

# bus and coach road safety handbook



safety first

doubling the use  
of buses and coaches

[www.busandcoach.travel](http://www.busandcoach.travel)

# // table of contents

1 // introduction	3
2 // safe vehicle	4
2.1. major existing active safety directives and regulations	5
2.2. updating and amendment of requirements on active safety directives and regulations	5
2.3. major existing passive safety directives and regulations	6
2.4. updating and amendment of requirements on passive safety directives and regulations	7
3 // safe driver	10
3.1. driving time, working time, rest	11
3.2. controls on the driver	12
3.3. training the driver	13
4 // safe company	15
4.1. 12 golden road safety rules	16
4.2. road safety charter for bus and coach companies	17
5 // driver's checklists	19

# 1 // introduction

Every year, buses and coaches bring passengers safely to their intended destinations with the lowest impact on the environment.

And although the use of collective passenger transport by road is increasing, many people are still unaware of just how safe buses and coaches are – indeed the safest of all modes of road transport, despite sharing the infrastructure with other users and modes.

Yet, despite its exemplary safety record, road safety remains the first priority of any responsible bus and coach manager or driver.

With this in mind, the International Road Transport Union (IRU), decided to consolidate its recent initiatives in the field of road safety into one practical and easy to consult handbook, to be used by a large variety of stakeholders – from bus and coach company managers and their drivers, to politicians, civil servants and citizens -, who all have a stake in keeping the bus and coach industry at the forefront of society's efforts to maintain and further improve its excellent safety record.

Apart from being a source of information on the state of the art of vehicle construction, driver training etc., the handbook contains several concrete proposals for legislation, which would improve safety both in terms of vehicle construction and maintenance, but also in terms of drivers' operational environment.

In addition, the handbook goes further into the practicalities of everyday company management and driving, by providing:

- bus and coach companies and their managers, with some simple and straightforward advice on how to guarantee the safety of their customers and drivers, including by signing and adhering to a voluntary company road safety charter;
- professional bus and coach drivers, with a series of checklists, which summarise the industry knowledge on several key road safety aspects, into simple and easy to apply instructions.

It is the IRU's and its Member Associations' commitment to make road safety their permanent priority, by sharing widely the industry's know how with its public and private partners, and to disseminate it within every single bus and coach company and to every single bus and coach driver.

It is the IRU's and its Member Associations' ambition to regularly update this handbook and to take other appropriate initiatives, in order for the bus and coach industry to remain the well known and respected road safety champion today and tomorrow.

# 2 // safe vehicle

Safe, well-maintained and optimally performing vehicles at all times are key instruments in maintaining and further improving the excellent road safety performance of bus and coach companies, increase service quality, improve customer satisfaction, and bring new customers on board buses and coaches worldwide.

A great deal has been achieved so far through regulation, innovative technologies implemented by manufacturers, in cooperation with the bus and coach industry itself. Yet, the bus and coach industry wants to go further and improve vehicles' safety performance, with the objective to keep its position as the road safety champion.



## 2.1. major existing active safety directives and regulations

Directive 70/388/EEC	UNECE Regulation 28.00	Audible warning
Directive 78/316/EEC	UNECE Regulation 121.00	Identification controls
Directive 75/443/EEC	UNECE Regulation 39.00	Speedometer and reverse gear
Directive 70/311/EEC	UNECE Regulation 79.01	Steering effort
Directive 71/320/EEC	UNECE Regulation 13.10	Braking
Directive 2003/97/EC	UNECE Regulation 46.02	Indirect vision
Directive 76/756/EEC	UNECE Regulation 48.03	Lighting installation
Directive 92/23/EC	UNECE Regulation 54.00	Tyres

## 2.2. updating and amendment of requirements on active safety directives and regulations

### 2.2.1. Improve road adherence

#### Current situation:

Electronic Stability Programme (ESP): currently mentioned under Directive 71/320/EEC and UNECE Regulation 13.10 on "Braking". This electronic control system improves the dynamic stability of vehicles.

Tyre Pressure Monitoring System (TPMS): currently implemented on a voluntary basis.

Tyres: currently regulated by Directive 92/23/EC and UNECE Regulation 54.00 and UNECE Regulation 117. Low-rolling-resistance tyres (LRRT) are also implemented.

#### IRU Recommendations:

Vehicles equipped with ESP should be equipped with tyre pressure monitoring system (TPMS).

TPMS should be mandatory in order to guarantee an optimum pressure and should be automatically associated with LRRT, in order to ensure at all times the maximising of safety and eco-performance (fuel economy).

