehicle on dual-carriageways and motorways. The problem is caused by the sitting position of the driver relative to the adjacent vehicle, and the fact that a car, for example, cannot be seen in any of even the latest compulsory mirrors (especially when it is immediately adjacent to the HGV cab, and also slightly forward of it).



This is a significant problem in the UK because drivers of visiting HGV's are unable to see adjacent cars - especially when traffic flow is heavy and a car driver may have had no choice other than to run parallel to an HGV cab for more than only a short period of time. In such circumstances an accident is inevitable when the HGV driver 'pulls out' to overtake a slower moving vehicle in front. Typically, the front passenger side of the HGV collides with the rear quarter panel of the car which then rotates, and may either end up 'broadside' in front of the HGV, or be spun off the carriageways altogether. We refer to such accidents as 'side-swipes'.

The consequences in the UK are illustrated from the latest accident record statistics in the UK. In 2007, there were 4 fatal accidents caused by visiting HGV sideswiping, 18 serious injury accidents and 280 accidents involving slight injury. (These figures do not include damage-only accidents or 'near-miss cases' that we frequently hear about).

This may not appear to be a significant number of casualty accidents, but, there are further statistics which help to put the issue into sharp context. For example, although there were 9 serious injuries caused by UK-registered HGV's side-swiping vehicles to the right in 2007, and 202 slight-injury accidents, the cause of such accidents is not the same - in that the driver should always have direct or indirect vision of cars in the adjacent carriageway to the right.

Notwithstanding the fact that the cause of such accidents is different - as between drivers of 'left-hand drive' (LHD) vehicles who cannot always see into the adjacent lane to the right - and drivers of 'right-hand vehicles' (RHD) who should always be able to see into the lane to the right - the numbers of such accidents are of a similar order of magnitude irrespective of whether the vehicle is LHD or RHD. However, visiting LHD HGV's only comprise 4% of the HGV traffic in the UK, and this makes the frequency of such accidents extremely worrying for us. Furthermore, 40% of all injury accidents in the UK are caused by side-swiping, as described above.

In addition to the road safety impact of such accidents, side-swiping accidents involving LHD HGV's - which occur mostly on the routes from the coastal international gateways - Dover, Folkestone, Felixstowe, etc. - lead to major disruption and congestion on the strategic road network in the UK.

DISCUSSION

At first glance it could be fairly easy to dismiss this problem as being something that is particular to the UK (and other States that 'drive' on the left). However, there are three further fundamental points that are relevant.

Firstly, there is the fact that drivers of RHD HGV's travelling in mainland Europe must inevitably encounter the same blind-spot problem when they pull-out to the left in order to overtake a slower moving vehicle in front. We do not have any information about whether this causes a significant number of incidents – but given that the number of UK-registered HGV's visiting particular States in Europe are inevitably far fewer than the number of non-UK-registered LHD HGV's visiting the UK, it seems to be inevitable that this particular mode of side-swiping may not be as evident to colleagues in other States.

Secondly, even though 'side-swiping' accidents caused by 'foreign HGV's' may not be as noticeable elsewhere in Europe as it is to us in the UK, we believe there is clear evidence that the same blind-spot we address in this paper is also responsible - at least in part - for some side-swiping accidents to the left in the UK (and in other States that 'drive' on the left); and, for some side-swiping accidents to the right in other European States. We believe that such accidents continue to occur because of the relatively restricted vision that an HGV driver may have into the carriageway adjacent to the passenger-side of his vehicle - either directly, or indirectly.

The third point is that it must be inevitable that providing a driver with a view into a clearly demonstrable blind-spot must improve his chances of not becoming involved in an accident which would otherwise be likely to happen. Of course the cost-effectiveness of any suggested solution would have to be carefully considered - which is something the UK is intending to provide additional information about before the next meeting of the Group - but we believe that eliminating this particular blind-spot could be undertaken relatively easily and cost-effectively. And, that it would deliver worthwhile benefits irrespective of whether the HGV was being driven 'at home' or abroad.

FURTHER INVESTIGATIVE WORK WE HAVE COMPLETED SO FAR

The UK has undertaken two significant elements of investigative work so far:

- to look for a potential practical solution to the problem; and,
- to seek to document the problem with some evidence-based research.

