



DRIVER CERTIFICATE OF PROFESSIONAL COMPETENCE
**CONTROL OF THE VEHICLE AND
ECO-DRIVING TECHNIQUES**

Session 2

DRIVER
CPC MODULE
NUMBER

1.3

Road Safety Authority – CPC Training Manual – Control of the Vehicle and Eco-Driving Techniques. V.1.3. Session 2





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SESSION 2 OBJECTIVES

Objective heading

To know the technical characteristics and operation of the safety controls in order to control the vehicle, minimise wear and tear and prevent disfunction.

Directive text

Specific features of hydraulic vacuum servo brake circuit, limits of the use of brakes and retarder, combined use of brakes and retarder, making better use of speed and gear ratios, using ways of slowing down and braking on downhill stretches, action in the event of failure.

Training Aim

At the end of this training the trainee driver will understand:

1. Specific features of hydraulic vacuum servo brake circuits;
2. Limits to the use of brakes and retarders;
3. The combined use of brakes and retarders;
4. Making better use of speed and gear ratios when slowing;
5. Ways of slowing down and braking on downhill stretches;
6. Action in the event of a breakdown.
7. Driver assistance technologies.
8. CVRT – the objectives of CVRT and its contribution towards road safety.





SECTION A – BRAKING SYSTEMS

This section looks at the various braking systems that are in use in large vehicles and the technical components and physical characteristics of these systems, so that you can be more aware of what you may need to do if one of these systems fail in your vehicle. Understanding how the various braking systems work will help drivers with regard to their safe operation and you will be able to make informed decisions about what options you can take in the event of that failure. The section begins by looking at general principles behind braking systems. We will then look at what are known as ABS systems and we will explore what they are and why they are important in large vehicles.

Next, we look at what a driver needs to know about this system how to use it and how to identify when the system may not be operating in a vehicle. We will then look at the newest addition to this process called the EBS - Electronic Braking System - which uses electronics for the control side of the vehicle's braking system.

This is where an electronic signal replaces the air signal sent by the brake pedal to activate the brakes, improving stopping distances and braking system performance.

Types of brakes

There are 4 main types of braking systems fitted to trucks/buses:

- The service brake;
- The secondary brake;
- The parking brake;
- The endurance brake.

The service brake is the principal braking system used and is operated by a foot control. It's used to control the speed of the vehicle and to bring it safely to a halt. It may also incorporate an anti-lock braking system (ABS).



Example of a manually operated parking brake control

The secondary brake may be combined with the footbrake or the parking brake control. This brake is provided for use in the event of the service brake failing. The service brake normally operates

on fewer wheels than the service brake and therefore has a reduced performance level.

The parking brake is usually a hand control and may also be the secondary brake. It should normally only be used when the vehicle is stationary. The parking brake must always be set to 'on' and the engine switched off when the driver leaves the driving position.

The endurance brake. Most modern trucks and buses are also equipped with endurance braking systems - commonly known as retarders.



Example of endurance brake control

Disc brake

The disc brake consists of

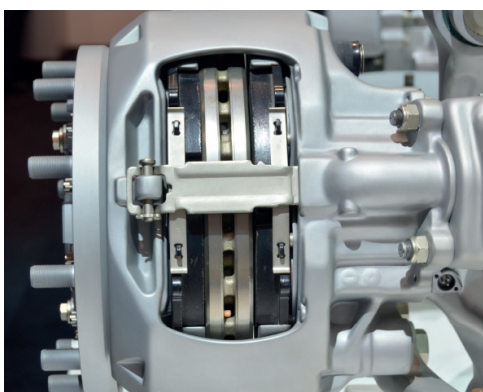
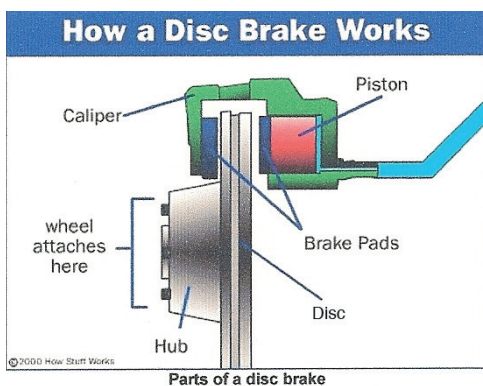
The brake pads;

The **caliper**, which contains a piston or pistons;

The **disc**, which is mounted to the hub.

In a disc brake, the brake pads apply pressure to the disc to slow or stop the vehicle.





Example of disc brake

Drum Brake Systems

Brake shoes apply pressure to the inner surface of a rotating drum to slow the vehicle.



Example of brake shoes

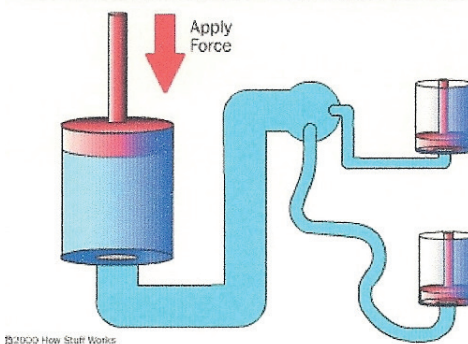
Leverage and hydraulics

Many smaller goods and passenger carrying vehicles use hydraulic braking systems rather than air brakes, which are generally reserved for larger/heavier vehicles, usually in excess of 7,500 kg. g.v.w.

The basic idea behind any hydraulic system is that force which is applied at one point is transmitted to another point using an incompressible fluid.

This means that when the brake pedal is pressed, pressure is transmitted evenly throughout the system.

Master and Wheel Cylinder Hydraulic System



Air brakes

The braking systems on heavy vehicles use compressed air to apply and release the brakes. The main components of the foundation air brake system are:

- **Air compressor:** pumps air into storage tanks to be used in the brake and auxiliary system.
- **Air dryer:** a filtration system which removes moisture and contaminants from the compressed air.
- **Air compressor governor:** controls the cut-in and cut-out point of the air compressor.
- **Air reservoir tanks:** hold the compressed or pressurised air.
- **4 Way Protection Valves (multi circuit protection valve):** splits the air coming from the compressor in 4 ways – supplies the primary brake circuit; then secondary brake circuit; ancillary systems including air suspension and finally to the parking brake circuit.
- **Drain valves:** release valves in the air tanks used to drain the moisture from the air tanks.
- **Brake Pads:** steel pad with a lining that causes friction against the disc.





- **Foot valve (brake pedal):** when depressed the brakes are applied.
- **Load sensing valve:** adjusts the brake pressure relative to the load being carried.
- **Brake chambers:** cylindrical container that activates the brakes when pressurised.
- **Slack adjuster:** a device which adjusts the clearance between the brake shoes and brake drum.
- **Brake S-cam:** an S-shaped cam that pushes brake shoes apart and against the brake drum.
- **Brake shoe:** steel mechanism with a lining that causes friction against the brake drum.
- **Return spring:** a stiff spring connected to each of the brake shoes.
- **Spring Brakes:** are often used to apply the brake whereas the air disengages the brake.

Antilock Braking System (ABS)

The original idea for an Antilock Braking System (ABS) dates back to the mid 1930's. However, at the time the cost of components and manufacturing restricted its application mainly to the aircraft industry. It was not until the late 1970s that materials and production techniques developed sufficiently, allowing for a more widespread application to motor vehicles. Initially fitted as standard equipment to luxury saloon cars, the ABS is now fitted to in excess of 90% of vehicles in the EU.

It is arguably one of the most valuable safety systems fitted to motor vehicles in recent years, and one often misunderstood by the average driver. The reason for this may stem from the systems title of 'Antilock Braking'; this infers that because the system prevents the wheels from locking that an ABS shortens stopping distance.

The primary function of an ABS is to help maintain control of the vehicle's steering when braking on slippery or icy road surfaces. It achieves this function by preventing the road wheels from locking thereby allowing the vehicle to be steered around or away from a hazard.

IMPORTANT

The Antilock Braking System does not necessarily shorten stopping distances.

How it works

There are three main components of the ABS

- A Rotational Speed Sensor
- An Electronic Control Unit (ECU)
- A Brake Pressure Modulator

The rotational speed sensor registers a change in the wheel's speed of rotation as the wheel decelerates under braking. It senses that the wheel has slowed too much and is about to stop rotating completely - i.e. lock up.

The information gathered by the wheel sensor is fed back to the ECU, which assesses the data. If the wheel speed is ok – no action is taken.

If the ECU finds that the wheel speed is too slow, it then sends a signal to the brake pressure modulator, to release pressure in the braking system, allowing the wheel to rotate freely again.

Again, the speed sensor now informs the ECU that the wheel is rotating too fast, and the ECU then instructs the brake modulator to increase pressure again. If the rotating wheel now being braked shows signs of excessive deceleration, the pressure is again released.

Depending on vehicle make and type of ABS employed, this cycle of pressure increases and decreases may occur up to 50 times per second.

The following information relates to ABS (Antilock Braking Systems) in general. For vehicle specific operating instructions always refer to the manufacturers recommendations.

Correct use of ABS

The onus is on the driver to firmly establish if any vehicle and or trailer he is operating is equipped with ABS.

If a vehicle is fitted with an ABS, a warning lamp will be illuminated when the 'ignition' is switched to the on position. After a short period of time or on some vehicles, once the vehicle is driven to a speed of 5 to 10 km/h, the lamp should go out. If this does not happen the system is registering a fault, which should be reported to an appropriate person.

Under heavy braking or braking on slippery surfaces, if the ABS is activated the driver may feel a 'pulsing' in the brake pedal. This pulsing is the result of the brake modulator increasing and decreasing pressure in the system. If this pulsing sensation is felt, it is important that the driver keeps the brake pedal fully depressed. Keeping the brake pedal fully depressed will ensure that maximum braking effort is applied to the road wheels.





Emergency braking with ABS

If your vehicle is equipped with an anti-lock braking system and you're unlikely to be able to stop the vehicle before reaching an obstruction, apply maximum force to the brake pedal, maintaining this force. You shouldn't "pump" the brake pedal as this will reduce the effectiveness of the ABS system.

Emergency braking without ABS

If your vehicle doesn't have ABS, wheel lock can be controlled during heavy decelerations by cadence braking. In this instance to alter the course of your vehicle and perhaps avoid a collision the road wheels must be allowed to rotate, the greatest degree of control is gained by pumping the brakes rhythmically (cadence braking). Brakes are most effective when they are on the point of locking, so each time the brake is pumped hard, maximum braking effect takes place, then when the brakes are released the wheels rotate and steering control is regained. Therefore cadence braking gives a combination of: "braking while the brakes are on" and "steering while they are off". Remember: apply the brakes with a deliberate movement, pausing momentarily at the full extent of brake pedal travel; avoid bouncing the foot on and off the pedal.

ABS and Trailers

If the vehicle being driven is the drawing unit for a trailer, it should display two ABS lamps when the ignition is switched on. These lamps may be marked for example ABS I and ABS II. When the 'ABS Suzie' is connected both of these lamps should be extinguished after a short period or once the vehicle is driven. Older trailers may not be equipped with an ABS, and if connected to a drawing unit with ABS, may cause a fault to be registered.

If this occurs, it must be understood that the complete combination may not brake correctly. There is an increased possibility of 'trailer swing' if heavy braking is required. This would occur when the drawing unit's brakes, controlled by the ABS stop correctly, but the trailer wheels don't. Instead they lock – causing the trailer to swing to either side of the drawing unit. The fitment of an ABS to heavy vehicles drawing trailers has significantly helped to reduce the occurrences of 'jack-knifing' because of the drive wheels locking under braking.

Notes:

- The primary function of an ABS is to maintain directional control of the vehicle.
- In normal conditions, the ABS should not engage if the vehicle is being driven correctly.
- It will only activate in adverse road conditions or under emergency braking.
- A vehicle fitted with an ABS should not be driven faster or braked harder.
- If the ABS is activated, keep the brake pedal fully depressed.

Checking ABS

It's important to ensure that the ABS is functioning before setting off on a journey.

Driving with a defective ABS is dangerous and may constitute an offence. Modern anti-lock braking systems require electrical power for their operation. Multi-pin connectors are required to carry the electrical supply to operate the trailer brakes. The satisfactory operation of the ABS can be checked from the warning signal on the dashboard. The way the warning lamp operates varies between manufacturers, but with all types of signal it should be displayed when the ignition is switched on and should go out no later than when the vehicle has reached a speed of about 10 km/h (6 mph).

For guidance on ABS electrical PIN connections, see the table on page 12.

Electronically (controlled) Braking System (EBS)

The EBS integrates and enhances the ABS in a vehicle. As the title suggests it controls the braking function electronically. With the EBS, the brake pedal in effect becomes an electric switch, which transmits a signal to the ECU. (Electronic Control Unit). EBS regulates the pressure on front and rear axles so that the braking force is optimally distributed.

This ECU then assesses the signal received from the pedal actuation, and instructs a brake modulator to apportion braking pressure to all wheels individually. Braking pressure is also controlled and apportioned to any trailer being drawn at the time.





As the EBS fully integrates an ABS facility, it performs the same functions in respect of steering control as detailed in the previous section. In addition to an ABS function, EBS may also provide monitoring of brake lining wear and automatically balances the distribution of braking effort between axles depending on the load on that axle.

Because the EBS is electrically operated, the 'activation time' from the driver pressing the brake pedal to the wheels decelerating is greatly reduced. Conversely, the brakes are also released faster and in a more even fashion, helping to reduce brake drag when moving away from a stop.

The EBS system may make driving safer but does not give reason to take unnecessary risks.

In particular a driver should not brake later or harder. This will affect the tyres and may place other road users in danger.

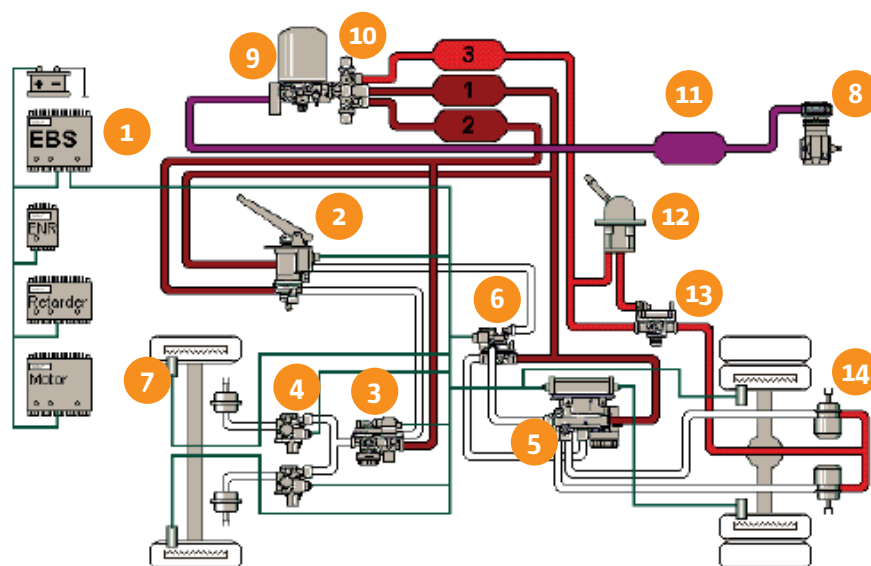
Braking distances with EBS can sometimes be shorter. In case of a problem in the EBS system, the EBS control light will light up.

At start-up of the vehicle, always check the functionality of the EBS control light.

Some advantages of EBS:

- Faster response times for brake activation

- Even brake force application to individual road wheels
- Balanced braking effort across axles
- Constant monitoring of brake lining wear rates
- Quick release of brakes to reduce drag when moving off
- Controlled uniform braking reduces lining wear rates, and therefore downtime
- Integrated ABS to enhance directional control
- Automatic tractor and trailer compatibility
- Reduces number of brake system components and air lines.
- Enhanced diagnostics of the complete braking system.
- Detects brake fade and notifies the driver if wear levels become critical.
- Coordination of air brakes with endurance brakes.
- Integration of ABS / ASR / ESC.



Legend: EBS components:

- 1 EBS central module
- 2 Brake signal transmitter
- 3 Proportional relay valve
- 4 ABS solenoid valve
- 5 Axle modulator

- 6 3/2 relay valve
- 7 ABS sensors
- 8 Compressor
- 9 Air dryer

Other components:

- 10 Four-circuit protection valve
- 11 Air reservoir
- 12 Hand brake valve
- 13 Relay valve FBA
- 14 Brake cylinder





Inspection and maintenance

While drivers are not expected to be mechanics, there are braking system checks that drivers are responsible for conducting in accordance with the manufacturer's specifications, H & S Regulations, CVRT Regulations and operators instructions, e. g., check warning buzzers or lights, bar pressure gauges, listen for air leaks, check for wheels binding when pulling forward, vehicle pulling to one side or metallic or grinding noises when brakes are applied, etc. These checks are in addition to the drivers daily walk around checks.

Air reservoirs

Air braking systems draw their air from the atmosphere, which contains moisture. This moisture condenses in the air reservoirs and can be transmitted around a vehicle's braking system. In cold weather this can lead to ice forming in valves and pipes and may result in air pressure loss and/or system failure.

Some air systems have automatic drain valves or air driers to which help to remove this moisture, while others require daily manual draining. **Not all vehicles are the same.**

You should establish whether your vehicle's air system reservoirs require manual draining. If so, it is the driver's responsibility to ensure that it is carried out.



Example of air dryer filter.

Controls

Before each journey make sure that all warning systems are working. ABS and or EBS warning signals will operate as soon as the ignition is switched on.

Brake pressure warning devices may operate when the ignition is turned on (before starting the engine) or may be activated by using a special "check" switch.

IMPORTANT. Never start a journey with a defective warning device or when a warning is showing or sounding.

If the warning operates when you're travelling, stop as soon as you can do so safely and seek expert assistance. Driving with a warning device operating may constitute a danger.

Pad wear optimisation and maintenance ease through EBS

EBS offers the possibility to continuously monitor the brake pad wear.

- Service and pad replacement points can be coordinated with each other.
- All brake pads of the vehicle can then be replaced as required.
- An integration of non-wearing brakes such as retarder and exhaust brake additionally conserve the brake pads and lead to an extended operating life.
- The EBS constantly checks itself through extensive integrated diagnostics and monitoring functions.
- The driver is immediately informed through respective warning devices if there is a limited operating state.
- The cause of the problem can be found fast and can easily be determined using the aid of a diagnostics device or the display of the onboard diagnostics in the vehicle display.
- Additional maintenance and workshop periods are shortened through the extensive testing functions of the diagnostics.

Drivers and operators should note that where the brakes have not been applied over an extended period such as when not having been used for some time, the brake pads may need to be inspected more frequently to ensure the integrity of the braking components.





The workings of a typical EBS braking system are highly complex and for some people who are not mechanical engineers they can be difficult to understand. However, for drivers who would like more information, the next two paragraphs provide some of the technical details.

Braking force distribution

The distribution of braking forces on front and rear axles depends on the comparison made in the program range "delay control". The delayed braking is recorded via speed sensors through the change of speed of the wheels. The evaluation of the sensors displays an exact image of the slip on every axle and therefore also over their braking power. If the slip is different, one axle has an increased braking compared to the other. As a result, this axle has increased wear. Using the differential slip control, EBS regulates the pressure on front and rear axles so that the braking force is optimally distributed.

Brake pad wear control

EBS can obtain information concerning the wear condition of the brakes through the pad wear sensors. The brake pad wear control intervenes when braking uncritically and detecting a difference in the pads between front and rear axles. The pressure of the wheel brake with the greater wear is released by a small amount and the pressure of the wheel brake with the lower wear is increased by an adequate measure of up to 0.5 bar. Therefore the

wear is regulated without the driver noticing. Where wear indicators are installed instead of brake pad wear controllers, wear control is only possible through the EBS electronics.

Understanding EBS braking connections

If you are a heavy goods vehicle driver, you must use the correct tractor to trailer connections. Each end of the EBS cable has a locking ring which must be securely fastened to its connecting socket.

The importance of using the correct cable connection cannot be overstated.

This cable provides the electrical feeds for all braking functions. It transmits braking information between the tractor and the trailer without which the electronic braking system (EBS) cannot function correctly. It is used to provide the electrical feeds for Anti-lock (ABS) and load sensing (LSV) systems.

Some trailer manufactures provide a secondary electrical feed from the lighting connections or some other source that enables ABS and the LSV to function.

However, this does not enable EBS to function.

If a driver regards the ISO7638 cable as unnecessary and does not use it then the driver is taking a risk and the vehicles safety is compromised.



Example of EBS cable (ISO7638) with locking rings.