- ESP and TPMS technology should be mandatory for Class II and III vehicles;
- Sufficient lead time should be given before implementation for all M3 vehicles;
- Promotion should be carried out providing information on their effectiveness.

## 2.2.2. Improve drivers' indirect vision

### Current situation:

Rear-view mirrors: currently regulated by Directive 2003/97 on "Indirect vision" as amended by 2005/27/EC and UNECE Regulation 46 (GRSG has established an informal group on camera monitoring systems (CMS)).

### IRU Recommendations:

- Mirrors between the door and the wheel, as well as horizontal mirrors in front, should be mandatory for all buses, to improve the indirect visibility of people getting on and off;
- Window condensation requirements for buses and coaches should be similar to that for private cars;

→ Improvements in mirror design to eliminate blind spots on both near and off side of buses and coaches;

→ Investigate the use of camera monitoring and radar systems as possible complementary or alternative technologies to the use of standard mirrors.

## 2.2.3. Improve reverse assist systems

### Current situation:

Cameras, radar systems: No requirements, always upon the initiative of the transport operators.

### IRU Recommendation:

- The use of existing technology (radar systems, CMS, etc.) should be encouraged and supported.

## 2.3. major existing passive safety directives and regulations

Directive 92/22/EEC	UNECE Regulation 43.00	Safety glazing
Directive 92/24/EEC	UNECE Regulation 89.00	Speed limiters
Directive 74/408/EEC	UNECE Regulation 80.01	Seat strength
Directive 77/541/EEC	UNECE Regulation 16.04	Safety belts
Directive 76/115/EEC	UNECE Regulation 14.06	Safety belt anchorage
Directive 70/221/EEC	UNECE Regulation 34.02	Fuel Tank
Regulation 661/2009/EC		General safety



## 2.4. updating and amendment of requirements on passive safety directives and regulations

### 2.4.1. Prevent fire propagation and protect vehicle risk zones against fire

#### Current situation:

- Materials used for the construction of the inside of bus and coach bodywork (EC Regulation n°661/2009 on General Safety of Motor Vehicles);
  - The materials used shall prevent or at least retard fire in order to allow occupants to evacuate the vehicle in the event of fire;
- Detection systems (UN/ECE Regulation No. 107);
  - Fire detection system in the engine compartments mandatory, (together with Euro VI-application);
  - Smoke or heat detection systems for the interior compartment mandatory, (adopted in 100th UNECE GRSG, April 2011);
  - Voluntary Agreement on the Installation of fire detection systems in the engine compartment of new buses and coaches (starting Jan 2011);
- Cable test (UN/ECE Regulation No. 118), mandatory from 9 December 2012 (new types);
- Repel test for insulation materials (UN/ECE Regulation No. 118), mandatory from 9 December 2012 (new types) and 9 December 2015 for all types;
- Burning behaviour of materials (UN/ECE Regulation No. 118) mandatory from 9 December 2012 (new types) and 9 December 2015 for all types.

#### IRU Recommendations:

The IRU and its Members are in favour of at source installation of fire detection, smoke detection and fire suppression systems in engine compartments. Consideration should also be given to the installation of detection systems in both the passenger and luggage areas of vehicles, together with a greater use of flame resistant materials in the construction of the bus or coach.

Periodic vehicle inspections can mitigate fire risks and mechanical problems and would promote an improved level of safety and compliance in the road transport sector.

Correct maintenance of all mechanical components of coaches and buses can considerably diminish any risk of fire.

The pre/post trip inspection list provided by the IRU checklist against fire can prevent coach and bus fires. The checklist should be carefully communicated to all drivers and disseminated to all concerned bodies of the passenger transport sector.

### 2.4.2. Improve vehicle evacuation

#### Current situation:

- EC Regulation n°661/2009 repeals Directive 2001/85 for new vehicles as of 2014.
  - Vehicle bodies shall be designed and constructed so as to enable the vehicle to be operated in a safe and stable manner, even at full capacity. Suitable provisions shall be made to ensure safe access to and exit from the vehicle, particularly in the case of an emergency;
  - Vehicles of Class I shall be accessible for people with reduced mobility, including wheelchair users.
- GRSG deal on number of service and emergency doors, especially the driver's door to be accepted as an emergency door (UNECE Regulation 107). Ongoing work on service doors, windows and emergency exits (SDWEE).

#### **IRU Recommendations:**

- Outside: emergency button should be between 1000mm and 1500mm from the ground and not more than 500mm from the door;
- Inside: the emergency exits should be well marked and placed in a harmonised way (either a button or a handle, covered with plexy glass);
- Outside and inside: central locking/unlocking of all doors and emergency windows with one all round vehicle operating device, either electronic or manual;
- The gangway of vehicles shall be designed and constructed as to permit the free movement of passengers.

