



Vehicle Safety Systems Installation

How to comply with the New Standards

Jason McComb

Introduction

- Introduction
- The AVI
- Equipment and Standards
- Myth Busting
- Future
- Something to think about



Jason McComb/AVI

What We Do.....



IMI Accredited
Training



Support for
engineers



Training and
Development



Sharing of
knowledge and
latest innovations



End user awareness
of minimum
standards



Key stakeholder
awareness

Trade Bodies

We have partnered with trade bodies to offer support and technical advice to them on equipment and installation practices so that:

- Operators can obtain a quality and consistent level of installation from qualified installers and members.
- Manufacturers and Installers (our members) can obtain the up-to-date information on the requirements and standards set by the trade, by offering information and courses



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FORS/CLOCS

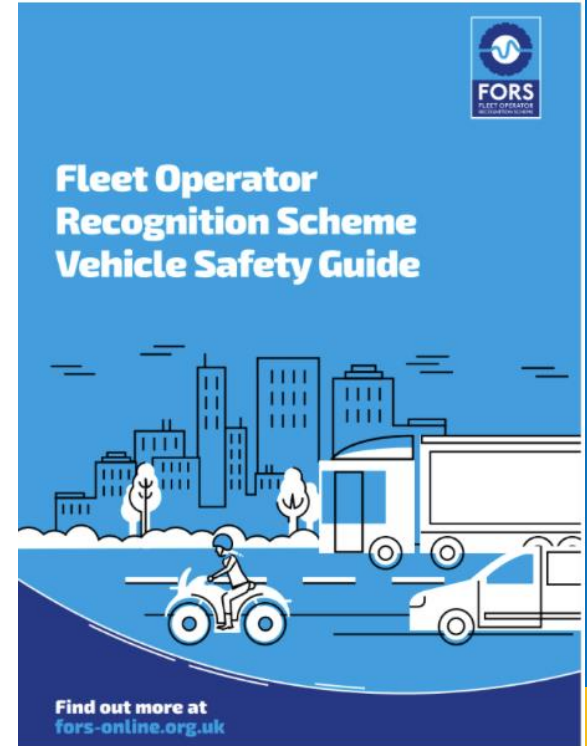
We are technical Advisors for the Technical guide FORS specifications.

The AVI have now been awarded supporter status and will be providing bulletins and webinars for FORS members and associates.

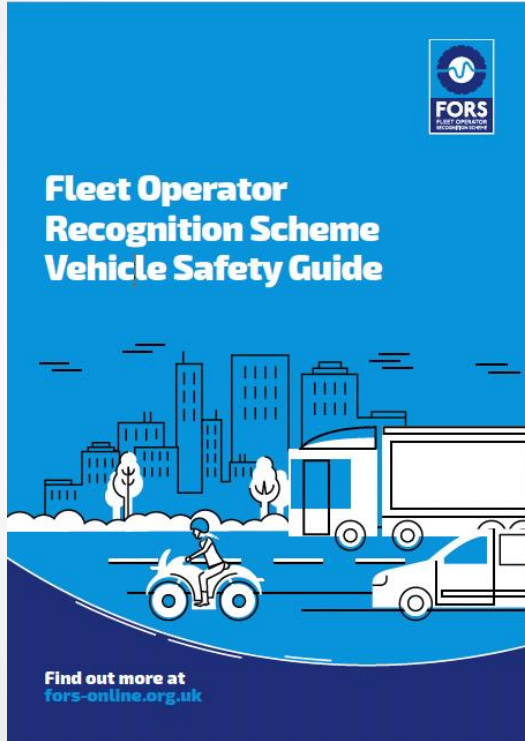
We are CLOCS Strategic Partners



Construction
Logistics and
Community Safety



FORS Vehicle Safety Equipment Guide



Available from the FORS website under 'Guides'

Acknowledgement

We gratefully acknowledge the invaluable contributions of the Association of Vehicle Installers in the production of this guide.