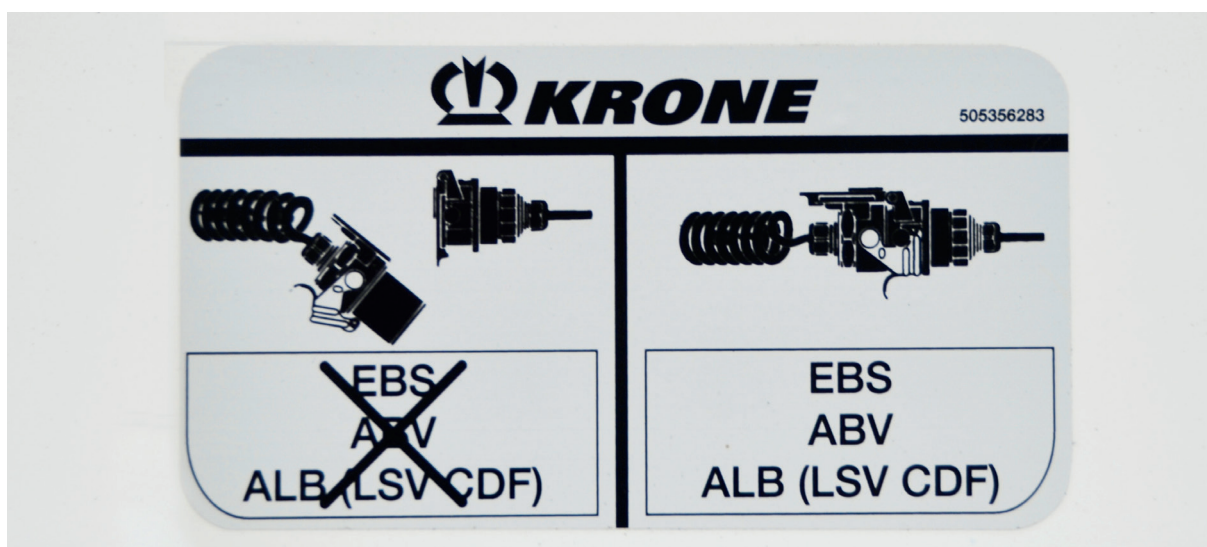


Likely consequences of not using the correct EBS cable include:-

- The trailer may swing out of control even at low speeds
- Brakes may come on with full force on the trailer causing the driver to lose control, and then release again unexpectedly. This may occur repeatedly.
- Stopping distance may increase
- When the tractor brakes and the load sensing valve is not activated because the correct EBS cable has not been connected, the load may shift resulting in instability of the vehicle and possible damage to the load.

Because of the possible consequences, it is important for the driver to know what combinations are safe and which ones are not. If the correct ABS/EBS ISO cable is not used, it could cause a collision like the one pictured below. See the table on page 12.

Each end of the EBS cable has a locking ring which must be securely fastened to its connecting socket.



Example of EBS Plate.





ABS/EBS Compatibility table

	Trailer has neither ABS or EBS	Trailer with ABS (Correctly connected)	Trailer with EBS (Correctly connected)	Trailer has EBS fitted However, it has a 5 Pin ABS wiring harness connected instead of a 7 Pin EBS harness.
Drawing vehicle that has No ABS or EBS Fitted	1) No ABS Control. 2) Load Sensing brake control (mechanical) is active.	1) No ABS Control. 2) Load sensing brake control (mechanical) is active.	Not Compatible 1) ABS control is not active 2) Load sensing brake control is not active	Not Compatible 1) ABS control is not active. 2) Load sensing brake control is not active.
Drawing vehicle that has ABS fitted	1) No ABS Control. 2) Load Sensing brake control (mechanical) is active.	1) ABS Control is Active. 2) Load sensing brake control (mechanical) is active.	1) ABS Control active. 2) Load Sensing brake control (Electrical) is active.	1) ABS Control active. 2) Load Sensing brake control (electrical) is active.
Drawing vehicle that has EBS fitted	1) Load sensing brake control (mechanical) is active.	1) ABS Control is active. 2) Load Sensing brake control (mechanical) is active.	CAN Communication 1) ABS Control is active. 2) Load sensing brake control (electrical) is active.	1) ABS Control is active. 2) Load sensing brake control (electrical) is active.

Note:

For the purposes of this table the term 'Drawing Vehicle' refers to either

(1) a rigid truck being used to draw a trailer, (truck and drag or drag and drop) or

(2) a tractor unit being used to draw a semi-trailer, (artic).

The table above shows the various combination possibilities and the effect on the braking systems of the combinations being used.

It is essential to understand that whilst it would be possible to connect a drawing vehicle that does not have ABS or EBS fitted to a trailer which does have EBS fitted, it should never be attempted as the combination is neither safe or roadworthy.

Check that all ABS/EBS lights on the control panel are functioning correctly.

If in any doubt consult the manufacturers guidelines.





Jack-Knife

The term 'Jack-knife' is commonly used to describe a particular type of accident which relates solely to vehicles towing trailers. Therefore it relates to all vehicles in classes BE, C1E, CE, D1E and DE. A jack-knife occurs when the drive wheels of the drawing vehicle lose adhesion with the road. This may occur for one of two reasons - when the drive wheels spin, or when the drive wheels lock-up. The two causes of vehicle jack-knife are separate and distinct - the first is called a 'Power Jackknife' and the second is called a 'Brake Jackknife'.

Power Jack-knife

A Power Jack-knife occurs when the drive wheels on the drawing vehicle spin excessively, causing adhesion with the road to be lost. When this happens, the tractive unit will turn into the side of the trailer. Common places for a Power Jack-knife to occur are when negotiating a roundabout, or when heavy acceleration is applied when overtaking. Road conditions and the weight of the vehicle can increase the potential for a Power Jack-knife. Other contributing factors such as an oil spill can cause the wheels to spin even at low speeds. It is possible to recover from a Power Jack-knife, by releasing the throttle and correcting the steering, then gently re-applying the throttle.

Brake Jack-knife

A Brake jack-knife is caused by the drive wheels on the tractive unit locking under excessive braking. The trailer then pushes through to either side of the tractor unit. The possibility of recovering from a Brake jack-knife is remote. As with the Power jack-knife, road conditions play an important part in the likelihood of this occurring.

Trailer Swing

While trailer-swing is often confused with jack-knifing, its causes and effects are different. Trailer swing occurs when the trailer wheels lock under hard braking. The tractor unit remains straight but the trailer swings around to either side of the truck. When this occurs, the trailer can swing across the road in front of oncoming traffic or swing to mount the near-side footpath.





SELF-ASSESSMENT OF KNOWLEDGE

Please complete the following questions to help assess your understanding of the module so far:

Q.1 List 2 events that will cause an ABS to activate.

Your Response

Q.2 What action must a driver take if the ABS light illuminates whilst driving?

Your Response

Q.3 List 4 common types of braking systems.

Your Response

Q.4 What is the purpose of an air dryer?

Your Response

Q.5 How does a load sensing valve work?

Your Response

Q.6 List 4 possible consequences of not using the correct EBS cable.

Your Response





Q.7 What is known as cadence braking?

Your Response

Q.8 When should an ISO 7638 cable be used?

Your Response

Q.9 Is a tractor unit without EBS compatible with a trailer with EBS?

Your Response

Q.10 Can a 5-pin wiring harness be used in place of a 7-pin harness?

Your Response

Q.11 What causes a Power Jack-knife?

Your Response

Q.12 What causes a Brake Jack-knife?

Your Response

Having completed these questions, your trainer will discuss typical answers with the group to ensure that drivers have a comprehensive understanding of the information and guidance provided. If you would like more information on any of the issues raised during this exercise, ask your trainer who will be pleased to discuss the issues and will encourage other participants to share their experiences to the benefit of all.

This concludes the section on Braking Systems.





SECTION B – RETARDATION DEVICES / ENDURANCE BRAKES

This section will provide an overview of Retardation Devices' as used on commercial vehicles. The primary function of a retardation device is to assist in reducing the vehicle road speed without application of the foundation braking system. Almost all heavy vehicles (in excess of 7.5 Tonne) employ some method of retardation in addition to the wheels brakes.

There is a wide range of systems available and the systems vary in their method of operation and degree of effectiveness. Some systems are designed by vehicle manufacturers, while other systems are designed by vehicle component specialists. It is not uncommon for two similar vehicles from the same manufacturer to use different methods of retardation.

Because there are wide variations in vehicle specification, it is only possible to discuss in general the main types of retardation devices, how they operate and their effectiveness.

Why use retarders?

Effective use of retardation devices allows drivers to not only maximize the braking effect of the vehicle but also to help reduce the maintenance costs and the overall costs to the operator. This in turn can contribute to the profitability of the organisation and to the job security of the drivers.

These systems provide a way of controlling the vehicle's speed without using the wheel-mounted brakes (service brakes/footbrake). They operate by applying resistance, via the transmission, to the rotation of the vehicle's driven wheels.

Retarders can be particularly useful on the descent of long hills, when the vehicle's speed can be stabilised without using the service brakes.

The system is sometimes designed to operate either with the service brake (integrated) or by using a separate hand control (independent).

The energy that is stored up in the vehicle when travelling is referred to as 'kinetic energy'. When braking, this energy is converted into heat at the brake shoes and drums.

Continuous use of the brakes results in them becoming over-heated and losing their effectiveness (especially on long downhill gradients). This is referred to as BRAKE FADE.

All braking should be smooth, controlled and as progressive as possible.

Note:

It is essential for a driver to know and understand that typically, retardation devices only operate on the drive wheels, i.e., all the vehicle wheels are not braked when a retarder is activated.

It is important for the driver to familiarise themselves with the correct operating procedure for any particular system fitted to a vehicle they may drive.

Always follow the manufacturers' instructions

Types of Retardation Systems

There are primarily four types of Retardation Devices commonly used on heavy vehicles. We will look at each individually and describe their operation in principle. A number of vehicles types may employ more than one system, particularly if a Retardation Device was fitted to the vehicle after original manufacture (i.e. retrofitted).

The main types of systems used are noted below.

- Exhaust Brake
- Engine Brake
- Retarders
- Intarders

Some of the best drivers are utilising the on-board retardation devices to their maximum effect, not only improving vehicle control but also reducing maintenance costs.





The Exhaust Brake

The Exhaust Brake is a common retardation device fitted to commercial vehicles. Because the Exhaust Brake acts on the engine it could also be described as a type of engine brake. Once the driver engages the Exhaust Brake, an actuator operates a control arm mounted on the engine. This control arm then closes a 'Butterfly Valve' located inside the engine's exhaust manifold.

When the valve is in the closed position, it restricts the outward flow of exhaust gas from the engine. The restricted flow of exhaust gas causes pressure to be exerted on the combustion chamber, effectively 'smothering' the engine. During the time the Exhaust Brake is operational there is no delivery of fuel to the engine and the throttle is locked closed. For this reason it is important not to press the accelerator pedal when the Exhaust Brake is activated. On a number of older vehicles the Exhaust Brake was also employed as the engine shut-off device.

The system is generally operated by pressing on a footswitch located on the floor. Alternatively, some versions use a stalk mounted on the steering column. This method allows the brake to be engaged in stages, gradually increasing the amount of braking effort. It may also allow for

some level of permanent engagement, where once the accelerator is released and/or the brake pedal is applied, the Exhaust Brake engages immediately without any action required by the driver.

Effectiveness of Exhaust Brakes:

Two factors determine the effectiveness of Exhaust Brakes. The first is the manufacturers design specifications. Many drivers will find noticeable differences in the effectiveness of Exhaust Brake systems between vehicle makes and engine types.

Secondly, the Exhaust Brake is more effective at higher engine speeds. The higher the engine speed, the more pressure produced, which results in a greater retardation effect.

Manufacturers may create a separate operational band marked in a different colour on the rev counter where the Exhaust Brake effectiveness is optimised. Therefore, to achieve maximum braking effort may require the driver to change down gear/s. Although this increases engine speed and braking effort, vehicle economy does not suffer as no fuel is delivered to the combustion chamber.



Example of Tachometer blue zone where the exhaust brake effect is maximized.





The Engine Brake

Certain vehicle manufacturers are incorporating retardation devices termed as 'Engine Brakes'. The engine brake system combines a standard exhaust brake with an engine compression brake and dramatically increases braking effort.

Initial use of the exhaust brake builds pressure in the exhaust manifold as mentioned under the previous heading. When the compression brake is activated, a pressure regulator in the exhaust manifold creates a further increase in pressure. At the same time the exhaust valve is opened momentarily, allowing high-pressure exhaust gas to enter the combustion chamber as the piston begins the compression stroke.

The cylinder, now full of pressurised exhaust gas causes a braking effect on the piston - and therefore the crankshaft. Just as the piston reaches the top of the compression stroke, the exhaust valve opens to decompress the chamber by releasing the pressure back into the exhaust manifold.

Engine brakes are a powerful and highly efficient means of braking a vehicle. As engine horsepower increases, so does the potential capacity of the engine brake.

Development of engine braking systems has progressed to a level where some manufacturers can offer a system capable of providing a retardation effect in excess of 550 bhp.

Operation of an engine braking system is usually via a stalk mounted on the steering column or by means of a dash-mounted switch.

Some versions may incorporate a transmission 'change down function', which will change down ratios in the gearbox to ensure engine speed is kept at the point where maximum braking effect is achieved.

The systems have proved to be highly reliable, simple to use and very cost effective. Moreover, they have greatly enhanced road safety for drivers of large vehicles and other road users.

Retarders

Generally, there are two main types of Retarders commonly fitted to goods and passenger vehicles. The first is an 'Electromagnetic Retarder' and the second is a 'Hydrodynamic Retarder'. Through using different principles, both devices achieve the same effect. As with other endurance braking systems, their operation is simple and effective.

Originally, retarders were fitted to vehicles as an optional extra, and required solely by vehicle owners whose transport operations demanded such equipment. Initially their use was more widespread among passenger vehicles than goods transport units. However, most drivers and operators appreciate the economic and safety benefits they bring.

Operating the Retarder is dependent on whether the Retarder is fitted as original equipment by the vehicle manufacturer, or retrofitted by an independent component producer/supplier. If supplied after manufacture, the operation of the Retarder is controlled by a separate lever generally mounted on the dashboard, within easy reach of the driver's hands. If fitted by the manufacturer the control may be integrated into the controls mounted on the steering column.

Either control is generally operated through three to five or possibly six stages, increasing in retardation effect with each stage.

Some passenger vehicles may integrate the retarder control into the foundation braking system. In this manner, the retarder is activated once the footbrake is applied under normal braking conditions.

(Example: approximate amount of retardation per stage of application)

Stage	1	-	Off
Stage	2	-	25%
Stage	3	-	75%
Stage	4	-	100%
*Stage	5	-	100%

This may vary with each vehicle/manufacture type of retarder.

*Some versions may incorporate a transmission 'change down function', which will change down ratios in the gearbox to ensure engine speed is kept at the point where maximum braking effect is achieved.

The Electromagnetic Retarder

The Electromagnetic Retarder acts on a rotor or disc placed between two electromagnets, which are located on the driveline between the back of the gearbox and the rear axle.

When current is passed through the magnets, they act on the rotor attached to the rotating drive shaft causing it to slow. As the driveshaft is slowed by the magnetic force, the vehicle will reduce speed.





Example of electromagnetic retarder

The Hydrodynamic Retarder

A Hydrodynamic Retarder operates in a similar manner. The main difference being the Hydrodynamic system uses a liquid (usually hydraulic oil) to achieve a similar result.

The device is located between the rear of the Gearbox and the rear axle, and acts on the driveshaft.

Intarders

Intarders effectively perform the same function as Retarders and are operated in the same method. The Intarder differs only in that the unit is integrated into, and acts directly on the transmission, where Retarders are individual units separate from the gearbox and act directly on the drive shaft.

Cooling for an Intarder may be provided by the transmission's own lubricating oil.

One advantage of an Intarder is that its operation can be synchronised with the operation of the transmission through the vehicle's electronic management systems.

IMPORTANT

The purpose of all retardation devices is to control and slow heavy vehicles on long descents. As they do so, they absorb vast amounts of energy, which create high operating temperatures.

Keeping retardation devices within appropriate operating temperatures is often achieved by connecting the device to the standard engine cooling system. For this reason, it is important for the driver to be aware of the engine temperature when the Retarder is engaged for prolonged periods. If the temperature has risen significantly it may be necessary to stop in a safe place and allow it to recover to normal levels before proceeding on.

As with an Engine Brake system, both Electromagnetic and Hydrodynamic Retarders are well proven and highly reliable. They require little maintenance and provide enormous assistance to the driver when negotiating steep and or long descents.

Note:

Care must taken when using Endurance Braking Systems and Retardation devices on slippery or icy roads. The power of these devices can cause the drive wheels to lock which may result in loss of control of the vehicle.

*It is strongly advised to be familiar with, and adhere to the manufacturers operating instructions





SELF-ASSESSMENT OF KNOWLEDGE

Please complete the following questions to help assess your understanding of the module so far:

Q.1 Why should a driver use a retardation device?

Your Response

Q.2 What are the main types of retardation systems?

Your Response

Q.3 Where is the 'Butterfly Valve' located?

Your Response

Q.4 How does the engine brake improve on the effectiveness of an exhaust brake?

Your Response

Q.5 Describe the difference between a retarder and an intarder.

Your Response





Q.6 Which of the following statements is true?

Your Response

- A) Endurance brakes are most effective at higher engine speeds above the 'Green' band ☐
- B) Endurance brakes are most effective at lower engine speeds within the 'Green' band ☐

Q.7 During prolonged use of an Engine Brake or Retarder what must the driver be aware of?

Your Response

Q.8 How are endurance braking system temperatures prevented from overheating?

Your Response

Q.9 In what road conditions must a driver exercise extreme caution when using a retarder?

Your Response

Q.10 Name one of the driveline components that a retarder acts on.

Your Response

Having completed these questions, your trainer will discuss typical answers with the group to ensure that drivers have a comprehensive understanding of the information and guidance provided. If you would like more information on any of the issues raised during this exercise, ask your trainer who will be pleased to discuss the issues and will encourage other participants to share their experiences to the benefit of all.

This concludes the section on Retardation Devices/Endurance Brakes.





SECTION C – ROAD SPEED LIMITER/SPEED LIMITATION DEVICE

A speed limitation device or speed limiter limits the top speed of a vehicle. They are a statutory requirement throughout the EU for goods vehicles with a design gross vehicle weight (DGWV) exceeding 3.5 tonnes and buses with passenger accommodation for more than 8 passengers. Whilst some professional drivers express frustration at the fitment of a speed limiter on the vehicle they are driving, most recognize the important role they play in terms of managing the speed of the vehicle in motion. In addition they are of assistance to drivers in terms of managing upper speed limits and help to avoid penalties for speeding infringements.

Summary of the Legislation

The compulsory fitment of RSL's to commercial vehicles began in the early to mid 1990's. Implemented under 'Directive No 92/6/EEC of 1992 the directive demanded that the speed of a goods vehicle in excess of 12 tonnes (DGWV) be restricted to 90 Km/h and passenger vehicles in excess of 10 tonnes (DGWV) be restricted to 100 Km/h.

'Directive 2002/85/EC' has since replaced the original 1992 Directive. The Directive 2002/85 is implemented in Irish law by Statutory Instrument 'S.I. No. 831 /2005'

S.I. 831/2005 extends the regulations to include goods vehicles from 3.5 tonnes to 12 tonnes and to passenger vehicles with seating for more than 8 passengers.

The fitment of a road speed limitation device is compulsory for all vehicles described here under (A) and (B).

A) Passenger vehicles with seating accommodation for more than 8 persons exclusive of the driver (Maximum Speed of 100 Km/h)

B) Goods vehicles with a "design gross vehicle weight" in excess of 3.5 tonnes

(Maximum Speed of 90 Km/h)

A speed limiting device does not in any circumstances permit the driver to exceed a lower posted speed limit or a special speed limit.

See also Section 8 of the Rules of the Road for further information.

Road Speed Limiters restrict a vehicle from achieving a speed exceeding the legislated limiter speed for that individual vehicle while being driven by the power of the engine. The RSL may operate mechanically or electrically to stop delivery of fuel to the combustion chamber at a pre-set road

speed. Activation of the device can be triggered by a signal from the Tachograph or via the vehicle's Engine Management System or ECU (Electronic Control Unit).

The device must be type approved and conform to the technical specifications as laid down in the Directive. The installation of a Road Speed Limiter can only be carried out by the manufacturer during the manufacturing process or by an approved fitter or workshop. Once fitted the device must be calibrated and then sealed as detailed in the technical specifications.

If a vehicle's RSL operates in a faulty manner, it must be repaired as soon as is practicable

The Regulations require a plaque to be displayed in a conspicuous place. This plaque must clearly detail the following information.

- The words 'Speed Limiter Fitted';
- Type Approval number;
- Name and number of authorised fitter and workshop;
- Maximum speed in Kilometres at which the device is set;
- Tyre size on drive axle/s;
- Date of most recent calibration and sealing;
- Vehicle registration and/or chassis number;

It is also an offence for a motor dealer to sell or supply a vehicle requiring an RSL under the scope of the regulations, if that vehicle does not comply with the Directive.