### **2.4.3. Provide emergency lights over emergency exits**

#### **Current situation:**

Emergency exits are marked.

#### **IRU Recommendations:**

- emergency exit markings should illuminate to allow passengers to orientate themselves in case of an accident in conditions of poor visibility;
- emergency exits should be indicated with an illuminated sign with the standard pictogram of a green running man that stays lit in the event of an accident.

### **2.4.4. Implement advanced vehicle systems**

#### **Current situation:**

- Cruise control: allowed – voluntary basis;
- Distronic or Adaptative Cruise Control System: allowed – voluntary basis;

- Tyre Pressure Monitoring System: allowed (Regulation 661/2009/EC);
- Lane departure warning system: mandatory basis as of 2014 (Regulation 661/2009/EC);
- Advanced brake monitoring system: mandatory basis as of 2014 (Regulation 661/2009/EC);
- Forward Collision Warning System: allowed – voluntary basis;
- Driver Alert Control System.

#### **IRU Recommendations:**

- Cruise control is not optimal. The Distronic application is more efficient as it automatically regulates vehicle speed depending on the traffic flow;
- For all above advanced safety systems, overall responsibility should remain with the driver.

### **2.4.5. Standardise ergonomic dash boards and instrument panels across all makes of buses or coaches**

#### **Current situation:**

Dashboards and instrument panels differ depending on the vehicle mark/type.

Directive 78/316/EEC will be replaced by Regulation 661/2009/EC.

#### **IRU Recommendations:**

- The requirements defined in the ISO standard should be extended to buses and coaches / UNECE Regulation 121;
- Easy to visualise identification of all controls, dials and warning devices;



## 2.4.6. Improve seat design

### Current situation:

Performance requirements are set by UNECE 107 and safety belt anchorages by UNECE Regulation 14.

### IRU Recommendations:

- Improvements to the back of the seat are still possible to increase safety;
- Suspension seats can improve comfort and, therefore, reduce tiredness for long distance transport. However, the safety benefits do not extend to urban driving, where infrastructure traffic calming measures (i.e. speed bumps) may create a safety hazard;
- The position of the upper belt: effective anchorage must be permanently marked in the vehicle or seat, defining the child position or the adult position, which allocates automatically the upper anchorage safety belt at the level of the occupant's shoulder.

## 2.4.7. Activate stop lights when using a retarder

### Current situation:

Stoptlights do not function when using the retarder.

### IRU Recommendations:

- Stoptlights must function, when a vehicle decelerates, to avoid dangerous situations for other users;
- Road transport sector calls for mandatory safety regulation in this field and, in the meantime, commits, on a voluntary basis, to fitting a cable connected to stoptlights.

## 2.4.8. Optimise the location and fixing of equipment/ accessories

### Current situation:

Equipment and accessories are not fixed and are not appropriately located.

### IRU Recommendations:

- Any drinks machines should be installed in a safe location where they can be used in a safe manner and not pose a potential safety hazard to drivers and passengers;
- Operational controls of any DVD/Video equipment should be sited in a safe location where they cannot be accessed whilst the driver is in control of the vehicle.
- (possibly) Provision to be made for LCD screens to be integrated into the head restraints of coach seats.

## 2.4.9. Intelligent Transport Systems (ITS) / Navigation systems

### Current Situation:

Currently - implemented on a voluntary basis.

### IRU recommendations:

- eCall:
  - Gain of time when an incident occurs: the emergency responder can react faster;
  - Promote wider use of eCall, including to other road users.
- Navigation systems must facilitate the use of all road infrastructure and contain details of all obstructions which restrict the free movement of buses and coaches, for example low bridges, tunnels, and width and weight restrictions.





## 3.1. driving time, working time, rest

### Current situation:

Drivers must follow extensive rules to ensure they take sufficient rest and observe maximum limits on daily and weekly working and driving hours.

### **Regulation 561/2006/EC on EU Driving and Rest Time Rules (in force since May 2007)**

- Compulsory regular weekly rest periods of 45 hours (minimum once every second week);
- Reduced weekly rest of 24 hours (maximum once every second week) and any reduction from 45 hours must be compensated within 3 weeks by an extended rest;
- 11 hour regular daily rest period required once in every 24 hour period. Can be reduced to 9 hours three times a week;
- Minimum 45 minute break for each 4.5 hour driving period;
- Maximum 56 hour weekly driving time limit;
- All travelling time spent to and from taking charge of a vehicle cannot be considered as rest;

- Strict rest rules for drivers on coach tours lasting between 6 and 12 days.