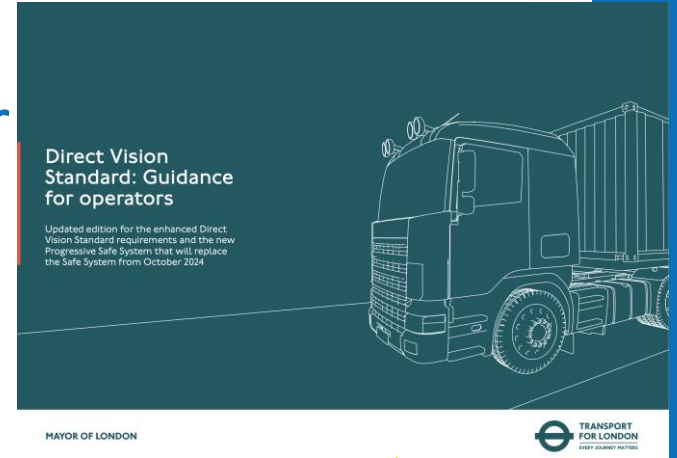
The Association of Vehicle Installers offers training and accreditation programme to install equipment into vehicles. For more information, please visit theavi.org.uk or email info@theavi.org.uk



DVS

We are the recommended route for the installation of equipment for PSS

We provide independent testing of the equipment against PSS standard to include testing of the BSIS & MOIS systems

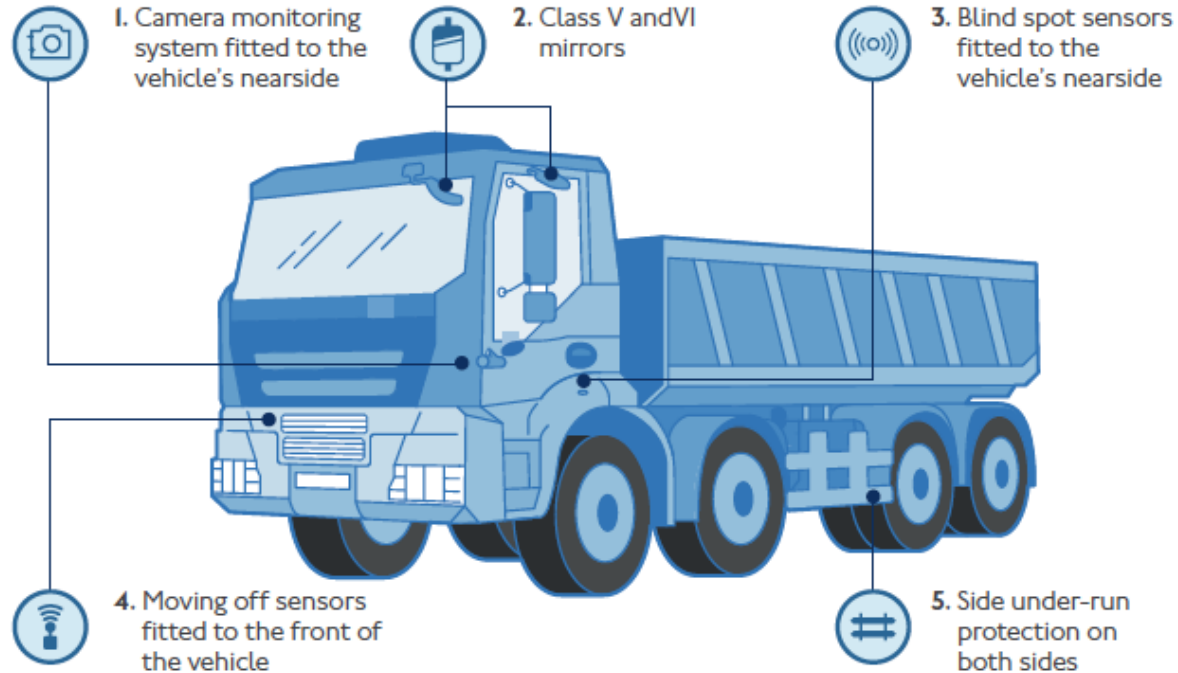


We recommend that any equipment fitted as part of the PSS is installed by a competent and qualified fitter. The Association of Vehicle Installers maintains a list of competent and qualified fitters on their website that may be used to install the PSS.