Penalties for non-conformance

Section 8 (1) of SI 831/2005 allows for the imposition of penalties and states;

“A person guilty of an offence under these Regulations is liable on summary conviction to a fine not exceeding €3,000 or to imprisonment for a term not exceeding 3 months or to both”.

In addition, there are Fixed Penalties associated with these offences.

Exceptions to the Regulations

There are a limited number of exceptions to the Regulations. In common with other Road Traffic Regulations the following vehicles are not included;

- Defence Forces
- An Garda Síochána
- Civil Defence
- Fire and emergency services
- Passenger vehicles which by reason of their construction are incapable of exceeding 100 Km/h
- Goods vehicles which by reason of their construction are incapable of exceeding 90 Km/h

Monitoring system for speed limiters

Monitoring procedures should be put in place for checking that the speed limiter is functioning correctly at all times, as otherwise road safety may be compromised. The system should check

- the installation date
- the position of the speed limiter plate and the accuracy of its details
- any speed limiter malfunction and a record of any checks that have been carried out
- the size of tyres fitted against details on plate;
- evidence from tachograph records that the vehicle has not exceeded the regulated speed limits
- records of all defect reports submitted by drivers concerning malfunctioning speed limiters and the actions taken to solve the problems (including relevant dates).

Where any malfunction of the instrument or any evidence of speeding is discovered, appropriate action should be taken to ensure that the instrument is repaired/calibrated and speeding does not occur again.

Note 1:

While the RSL restricts the maximum speed of trucks to 90 km/h, this speed limit is applied under European legislation. Currently, under Irish legislation, trucks are restricted to 90 km/h on Motorways. On all other roads trucks must adhere to the maximum permitted speed of 80 km/h, or to any lower speed limit applicable to that road.

Note 2:

Buses are restricted to 100 km/h on Motorways and Dual Carriageways. On all other roads buses must adhere to the maximum permitted speed of 80 km/h, or to any lower speed limit applicable to that road. Buses designed to carry standing passengers must not exceed 65 km/h, or any lower speed limit applicable to that road.

Note 3:

A speed limitation device is not the same as an engine governor. The RSL limits the road speed of the vehicle. The engine governor limits the maximum rpm of the engine.

Note;- Refer to Appendix 3 for further information on speed limits.





SELF-ASSESSMENT OF KNOWLEDGE

Please complete the following questions to help assess your understanding of the module so far:

Q.1 What passenger vehicles must have a speed limitation device fitted?

Your Response

Q.2 What goods vehicles must have a speed limitation fitted?

Your Response

Q.3 What is the purpose of a speed limitation device?

Your Response

Q.4 What is the maximum permitted speed for trucks on all roads other than Motorways?

Your Response

Q.5 What is the maximum permitted speed for buses on all roads except Motorways and Dual Carriageways?

Your Response

Q.6 What are the possible penalties for breach of the RSL Regulations?

Your Response

This concludes the Section on Road Speed Limiters/Speed Limitation Devices.





SECTION D – DRIVER ASSISTANCE TECHNOLOGIES

The following section will describe in brief some of the driver assistance technologies available. It is not an exhaustive list and can only provide information in a general sense. There are variations between different manufacturers and the specifications of any given vehicle. Many of these technologies have made driving safer and have contributed to a significant reduction in running costs. As with other developments they can improve profitability and protect jobs.

For this reason, it is important to adhere to the manufacturer's recommendations for any particular vehicle you may operate. Vehicle manufacturers often use different names to describe what are essentially, the same system/s fitted to their product range.

E.g., Lane Changing Support (LCS) and Lane Changing Assist (LCA) – while not identical systems, they perform similar functions.

Vehicle Electronics

Vehicle safety and driver assistance programmes have become commonplace in modern motor vehicles of all classes. Since the initial introduction of the ABS, further advancements in vehicle safety have been made possible through the application of electronics. The primary reason that has allowed this to take place is the now common use of a CAN-bus interface.

The term CAN means 'Controller Area Network'. What the CAN allows is similar to a computer network within a building. It enables all the computers to send information back and forward to each other through a server. In a motor vehicle, the CAN allows a multitude of sensors performing different monitoring functions to relay information to and from the Electronic Control Unit (ECU).

Because the flow of information is carried electronically, it is instantaneous. Therefore, processing the information and reacting to alter vehicle dynamics is immediate. This is what enables an ABS to cycle the brake pressure up to 50 times per second. The use of a CAN-bus allows driver assistance systems to be added or altered by simply re-programming the ECU.

Anti Skid Control (ASC)

When driving in slippery conditions or when too much engine power is applied by the driver, the ASC programme is activated to prevent the drive wheels from spinning and losing traction with the road. In a situation where only one of the drive wheels is spinning the ASC intervenes to brake the spinning wheel until an equal traction effort is achieved across the drive axle. This is of particular benefit to articulated vehicles where the possibility of a 'power jack-knife' is greatly reduced.

Adaptive Cruise Control (ACC)

By use of an integrated radar system, ACC regulates the distance between a vehicle and the vehicle in front. If the system determines that the distance is too short for the cruising speed selected and the driver does not take corrective action, the ACC will engage the wheel brakes to slow the vehicle and increase the available stopping distance.

Predictive Cruise Control (PCC)

A programme of continuous development by vehicle manufacturers has significantly reduced fuel consumption - in some cases by up to 12% over the last four to five years.

One system contributing to the savings has been the development of Predictive Cruise Control (PCC). While different manufacturers call Predictive Cruise Control different names, in essence they all work in a similar fashion.

Using GPS to determine exactly where the truck or bus is located, PCC is able to read the topography of the road ahead for approximately two to five kilometres and knows where the inclines and declines begin and end. It therefore can increase or reduce engine power as required. This can allow the vehicle to roll in a controlled manner in order to save fuel. The systems are highly accurate and work whether the driver is familiar with the road or not.

PCC works equally as well in daytime or night time, and in all weather conditions including heavy rain or fog. In achieving a fuel reduction of up to 12% the importance of PCC should not be underestimated. Some vehicle manufacturers report a 70% uptake of PCC across Europe with no individual country recording an uptake figure of less than 50%.





Adaptive Headlight Control

Adaptive headlights operate at slow speeds and will direct vehicle lighting at an angle to the vehicle. Adaptive lighting illuminates the area into which the vehicle is driving. Activation normally occurs when the driver switches on an indicator. The adaptive lights are then directed to that side.

The system provides a high level of safety, especially in urban or city driving. A number of versions will also automatically dip headlights when meeting oncoming traffic.

Anti Rolling Brake (ARB)

Typically, ARB devices are activated by a dash mounted (master) switch. Once switched on the system remains passive until the vehicle is brought to a stop. When the vehicle is stopped, the brakes remain on, until the driver presses the accelerator pedal and the drive is taken up. As the vehicle begins to move forward, the brakes are released. Up to a certain speed, the ARB may engage again once the accelerator pedal is released - without the brake pedal being applied. After that speed the ARB is fully disengaged until the footbrake is applied again.

It must be noted that an ARB is not a parking brake and should never be used as such.

Some systems may have a predetermined time limit on how long the ARB remains on, after which an audible warning informs the driver that the brake will be released. The master switch can be used to switch the system off when manoeuvring.

Brake assist

A brake assist system if fitted to the vehicle supports the driver during the full application of the brakes through recognising a strong braking requirement. The brake assist remains activated until the driver releases the brake pedal.

Advanced Emergency Braking Systems (AEBS)

From 1 November 2015, all new trucks and buses sold in the EU must be equipped with Advanced Emergency Braking Systems (AEBS) as well as lane departure warning systems.

These advanced emergency braking systems can range from providing an initial warning to the driver, to a fully automated application of the brakes in case of emergency.

In this case both the vehicle's brake lights and

hazard lights will flash to warn other motorists.

You should not change your driving style if you are driving a vehicle fitted with Advanced Emergency Brake System. AEBS is only a driver aid and has its limitations. AEBS cannot prevent accidents and does not replace the skill/opinion of the driver regarding the actual road and traffic situation, the weather and handling of the vehicle.

Always brake the vehicle yourself and remember the driver is ultimately responsible for ensuring the vehicle is operated safely.

The system is designed to reduce the severity of an accident. It is also known as **precrash system, forward collision warning system or collision mitigating system**. It uses radar (all-weather) and cameras to detect an imminent crash.

Advances in this area of automotive technology are developing at an ever quickening pace.

It is important for the driver to be aware of what safety systems are fitted to the vehicle which they are driving and how the specific systems operate on that vehicle.

Always refer to the manufacturers handbook for the vehicle you are driving.

Anti Rolling Control (ARC)

If fitted to the vehicle, the anti-rolling control allows the driver to start easily uphill by preventing the vehicle from rolling backwards. Recent technological developments can now also prevent the vehicle from rolling forward downhill. The driver can activate the function in a number of ways depending on the make or model of the vehicle, i.e. hand or foot controls.

Bus Halt Brake

Some passenger vehicles may have a 'Bus Halt Brake' facility fitted. This applies a braking force to the drive wheels of the bus when the doors are open. During the open door period the accelerator pedal is locked and cannot be depressed again until the doors have been closed. Once the doors are closed and the accelerator is pressed the Bus Halt Brake is released and the vehicle can move away.

The system is also engaged automatically when the vehicle is 'kneeled' and will be unable to accelerate until the vehicle returns to the correct driving height.

It must be noted that this device is not a parking brake. It must also be noted that the main electrical isolator switch must be in the 'on' position for the system to operate.





Collision Warning Systems (CWS)

CWS provides the driver with advance warning of an impending impact with vehicles, and vulnerable road users such as pedestrians and cyclists in urban or rural areas.



Electronic Stability Programme (ESP)

An ESP system monitors the vehicle's momentum and dynamics on the road. It receives information

from sensors monitoring wheel speeds, steering angle and the load on each individual wheel.

It will engage when it senses that a wheel or set of wheels is spinning or begins to lose traction with the road.

It operates by applying a braking force to specific wheel/s to decrease road speed and or reduce engine power to bring the vehicle under control.

While the ESP system greatly assists the driver in emergency situations, it is not designed to handle a deliberately dangerous action by the driver.

Lane Changing Assistance (LCA)

LCA provides the driver with assistance when changing lanes to the passenger side by using a proximity sensor to establish if another vehicle is within the 'blind spot' and alerts the driver with an audible signal and or a warning light.

The system is activated when the driver uses the indicator stalk, signaling their intention to change lanes.

Lane Departure Warning

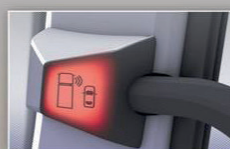
If a large vehicle strays inadvertently out of its traffic lane a dangerous situation can quickly arise. Statistics show that one in five accidents involving commercial vehicles is the result of a sideways collision.

Lane Departure Warning (LDW) detects the lane ahead of the vehicle with a camera, optimized for this specific application. LDW will warn the driver through acoustic or haptic signals (seat vibrations) if he or she is on the verge of drifting out of the lane. The system intervention means important seconds could be gained which can

HOW IT WORKS: LANE CHANGING SUPPORT – LCS

Changing lanes can be a challenge for drivers due to the trucks blind spots on the passenger side. Lane Changing Support, Volvo Trucks' radar system, is designed to help the driver.

1. THE TURN SIGNAL ACTIVATES THE SAFETY SYSTEM.



2. A LIGHT SIGNAL AND A BUZZER INSIDE THE TRUCK WARNS THE DRIVER.





save lives. If this system is fitted to your vehicle you should ensure that it is operational and you are familiar with its means of operation. (See manufacturer's handbook).

When performing manoeuvres such as overtaking or where the driver intends to change lane, the LDW is de-activated once the indicator is switched on. LDW systems became mandatory for all new buses and trucks from November 2015.



Example of visual and acoustic warning of 'blind-spot' obstruction

Night Vision Assistance

NVA assists the driver at night by employing an infrared camera to survey the road ahead and display the image in the information cluster. The range of infrared is greater than that of standard vehicle lighting systems. In addition, it performs this function without dazzling oncoming traffic.

Tyre Pressure Monitoring System (TPMS)

Tyre pressure monitoring systems (TPMS) warn you when a tyre fitted to your vehicle is significantly below its optimum inflation pressure. Maintaining proper tyre inflation pressure is essential for both fuel efficiency and vehicle stability. Under-inflated tyres are also a significant contributory factor in road traffic accidents and can cause up to a 4% increase in fuel consumption and reduce tyre lifespan by 45%. Although you might not notice it, tyres may lose 3-6% of pressure per month. TPMS helps to ensure that the vehicle's tyres are always operating at the optimum recommended pressure.

Correct tyre pressures help to

- reduce fuel consumption,
- improve braking efficiency,

- Improve steering efficiency
- maintain the stability of the vehicle
- increase the lifespan of the tyres.



Example of a tyre pressure monitoring device

Air Brake Warning Systems

Air braking systems are fitted with audio devices that will be activated when air pressure drops below a predetermined level.

In some circumstances there may be sufficient pressure to release the parking brake even though the low pressure warning is showing or sounding.

In these cases the service brake may be ineffective. Therefore you should never release the parking brake when the brake pressure warning device is operating. After operating, the air system must be fully recharged before moving off. Towing vehicles are equipped with braking lines for attachment to a trailer. On some vehicles these lines may be fitted with automatic sealing valves or manual taps.

When a trailer is coupled to a towing vehicle it's important to check that the brakes of the trailer function correctly.

Failure to do so could result in the loss of braking effectiveness on the whole combination.

Power Assisted Steering (PAS)

PAS reduces the driver effort when turning; however it only operates when the engine is running.

Do not attempt to drive a vehicle fitted with PAS without the engine running.





Noise Pollution

In addition to the growing concerns around vehicle emissions in city centres, vehicle and equipment manufacturers are addressing the issue of the noise pollution generated by commercial vehicle deliveries, especially during the night or early in the morning.

A number of cities throughout Europe have now created low noise zones and/or imposed restrictions on entry to the zones at certain times.

To help operators comply with the regulations, some vehicle manufacturers have developed 'quiet' versions of their trucks which can operate within the regulations where they apply.

When entering a low noise zone the driver simply presses a switch on the dash to engage Silent Mode. Once activated Silent Mode will limit engine torque and change gears at a lower engine speed. When combined with other noise abatement systems such as encapsulation of the transmission, this can reduce the noise level to 72 decibels or dB(A).

As an indication, 68-70 dB(A) equates to hearing normal conversation at a distance of one metre.

Once the driver leaves the restricted zone, Silent mode can be switched off which returns the truck to its normal performance level. Other manufacturers can also offer noise abatement

vehicles including electric and gas powered versions of their regular trucks.

The noise reduction regulations also apply to ancillary equipment such as refrigeration units.

The major producers of this equipment have invested heavily to develop quiet operation cycles and can offer operators a range of products that meet the low noise standards.

However while the issue of noise is becoming increasingly important, and truck manufacturers have successfully reduced vehicle driveline noise, there remains a problem with the physical loading and unloading of goods to and from the vehicle. Much of the disruption and noise attributed to urban deliveries is caused by the cargo handling aspect of the delivery. This appears somewhat more difficult to eliminate though producers of handling equipment are making progress.

While there are moves to create a European wide standard similar to the PIEK regulations used in the Netherlands, often low noise zones are determined by local authorities and drivers would need to be familiar with any regulations that may apply to their intended routes. In addition, drivers should anticipate the impact on vulnerable road users who may not hear the vehicle approaching.



Example of low noise truck





Lift Axles

Depending on the nature of the work, operating a vehicle and/or trailer with the ability to lift one or more sets of wheels off the ground can deliver savings for the operator. Commonly referred to as 'lift-axles' the benefits are achieved when the vehicle is running empty or lightly loaded. When an axle is lifted and its set of wheels are no longer in contact with the road, the vehicle's rolling resistance is reduced and this in turn can reduce fuel consumption. In addition there is a corresponding saving in tyre and brake wear when the axle/s are raised, and on wet roads wheel spray is reduced.

Whenever possible, axles should be raised when manoeuvring or reversing in order to minimise damage and excessive wear to tyres and components. Depending on vehicle or trailer specifications, when an axle is in the raised position and the vehicle is then loaded, at a pre-determined weight the axle will be lowered automatically and remain in the lowered position until the weight is removed.

However some vehicles will allow a driver to raise an axle even when fully loaded. While this temporarily means the vehicle could be deemed to be overweight, it is a temporary measure and the axle will lower automatically once the vehicle reaches a pre-determined road speed, (e.g., 25 km/h).

The advantages of lift axles are dependent on the type of work. Therefore the advantages of reduced rolling resistance and tyre wear should be compared against the additional cost and weight of the components needed to raise a given axle/s. Nevertheless for those engaged in certain types of transport such as liquids in tanks, forestry, abnormal loads or animal feeds, empty running is often unavoidable and these operators could benefit from lift axle/s.

Additional Steering Axles

Commercial vehicles are often designed to operate with steering axles that are in addition to the normal steering axle located at the front of the vehicle. They provide additional manoeuvrability and can significantly reduce tyre wear when negotiating tight turns, roundabouts, or when accessing confined delivery points and town centres. Additional steering axle/s can be either positively steered, or self-steered, and it may also be possible to lift these axles.

Positively steered Axles

Positively Steered Axles generally mean that when the driver moves the steering wheel to change the vehicle's direction, the additional steering axle will turn in the same direction though usually by a smaller percentage of the primary steering



Example of a lift axle





axle. The axle's direction can be altered either mechanically, hydraulically, electrically, or by a combination of these methods.

Self-Steered Axle

A self-steer axle will operate through the dynamic forces acting on the axle, which make the axle turn. The degree the axle turns is in most cases controlled mechanically using a series of ridged or undulated washers which allow the axle to turn in stages and then return to the straight ahead position.

In Ireland the most common example of additional steering would be a four axle tipper truck which usually operates with a positively steered second axle located behind the main steering axle.

While additional steer axles can be located wherever is most suitable for the type of work, the majority of trailers, semitrailers and passenger vehicles position the axle as the rearmost axle on the vehicle.

It is important to establish if any additional measures are required when operating with additional steer axles. When reversing with a positively steered vehicle or trailer most do not require any special measures.

However a number of self-steered systems do require that the wheels of the vehicle and/or trailer be completely straight, and then locked in the straight ahead position before the unit or combination is reversed.

The reason for this is that as the vehicle is

steered backwards, the self-steer axle will be inclined to turn in the opposite direction. If this was to occur there will be excessive wear of the tyres and the increased possibility of unnecessary damage to steering components.

The operation of additional lift and steering axles can vary widely from manufacturer to manufacturer. It is also worth noting that one brand of truck, bus or trailer may have a number of different component and or system suppliers. Therefore it is always necessary to establish the correct operating procedures for the vehicle you are using at any given time.

Seat belts

Where fitted, it is a legal requirement to wear a safety belt. Wearing a seat belt in a vehicle is the best protection from injury or even death in an accident. Should a collision take place, a seat belt holds you in place in your seat, reducing the risk you have of:

- striking the interior of the vehicle
- colliding with other passengers
- being ejected during impact or emergency braking

Most modern vehicles include a seat belt reminder light or acoustic warning for the driver. Some also include a reminder for passengers, when present, activated by a pressure sensor under passenger seats. Some vehicles will intermittently flash the reminder light and sound the chime until drivers (and sometimes the front passenger, if present) fasten their safety belts.



Example of rear steering axle





Air Bags

Airbags are inflatable devices that deploy in a fraction of a second during serious collisions, helping to prevent injuries and death, especially in head-on collisions.

- Front airbags provide additional protection (over and above your seat belt) during severe collisions, when the head and chest of a restrained occupant can move forward and are at risk of striking the steering wheel, dashboard or windscreen.
- Side airbags deploy during side impacts and rollovers, and provide buffers between the occupants and the vehicle structure (i.e., doors, windows, roof, etc.).

To be sure you get maximum protection from an airbag system, it is essential to make sure that you always wear your seat belt and maintain adequate distance between yourself and the steering wheel to avoid the risk of making contact with the airbag when it inflates.

Daytime running lights (DRLs)

Daytime running lights (DRL) make your vehicle more conspicuous in daylight hours and less likely to be involved in daytime collisions.

Drivers should be aware that DRLs which come on automatically only operate on the front of the vehicle, i. e., the taillights do not illuminate.

DRLs may come in three forms:

- A vehicle's dipped headlights may be hardwired to come on automatically when the vehicle's ignition is switched on.
- A more common form of DRL involves drivers manually switching on their dipped headlights before starting a journey
- A more energy efficient alternative is to fit dedicated daytime running lights that come on automatically with your vehicle's ignition and use a more fuel efficient LED technology
- An increasing number of vehicles already on the road have dedicated DRL fitted as standard, and it has become mandatory for the manufacturers of cars and small vans to fit them to any new vehicle model that they have been producing since February 2011 and which was granted type approval in accordance with EC Directive 2008/89/EC. All other new types of road vehicles (including trucks and buses, but excluding motorcycles and agricultural tractors) require them from August 2012 onwards.