### **Road Transport Working Time Directive No 2002/15/EC (in force since 23 March 2005)**

- Supplements and covers all mobile workers including the self employed, who are subject to the EU Driving and Rest Time Rules Regulation no 561/2006/EC;
- Average maximum 48-hour working week, calculated over a four month reference period;
- 10 hours night work limit in each 24 hour period;
- Obligatory break after 6 hours work.

### IRU recommendations:

EU Regulation 561/2006/EC is principally designed for heavy goods vehicles but currently applies to the bus and coach industry as well. It does not reflect the different working patterns of bus and coach drivers.

## 3.2. controls on the driver

### Current situation:

Bus and coach drivers are true professionals, but the rules should be enforced in a way that makes customers even more confident of their driver's fitness for work.

### **Tachograph Regulation No 3821/85/EC (in force since 1985)**

- All vehicles driven within the scope of EU driving and rest time rules must be fitted with a tachograph – a secure recording device for registering drivers' driving hours, rest and work periods;
- Since May 2006, all new vehicles must be fitted with a digital tachograph that has been developed with even stronger security features that are continuously updated, to ensure that drivers cannot falsify the record of their driving and rest time activities;
- The tachograph may, in the future, be linked to satellite positioning systems to improve security and also integrate the vehicle into information technology systems (ITS), including 'eCall' and possibly other road safety measures.

### **Enforcement Directive No 2006/22/EC (in force since May 2006)**

- Determines the minimum level of enforcement required to ensure compliance with the EU driving and rest time rules and the digital tachograph regulation. A minimum 3% of the total days worked by drivers must be checked);
- Member State enforcement authorities must carry out a minimum of six cross border joint controls per year. They must extend their cooperation to enforce driving, resting and safety rules more effectively, via joint training programmes, standard equipment levels and electronic information and intelligence exchange systems.

### **IRU recommendations:**

The IRU and its Members support strong controls on drivers by the competent authorities as well as tough sanctions for those found guilty of serious infringements. The IRU welcomes the use of new technologies and intelligence led enforcement that focuses attention on those who are a known risk or who clearly present one. The IRU also supports new measures, now debated in the EU that will make the digital tachograph much harder to manipulate and will oblige more rigorous training for the control bodies and agents that enforce the rules.



### 3.3. training the driver

#### Current situation:

In view of all the responsibilities and legal obligations which are placed on the shoulders of bus and coach drivers, it is only to be expected that a high priority is given to training.

#### **Driver Training Directive 2003/59/EC (in force since 10 September 2008)**

- A professional category driver's licence is no longer sufficient to start working in the sector. All new professional drivers must obtain an additional EU Certificate of Professional Competence (CPC);
- CPCs are obtained following 280 hours of compulsory training, followed by a test, or by completing Modules 1 to 4 by practical and theory examinations, all undertaken with Member States approved bodies;
- All drivers must undergo 35 hours of periodic training every 5 years to retain the CPC;
- Training and proof of professional competence is heavily oriented towards road safety. Amongst other points the Directive specifies the following as basic skills:
  - Advanced training in defensive driving techniques based on safe and fuel efficient driving, including knowledge of the technical characteristics and operation of the safety controls of the vehicle, limits to the use of brakes, better use of speed and gear ratio, ways of slowing down and braking on downhill stretches, and action in the event of failure;
  - Ability to ensure passenger comfort and safety, including, using specific infrastructure (public areas, dedicated lanes), managing conflicts between safe driving and other roles as a driver, interacting with passengers, specificities of certain groups of passengers (disabled persons, children);

- Knowledge of maximum working periods; the principles, application and consequences of EU Regulations on driving and rest times and tachograph use;
- Knowledge of the regulations governing the carriage of passengers, specific groups, safety equipment, seat belts and vehicle loads;
- Awareness of road traffic risks, types of accident at work in the transport sector, accident statistics and accident causation involving coaches, human, material and financial consequences;
- Ability to respond in all emergency situations to ensure the safety of all passengers and other road users, through training covering First Aid, Fire Evacuation procedures and potential driver/passenger conflict situations;
- Importance of physical and mental wellbeing for road safety: healthy diet, effects of alcohol, drugs or other substances affecting behaviour, fatigue and the work/rest cycle.

#### IRU recommendations:

The IRU is working to ensure that the EU Driver Training Directive works to improve skills and safety in practice and not just on paper.