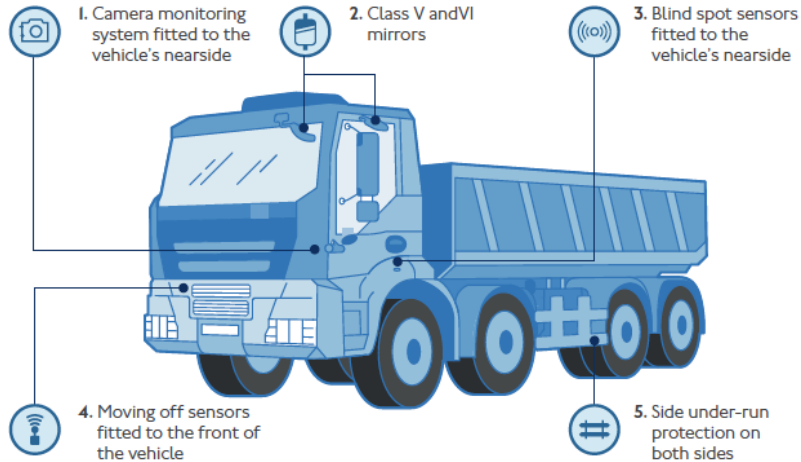


Equipment Required

PSS/FORS Silver Requirements

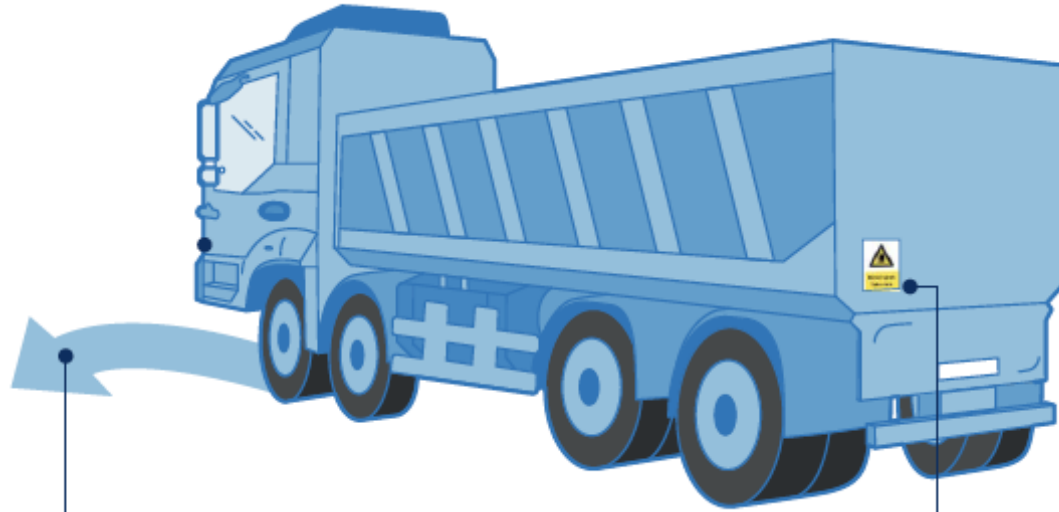


PSS/FORS Silver Requirements



1. A fully operational camera monitoring system must be fitted to the nearside of the vehicle, to completely eliminate the remaining blind spot at the nearside
2. Class V and VI mirrors, or a camera monitoring system that replaces the mirrors, or a combination of both, must be fitted to the front and nearside of the vehicle. These should be fitted in compliance with UNECE Regulation 46
3. A blind spot information system, with active sensors that gives adequate warning to the driver of the presence of a vulnerable road user, must be fitted to the nearside of the vehicle in accordance with the technical specifications for the PSS. A vehicle that demonstrably complies with UNECE Regulation 151 will meet this requirement
4. A moving off information system must be fitted to the front of the vehicle to warn the driver of the presence of a vulnerable road user, in accordance with the technical specifications for the PSS. A vehicle that demonstrably complies with UNECE Regulation 159 will meet this requirement
5. Side under-run protection must be fitted to both sides of the vehicle, except where this is demonstrably impractical. This equipment must be fitted in compliance with UNECE Regulation 73 on lateral protection devices