Gear shift indicators

Gear Shift Indicators (GSI's) advise you when to change gear in a vehicle fitted with a manual gearbox. The vehicle's engine management system calculates the optimum gear and recommends changes accordingly by continuously monitoring data from sensors fitted to your vehicle, including engine and road speed, and also taking account of road gradient, vehicle load, gear selected and throttle position.

If for example a higher gear and lower engine speed would be more efficient, an arrow symbol and the recommended gear number appears on the info display on your dashboard.

These systems adapt recommendations to suit your current driving situation, thus helping you cut fuel costs, but also enabling you to reduce CO2 emissions and to decrease wear on engine and transmission components.

Conclusion

The driver assistance technologies described above are a sample of the ever-increasing number of active and passive safety systems currently available. Manufacturers are constantly updating and improving vehicle safety, and it is prudent for drivers to keep abreast of developments in the automotive industry. It is also essential for a driver to familiarise themselves with the systems fitted to any vehicle they may operate. Studies have shown that they can provide immense benefits to road safety.





SELF-ASSESSMENT OF KNOWLEDGE

Please complete the following questions to help assess your understanding of the module so far:

Q.1 What are the benefits of a self steered axle?

Your Response

Q.2 How does Adaptive Cruise Control work?

Your Response

Q.3 How does a Bus Halt Brake work?

Your Response

Q.4 What is a CAN-bus interface?

Your Response

Q.5 What does the Anti Skid Control do?

Your Response

Q.6 Why should the Anti Rolling Brake not be used as a parking brake?

Your Response





Q.7 How does a Lane Departure Warning system operate?

Your Response

Q.8 What is the purpose of the Air Brake Warning system?

Your Response

Q.9 What are the benefits of a Lift Axle?

Your Response

Q.10 How does a Night Vision Assistance system work?

Your Response

Q.11 What should a driver be particularly aware of when driving a vehicle in Silent Mode?

Your Response

Q.12 List 3 benefits of using a TPMS (Tyre Pressure Monitoring System)?

Your Response

Having completed these questions, your trainer will discuss typical answers with the group to ensure that drivers have a comprehensive understanding of the information and guidance provided. If you would like more information on any of the issues raised during this exercise, ask your trainer who will be pleased to discuss the issues and will encourage other participants to share their experiences to the benefit of all.

This concludes the section on Driver Assistance Technologies.





SECTION E – ACTION IN THE EVENT OF A BREAKDOWN

Tyre safety is a key consideration for professional drivers. The small amount of tyre rubber in contact with the road surface must work hard to maintain road grip and the stability of the vehicle at any one time. This section looks at some common causes of tyre failure and wheel loss. It also examines how drivers can minimise the dangers by carrying out an effective Drivers Walkaround Check before each journey.

Appendix 1 details recommended checks.

Many bus and truck breakdowns involve braking or tyre failures or blow-outs. Not only are these dangerous in themselves, by causing loss of control, but the resulting debris from tyre failures also presents a common hazard to other road users.

Tyres

Front tyre failure: A sudden deflation of the front tyre can result in a loss of steering control. You should:

- Keep firm hold of the steering wheel;
- Always be aware of anything on your nearside;
- Signal to move to the left;
- Try to steer a steady course to the nearside (or hard shoulder on the motorway);
- Reduce speed gradually and avoid any harsh braking;
- Try to bring the vehicle to rest under control and as far to the left as possible;
- Use a warning triangle – place it behind the vehicle and operate the hazard flashers if the vehicle is causing an obstruction. However, do NOT place a warning triangle on a Motorway.

Rear tyre failure: If a rear tyre on either the vehicle or a trailer deflates, the effects may not be quite so severe. On a large vehicle this may not be immediately obvious to you, especially if it's a multi-axle vehicle. Keep the vehicle under observation at all times during a journey. Although a rear tyre blow-out usually has less effect on the steering than a front tyre blow-out, the control of the vehicle and stability will be affected. Follow the same procedure for a front tyre blow-out, and pull off the road as safely as possible.

Lost wheels: Regular maintenance is essential to help prevent wheels becoming detached during use. When the wheels have been removed and replaced for any reason, it's important to ensure that the wheel nuts are rechecked shortly after

their initial tightening. Wheel nut indicators can provide a quick visual check to ensure that nuts haven't loosened or broken off. However, they are only a guide and should not be completely relied on. The most common cause of a vehicle losing a wheel or wheels is poor maintenance and a lack of safe working systems, which includes the drivers daily walk around checks. As highlighted elsewhere, these checks must be documented and any defects recorded and reported.

Unintended Acceleration

Research shows that the underlying causes of unintended acceleration can be explained in terms of normal human behaviour and action; it usually happens when the driver has left the vehicle cab, even for a short time then returns to resume driving or is undertaking a slow speed manoeuvre. To help prevent unintended acceleration you should, every time you get into the vehicle, carry out the cockpit drill. Check that:

- The parking brake is applied and the engine is not running.
- The gear selector is in the neutral position in a manual gearbox vehicle or park/neutral in an automatic vehicle.
- The driving seat is correctly adjusted and seat belt fastened.
- All interior and exterior mirrors are clean and correctly adjusted.
- Gauges, dials and the systems warning panel are working correctly (whether ABS brakes are fitted and functioning).
- You know where the controls are and how they work.
- You know the vehicle height, width and weight.





Be professional and always apply the handbrake and select neutral and switch off the engine when parked.

Vehicle Breakdown

If your vehicle breaks down, try to stop as close to the left as possible and get off the main carriageway without causing danger or inconvenience to other road users, especially pedestrians and cyclists. Switch on the hazard warning lights and wear your fluorescent (Hi-Visibility) clothing.

On roads other than Motorways place the hazard warning triangle behind the vehicle.

Do not place any warning device such as a triangle on the motorway as it is dangerous to do so.

Contact the nearest emergency services for help, if required.

Drivers must not abandon any vehicle in a public place.

Gardaí – If a breakdown occurs on the motorway, inform the Gardaí.

Do not attempt to work on the right-hand side of the vehicle or retrieve luggage from the right hand side (offside) of a vehicle on a roadway of any kind.

Take great care on roads carrying fast-moving traffic. Many road traffic incidents happen at breakdowns.

Protect yourself, your passengers and your vehicle.



Assessing the Dangers

If your vehicle is creating an obstruction, or is a potential danger to other road users, inform the Gardaí as soon as possible. This is particularly important if your vehicle is carrying passengers, especially schoolchildren.

Bus drivers – Move any passengers as far forward in the vehicle as possible.

This will reduce the risk in the case of another vehicle colliding with the rear of your vehicle.

Remember the dangers of allowing passengers to leave the vehicle, especially on a Motorway. Do not allow persons to stand at the rear of the vehicle obscuring the hazard warning/lights or tail lights

If you think that there is a serious risk of collision, escort your passengers off the vehicle. Ensure that they wait somewhere safe and well away from traffic.

Explain fully what you are doing and ask somebody competent to go for help if necessary.

Make sure that you:

- Know where all your passengers are.
- Know what they are doing.
- Keep them informed.

Daily vehicle check – Remember to carry out the vehicle walkaround check before starting any journey. This can often reveal a potential problem before it becomes a serious safety issue.

You should not continue to drive after the oil or coolant warning light illuminates in the display panel. Further details on a typical drivers daily walk around check are provided at Appendix 1 of this manual. RSA Transport Officers and members of An Garda Síochána may seek written proof that you have completed the walk around checks. Failure to provide such proof may lead to additional checks being carried out and/or prosecution.

Tunnels – In addition to the procedures listed above, additional measures are required when a breakdown occurs in a tunnel.

- Switch off your engine.
- Go to an emergency station and use the emergency phone to inform the tunnel operator.
- Check your vehicle radio for instructions.
- Check all electronic signs in the tunnel for information.
- Check your vehicle radio for instructions

See Section 11 of the Rules of the Road for further information.





SELF-ASSESSMENT OF KNOWLEDGE

Please complete the following questions to help assess your understanding of the module so far:

Q.1 How should you deal with a tyre blowout?

Your Response

Q.2 Why should you document the daily walk around checks?

Your Response

Q.3 What should you do when wheels have been removed and replaced?

Your Response

Q.4 What should you do to prevent unintended acceleration?

Your Response

Q.5 Why should you conduct a vehicle walkaround check?

Your Response





Q.6 List 5 things you should do if your vehicle breaks down in a tunnel.

Your Response

Q.7 What should you do with any passengers following a breakdown?

Your Response

Q.8 On what type of road should you not place a red warning triangle?

Your Response

Q.9 What should you do if your vehicle requires repairs on the traffic side of the vehicle?

Your Response

Q.10 What is the most common cause of your vehicle to lose a wheel?

Your Response

Having completed these questions, your trainer will discuss typical answers with the group to ensure that drivers have a comprehensive understanding of the information and guidance provided. If you would like more information on any of the issues raised during this exercise, ask your trainer who will be pleased to discuss the issues and will encourage other participants to share their experiences to the benefit of all.

This concludes the section on Action in the event of a Breakdown.





SECTION F – CVRT (COMMERCIAL VEHICLE ROADWORTHINESS TESTING)

The Commercial Vehicle Roadworthiness Test (CVRT) is a roadworthiness test which applies to all commercial vehicles, all buses with more than eight passenger seats and to ambulances, all of which are more than one year old.

The RSA is now responsible for the overall supervision of the Commercial vehicle roadworthiness testing system and for authorisation of CVR Test Operators and Testers.

The CVRT confirms that a vehicle satisfies basic safety standards on the day the test is carried out. It tests what is accessible and visible.

It does not confer a warranty as regards the condition of the vehicle.

Commercial Vehicle Testing is one component of the preventative measures needed to have safer vehicles on the roads. In order to ensure that vehicles are kept in a safe and roadworthy condition throughout their life, it is essential that they are regularly maintained and serviced. Properly maintained vehicles are more reliable, more efficient and generally do not let you down.

Commercial Vehicle Operators now have explicit obligations to have maintenance systems in place and to conduct daily walk around checks. See Appendix 1 for more information.

Prospective purchasers of used vehicles should always have the vehicle thoroughly and independently checked by a qualified person prior to purchase, or else buy from an authorised dealer with a warranty. For further information visit the Competition and Consumer Protection Commission website .

There are two types of commercial vehicle tests, one for **Light Commercial Vehicles (LCVs)** and one for **Heavy Commercial Vehicles (HCVs)**.

The LCV test is for:

All small goods vehicles with a gross vehicle weight (GVW) of 3,500 kg or less

The HCV test covers all other commercial vehicles including:

- goods vehicles over 3,500 kg GVW
- goods trailers over 3,500 kg GVW
- buses with more than eight passenger seats
- ambulances

What the test examines;

Only components that are visible and accessible can be assessed at the CVRT. These include:

- Brakes
- Lights and markings
- Wheels and tyres
- Steering and suspension
- Chassis and underbody

- Tachograph
- Speed limiter
- Exhaust emissions
- Electrical systems
- Glass and mirrors

Further information on the CVRT test items can be found in the testers manuals (See www.rsa.ie/cvr testing manuals)

Fees;

The cost of the Commercial vehicle roadworthiness test varies according to vehicle size.

See www.rsa.ie/cvr test fees

All retests must be completed within 21 calendar days and within 4,000 kms of the initial test or the full test must be repeated and the full fee must be paid again.

A visual re-test is free, but a retest that requires a test lane has a fee that is half of the normal test fee. You should repair vehicle fail items immediately and present the vehicle for re-test as soon as possible.





What is the difference between CVRT, DoE, VTN?

The actual test is now called a Commercial Vehicle Roadworthiness Test (CVRT) but is still commonly referred to as a DoE (Department of Environment) Test.

The reason for this is that the Department of Environment originally introduced commercial vehicle testing. They have not been involved in its regulation for a number of years.

The network of commercial vehicle testing centres where you have your commercial vehicle tested are called **Commercial Vehicle Roadworthiness Test Operators** previously known as Vehicle Testing Network (VTN).

This is a network of independently owned test centres currently licensed by the Local Authority in the area and are completely separate from the National Car Testing Service (NCT) network which only tests cars.

Why you need a CVRT

The ultimate goal is to keep Irish roads safe. Commercial Vehicle Roadworthiness Testing (CVRT) is part of that effort.

There are five main reasons why your vehicle needs an annual CVR test

1. In order to get your Certificate of Roadworthiness (CRW).

Only when you pass your CVR test, will you get your Certificate of Road Worthiness (CRW). This certificate is proof that a vehicle met a set of basic safety standards on the day it passed its test, however it cannot be regarded as a warranty as regards the condition of the vehicle.

2. You must have a valid CRW in order to tax your vehicle.

3. It checks the basic condition of your vehicles.

The CVR test makes sure that, every year, all goods vehicles on the road have been fairly tested. The test identifies vehicle failure points on items tested in accordance with the CVRT manuals and re-tests vehicles on those points, so they return to the road as safer and more roadworthy vehicles. It should be noted that only items that are visible and accessible are tested at the CVR test.

4. It saves time.

Yearly tests and well-maintained vehicles

mean fewer breakdowns. The CVRT programme improves the overall efficiency for goods vehicle testing.

5. Its the law.

The legislation states that all commercial vehicles must be tested when they are over one year old and annually after that. So having your vehicle tested means avoidance of penalty points and fines.

The legislation

The legislation reforms Ireland's commercial vehicle roadworthiness testing system.

It allows the standardisation and enforcement of compliance among commercial vehicle owners, as well as test centres.

The Road Safety Authority Commercial Vehicle Roadworthiness Act 2012.

Signed by the president on the 30th May 2012 this Act establishes a new legal framework for commercial vehicle roadworthiness in the State. The Act includes provisions for:-

- the transfer of the functions of local authorities in relation to the roadworthiness testing of commercial vehicles to the RSA.
- the requirements that a person must meet in order to be authorised as a Commercial Vehicle Roadworthiness test operator or tester
- the obligations on owners of commercial vehicles to ensure that they are maintained in a roadworthy condition and that vehicles are periodically inspected and that defects are rectified.

S.I. No. 107 of 2013 Authorisation of Commercial Vehicle Roadworthiness Test Operators and Testers Regulations 2013.

These regulations commenced on 27th March 2013 and include provisions relating to:-

- Authorisation of CVR Test Operators and testers including fees and the application process.
- Suspension and revocation of authorisations
- Qualifications and training requirements.

SI No 347 of 2013 Commercial Vehicle Roadworthiness (Vehicle Testing) No. 2) Regulations 2013.





These Regulations provide for :

- testing to be conducted through CoVIS from 25 September
- changes to test fees from 7 October.

The Regulations also introduce a number of changes to test administration which are being facilitated by CoVIS (Commercial Vehicle Operator Information System) – eg central issuing of the CRW, eliminating the requirement for presenting Vehicle Registration Documents at the test, printing odometer readings, presenter ID, etc.

SI No 348 of 2013 - Road Safety Authority (Commercial Vehicle Roadworthiness) (Vehicle Repair and Maintenance) Regulations 2013.

These regulations place obligations on the owners of commercial vehicles in relation to the following matters:-

- maintenance and repair of commercial vehicles
- decisions concerning the frequency of maintenance
- daily walk around checks
- vehicle inspections at periodic intervals
- carrying out of repairs by suitably qualified persons
- record keeping
- making an annual declaration about maintenance of vehicles to the Road Safety Authority

Under the regulations, commercial vehicle owners are required to put in place a system for the regular inspection and maintenance of vehicles and to review the system to ensure it is fit for purpose.

In making decisions on the frequency of maintenance of vehicles, vehicle owners must have regard to a number of factors as specified in the regulations which includes the age, mileage, normal wear and tear and the overall condition of the vehicle.

A daily walk-around check must be completed on the vehicle before it is used on a public road and defects found during the check must be reported to the owner of the vehicle concerned.

The owner of the vehicle is responsible for ensuring that the person conducting the daily walk-around check is trained to conduct the required walk-around check.

A person undertaking repairs and maintenance

of a vehicle must be suitably qualified and have the necessary training, expertise or experience to conduct such activities to ensure that the vehicle is roadworthy.

In accordance with the Road Safety Authority (Commercial Vehicle Roadworthiness) Act 2012, the RSA has appointed authorised officers to inspect compliance with these regulations and to issue directions and take prosecutions for non-compliance.

Both RSA Authorised Officers and Bureau Veritas, on behalf of the Authority, are conducting these operator premises inspections. Most initial visits are educational and advisory in nature to give operators the opportunity to know their obligations and to comply. A minimum of 250 to 300 operator premises inspections are conducted each month.

A person convicted of an offence under the regulations may be liable to a fine of up to €5,000 or a term of imprisonment not exceeding 6 months, or both.

Operators of Heavy Commercial Vehicles are required by law to make an online 'Self-Declaration' to the RSA in relation to their Heavy Goods Vehicles, Goods Trailers, Buses and Ambulances.

They must register for a CVRT Online Account to submit a Self-Declaration to the RSA.

Hired-in vehicles and trailers

Each operator must make sure that any vehicles or trailers leased, hired or borrowed are roadworthy and have a valid Certificate of Roadworthiness (CRW) if they are more than one year old. Any such vehicles or trailers should be inspected before taking delivery. The hirer is responsible for the checks. The driver should conduct a walk around check as a minimum.

Purchasing a used vehicle?

If you are considering purchasing a used commercial vehicle you should firstly ensure that it has a valid Certificate of Roadworthiness (CRW).

It is important to note however that while a CRW is proof that a vehicle met basic safety requirements on the day it was tested only components that are visible and accessible can be assessed at the Commercial Vehicle Test. Therefore a CRW cannot be regarded as a warranty as regards the condition of a vehicle.





Verification of odometer readings prior to purchase.

Since 11th May 2016 the current odometer reading and up to two prior readings are printed on the Certificate of Roadworthiness (CRW). The 'start date' for recording these historical readings was 19/08/2014, so any vehicle that passed an initial or periodic CVR test after this date should, since 11th May 2016, display up to two previous test dates and the corresponding odometer readings.

Therefore if you are considering purchasing a used commercial vehicle you should request a copy of the CRW certificate from the seller to check the historic odometer readings. If on review of this document you have any queries on the odometer readings recorded at a previous test, the RSA recommends that you seek clarification from the seller prior to purchase.

It is important to note that the historic odometer readings are only printed on the Certificate of Roadworthiness that comes with the CRW disc to be displayed on the vehicle's windscreen. The CRW disc itself only contains the details of the odometer reading recorded at the most recent CVR Test. Therefore you should request a copy of the full CRW certificate from the vehicle seller and not just the actual CRW disc prior to purchase.

Please note also that there may be legitimate reasons why an earlier reading is higher than a more recent one, for example, if a speedometer has been replaced.

However, it might also suggest that the odometer has been 'clocked' or tampered with.

While this new measure should act as a deterrent to odometer fraud, the RSA is not responsible for policing such activity. Furthermore the RSA cannot divulge any information as regards a vehicle's prior test history (including historic odometer readings) or details of where a vehicle was tested to any person who was not the registered owner at the time of the test.

How to get your CRW

All commercial vehicles must complete a CVR test in order to get a Certificate of Roadworthiness (CRW).

Follow these steps:

- First your vehicle must pass a CVR test.
- Once your vehicle passes a CVR Test the test centre will give you a pass statement.
- You don't need to bring your Vehicle

Registration Document or Log book to the test. However, you do need to bring presenter ID in the form of a valid driver's licence or passport.

- The registered owner of the vehicle will receive the CRW in the post.

Presenter ID requirement

If you are bringing a vehicle for a Commercial Vehicle Roadworthiness Test (CVRT) you must produce Identification. If you don't then the Certificate of Roadworthiness (CRW) will not issue for a vehicle which successfully completes the test, until the required ID is produced.

Why do I need to bring ID?

Recording presenter IDs helps ensure higher quality testing and makes it easier to follow-up on issues. It can provide important information to help identify and investigate unusual patterns of activity relating to test quality or outcomes. The application of these measures also acts as a deterrent to fraudulent activity in relation to the CVRT.

The Commercial Vehicle Roadworthiness (Vehicle Testing) (No.2) Regulations 2013 provide the legal basis under which required identification may be sought.

What sort of ID is required?

The test centre will ask for either your drivers licence or passport. You should have your drivers licence with you as it's against the law to drive a vehicle without a drivers licence.

Does this mean that only the owner can present the vehicle for a test?

No. It simply means that whoever you nominate to bring your vehicle for a test must produce their drivers licence or passport.

What happens if the presenter forgets to bring ID?

If you forget to bring ID then the test centre can still carry out the test on the vehicle. However, if the vehicle successfully completes the test, you'll need to go back to the test centre as soon as possible with valid ID so the CRW can be released.

You should be aware that where you do not produce Presenter ID, the CRW will not be issued. You will not be able to tax your vehicle if your vehicle does not already have an in date and valid CRW.





If I don't have Presenter ID, will I get proof that the vehicle has completed the test?

A test report will be issued to you when the test is complete. The issuing of the CRW will be placed on-hold until you return with the required ID.

What will be recorded by the test centre?