A potential practical solution:
The potential practical solution was to equip large vehicles with a 'Fresnel lens' on the passenger door side window – in order to give drivers a wider field of vision through the window and a true image of adjacent vehicles.

A Fresnel lens is a small sheet of flexible plastic (about 25cm x 30cm x 3mm thick) with a moulded optical lens that self-adheres to flat glass. Fresnel lenses require no special fittings and do not impede the drivers view through the passenger side window. These lenses cost around €15 individually, but bulk purchase can reduce this considerably (e.g.: 50+ @ €10 / 10,000+ @ €5).

The effect of enhancing driver vision through the passenger side-window was studied during a trial period in the UK (which ran from August 2006 to March 2007). During the course of the trial 40,000 Fresnel lenses were issued - free of charge and subject to voluntary fitment - to LHD HGV's entering the UK by the Channel crossings. Results from this trial indicated a 59% reduction in side-swipe incidents (casualty and damage-only) involving LHD HGV's in the period following the issuing of the lenses. Full details of this report can be accessed through the following web-link:
http://www.vosa.gov.uk/vosacorp/repository/Final%20Fresnel%20VOSA%20report%20V1.3.pdf

In view of the success of the trial, further lenses are being issued - but in the hope that it will be possible to implement a longer-term solution with the help of the UNECE in the not too-distant future.

The impact of Fresnel lenses in helping to reduce side-swiping accidents has been sufficient in the UK to persuade other UK public bodies to commend their use - notably

with a view to helping to reduce the incidence of side-swiping of vulnerable road users by RHD HGV's. To date 'Transport for London' (the organisation responsible for the implementation of transport strategy in London) has handed out 10,000 Fresnel lenses to UK-registered HGV's in the Greater London area during March 2008. And, the Olympic Delivery Authority (the organisation responsible for developing and building the new venues and infrastructure for the 2012 Games in London) has made it a requirement for all HGV's seeking to access the site to have a Fresnel lens fitted to the passenger window.

Evidence-based research

The UK DfT recently commissioned from the UK Transport Research Laboratory (TRL) a study to determine the precise extent of the blind spot on the passenger side of HGV's - and also to determine how supplementary devices may help to alleviate the deficiency.

The results of the study so far indicate that, whilst the changes instigated by EC Directives 2003/97 and 2007/38 provide significant improvements in driver vision, blind spots on the passenger side of the vehicle still remain. The study has also indicated that whilst supplementary devices, such as the BDS and Dobli mirrors are useful, a Fresnel lens was able to provide good coverage and could give the driver a true image of a smaller vehicle alongside.

The problem of the blind-spot can be seen in the following photograph - which shows a medium-sized car in the middle of the adjacent carriageway to the HGV. The point being that the car is not visible in any of the mirrors and that it would also not be visible to the driver by direct vision. It is only visible (in the photograph) to the driver because of the Fresnel lens in the window.

The study has not yet been completed because TRL have yet to assess the extent to which:

- the height of the driver;
- the seating position of the driver; and,
- the height of the passenger window from the road,

affect vision into the potential blind-spot adjacent to the cab of the vehicle. Initial indications are that the extent of the blind-spot is likely to be affected by all of these parameters - and that the extent of the blind-spot depends on the make and model of the vehicle concerned.

It is hoped that the study will be completed before the end of 2008 and that full details will be published by the beginning of 2009.

CONCLUSIONS

Significant research has already been conducted into reducing blind-spots using HGV Mirrors - and this has resulted in the legislative changes in EC Directive 2003/97 and some National changes within Member States. Further legislative change, for existing vehicles is contained in EC Directive 2007/38.

However, blind-spots remain - the most notable of which in the view of the UK lies in the area immediately adjacent to the passenger side of HGV cabs-

Fresnel lenses have been shown to be highly effective in reducing the incidence of side-swiping by foreign-registered vehicles whilst in the UK - but their fitment is not compulsory and lenses are only being offered as a short-term solution to the problem.

Evidence-based research confirms the existence of significant blind-spot adjacent to the cab of some types of HGV. Once this has been finalised the UK will be preparing a proposal to rectify the problem, which it aims to present as a formal proposal at the next meeting of the Group. The objective will be to help safeguard against side-swiping accidents irrespective of whether or not the vehicle is being used ‘at home’ or abroad.