PSS/FORS Silver Requirements

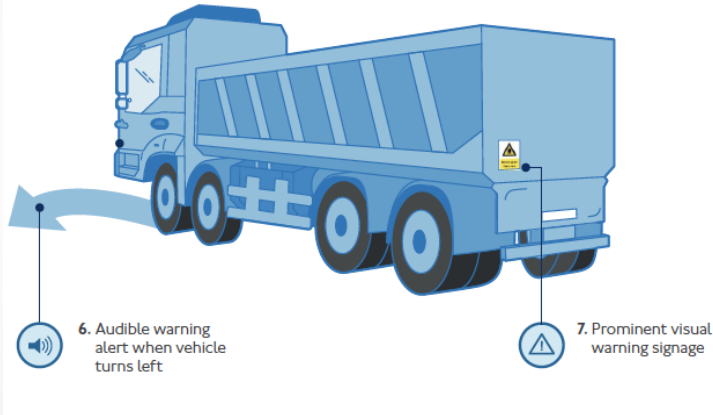


6. Audible warning alert when vehicle turns left



7. Prominent visual warning signage

PSS/FORS Silver Requirements



6. An audible vehicle manoeuvring warning must be fitted to provide an adequate audible warning to vulnerable road users when a vehicle is turning left
7. External pictorial stickers and markings must be displayed on vehicles to provide adequate visual warning to vulnerable road users of the hazards present around the vehicle

FORS/CLOCS

Still acceptable to install the Non AI Side Sensors systems (Ultrasonic) and there is no requirement for the Moving Off Systems



FORS vs DVS

FORS vs DVS

FORS

7 Requirements

All vehicles over
3.5 tonnes

3 Levels

Voluntary

DVS

7 Requirements

All vehicles over
12 tonnes

1 Standard

LAW

FORS vehicle safety requirements

FORS Mandatory requirements for vehicles over 3.5 t vehicles				Recommended	Option
	Bronze	Silver	Gold		
Side under-run protection	Yes	Yes	Yes		Covering Panel, Signage applied
Class V and VI mirrors or camera system	Yes	Yes	Yes		Option to replace with camera
Blind spot warning signage - Rear	Yes	Yes	Yes		Side of Vehicle, Rear Tractor Unit, LED's
Audible Sensor Systems – Sidescan (BSIS PSS)		Yes	Yes		Rear Sensors on Trailers and Rigid's
Blind spot Camera Nearside		Yes	Yes	Cameras cover all areas (360 view), DVR	
Rear Camera		No	No		
Audible Left Turn Alarm should be with On/Off Switch		Yes	Yes	Voice Message, Night Curfew Switch	
Reversing Alarm		Yes	Yes	Buzzer, Bleeper or voice, Night Curfew switch	



FORS mandatory requirements for over 7.5T rigid's	Bronze – as above	Silver – as above	Gold – as above
Rear Camera	Not required	Required	Required



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DVS/HS2 vehicle safety requirements

HS2 - Fitment of Silver System after 5th visit to site

FORS Mandatory requirements for vehicles over 7.5 t vehicles				DVS for all Vehicles over 12 tonnes	Recommended	Option
	Bronze	Silver	Gold			
Side under-run protection	Yes	Yes	Yes	Yes		Covering Panel, Signage applied
Class V and VI mirrors or camera system	Yes	Yes	Yes	Yes		Option to replace with camera
Blind spot warning signage - Rear	Yes	Yes	Yes	Yes		Side of Vehicle, Rear Tractor Unit, LED's
BSIS		YES*	Yes*	Yes	If fitted as part of the DVS Requirement	
MOIS		YES*	Yes*	Yes	If fitted as part of the DVS Requirement	
Blind spot Camera Nearside		Yes	Yes	Yes	Cameras cover all areas (360 view), DVR for mass spoil movements (HS2)	
Rear Camera – Rigid		Yes	Yes	No		
Audible Left Turn Alarm should be with On/Off Switch		Yes	Yes	Yes	Voice Message, Night Curfew Switch	
Reversing Alarm		Yes	Yes	Yes	Buzzer, Bleeper or voice, Night Curfew	

DVS - 2024

Progressive Safe System - New Vehicle

- Mirror System (normally fitted by Manufacturer)
- Side Under Run Protection (normally fitted by Manufacturer)
- Camera Monitoring System
- Audible Alert System
- Signage
- BSIS - Blind Spot Information System
- MOIS - Moving Off Information System

DVS Upgrade from 2019 to 2024

Progressive Safe System

- Mirror System (normally fitted by Manufacturer)
- Side Under Run Protection (normally fitted by Manufacturer)
- Camera Monitoring System (already installed)
- Audible Alert System (already installed)
- Signage (already installed)
- **BSIS - Blind Spot Information System**
- **MOIS - Moving Off Information System**
- **Deactivate the existing sensor system**