The test centre will record your name, type of identification presented and the relevant unique number on identification. Please note your data is safe and data recording is carried out in line with data protection obligations.

Your Certificate of Roadworthiness (CRW) has a detachable disc that you are legally obliged to display. The disc must be displayed on the windscreen of the vehicle, or in the case of a goods trailer, as close as possible to the registration plate or where it can be easily inspected.

Changes to Roadworthiness (CVR) Test requirements

Since 1st June 2015, 'manual shut-off' taps will no longer pass the CVR test. Trailer brake lines must be fitted with 'self-sealer' couplings.

This is naturally important for operators but is equally important for the drivers who will need to couple or un-couple a trailer. Drivers who are unfamiliar with the 'self-sealing' coupling devices should fully familiarise themselves with their safe operation before attempting to couple or un-couple a trailer. Because of the automatic supply of pressurised air, it is vitally important to follow a safe procedure. If you do not know how to use them, get someone competent to show you and then practice under their guidance - before attempting it alone.

Further information can be obtained at vehiclestandards@rsa.ie where a FAQ document is available, or by calling the RSA on 096)25014 between 8.00 am and 6.00 pm, Monday to Friday. Please note that the FAQ document is not an interpretation of the law.

Roadside inspections

The RSA conducts inspections at the roadside in conjunction with An Garda Síochána to check compliance with vehicle roadworthiness

standards and also to check drivers' hours, tachographs, drivers CPC and the requirement to hold a Road Transport Operator Licence.

Transport Officers and Vehicle Inspectors are equipped with a smartphone app which gives them quick access to certain information about vehicles, drivers and operators. Transport Officers also use ANPR (Automatic Number Plate Recognition) technology at roadside checks in order to enhance targeting of non-compliant vehicles, drivers and operators. Furthermore, vehicles with expired Certificates of Roadworthiness (CRW's) have been added to the Garda Síochána ANPR systems and alerts will be sent to the Garda where a vehicle is being driven with an expired CRW.

What is checked at a roadside inspection?

An RSA Vehicle Inspector will carry out visual checks on the roadworthiness of a vehicle or trailer. The Inspector will check that a valid Certificate of Roadworthiness (CRW) is displayed on the vehicle(s) (including trailers) and will check the physical condition of the vehicle to assess its roadworthiness. This is a limited visual inspection and the inspector may require the vehicle to be brought to a Commercial Vehicle Testing Centre for further inspection.

An RSA Transport Officer will check that the vehicle has a valid Road Transport Operators' Licence (if one is required) and will carry out a tachograph and drivers' hours check.

The following should be available to a Transport Officer at a roadside check:

- A copy of the operators licence or a certified copy of a Community licence (where the vehicle is engaged in hire or reward)

If the vehicle is fitted with an analogue tachograph:

- the record sheet for the current day and any used by the driver in the previous 28 calendar days;
- any manual record and printout made during the current day and the previous 28 calendar days; and
- digital tachograph driver's card (if driver holds one)





If a vehicle is fitted with a digital tachograph:

- drivers digital tachograph drivers' card
- any manual records or printouts made by the driver during the current day and the previous 28 calendar days; and
- record sheets for any vehicle fitted with an analogue tachograph that was driven, by the driver, within the previous 28 calendar days.

The Transport Officer will download the vehicle unit for vehicles fitted with a digital tachograph and take some printouts. He/she will also download information from the drivers' driver card. This downloading does not erase any data and merely takes a copy of information stored on the card.

The Drivers' CPC card

The driver may also be asked to produce a valid CPC Card. Failure to do so is an offence.

After a roadside inspection

The Transport Officer / Vehicle Inspector will record the results of the inspection at the roadside and give you a copy of the inspection report. This report will also be available to operators via their CVRT Online Account. To create your CVRT online account you need to register with us. If you have already registered you can log in to view your inspection reports.

We will retain a record of the inspection on our system for at most 10 years. The findings of the inspection will feed into our Commercial Vehicle Operator Risk Indicator (CVORI) for a maximum of 3 years after the inspection has taken place.

Outcome of Roadside Inspection

A number of outcomes are possible from a roadside inspection.

Where compliance is evident, the inspection will conclude and you will receive a report. Where breaches / defects are detected you will be informed of these and one or more of the following may happen:

- You may be given a warning
- You may be asked to submit further information
- You may be issued with a Direction Notice / Letter
- Records may be taken away for further analysis (you will receive a receipt for these)

- The driver and / or vehicle may be prohibited from continuing their journey
- The vehicle may be directed to a Commercial Vehicle Test Centre for further inspection or an enforcement test
- The operator / owner of the vehicle may be put on a list for a premises inspection
- You may be interviewed under caution and a prosecution initiated.

During the course of an inspection, Transport Officers and Vehicle Inspectors will give you information and advice on the rules in place and how you can comply.

Transport Officers – Road Safety Authority

Transport Officers are employed directly by the Road Safety Authority. They carry out inspections both at the roadside and at operator premises to check compliance with EU tachograph and drivers' hours rules and the mobile workers Working Time Directive, as well as elements of operator licensing and drivers CPC.

Transport Officers are authorised enforcement officers appointed under Section 15 of the Road Transport Act 1986 (as amended) and Section 16 of the Road Transport Act 2011. The powers of Transport Officers are set out in Part 5 of European Communities (Road Transport) (Working Conditions and Road Safety) Regulations 2008 (S.I. 62 of 2008) (as amended).

Vehicle Inspectors – Road Safety Authority

Vehicle Inspectors are employed directly by the Road Safety Authority. They carry out roadworthiness inspections at the roadside. In addition they conduct comprehensive technical inspections at Commercial Vehicle Testing Centres and at operators' premises in Ireland as part of the statutory commercial vehicle roadworthiness inspection programme. Vehicle Inspectors have been appointed as Authorised Officers and CVR Inspectors under Sections 24 & 33 of the Road Safety Authority (Commercial Vehicle Roadworthiness) Act 2012. The powers of authorised officers are prescribed in section 25 & 31 of the Act. The powers of CVR Inspectors are prescribed in section 34 of the Act.

See Appendix 7 for a sample of a Technical Roadside Inspection Check Form and a sample of the Vehicle Inspectors Checklist.





Contact Details

The enforcement unit of the Road Safety Authority is located at the following address:

Standards & Enforcement Directorate,
Road Safety Authority,
1st Floor, Clonfert House,
Bride street,
Loughrea,
Co. Galway
H62 ET93
Phone: 091 872600
Fax: 091 872660
Email: enforcement@rsa.ie



Example of CVRT inspection in progress



CRW EXPLAINED



CVRT
Commercial Vehicle Roadworthiness Testing

Deimhníú Ródacmhainneachta
Certificate of Roadworthiness

2

Mr. Joseph Alexander Bloggs-Fitzwilliam
The Moorings
Abbey-lane-gate Street
Springfield
Co. Galway

This is a test message

1

It is hereby certified that the vehicle described in this Certificate was tested on the date below in accordance with the Road Safety Authority (Commercial Vehicle Roadworthiness) Act 2012 and any Vehicle Testing Regulations made there under and was found to comply therewith. Deimhnítear leis seo gur dearmadh an fheithicil atá tuairiscithe sa Deimhníú seo a thástáil ar an dáta thíos de réir an Acht fán Udarás um Shábháilteacht ar Bhóithre (Ródacmhainneacht Feithicil Tráchtála) 2012 agus Rialachán um Thástáil Feithicil ar bith a rinneadh faoin gcéanna agus gur cinneadh gur chomhlíon sí iad.

Registration No / Cláruimhir:	10DL78100	3	
Make/Model / Déanamh/Múnla:	VOLKSWAGEN TRANSPORTER		
Vehicle Category / Catagóir na feithicle:	M1		
Colour / Dath:	BLUE		
VIN / Uimhir aitheantais na feithicle:	GFJ5927472740375	4	
DGVW / ODF: 40000KG	ULW / MNU: 19000KG		
Serial No / Sraithuimhir:	A000001001		
Test date / Dáta na tástála:	24-10-2013		
CVRT Centre / Ionad TRFT:	7437		
Tester ID / Tástálaí ID:	4466	5	
Unique Test ID No / Uimhir ID uathúil tástála:	1122334466H		
Expiry date / Dáta éaga:	23-10-2014		
Odometer / Odaiméadair:			
Date: 24-10-2013	Date: N/A	Date: N/A	5
Reading: 86331km	Reading: N/A	Reading: N/A	

Detach disc carefully
Téigh amach an diosca go cúramach

6



Place facing outwards
Bíodh an diosca le léamh lasmuigh den fheithicil

www.cvrt.ie | 1890 40 60 40

The operator should ensure that both sections of the disc are inserted back-to-back into the holder on the windscreen.

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SELF-ASSESSMENT OF KNOWLEDGE

Please complete the following questions to help assess your understanding of the module so far:

Q.1 What vehicles does CVRT apply to?

Your Response

Q.2 What obligations does CVRT impose on operators?

Your Response

Q.3 What items are examined during a CVRT?

Your Response

Q.4 After what age must a vehicle undergo a CVRT?

Your Response

Q.5 What are the main reasons why a vehicle must undergo a CVRT?

Your Response

Q.6 Who must make an on-line declaration in relation to their vehicle(s)?

Your Response





Q.7 What is a Certificate of Roadworthiness?

Your Response

Q.8 Where must a CRW disc be displayed on a vehicle?

Your Response

Q.9 Where must a CRW disc be displayed on a trailer?

Your Response

Q.10 What items must be available at a roadside inspection?

Your Response

Q.11 What penalties can be imposed for breach of the CVRT regulations?

Your Response

Q.12 What are the possible outcomes from a roadside inspection?

Your Response

Having completed these questions, your trainer will discuss typical answers with the group to ensure that drivers have a comprehensive understanding of the information and guidance provided. If you would like more information on any of the issues raised during this exercise, ask your trainer who will be pleased to discuss the issues and will encourage other participants to share their experiences to the benefit of all.





SCENARIO 2

Bus driver Tom was an owner/operator of a bus involved in school transport. He always tried to be punctual at his pick-up and drop-off points as he knew that parents were concerned about their children being out in inclement weather, especially during the hours of darkness.

He had a reliable bus and it never gave him any trouble. He had heard about the need to conduct a daily vehicle walk around check but believed there was little need for it. He occasionally looked at the tyres and believed that if any problem developed he would be able to detect it as he drove along.

He also occasionally checked the oil and coolant levels and once in a while checked the sidelights, taillights, dipped and headlights.

He intended to have the First Aid kit and the fire extinguisher checked and serviced when he had the time.

Tom was surprised and disappointed to be stopped at a RSA checkpoint and to be told that his bus should have been registered for the CVRT programme.

Q.1 What is liable to be checked at a RSA roadside inspection?

Your Response

Q.2 What should Tom have done regarding his vehicle and the CVRT programme?

Your Response

Q.3 What do the regulations say regarding a person who is responsible for repairs and maintenance of eligible vehicles?

Your Response





Q.4 What is the process for obtaining a CRW?

Your Response

Q.5 Where could Tom get further information relating to the CVRT programme?

Your Response

This concludes the section on CVRT. It also concludes CPC Module No. 1 – Control of the Vehicle and Eco-Driving Techniques.





List of Appendices

The following appendices are provided as an information resource for professional drivers. It may help to refer to them when you require particular information. Please be aware that regulations, conditions and standards can change from time to time and up-to-date information is available on the RSA website at www.rsa.ie

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APPENDIX 1

DAILY WALK-AROUND CHECKS

Responsibilities of the driver

Before driving the vehicle in a public place the driver of a CVR vehicle must conduct a visual inspection of the condition of the interior and exterior of the vehicle by walking around it.

What do daily walk around checks entail?

Walk-around daily checks prior to driving the vehicle are a simple and effective way to spot potentially dangerous issues before vehicles are used. These walk-around checks may be carried out by any person trained to conduct such checks, including drivers or mechanics.

Potential vehicle roadworthiness issues can also be identified while they are being driven, and driver feedback is a good source of information on vehicle condition.

Obligations in relation to recording of defects

For the daily walk-around checks to be effective, there must be a system in place for reporting and recording vehicle defects. It is good practice for drivers to carry a book of check-sheets and defects forms, or an electronic recording device, where all completed checks and any defects can be recorded.

When a defect is identified during an inspection, the following information must be recorded:

- Description of the defect
- Time and date of the discovery of the defect; and
- Any temporary measure taken to mitigate the effect of the defect

Detection of defects by drivers when on the road

If a defect to a vehicle is likely to be a danger to the vehicle or other road users when on the move, the driver should stop driving the vehicle as soon as possible at a safe location, and not drive the vehicle again until the defect is inspected and, if necessary, repaired by a suitably qualified person.

Vehicle owners should be aware that they may be prosecuted if they knowingly, or could have discovered by the exercise of ordinary care, caused or permitted a driver to drive a defective vehicle.

Repairing defects to vehicles

All reported defects must be followed up and appropriate action must be taken before the vehicle is used on a public road. The corrective action taken must be recorded and included in the vehicle's maintenance record.

See sample Walk-around check sheets and defect reports.

See www.rsa.ie/cvrt for further information

Overleaf you will find a useful guide to carrying out vehicle walkaround checks, following on from which you will find typical examples of walkaround check-sheets which should be used to record the status of each item – defect or ok. Your company may have an alternative version which you should use.



Bus & PSV Driver Walkaround Checks

In Cab Checks

- Check driving controls, seat & safety belt position (if fitted)
- Heater / demister working properly
- Tachograph: Correct hours, calibrated & speed limiter plaque displayed
- ABS/EBDS warning lights working
- Instruments, gauges & warning devices working
- Horn working properly & accessible to driver

External Checks

- Check underneath vehicle for fluid leaks
- Exhaust: No excessive noise or smoke
- Number plates: In place, clean & in good condition
- Check engine oil, coolant and windscreen wash for levels
- Fuel cut off clearly marked & accessible

Internal PSV Checks

- Fire Extinguisher in place, fully charged & in date
- First Aid Kit in place & in date
- Passenger safety belts working (if fitted)
- Seats & handrails in good conditions
- All walkways clear
- Internal lighting working & luggage racks in good condition
- Emergency exit hammer in place (if fitted)
- Emergency door warning buzzer working (if fitted)
- Emergency exit doors & signs

Windows (Windscreen & Side Windows)

- Clean & in good condition
- View not obstructed e.g. by stickers, etc.
- Valid Tax/insurance discs present
- Windscreen washers & wipers working correctly & in good condition

Lights, Indicators & Reflectors

- All in place & undamaged
- Working
- Clean
- Correct colour

Mirrors

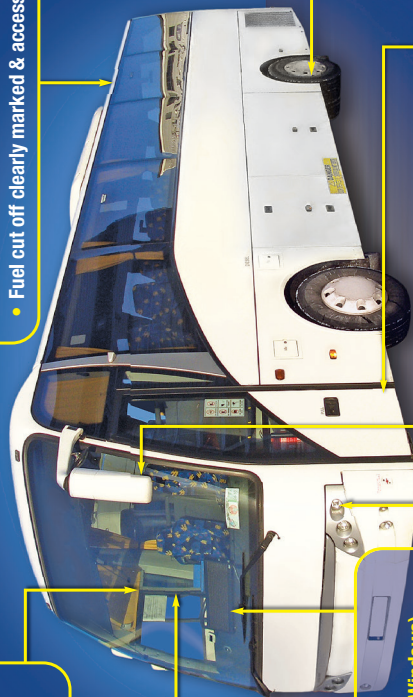
- Clean & in good condition
- Correctly aligned
- Correct operation of electrical mirror (if fitted)

Vehicle Access

- Steps undamaged
- Good unworn surface
- Clean
- Good handholds
- Door working properly

Wheels & Tyres

- Tyres correctly inflated
- Tyres correct tread depth
- Tyres undamaged: no abrasions, bulges or tears
- Wheel nut indicators correctly aligned (if fitted)
- Road wheel nuts all in place, correctly fitted & secure



HGV Driver Walkaround Checks

In Cab Checks

- Check driving controls, seat position, safety belt (if fitted)
- Tachograph: Correct hours, calibrated & speed limiter plaque displayed
- ABS/EBS warning lights working
- Instruments, gauges & warning devices working
- Wipers, washers, horn, demister & temperature controls working correctly

Load Security

- Loaded correctly
- Weight distributed across axles
- Not overloaded
- Load restrained & contained

External Checks

- Check underneath front of vehicle for fluid leaks
- Exhaust: No excessive noise or smoke
- Landing legs fully raised & handle in position
- Trailer park brake operates correctly & is fully released
- Air suspension correctly set
- Number & marker plates in place, clean & in good condition

Windows (Windscreen & Side Windows)

- Undamaged
- Clean
- View not obstructed e.g. by stickers, etc.
- Valid Tax/insurance discs present
- Windscreen washers & wipers working correctly & in good condition

Lights & Indicators

- Working
- Clean
- Correct colour
- All in place & undamaged

Mirrors

- Cover side & rear blind spots (if fitted)
- Clean & in good condition
- Correctly aligned

Suzie Connections

- All required air & electrical Suzie connectors present & correctly located
- In good condition: No chaffing, stretching or any other damage
- ABS/EBS cable fitted (if required)
- No air leaks from connectors

Tyres, Wheels & Couplings

- Tyres correctly inflated
- Tyres correct tread depth
- Tyres undamaged: No abrasions, bulges or tears
- Wheel nut indicators correctly aligned (if fitted)
- Road wheel nuts all in place, correctly fitted & secure
- Road wheels in good condition
- Semi-trailer is correctly located in fifth wheel & locked in position (if applicable)
- Drawbar coupling in place & good condition

Vehicle Access

- Steps undamaged
- Good unworn surface
- Clean
- Good handholds
- Proper access to catwalk & load area (if required)
- Safe access for driver
- Safe access to Suzie Connections



Bus / PSV Driver Walk-Around Check Sheet			
Vehicle Registration Number		Mileage	
			OK 
			Defect 
Check Items			
In-Cab Checks			
1	Good visibility for driver through bus windows and mirrors. All required mirrors fitted and adjusted correctly.		
2	Driving controls, seat and driver safety belt adjusted correctly.		
3	Windscreen washer, wipers, demister and horn operating correctly.		
4	Tachograph calibrated with correct hours. Speed limiter plaque displayed.		
5	All instruments, gauges and other warning devices operating correctly (including ABS/EBS in-cab warning lights).		
6	No air leaks or pressure drop.		
PSV Checks			
7	Fire extinguisher, first aid kit, emergency hammer (if applicable) in place and serviceable.		
8	Passenger safety belts, seats, handrails, walkways, lighting and luggage racks in good condition.		
9	Emergency exit door and buzzer working correctly. Emergency signs in place.		
External Vehicle Checks			
10	Vehicle sitting square and not leaning to one side.		
11	Tax disc, insurance disc and PSV plate (if applicable) present and valid. Number plates clearly visible.		
12	Wheels in good condition and secure. Tyres undamaged with correct inflation and tread depth.		
13	All lights and reflectors fitted, clean and in good condition.		
14	Exhaust secure with no excess noise or smoke.		
15	Vehicle body work in good condition, fuel cut off working.		
16	Vehicle access, steps, handholds and surfaces in good condition.		
17	Air suspension correctly set (if fitted).		
18	Engine oil, water, windscreen washer reservoir and fuel levels checked and no leaks (including fuel cap).		
Prior to Leaving Depot			
19	Steering and brakes operating correctly.		
20	Luggage door secure.		
On-the-Road			
21	Tachograph, speedometer and speed limiter operating correctly.		
22	ABS/EBS warning lights off.		
Defect Details			
Signed		Date	

NOTE: This is a sample driver walk-around Bus / PSV checklist. It is recommended that operators prepare their own driver walk-around checklists to account for the type and use of their own vehicles.

HGV Driver Walk-Around Check Sheet			
Vehicle Registration Number		Mileage	
			OK 
			Defect 
Check Items			
In-Cab Checks			
1	Good visibility for driver through cab windows and mirrors. All required mirrors fitted and adjusted correctly.		
2	Driving controls, seat and driver safety belt adjusted correctly.		
3	Windscreen washer, wipers, demister and horn operating correctly.		
4	Tachograph calibrated with correct hours. Speed limiter plaque displayed.		
5	All instruments, gauges and other warning devices operating correctly (including ABS/EBS in-cab warning lights).		
6	No air leaks or pressure drop.		
External Vehicle Checks			
7	Vehicle sitting square and not leaning to one side.		
8	Tax, insurance and transport discs (if applicable) present and valid. Number plates clearly visible.		
9	Wheels in good condition and secure. Tyres undamaged with correct inflation and tread depth.		
10	All lights, reflectors and markings fitted, clean and in good condition.		
11	Exhaust secure with no excess noise or smoke.		
12	Air & electrical suzies and connectors fitted correctly (inc. ABS / EBS cable).		
13	Vehicle access, steps, catwalk or drawbar coupling in good condition.		
14	Vehicle body / wings / guards, side and rear / curtains and straps / doors / tail lift in good condition.		
15	Fifth wheel located and locked correctly, landing legs and handle in correct position.		
16	Trailer park brake operating correctly.		
17	Air suspension correctly set.		
18	Engine oil, water, windscreen washer reservoir and fuel levels checked and no leaks.		
Prior to Leaving Depot			
19	Steering and brakes operating correctly.		
20	Loads secured and weight distributed correctly.		
On-the-Road			
21	Tachograph, speedometer and speed limiter operating correctly.		
22	ABS/EBS warning lights off.		
Defect Details			
Signed		Date	

NOTE: This is a sample driver walk-around HGV checklist. It is recommended that operators prepare their own driver walk-around checklists to account for the type and use of their own vehicles.