GSR 2 Regulations

- General Safety Regulations 2 has been introduced to all new vehicles from 2024.
- UNECE 159 and UNECE 151 define new safety systems for the Moving Off information Systems and Blind Spot Information Systems.
- These have specific requirements for the EU market
- The PSS has created new versions of the BSIS and MOIS systems which have **different coverage zones for the UK market** and are different in a number of ways

GSR 2

The GSR introduces several new mandatory safety features for buses and trucks, including:

- **Emergency stop signal:** A flashing light that indicates to other road users behind the vehicle that the vehicle is suddenly slowing down or braking heavily.
- **Reversing information:** Camera and/or sensor technology that shows the driver if there are objects or people behind the vehicle when they are reversing.
- **Tyre pressure monitoring system:** A system that monitors the tyre pressure and reports it in real time to the driver.
- **Moving off information system:** Warns the driver of a potential collision with pedestrians and cyclists that are in the proximity of forward blind spot of the vehicle.
- **Blind spot information system:** Warns the driver of a possible collision with vulnerable road users at the vehicle, especially when making turns. It's active at low speed.
- **Alcohol interlock installation facilitation:** A standardised interface that allows the fitting of aftermarket breathalyser interlock devices, preventing drivers who are over the drink-driving limit from driving the vehicle.
- **Drowsiness and inattention detection and warning:** A safety warning system that detects driver fatigue and distraction and warns the driver in real-time.
- **Intelligent speed assistance:** The system actively monitors the vehicle's speed by using cameras and GPS-linked map databases and warns the driver from exceeding the speed limit.

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- **Reversing information:** Camera and/or sensor technology that shows the people behind the vehicle when they are reversing.
- **Tyre pressure monitoring system:** A system that monitors the tyre pressure and alerts the driver.
- **Moving off information system:** Warns the driver of a potential collision with vehicles that are in the proximity of forward blind spot of the vehicle.
- **Blind spot information system:** Warns the driver of a possible collision with vehicles in the blind spot of the vehicle, especially when making turns. It's active at low speed.
- **Alcohol interlock installation facilitation:** A standardised interface that allows for the installation of aftermarket breathalyser interlock devices, preventing drivers who are over the legal limit from driving the vehicle.
- **Drowsiness and inattention detection and warning:** A safety warning system that detects driver fatigue and distraction and warns the driver in real-time.
- **Intelligent speed assistance:** The system actively monitors the vehicle's speed by using cameras and GPS-linked map databases and warns the driver from exceeding the speed limit.

UNECE
159 & 151

GSR 2 Vehicle

Progressive Safe System

- Mirror System (normally fitted by Manufacturer)
- Side Under Run Protection (normally fitted by Manufacturer)
- **Camera Monitoring System (Optional)**
- **Audible Alert System**
- **Signage**
- BSIS - Blind Spot Information System
- MOIS - Moving Off Information System

Sensor Technologies

- The PSS documents have been written to accommodate both AI and Radar Technologies.

Progressive Safe System: Detailed Specifications

Blind Spot Information Systems (BSIS)

Progressive Safe System: Technical Specifications

Moving Off Information Systems (MOIS)



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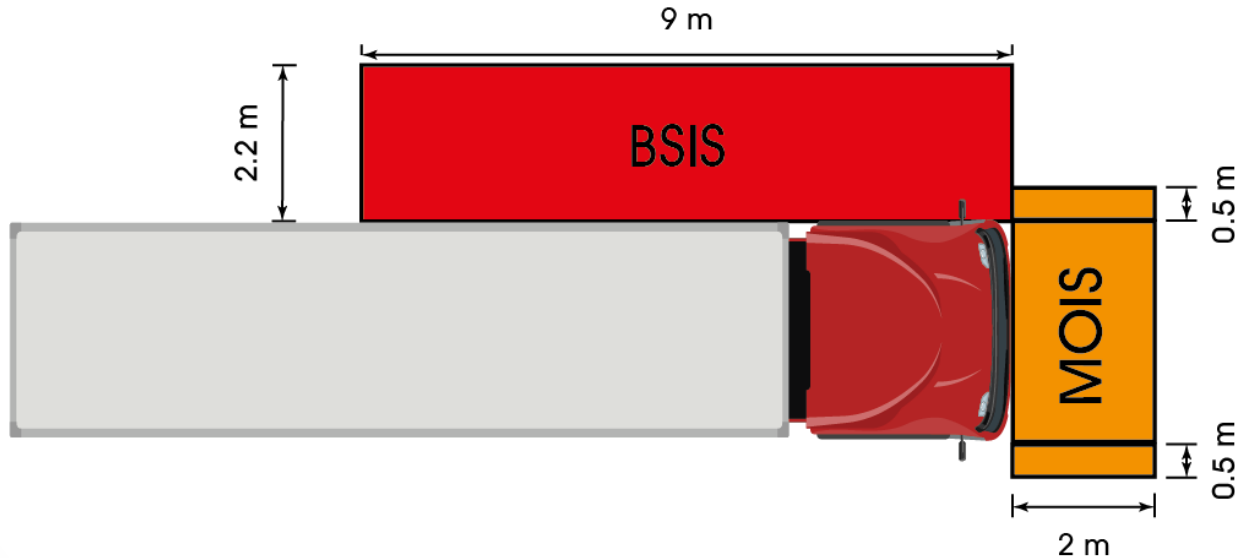
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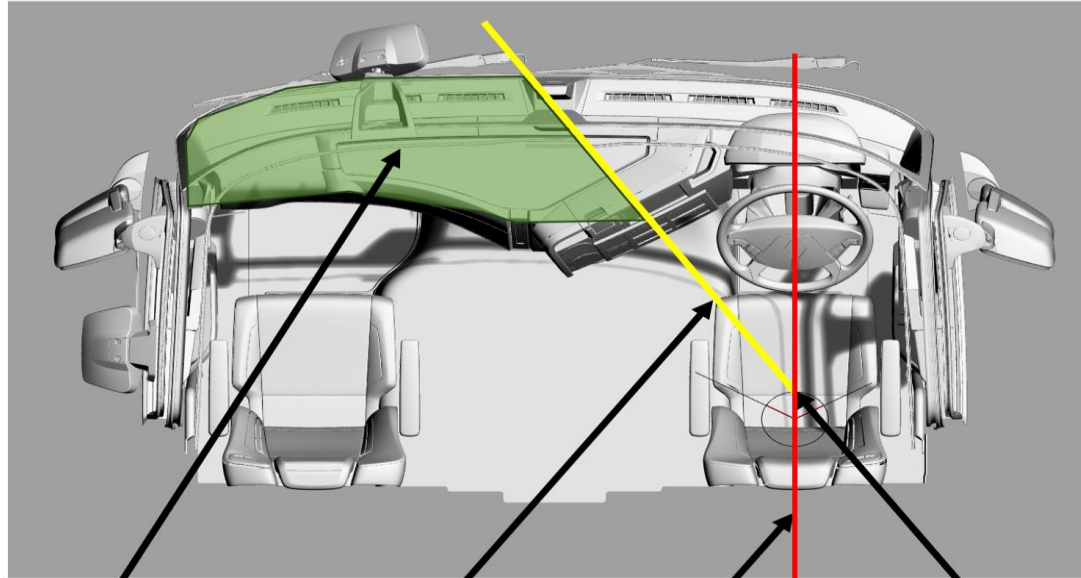
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How should the BSIS and MOIS work?

- The Systems should provide two types of messages for the driver
- The **INFORMATION** signal
 - The **INFORMATION** signal should be a **VISUAL** signal when there is a cyclist or pedestrian in the detection areas
- The **WARNING** signal
 - The **WARNING** signal should combine a different visual signal with a **TONAL AUDIBLE** signal but only **when a collision is imminent**
 - (A haptic signal can also be used to replace one of these)



BSIS Display



Green area zone for display

30° relative to an axis parallel to the longitudinal median plane of the vehicle and going through the ocular reference point.

Axis parallel to the longitudinal median plane of the vehicle

Ocular point



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Future.....

Future

- **A new version of the London Direct Vision Standard** is now being adopted by all vehicle manufacturers in the EU through the new regulation UNECE 167
- UNECE 167 defines even more stringent direct vision requirements for all new types of HGV from 2026 and ALL HGVs by 2029

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GSR 2 - Retrofit?

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Something to think about??

What can I do?



Construction
Skills Certification
Scheme



INSTITUTE OF THE
MOTOR INDUSTRY

What can I do?