APPENDIX 2

ROAD SIGNS OF PARTICULAR INTEREST TO DRIVERS OF LARGE VEHICLES.

See Rules of the Road for the complete list of Road Signs.



Height Restriction



No Entry by reference to Weight



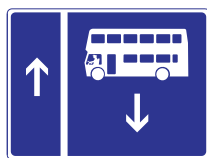
School Warden



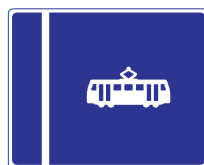
Clearway



No Entry for HGVs. by no. of axles



Contra-flow bus lane



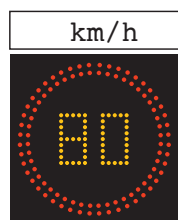
Tram lane on right



No Parking of Large Vehicles



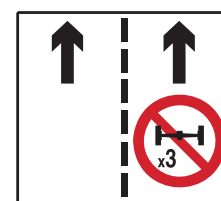
Cycle Track



Tunnel Speed Limit



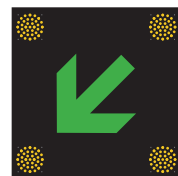
Variable Speed Limit



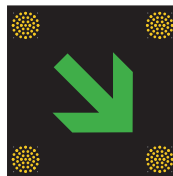
Tunnel Lane Prohibition



Tunnel Lane Closed



Move to Left Hand Lane



Move to Left Hand Lane



Tunnel lane open





Low bridge ahead



Low Bridges



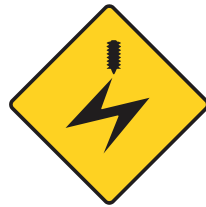
Traffic crossover



Low flying aircraft



Safe height



Overhead electric cables



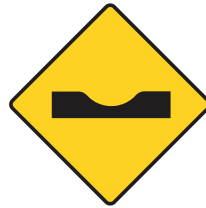
Slippery road ahead



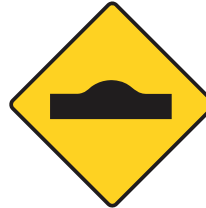
Road narrows



Tunnel ahead



Sharp dip ahead



Sharp rise ahead



Horse riders ahead



Steep descent



Crosswinds



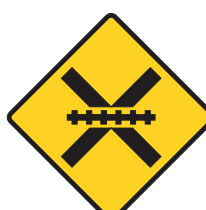
Steep ascent ahead



Unprotected quay



Deer or wild animals



Level crossing ahead



Sharp diversion ahead to the left



Tram crossing ahead





Loop road ahead



Start of passing lane



Start of climbing lane



Low Bridge Ahead



Roadworks ahead



Left hand lane closed



Site access



Flagman ahead



Detour ahead



Diverted Traffic



Concealed entrance



Use hard shoulder



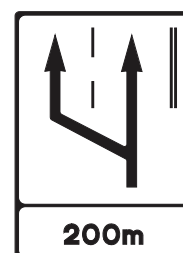
Low Bridge Ahead



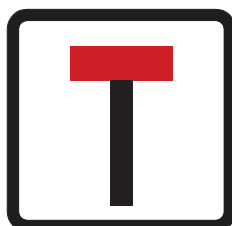
Barrier boards



Stop at roadworks



Slow Lane Ahead



Cul-de-Sac



Industrial Estate



Airport Ahead



Ferry Ahead





Axle weight restriction



No entry to vehicles



Width restriction



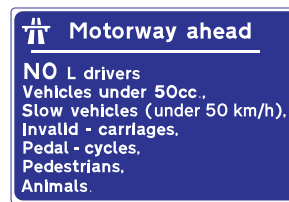
Lay-by Ahead



Lay-by facilities



Parking Bay for Disabled Persons



Motorway ahead



End of Motorway



300 metres to next exit



Speed Limits per lane



Traffic Calming Ahead



SOS Lay-by



Traffic Calming



Speed control ramps



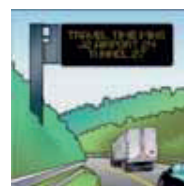
No overtaking for 3 axle vehicles



Speed camera ahead



Speed limit sign for minor local roads



Overhead variable Message



Alternative Route for High Vehicles





APPENDIX 3

Motorway – Dual carriageway.

1. HGVs;- The ordinary speed limit for HGVs is increased to 90 km/h on motorways where no lower speed limit is in place.

You must not use the lane nearest the central median, that is, the outside lane (lane 2 or lane 3, depending on the number of lanes), if you are driving; a goods vehicle with a maximum authorised mass of more than 3,500 kilograms, such as a lorry or heavy goods vehicle, or a vehicle towing a trailer, horsebox or caravan. See Appendix 5 on Page 72 for details of the penalty points offence of driving a vehicle subject to an ordinary speed limit of 90 km/h or less on the outside lane of a motorway. You may use it, however, in exceptional circumstances when you cannot proceed in the inner lane because of an obstruction ahead.

2. The ordinary speed limit for HGVs is 80km/h on a dual carriageway. A HGV may use the outside lane of a dual carriageway.

3. Buses;- The ordinary speed limit for buses is increased to 100km/h on motorways and dual carriageways where no lower speed limit is in place.

However, see restriction below relating to vehicles designed to carry standing passengers and Appendix 5 on Page 72 for details of the penalty points offence of driving a vehicle subject to an ordinary speed limit of 90 km/h or less on the outside lane of a motorway.

4. Buses not designed to carry standing passengers may use the outside lane of a motorway or dual carriageway.

Type of Vehicle	Built up Areas	Regional or Local Roads	Ordinary Speed limit on National Roads (Primary or Secondary)	Ordinary Speed limit on a Dual Carriageway	Ordinary Speed limit on a Motorway	Permitted in outside lane of a Dual carriageway	Permitted in outside lane of a Motorway
Car or Motorcycle	50 km/h	80 km/h	100Km/h	100 km/h	120 km/h	Yes	Yes
Bus/coach	50 km/h	80 km/h	80 km/h	100 km/h	100 km/h	Yes	Yes
Bus (designed to carry standing passengers)	50 km/h	65 km/h	65 km/h	65 km/h	65 km/h	Yes	No *see Appendix 5 – (List of Penalty Point and Fixed Charge Notices and Note 3 above)
Truck	50 km/h	80 km/h	80 km/h	80 km/h	90 km/h	Yes	No *See Appendix 5 – (list of Penalty Point and fixed Charge Notices and Note 1 above).

This table is provided for information purposes only. Drivers should always refer to the most recent version of the Rules of the Road.





APPENDIX 4

CHANGES TO RIGID AND DRAWBAR TRAILER WEIGHT LIMITS.

These changes relate to the introduction of the 46 tonne national weight limit for six (or more) axle rigid and drawbar trailer combinations

New Regulations relating to combinations operating at 46 tonnes g. v. w. came into effect on 1-June-2015.

The new Regulations are titled the Road Traffic (Construction and Use of Vehicles) (Amendment) Regulations 2015 (S.I. No. 136 of 2015), amending the Road Traffic (Construction and Use of Vehicles) Regulations 2003 (S.I. No. 5 of 2003), otherwise known as the 'C&U' Regulations.

A summary of the qualifying criteria necessary for 46 tonne operation is as follows:

1. Rigid vehicles and drawbar trailers already in service prior to 1 June 2015 will require air suspension or equivalent systems¹ and Electronic Braking Systems (EBS). Anti-lock Braking Systems (ABS) are not sufficient.
2. New rigid vehicles registered on or after 1 June 2015, will in addition to requiring air suspension or equivalent systems and EBS, also require Electronic Stability Control (ESC). However an exemption from the ESC requirement is provided for rigid vehicles having more than 3 axles.
3. New drawbar trailers licensed on or after 1 June 2015, will in addition to requiring air suspension or equivalent systems and EBS, also require Roll Stability Control (RSC).
4. The distance between the rearmost axle of the towing vehicle and the foremost axle of the trailer must be 3 meters or greater to operate at a gross combination weight of 46 tonnes.

Changes to Roadworthiness (CVR) Test requirements

Since 1st June 2015, 'manual shut-off' taps will no longer pass the CVR test. Trailer brake lines must be fitted with 'self-sealer' couplings.

This is naturally important for operators but is equally important for the drivers who will need to couple or un-couple a trailer. Drivers who are unfamiliar with the 'self-sealing' coupling devices should fully familiarise themselves with their safe operation before attempting to couple or un-couple a trailer. Because of the automatic supply of pressurised air, it is vitally important to follow a safe procedure. If you do not know how to use them, get someone competent to show you and then practice under their guidance - before attempting it alone.

Further information can be obtained at vehiclestandards@rsa.ie where a FAQ document is available, or by calling the RSA on 096)25014 between 8.00 am and 6.00 pm, Monday to Friday. Please note that the FAQ document is not an interpretation of the law.





APPENDIX 5

Penalty Points

As a professional driver the accumulation of Penalty Points on your driving record can impact negatively on your ability to secure employment or to obtain Insurance cover. The following information is provided to inform and assist you in avoiding their accumulation.

OFFENCES INCURRING PENALTY POINTS

AND FIXED CHARGE NOTICES AT 8 DECEMBER 2014

These are summary descriptions of the offences and not a legal interpretation.

Offences incurring Penalty Points and Fixed Charges	Penalty points on payment	Penalty points on conviction	Amount paid in 28 days Fixed Charge €	Amount paid in next 28 days Fixed Charge €
Learner permit holder driving unaccompanied by qualified person	2	4	80	120
Failure to display N Plate or tabard	2	4	60	90
Failure to display L-Plate or tabard	2	4	60	90
Contravention of ban on U-turns	2	4	60	90
Contravention of rules for use of mini roundabouts	1	3	60	90
Proceeding beyond no entry to vehicles sign	1	3	60	90
Proceeding beyond a traffic lane control sign other than in accordance with such sign or without yielding	1	3	60	90
Using vehicle in a public place without an authorisation plate	3	5	60	90
Using vehicle in a public place that has been modified or altered such that authorisation plate is inaccurate	3	5	60	90
Using vehicle not equipped with a speed limitation device or using a vehicle equipped with a speed limitation device not complying with requirements specified in Regulations	3	5	60	90
Proceeding beyond maximum vehicle length sign where length exceeds maximum displayed	1	3	60	90
Proceeding beyond maximum vehicle width sign where width exceeds maximum displayed	1	3	60	90
Proceeding beyond maximum design gross vehicle weight (safety) sign where design gross vehicle weight exceeds maximum displayed	1	3	60	90
Proceeding beyond maximum vehicle axle loading weight sign where vehicle axle loading weight exceeds maximum specified	1	3	60	90
Using vehicle (car) without valid test certificate (NCT)	3	5	60	90
Parking a vehicle in a dangerous position	3	5	80	120
Failure to drive on the left hand side of the road	2	4	60	90
Dangerous overtaking	3	5	80	120
Contravention of prohibition of driving vehicle along or across median strip	2	4	60	90
Failure to stop a vehicle before stop sign/stop line	3	5	80	120
Failure to yield right of way at a yield sign/yield line	3	5	80	120
Failure to comply with mandatory traffic signs at junctions	2	4	80	120
Crossing continuous white line	3	5	80	120
Failure by vehicle to obey traffic lights	3	5	80	120
Failure to leave appropriate distance between you and the vehicle in front	3	5	80	120
Driving vehicle before remedying dangerous defect	m*	3	Court Fine	
Driving dangerously defective vehicle	m*	5	Court Fine	
Using commercial vehicle without certificate of roadworthiness	m*	5	Court Fine	
Bridge strikes, etc.	m*	3	Court Fine	
Holding a mobile phone while driving	3	5	60	90
Failure to act in accordance with a Garda signal	1	3	80	120
Entry by driver into hatched marked area of roadway, e.g. Carriageway reduction lane	1	3	80	120
Failure to obey traffic rules at railway level crossing	2	5	80	120
Driving a vehicle on a motorway against the flow of traffic	2	4	80	120
Driving on the hard shoulder on a motorway	1	3	80	120
Driving a vehicle (subject to an ordinary speed limit of 90 kms per hour or less) on the outside lane on a motorway.	1	3	80	120
Failure to obey requirements at junctions, e.g. Not being in the correct lane when turning onto another road	1	3	60	90
Failure to obey requirements regarding reversing of vehicles, e.g. Reversing from minor road onto main road	1	3	60	90
Driving on a footpath	1	3	60	90
Driving on a cycle track	1	3	60	90
Failure to turn left when entering a roundabout	1	3	60	90
Failure to stop for school warden sign	2	5	80	120
Failure to stop when so required by a member of the Garda Síochána	2	5	80	120
Failure to yield	2	4	80	120
Driving without reasonable consideration	2	4	80	120
Failure to comply with prohibitory traffic signs	1	3	60	90
Failure to comply with keep left/keep right signs	1	3	60	90





OFFENCES INCURRING PENALTY POINTS

AND FIXED CHARGE NOTICES AT 8 DECEMBER 2014

These are summary descriptions of the offences and not a legal interpretation.

Offences incurring Penalty Points and Fixed Charges	Penalty points on payment	Penalty points on conviction	Amount paid in 28 days	Amount paid in next 28 days
			Fixed Charge €	Fixed Charge €
Failure to comply with traffic lane markings	1	3	60	90
Illegal entry onto a one-way street	1	3	60	90
Driving a vehicle when unfit	m*	3	Court Fine	
Breach of duties at an accident	m*	5	Court Fine	
Speeding	3	5	80	120
Driving without insurance	m*	5	Court Fine	
Driver of Car or Goods vehicle not wearing Safety belt	3	5	60	90
Failure by Driver to comply with rear seat belt requirements for passengers under 17 years	3	5	60	90
Driver of car or goods vehicle permitting child under 3 years of age to travel in it without being restrained by appropriate child restraint	3	5	60	90
Driver of car or goods vehicle permitting child over 3 years of age to travel in it without being restrained by appropriate child restraint	3	5	60	90
Driver of car or goods vehicle permitting child to be restrained by rearward facing child restraint fitted to a seat protected by active frontal air-bag	3	5	60	90
Driver of bus not wearing safety belt	3	5	60	90
Driver found to be driving carelessly	m*	5	Court Fine	
Using vehicle – (a) whose weight un-laden exceeds maximum permitted weight, (b) whose weight laden exceeds maximum permitted weight, or (c) any part of which transmits to ground greater weight than maximum permitted weight	1	3	200	300
Drink driving offences (In all cases where the BAC is between 50mg and 80mg of alcohol per 100 millilitres of blood)	3	n/a	200	

12 Penalty Points = Automatic Disqualification

7 Penalty Points = Automatic Disqualification where the person was first issued with a learner permit on or after 1st August 2014, during the period the person drives under a learner permit and during the first two years while the person drives under a first full driving licence.

* Mandatory Court Appearance

For more information visit penaltypoints.ie





APPENDIX 6

Obtaining or renewing a driving Licence for HGV or PSV from 19-Jan-2013

From 19 January 2013, all new driving licences and renewals will be in the new 'credit card' format.

Driving licences which are issued for categories C1, C, C1E, CE, D1, D, D1E, DE will have a maximum validity period of 5 years.

Ongoing renewal and validity of those licences will be subject to continuing compliance with minimum standards of physical and mental fitness for driving as set out in 'Slainte agus Tiomaint Medical Fitness to Drive Guidelines' and or advised by your doctor.

Age limits for driving licences not obtained through the CPC Initial Qualification process have increased to 21 years for truck licences and to 24 years for bus licences.

Please note that if you are the holder of a licence from an EU country other than Ireland, or hold a licence from a recognised country for licence exchange purposes, you should contact the NDLS to arrange for a licence exchange and Medical Report.

Regardless of the rules relating to applying for a Driving Licence, it is essential for your own benefit and for the benefit of other road users that you maintain a high level of fitness to drive. For this reason, a driver who is applying for or renewing a Driving Licence in any or all of Categories C, C1, CE, C1E, D, D1, DE, D1E must always supply a Medical Report.

For Licensing purposes these drivers are known as Group 2 Drivers.

The Medical review period for licensing a Group 2 driver is 1, 3 or 5 years. Group 2 standards are minimum standards and do not preclude employers setting higher standards in terms of the demands of driving and other tasks encountered in the course of employment.

At application for or renewal of a Group 2 Driving Licence, the driver will be asked to self-declare any of the conditions referred to on the following page. If a condition emerges mid-licence, the driver has a responsibility to discuss with their doctor how this affects or does not affect their medical fitness to drive a Group 2 or Group 1 vehicle in the short or long term.

Be a responsible driver

It is your responsibility as a driver to:

- Adhere to prescribed medical treatment and monitor and manage your condition(s).
- Report to the National Driver Licence Service (NDLS) and your insurance provider any long-term or permanent injury or illness that may affect your ability to drive safely:
- Comply with requirements of your licence as appropriate, including periodic medical reviews.
- Seek advice on medical fitness to drive where a medical condition emerges mid-licence.

In order to become a professional bus or truck driver you must take the following steps

1. Hold a Category B (car) licence
2. Pass a Driver Theory Test for category C or D (or both) as appropriate
3. Pass a medical examination
4. Obtain a Learner Permit in the relevant category
5. Pass a 2 hour 'case study' theory test
6. Pass the 90 minute standard driving test in the relevant category(s)
7. Pass a 30 minute practical demonstration test in the relevant category(s)
8. Apply for your Driving Licence, your CPC Card and your Tachograph Card.





Medical report requirements for obtaining your higher category driving licence

The following medical conditions require a declaration at application for and renewal of a Driving Licence.

1. Diabetes treated by insulin or managed by tablets which carry a risk of inducing hypoglycaemia e. g., sulphonylureas. (Ask your doctor whether you are on sulphonylureas or other medications which carry a risk of inducing hypoglycaemia. You do not need to tell the NDLS if managed by diet alone, or only by medications which do not carry a risk of inducing hypoglycaemia).
2. Epilepsy.
3. Stroke or TIAs (Transient Ischemic Attack – minor stroke) with any associated symptoms lasting longer than one month.
4. Fits or blackouts.
5. Any type of brain surgery, brain abscess, or severe head injury involving in-patient treatment, or brain tumour, or spinal injury or spinal tumour.
6. An implanted cardiac pacemaker.
7. An implanted cardiac defibrillator. (ICD).
8. Repeated attacks of sudden disabling dizziness.
9. Any other chronic neurological condition such as Multiple Sclerosis, Motor Neurone disease, Parkinsons disease, and Huntingtons disease.
10. A serious problem with memory, or periods of confusion.
11. Persistent alcohol misuse or periods of dependency.
12. Persistent drug misuse or dependency.
13. Serious psychiatric illness or mental health problems.
14. Sleep Apnoea Syndrome.
15. Narcolepsy.
16. Any condition affecting the drivers peripheral vision.
17. Total loss of sight in one eye.
18. Any condition affecting both eyes, or the remaining eye if the driver only has one eye. (Not including colour blindness or short or long sight).
19. A serious hearing deficiency.
20. Any persisting problem with arm(s) or leg(s) which needs driving to be restricted to certain types of vehicles, or vehicles with adapted controls.
21. Is the drivers vehicle adapted because of a physical disability to enable you to drive.
22. Severe learning disability.

Different intervals as to medical examinations derive from legal standards made by provisions in European Directives 2006/126/EEC, Directives 2009/113/EC and 2014/85/EU : The renewal of driving licences shall be subject to continuing compliance with the minimum standards of physical and mental fitness for driving set out in European Directives. In particular the minimum standards for Vision, Epilepsy, Diabetes and Sleep Apnoea are set out in these harmonising European Directives and have subsequently been adopted by Irish law.

The European Agency for Safety and Health at Work (<http://osha.europa.eu>) has established that many professional drivers suffer from lower back pain, overweight, cardiovascular and respiratory diseases, work related stress, fatigue, sleep disorders, unhealthy diet, neck and shoulder pain, alcohol abuse and smoking.



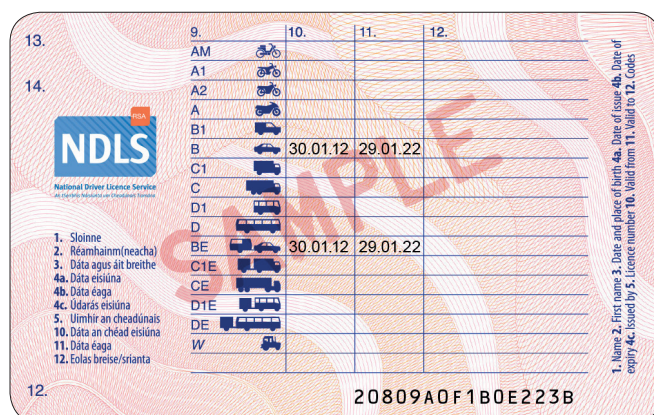
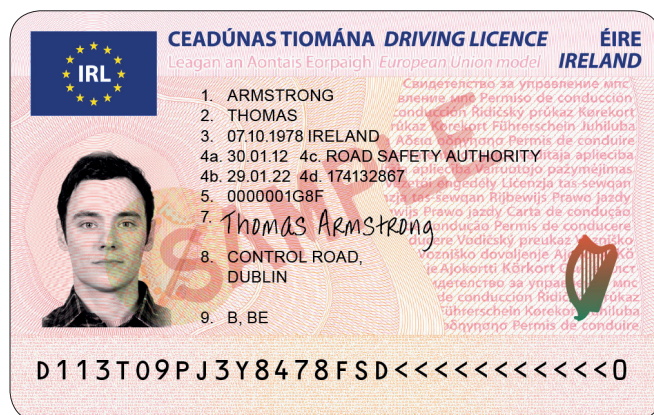
For detailed information on all aspects of drivers health related issues, please see the document *Slainte agus Tiomaint, Medical Fitness to Drive Guidelines* published by the RSA in consultation with the National Programme Office for Traffic Medicine and The Royal College of Physicians of Ireland. The guidelines refer to medical conditions including:

- Neurological disorders
- Cardiovascular disorders
- Diabetes Mellitus
- Psychiatric disorders
- Drug and alcohol misuse and dependence
- Visual disorders
- Renal disorders
- Respiratory and sleep disorders
- Miscellaneous Conditions and Disabled Drivers

The Guidelines may be accessed at [www.rsa.ie/Slainte agus Tiomaint](http://www.rsa.ie/Slainte%20agus%20Tiomaint).

Once your Driving Licence application has been accepted and processed by the National Driver Licence Service (NDLS) you can expect to receive your new plastic credit card style Driving Licence in the post shortly afterwards. Below is an image of the new and old style Driving Licences.

New Plastic Credit Card style Driving Licence



Old paper style Driving Licence



These old style Driving Licences remain valid until their expiry date. Upon renewal, you will receive the new plastic credit card style Driving Licence.

To drive group 2 vehicles, a professional truck or bus driver must be the holder of the relevant Driver CPC in addition to the Driving Licence.



APPENDIX 7

The table below contains a list of items which may be checked during a roadside inspection.



Technical Roadside Inspection Check Form

EU Directive 2014/47/EU

No.

Please quote this number on all correspondence

PLACE OF CONTROL		LOCATION AND ROAD NUMBER	
AREA CODE/COUNTY		DATE	
ENFORCEMENT OFFICER		TIME	
VEHICLE			
REGISTRATION NUMBER		VIN	MILES/KMS
CATEGORY OF VEHICLE	☐ N1 (<=3.5t)	☐ N2 (> 3.5t – 12t)	☐ N3 (> 12t)
	☐ M2 (> 9 SEATS <= 5t)	☐ M3 (> 9 SEATS > 5t)	☐ O4 (> 10t)
TRAILER			
REGISTRATION NUMBER		VIN	
OPERATOR/OWNER DETAILS			
OPERATOR/OWNER		TRAILER OWNER	
NAME		NAME	
ADDRESS		ADDRESS	
RTOL NUMBER		NATIONALITY	
PHONE NUMBER			
NATIONALITY			
DRIVER DETAILS			
NAME		DRIVER'S LICENCE NUMBER	
DATE OF BIRTH		PHONE NUMBER	
INFRINGEMENTS			
VEHICLE			
☐ CRW expired	☐ CRW not displayed	☐ Authorisation plate missing	
☐ Authorisation plate not compatible	☐ Presented vehicle weight exceeds plated weight	☐ Presented axle weight exceeds plated weight	
TRAILER			
☐ CRW expired	☐ CRW not displayed	☐ Not registered	
☐ Authorisation plate not compatible	☐ Authorisation plate missing	☐ Presented axle weight exceeds plated weight	
DEFECTS			
	VEHICLE	TRAILER	RESULT OF CHECK
	PASSED FAILED NOT CHECKED	PASSED FAILED NOT CHECKED	VEHICLE TRAILER
0 Identification			Pass ☐ ☐
1 Braking equipment			Minor, no follow-up ☐ ☐
2 Steering			Minor, follow-up ☐ ☐
3 Visibility		N/A N/A N/A	Major, no follow-up ☐ ☐
4 Lighting equipment & electric systems			Major, follow-up ☐ ☐
5 Axles, wheels, tyres, suspension			Dangerous, no follow-up, defect(s) rectified ☐ ☐
6 Chassis and chassis attachments			
7 Other equipment incl. Tachograph & speed limitation device		N/A N/A N/A	
8 Nuisance including emissions and spillage of fuel and/or oil			Dangerous, follow-up ☐ ☐
VEHICLE DEFECTS			
EU CODE	DESCRIPTION		MIN MAJ DAN
TRAILER DEFECTS			
EU CODE	DESCRIPTION		MIN MAJ DAN
OUTCOME			
V T	V T	V T	V T
☐ No action required	☐ Warning/advice/education	☐ Prohibition – delayed	☐ Periodic CVR test requested in ___ days*
☐ Partial CVR test in ___ days*	☐ Produce CRW*	☐ Repaired on-site	☐ Direct to secure site/return to base
☐ Vehicle taken off road	☐ Follow-up premises inspection	☐ Evidence of repairs in ___ days*	☐ Proof of rectification in ___ days*
☐ Proof of trailer licence in ___ days*	☐ New authorisation plate and confirmation from authorised workshop requested in ___ days*	☐ Follow-up vehicle inspection in ___ days*	☐ Enforcement test required in ___ days*
☐ Prohibition – immediate		☐ Put forward for prosecution	
Failure to comply with outcomes marked with an asterisk (*) will have an affect on the Commercial Vehicle Operator Risk Indicator (CVORI)			
SIGNATURE			
VEHICLE INSPECTOR'S SIGNATURE		DRIVER'S SIGNATURE	

PLEASE NOTE: A limited visual assessment of the condition of the vehicle has been conducted under restricted circumstances and without the use of test equipment, such as a Roller Brake Tester. As such, there may be defects on the vehicle that have not been identified but which could affect the roadworthiness of the vehicle. It must not be interpreted that the vehicle has undergone a full examination and is otherwise free from defects. It is the responsibility of the owner of a vehicle that an effective maintenance system is in place to ensure that it is maintained in a roadworthy condition. Where Court proceedings are initiated by the Road Safety Authority against a person or company for alleged offences of road transport related legislation, relevant details of the person or company convicted and the penalty applied by the Court are published on the RSA website at www.rsa.ie

Údarás Um Shábháilteacht Ar Bhóithre
Road Safety Authority

Cai gheáin agus Forheidhmiú, Teach Chluain Fearth, Sráid Bhríde, Baile Locha Riach, Co. Gaillimhe.
Standards and Enforcement, Clonfert House, Bride Street, Loughrea, Co. Galway.
tel: (091) 872 600 email: enforcement@rsa.ie website: www.rsa.ie





DEFECT CATEGORISATION

0	IDENTIFICATION OF THE VEHICLE	2	STEERING	4.7	Rear registration plate lamp	6.2.6	Other seats
0.1	Registration number plates	2.1	Mechanical condition	4.7.1	Condition and operation	6.2.7	Driving controls
0.2	Vehicle identification/chassis/serial number	2.1.1	Steering gear condition	4.7.2	Compliance with requirements	6.2.8	Cab steps
1	BRAKING EQUIPMENT	2.1.2	Steering gear casing attachment	4.8	Retro-reflectors, conspicuity markings and rear marker plates	6.2.9	Other interior and exterior fittings and equipment
1.1	Mechanical condition and operation	2.1.3	Steering linkage condition	4.8.1	Condition	6.2.10	Mudguards (wings), spray suppression devices
1.1.1	Service brake pedal pivot	2.1.4	Steering linkage operation	4.8.2	Compliance with requirements	7	OTHER EQUIPMENT
1.1.2	Pedal condition and travel of brake operating device	2.1.5	Power steering	4.9	Tell-tale mandatory for lighting equipment	7.1	Seat belts/buckles
1.1.3	Vacuum pump or compressor and reservoirs	2.2	Steering wheel and column	4.9.1	Condition and operation	7.1.1	Security of mounting
1.1.4	Low pressure warning gauge or indicator	2.2.1	Steering wheel condition	4.9.2	Compliance with requirements	7.1.2	Condition
1.1.5	Hand-operated brake control valve	2.2.2	Steering column	4.10	Electrical connections between towing vehicle and trailer or semi-trailer	7.1.3	Safety belt load limiter
1.1.6	Parking brake activator, level control, parking brake ratchet	2.3	Steering play	4.11	Electrical wiring	7.1.4	Safety belt pre-tensioners
1.1.7	Braking valves (foot valves, unloaders, governors)	2.4	Wheel alignment	4.12	Non-obligatory lamps and reflectors	7.1.5	Airbag
1.1.8	Couplings for trailer brakes (electric and pneumatic)	2.5	Trailer steered axle turntable	4.13	Battery	7.1.6	SRS system
1.1.9	Energy storage reservoir pressure tank	3	VISIBILITY	5	AXLES, WHEELS, TYRES AND SUSPENSION	7.2	Fire extinguisher
1.1.10	Brake servo units, master cylinder (hydraulic systems)	3.1	Field of vision	5.1	Axles	7.3	Locks and anti-theft device
1.1.11	Rigid brake pipes	3.2	Condition of glass	5.1.1	Axles	7.4	Warning triangle
1.1.12	Flexible brake hoses	3.3	Rear view mirrors	5.1.2	Stub axles	7.5	First aid kit
1.1.13	Brake linings and pads	3.4	Windscreen wipers	5.1.3	Wheel bearings	7.6	Wheel chocks (wedges)
1.1.14	Brake drums, brake discs	3.5	Windscreen washers	5.2	Wheels and tyres	7.7	Audible warning device
1.1.15	Brake cables, rods, levers, linkages	3.6	Demisting systems	5.2.1	Road wheel hub	7.8	Speedometer
1.1.16	Brake actuators (including spring brakes or hydraulic cylinders)	4	LAMPS, REFLECTORS, ELECTRICAL EQUIPMENT	5.2.2	Wheels	7.9	Tachograph
1.1.17	Load sensing valve	4.1	Headlamps	5.2.3	Tyres	7.10	Speed limitation device
1.1.18	Slack adjusters and indicators	4.1.1	Condition and operation	5.3	Suspension system	7.11	Odometer
1.1.19	Endurance braking system (where fitted or required)	4.1.2	Alignment	5.3.1	Springs and stabilisers	7.12	Electronic stability control (ESC)
1.1.20	Automatic operation of trailer brakes	4.1.3	Switching	5.3.2	Shock absorbers	8	NOISE
1.1.21	Complete braking system	4.1.4	Compliance with requirements	5.3.3	Torque tubes, radius arms, wishbones and suspension arms	8.1	Noise suppression system
1.1.22	Test connections	4.1.5	Levelling devices	5.3.4	Suspension joints	8.2	Exhaust emissions
1.2	Service braking performance and efficiency	4.1.6	Headlamp cleaning device	5.3.5	Air suspension	8.2.1	Petrol engine emissions
1.2.1	Performance	4.2	Front and rear position lamps, side marker lamps and end outline marker lamps	6	CHASSIS AND CHASSIS ATTACHMENTS	8.2.1.1	Exhaust emission control equipment
1.2.2	Efficiency	4.2.1	Condition and operation	6.1	Chassis or frame attachments	8.2.1.2	Gaseous emissions
1.3	Secondary (emergency) braking performance and efficiency	4.2.2	Switching	6.1.1	General condition	8.2.2	Diesel engine emissions
1.3.1	Performance	4.2.3	Compliance with requirements	6.1.2	Exhaust pipes and silencers	8.2.2.1	Exhaust emission control equipment
1.3.2	Efficiency	4.4	Direction indicator and hazard warning lamps	6.1.3	Fuel tank and pipes (including heating fuel tank and pipes)	8.2.2.2	Opacity
1.4	Parking braking performance and efficiency	4.4.1	Condition and operation	6.1.4	Bumpers, lateral protection and rear under-run devices	8.3	Electromagnetic interference suppression
1.4.1	Performance	4.4.2	Switching	6.1.5	Spare wheel carrier	8.4	Other items relating to the environment
1.4.2	Efficiency	4.4.3	Compliance with requirements	6.1.6	Coupling mechanisms and towing equipment	8.4.1	Visible smoke
1.5	Endurance braking system performance	4.4.4	Flashing frequency	6.1.7	Transmission	8.4.2	Fluid leaks
1.6	Anti-lock braking system	4.5	Front and rear fog lamps	6.1.8	Engine mountings		
		4.5.1	Condition and operation	6.1.9	Engine performance		
		4.5.2	Alignment	6.2	Cab and bodywork		
		4.5.3	Switching	6.2.1	Condition		
		4.5.4	Compliance with requirements	6.2.2	Mounting		
		4.6	Reversing lamps	6.2.3	Doors and door catches		
		4.6.1	Condition and operation	6.2.4	Floor		
		4.6.2	Switching	6.2.5	Driver's seat		
		4.6.3	Compliance with requirements				

Definitions according to S.I. No. 347/2013 - Commercial Vehicle Roadworthiness (Vehicle Testing)

“Periodic CVR test” means a test carried out on a vehicle in accordance with Regulation 16 other than a re-test or partial CVR test.

“Partial CVR test” means a roadworthiness test of a CVR vehicle on foot of a direction issued under—

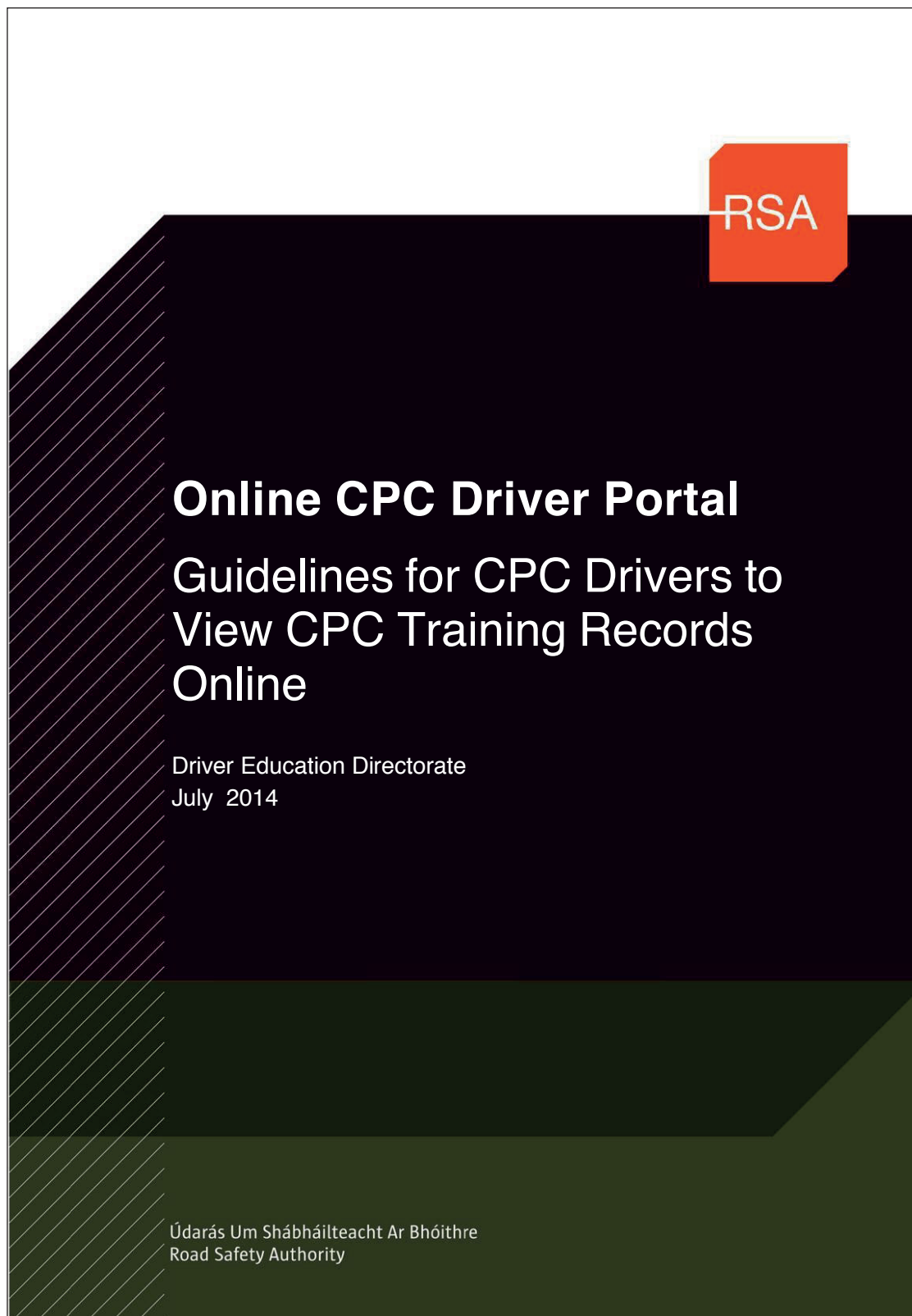
- (a) section 31 or 35 of the Act of 2012 by an authorised officer, or
- (b) Section 35 of the Act of 2012 by a CVR inspector.





APPENDIX 8

The RSA has provided an online CPC Driver Portal to assist professional drivers in planning for their Periodic Training requirements/obligations. Checking their record will help drivers to avoid unnecessary costs and wasted time in attending the wrong CPC module. Drivers can also take a printout of the screen in order to assure employers on the status of their CPC qualifications.





User Guide:

Go to www.rsa.ie, click on **Professional Drivers** which takes you to a screen where the user clicks on **Driver CPC** located on the toolbar at the top of the page. Click the **My CPC** link as shown below.



Driver CPC

- **Getting your CPC**
- **Acquired rights for bus drivers**
- **My CPC** ←
- **Annual training**
- **Find a CPC Trainer**
- **Regulations**
- **Driver CPC video**

After clicking the “My CPC” link as shown here on the left you will be redirected to a new page where you must select “My CPC Driver Portal” as seen below. Here you will enter your details and sign in.



My CPC

➤ **My CPC Driver Portal**





When users arrive at the CPC Driver Portal, they are given the option to either Login or Register. Users will be presented with the screen below and will be asked on their initial visit to register on the Portal. At login stage, users must confirm that they have read the Terms & Conditions using the checkbox shown below.

To register, users will need their:

- Driver Number
- Email address
- Date of Birth

DRIVERcpc Driver Certificate of Professional Competence **RSA**

CPC Driver Portal

Existing User Log-In

Driver Number:

Date of Birth: DD MM YYYY

Password:
[Forgotten your password?](#)

☐ I have read and agreed to the [terms & conditions](#)

Log in

Not Registered?

Register as a driver in order to:

- View your driver training records
- Download your driver training records
- View training courses due

Register now

Questions about this application? Go to our [help section](#).





Once users click on the **▶ Register now** button, the below screen is presented. Fill in your Driver Number, Date of Birth and email address and click **▶ Register**

(Note: Your Driver Number may be found at line 5 on the old pink driving licence and line 4d on the newly released plastic card driving licence)

Driver Number:

Date of Birth:

Email Address:

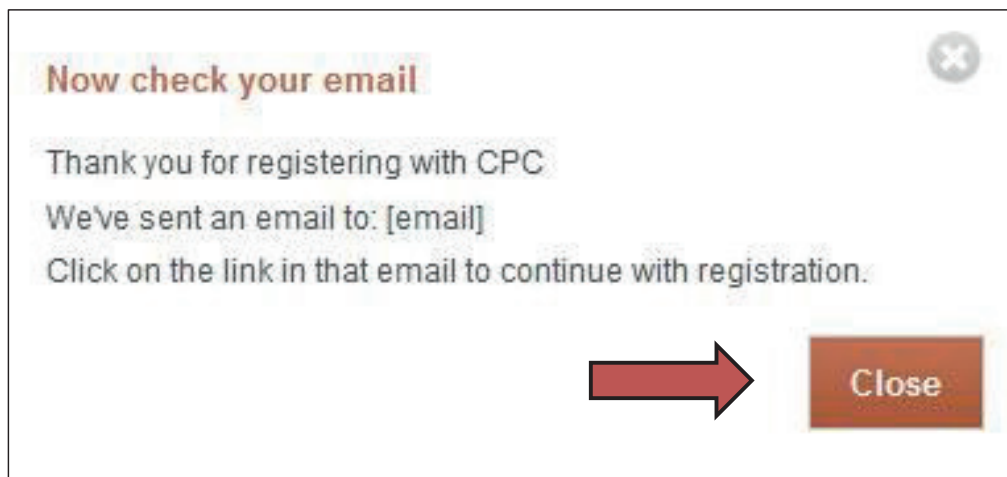
▶ Register

4





Users will then be presented with the following screen:



The email sent from the Portal will contain the password used to access the Driver CPC Portal.