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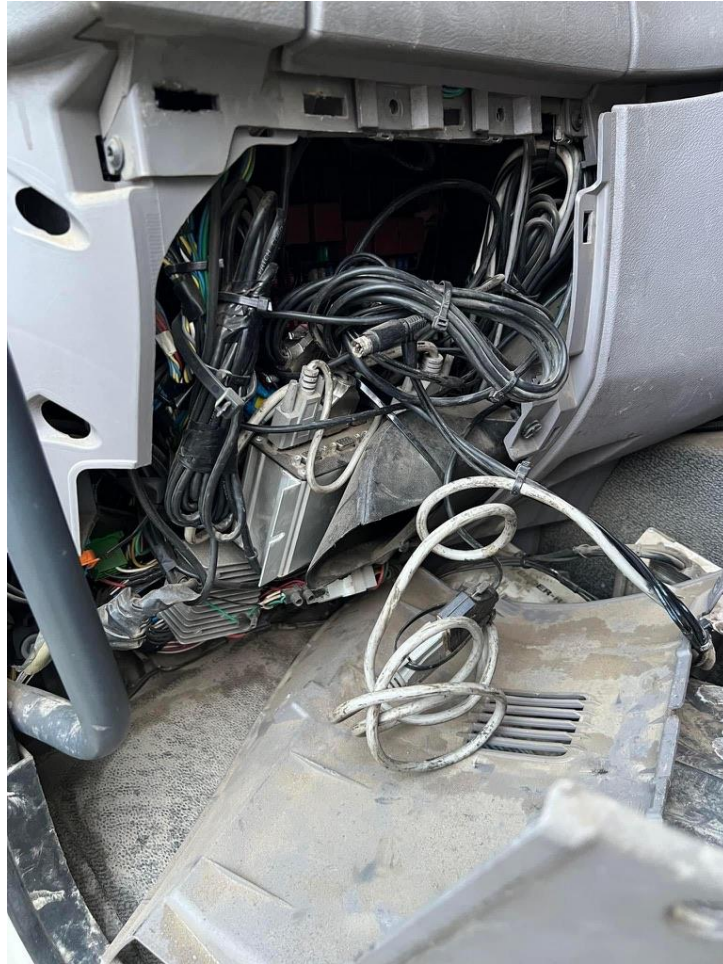


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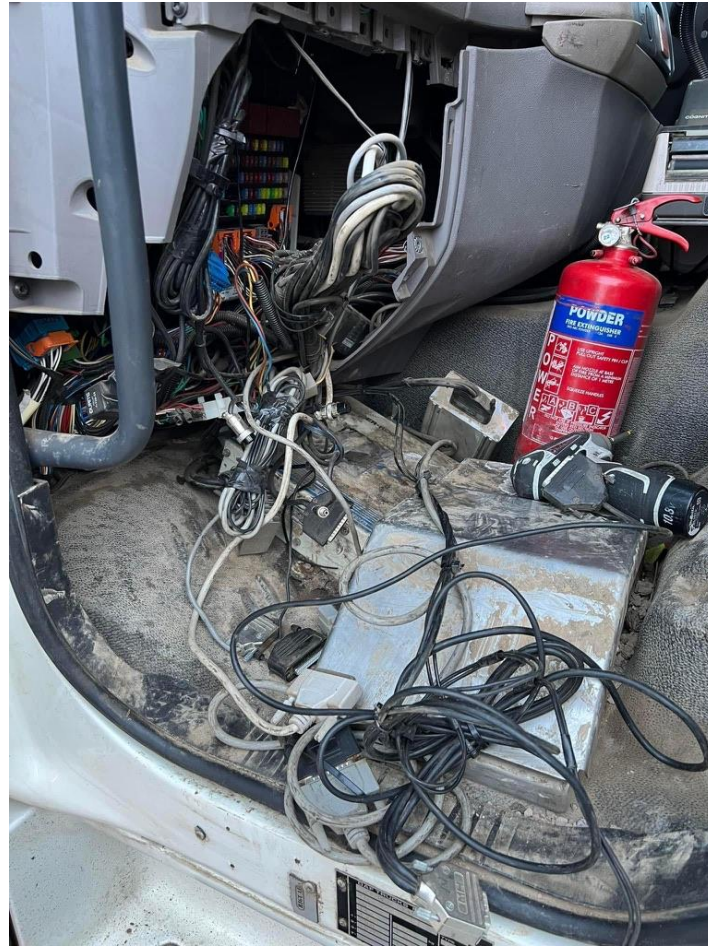
Installs



Installs



Installs



What can I do?



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Thank you

Q & A

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