Upon clicking **Close** on the “Check your email” screen, the user will be taken back to the initial login screen where the user will enter his/her:

- Driver Number
- Date of Birth
- Password

The user will also be provided with the option of clicking the tick box to acknowledge, that they have read the Terms and Conditions of CPC Portal use.

The screenshot shows the 'CPC Driver Portal' interface. At the top is a blue header with the 'DRIVERcpc' logo and 'RSA' text. Below the header, the page is titled 'CPC Driver Portal'. There are two main sections: 'Existing User Log-In' and 'Not Registered?'. The 'Existing User Log-In' section contains fields for 'Driver Number' (with the value '123456'), 'Date of Birth' (with dropdowns for '03', '03', and '1980'), and 'Password' (with a masked input '*****'). Below the password field is a link 'Forgotten your password?'. A checkbox is checked with the text 'I have read and agreed to the [terms & conditions](#)'. A 'Log in' button is at the bottom of this section. The 'Not Registered?' section has the heading 'Register as a driver in order to:' followed by a list of benefits: 'View your driver training records', 'Download your driver training records', and 'View training courses due'. A 'Register now' button is at the bottom of this section. At the very bottom of the page, there is a blue footer with the text 'Questions about this application? Go to our [help section](#)'.





Please note that the user will not be able to log in without acknowledging that they have read and agreed to the terms and conditions of use of the CPC Portal, by clicking on the tick box provided.

Users should familiarise themselves with the terms & conditions which can be accessed by highlighting and clicking on terms & conditions on the box In screen

☒ I have read and agreed to the terms & conditions





Once logged in, the user will be presented with his/her training records as can be seen on the next page, the orange numerical tags highlighting the following:

1. Links to supporting content and essential reading on the right-hand sidebar to aid the Driver.
2. Completed modules display the Module Name, Training Centre, Trainer, Status, a green tick and the date of completion. The green tick confirms that the training has been completed within the requisite period and is thus compliant.
3. Completed but Non-Compliant Modules display the Module Name, Training Centre, Trainer, Status, a red exclamation mark and date of completion. The red exclamation mark is to signify that in this instance the Driver is not compliant as training was not completed before the end of their training year. Driver needs to notify the RSA in writing of the reason that training was completed late.
4. Uncompleted modules display the Module Name, Status, a grey X and an N/A for the date completed.
5. Once each 5-year CPC cycle has passed, previous modules will be stored separately and a new table of modules will appear for the next 5-year period. There will be a maximum of 10 years of Driver Training Records displayed

8





Explanation on previous page:

DRIVERcpc RSA
Driver Certificate of Professional Competence

Hello, Roisin [Log out](#)

My CPC Driver Portal

5

Cycle 2

[Update My Details](#)

Module Name	Training Centre	Trainer	Status	Date Completed
Health and Safety of the Professional Driver			⌚ Not Completed	N/A
Minimising risks and Managing Emergencies in the Transport Industries			⌚ Not Completed	N/A
The Professional Bus Driver			⌚ Not Completed	N/A
Role of the Professional Driver in the Transport Industries			⌚ Not Completed	N/A
The Professional Truck Driver			⌚ Not Completed	N/A
Control of Vehicle and Eco Driving Techniques			⌚ Not Completed	N/A

2

Cycle 1

Module Name	Training Centre	Trainer	Status	Date Completed
Control of Vehicle and Eco Driving Techniques	Castlebar	Jimmy	✅ Completed	27/03/2010
Minimising risks and Managing Emergencies in the Transport Industries	Castlebar	Liam	✅ Completed	25/06/2011
Health and Safety of the Professional Driver	Castlebar	Mary	✅ Completed	14/01/2012
Role of the Professional Driver in the Transport Industries	Ballina	Liam	⚠️ Completed but Non-Compliant	28/07/2012
The Professional Bus Driver			⌚ Not Completed	N/A

Essential Links

[RSA](#)
[Frequently Asked Questions](#)

Compliance Explanation

Completed Modules
If you have undergone training in accordance with legislation i.e. undergone seven hours of periodic training per year, your training record will be noted as 'Completed'.

Non-Compliant Modules
The 'Completed but Non-Compliant' Module message signifies that your training record is not compliant. You may not have completed training as required. In other words you may not have completed one training module per year e.g. missed one year and caught up with two or more modules in a subsequent year. In this instance you must e-mail cpc@rsa.ie or write to the CPC Unit of the RSA explaining the reason for your non-compliance. This will enable the CPC Unit to correct your record and change it to compliant.





APPENDIX 9

Glossary of terms used in the transport industry

TERM	MEANING
A	International motoring symbol for Austria
ABS	Anti-lock braking System
ACC	Adaptive Cruise Control
Accompanied	When a driver ships with the vehicle and load
Ad Blue	A Urea based additive for diesel fuel to reduce noxious emissions
ADI	'Approved Driving Instructor'- Accredited by RSA
ADR	'Accord Dangereuses Routier' - carriage of dangerous goods by road
Aduana	Identifies a Customs area or person (Spanish)
Air Dryer	A filtration system to remove moisture from air system
Ambient	The external temperature on any given day
AMT	Automated Manual Transmission
Artic	A tractive unit pulling a trailer
ASR	Anti skid reduction
AS-Tronic	DAF's automatic transmission system
ATA	Customs document for temporary import of goods
ATP	Certificate relating to refrigerated units
Autobahn	Motorway in Germany
Autopista	A toll road in Spain
Autovia	Motorway class road which is toll free (Spain)
B	International motoring symbol for Belgium
Baffles	Used to divide a road tank to reduce the effects of surge
BAR	A unit of pressure, 1 BAR = 14.72 psi
BG	International motoring symbol for Bulgaria
Caddie/s	A rolling pallet with a frame for cargo handling
Catwalk	A metal frame allowing safe passage on top of or around a vehicle or trailer
CH	International motoring symbol for Switzerland
Chilled	Temperature controlled cargo usually between 0c & 10c
CMR	'Convoyance Merchandise Routier' - An International Transport Document (Also Insurance Document)
CNG	Compressed Natural Gas
COD	Cash on Delivery - Payment to be collected by driver
Consignee	The person or company receiving the load (Importer)
Consignor	The person or company sending the load (Exporter)
CPC	Certificate of Professional Competence – (manager)
CPC	Certificate of Professional Competence – (driver)





Cyclops Mirror	Enables driver to see in of area in front of truck
CZ	International motoring symbol for the Czech Republic
D	International motoring symbol for Germany
Deep Frozen	Temperature controlled cargo usually between -15 to -30
DGSA	Dangerous Goods Safety Advisor
DGVW	Design Gross Vehicle Weight – Max weight of vehicle
Diff Lock	Differential Lock, used to stop drive wheels slipping on ice, gravel, loose surfaces only at very low speeds
DK	International motoring symbol for Denmark
Douane	Identifies a Customs area or person (French)
Drawbar	A rigid truck pulling a trailer
Drive Axle	The set of wheels which are driven by the engine
Driving Ban	A restriction for heavy vehicles usually exceeding 7.5 t
DRL	Daytime Running Lights
DZ	International motoring symbol for Algeria
E	International motoring symbol for Spain
EBD	Electronic Brake force Distribution
EEV	Enhanced Environmental Vehicle
ESP	Electronic Stability Programme
Euro 3, 4, 5,	A rating system for engine emmsions
Europallet	A pallet measuring 800 X 1000 mm
Eurotronic	Iveco's automatic transmission
F	International motoring symbol for France
Fifth Wheel	Connects tractor unit to trailer
Fridge	A temperature controlled unit for transporting cargo
Frozen	Temperature controlled cargo usually between 0c & -15c
GB	International motoring symbol for Great Brittan
GO-Box	Road Tolling System in Austria
GR	International motoring symbol for Greece
Green Diesel	Marked Gas Oil, not to be used in a road vehicle
Groupage	A load comprising of many consignors and consignees
GVW	The Gross Weight of the vehicle –(Truck, Trailer & Load)
H	International motoring symbol for Hungary
Hanging Load	A load suspended from the roof of the cargo area (Meat)
Hazchem	See ADR
Hybrid	Vehicle using Diesel & Electric Motors
I	International motoring symbol for Italy
IBC	Intermediate Bulk Container – Palletised liquid container





IRHA	Irish Road Haulage Association
IRHA	Irish Road Haulage Association
IRL	International motoring symbol for Ireland
I-Shift	Volvo's automatic transmission (heavy FM, FH, & FH16)
I-Sync	Volvo's automatic transmission (light trucks FL & FE)
Jack-knife	When the tractor unit collides with the trailer
L	International motoring symbol for Luxembourg
Landbridge	To transit the UK when delivering to mainland Europe
LCS	Lane Control System, warns driver of vehicle direction
LCS	Lane Changing Support, warns driver of blind spot n/side
LEV	Low Emission Vehicle
LEZ	Low Emission Zone
LHV	'Longer Heavier Vehicles' usually 25.25 metres long
Lift Axle	A set of wheels which can be lifted off the ground
Lo / Lo	Lift On / Lift Off – referring to containerised freight
LT	International motoring symbol for Lithuania
LV	International motoring symbol for Latvia
M	International motoring symbol for Malta
MA	International motoring symbol for Morocco
Manifest	A authorised list of the contents consignors & consignees
Master Switch	Turns off all electrical power in a vehicle
MAUT	Road Tolling System in Germany
MC	International motoring symbol for Monaco
MO	International motoring symbol for Moldova
Multi-modal	A load transported by at least two different means
N	International motoring symbol for Norway
Near side	The side of the vehicle nearest the kerb
NL	International motoring symbol for Netherlands
Off side	The side of the vehicle furthest from the kerb
Opticruise	Scania's automated transmission
Optronic	Renault's automatic transmission system
P	International motoring symbol for Portugal
Pallets	A system used to ease the handling of cargos
Payload	The weight of the cargo a vehicle can carry
Peaje	A road toll booth, or a section of road that is tolled
Pin Release	Handle when pulled releases the Jaws from the Kingpin
Pin Weight	The weight exerted on the fifth wheel by the trailer





PL	International motoring symbol for Poland
POD	Proof of Delivery, document signed by receiver
PTO	Power Take Off, using the vehicle to drive extra equipment usually by means of a drive shaft
Pusher Axle	Axle placed usually placed in front of drive axle,
Range Change	A air/electric switch to select another range of gear ratios
Rear Steer	The rearmost axle of a rigid or trailer which steers itself
Retarder	A braking device operated independently
Rigid	A one piece vehicle
RO	International motoring symbol for Romania
Ro / Ro	Roll On / Roll Off – referring to trailer freight
Road Barrel	A method of transporting liquids substances by road
Road Speed Limiter	A 'Speed limitation device' means a device whose primary function is to control the fuel feed to the engine in order to limit the vehicle speed to the specified value
Rollcage	Cargo handling device on wheels
Route Express	Motorway class road which is toll free (France)
RSA	Road Safety Authority
RSM	International motoring symbol for Rep of San Marino
RUS	International motoring symbol for Russia
S	International motoring symbol for Sweden
SCR	Selective Catalytic Reduction
Semi Trailer	The trailer of an articulated vehicle
SF	International motoring symbol for Finland
SGR	Selective Gas Recirculation
Skeletal	A trailer for the transport of tank containers
SLO	International motoring symbol for Slovakia
Split Fridge	Trailer which can keep cargo at different temperatures
Splitter	An air/electric switch to select a high/low ratio of a gear
STC	Said to Contain, A clause inserted when receiving a load
Susies	Air and electrical connections between truck and trailer
Tachograph	A device that records the time, speed and distance travelled by a vehicle over 3.5 tonnes
Tag Axle	Axle affixed to rear of truck , not driven by engine
Tail Lift	Used for loading/unloading from truck without ramp
Tail-swing	The distance from rearmost axle to rear bumper
Telligent	Mercedes automated transmission and driving system
Tip-matic	MAN's automatic transmission system
TIR	'Transport Internationaux Routier' (French)





TN	International motoring symbol for Tunisia
TR	International motoring symbol for Turkey
Trailer Brake	An device to apply the brakes on the trailer only
Trailer swing	When the trailer collides with the tractor unit
Tranship	To transfer a load from one vehicle to another
Transit	To pass through a place or country
Twin Steer	Truck with two sets of wheels that both steer the vehicle
Ullage	The space above a liquid in a container. (For expansion)
Unaccompanied	When a trailer or vehicle is shipped without a driver
VEB	'Volvo Engine Brake' a retardation device (Volvo Trucks)
Vignette	The road tax payable in (B, L,S,NL,DK)
Wheel Choc	A device placed under wheels to stop vehicle from rolling
ZEV	Zero Emission Vehicle (Usually Electric)
Zoll	Identifies a Customs area or person (German)





APPENDIX 10

REFLECTION ON CPC MODULE

Take a few moments to reflect on the following questions and discuss your answers with at least one other colleague from the programme:

What have I gained/learned from the workshop?

Your Response

■ For myself

■ In my work

■ In relation to my colleagues

What personal changes will I undertake/implement?





What do I want to leave here?

(Anything that I used to do before I came to the programme that I am now going to discontinue thinking, saying or doing.)

Your Response

What do I want to take with me?

(Anything that I did not do, say or think before I came to the programme that I am now going to start doing, saying or thinking.)

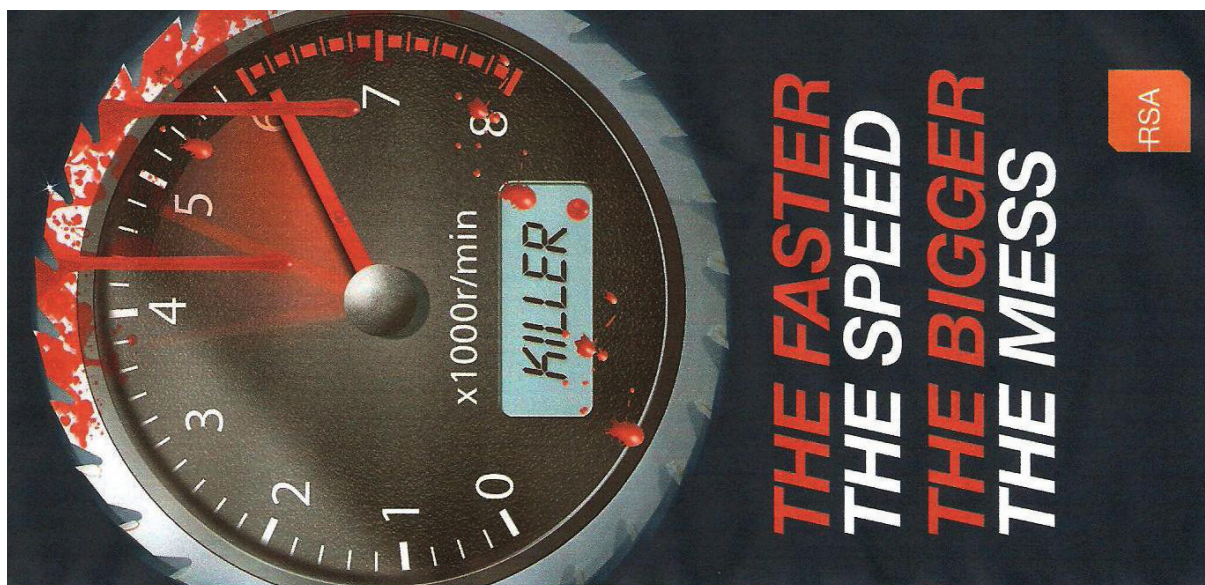
Your Response





APPENDIX 11

HARD AND FAST FACTS



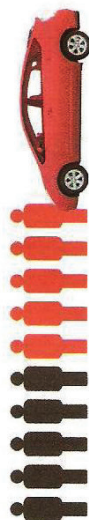
HARD AND FAST FACTS

Pedestrians hit by a car...

at 30 km/h – 1 in 10 will die



at 50 km/h – 5 in 10 will die



at 60 km/h – 9 in 10 will die



Source: Rules of the Road, 2007

T: Lo Call 1890 506080 E: info@rsa.ie W: www.rsa.ie

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THE BIGGER THE PENALTY

Speeding drivers risk getting **two penalty points on their driving licence plus a fine of between €80 to €120**, if you decide to go to court and are convicted you risk **four penalty points and a fine of up to €800**.

ANY DRIVER WHO GETS

12 PENALTY POINTS

AT ANY TIME INSIDE

A THREE YEAR PERIOD

FACES DISQUALIFICATION

FROM DRIVING

FOR SIX MONTHS.

For more information on speed limits and stopping distances read the **Rules of the Road** at www.rsa.ie

GET THE POINT!
NOT THE POINTS!





THE BIGGER THE RISK OF DEATH

Speed is the **biggest** contributory factor to road deaths in the Republic of Ireland.

THE BIGGER THE NUMBER OF DEATHS

Speed is **directly** killing an average of 101 people a year in Ireland.

THE BIGGER THE MISERY

A speeding crash is over in a second but, for the victims, the **misery lasts a lifetime**.

Speeding is a selfish act which sentences innocent people to a **lifetime of pain**.

THE BIGGER THE HIT COLLISION IMPACT MEASURED IN HEIGHT OF FALL FROM A TALL BUILDING

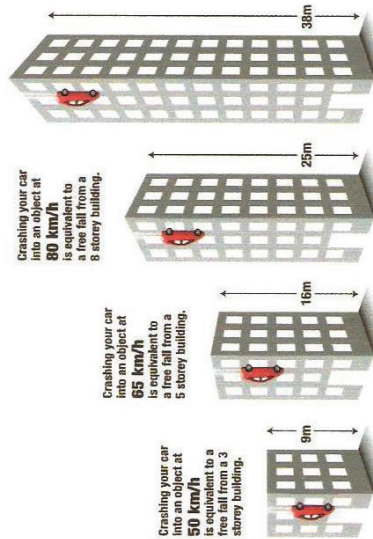
Source: RSA / OPW

Crashing your car into an object at **95 km/h** is equivalent to a free fall from a 12 storey building.

Crashing your car into an object at **80 km/h** is equivalent to a free fall from a 8 storey building.

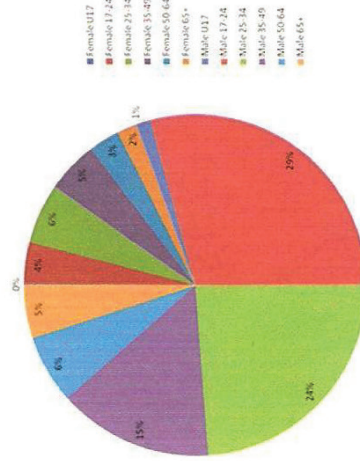
Crashing your car into an object at **65 km/h** is equivalent to a free fall from a 5 storey building.

Crashing your car into an object at **50 km/h** is equivalent to a free fall from a 3 storey building.



WHO IS TO BLAME? DRIVERS

Drivers responsible for fatal/serious injury collisions by age/gender



Source: RSA Data

EVERY DRIVER IS AT RISK!

THE FASTER THE SPEED, THE BIGGER THE MESS



APPENDIX 12

REFERENCES

1. Directive 2003/59/EC of the European Parliament and of the Council of 15 July 2003 on the initial qualification and periodic training of drivers of certain road vehicles for the carriage of goods or passengers, amending Council Regulation (EEC) No 3820/85 and Council Directive 91/439/EEC and repealing Council Directive 76/914/EEC
2. Bus Eireann, Initial Driver Training
3. Dublin Bus, Initial Driver Training
4. Large Goods Vehicle Training Programme. DDLETB Training Centre, Baldoyle
5. The Official DSA Guide To Driving Buses And Coaches, DSA, UK
6. The Official DSA Guide To Driving Goods Vehicles, DSA, UK
7. Road Safety Authority - Rules Of The Road, 2013
8. Road Safety Authority – CVRT (Commercial Vehicle Roadworthiness Testing)
9. Workplace Transport Safety Management, Health and Safety Authority (HSA)
10. Fleet Transport www.fleet.ie
11. European Agency for Safety and Health at Work (osha.europa.eu)
12. An Garda Siochana
13. National Programme Office for Traffic Medicine. (NPOTM)
14. The RSA would also like to acknowledge the valuable contributions made by CPC Training Organisations and their trainers to this and other manuals and training literature.

Whilst every attempt has been made to acknowledge the sources of our reference material, and the origin of the information which we retrieved from the public domain, errors and/or omissions may have occurred. If there are errors or omissions in the acknowledgements of our references please contact the originator who will ensure such errors and/or omissions are corrected.







NOTES