The quality and quantity of the EU's training capacity in terms of facilities and instructors must be rapidly expanded.

Member States must open national registries for training institutes, to keep a record of their number and standards. Governments must provide concrete support to approved training bodies which represent true centres of excellence in terms of training - such as IRU Academy Accredited Training Institutes.

Better control and coordination of the accreditation process for training institutes, trainers and curricula will be vital to ensure there are consistent training standards across the EU.

---

**ISN'T IT FUNNY HOW  
PEOPLE THINK THAT**

---

**monthly car payments,**

monthly car insurance costs,

**weekly trips to the petrol station,**

hours lost sitting in traffic,

**bi-weekly car washes,**

yearly car registration,

**expensive car repairs,**

paying for parking,

**and buying other accessories like**

windscreen wiper fluid,

winter tyres and air fresheners

---

**is better than buying a monthly bus pass,**

**sitting back and relaxing with a good book**

**each morning on the way to work?**

---

**MAKE THE SMART MOVE**

[www.busandcoach.travel](http://www.busandcoach.travel)

# 4 // safe company

Customers, crew and other road users' safety is a top priority for bus and coach companies. For true professionals, every road accident is one too many.

Despite the fact that bus and coach transport is the safest mode of road transport, further enhancing safety is a daily task and a priority commitment of every bus and coach company and its management.

## 4.1. 12 golden road safety rules

1. Ensure drivers and crew are aware of the requirements to wear seat belts and are fully trained in the specific type of vehicle they will be driving.
2. Remind passengers of safety guidelines and the obligation to wear a seatbelt (by showing a video tape in Class II and III vehicles).
3. Ensure drivers are always at peak performance through the adoption of a healthy life style and constant training in defensive driving and other road safety techniques and best practices.
4. Ensure drivers are aware and follow the driving and rest times rules at all times, via careful instruction and management and appropriate transport planning.
5. Ensure that transport buyers like tour operators understand that social regulations (principle of co-responsibility/joint liability) should be respected in all transport operations and that they bear joint responsibility.
6. Ensure that drivers know the specific requirements of their passengers and implications for road safety, such as when driving with children, the disabled or elderly.
7. Ensure drivers are trained to observe and adhere to speed limits.
8. Ensure drivers and crew are aware that no alcoholic drinks or drugs are to be taken during working hours and educate them through training of the harmful effects that consumption outside of working time will have on their ability to perform their duties safely.
9. Drivers should wear a fluorescent jacket when on duty outside the vehicle.
10. Develop safe vehicle parking procedures and ensure all drivers are trained in vehicle evacuation procedures for all types of passengers.
11. Train drivers in defensive driving techniques and increase awareness of the main causes of vehicle and passenger accidents and how they can be avoided.
12. Companies should develop and implement corporate road safety policy to ensure an ever improving road safety performance.

## 4.2. voluntary road safety charter for bus and coach companies



This voluntary road safety charter is proposed to be signed and implemented, on a voluntary basis, by bus and coach companies.

It represents a public company commitment to further improve road safety by implementing, on a regular and verifiable basis, the provisions listed in the charter.

### 1. Plan operations to ensure safety obligations are met

- Schedule vehicles so that drivers' hours and resting time rules can be followed in normal traffic conditions mindful of drivers' needs;
- Ensure vehicle weight complies with minimum and maximum axle load requirements;
- Schedule journeys such that speed, routing and other traffic restriction requirements are complied with. Where there are no actual restrictions, ensure that, as far as possible, the safest route is followed;
- Ensure that vehicles are parked in places where they are not likely to jeopardise road safety.

### 2. Monitor driver compliance with the law

- Check regularly that drivers hold valid vocational driving licences and other certificates required by the law, and that they have received appropriate training;
- Monitor tachograph records for compliance with drivers' hours and resting times;
- Follow up appropriately any complaints against the driver;
- Ensure drivers are fully aware of and comply with their obligations, notably with regard to their passengers.

### 3. Encourage driver training at levels above the legal minimum standards

- Encourage drivers to understand their responsibilities towards their passengers, other road users and the communities through which they pass;
- Have drivers trained in accordance with internationally recognised standards, such as those of the IRU Academy Accredited Training Centres;
- Keep records of such instruction;
- Re-assess driver performance regularly and if and when complaints are lodged;

- Give each driver a personal copy of the IRU bus and coach checklists and of any other road safety material for drivers produced by the IRU or national Association, as appropriate.

### 4. Ensure vehicles are safe and well-maintained

- Ensure, by preventive maintenance and checks before departure, that vehicles are always roadworthy;
- Ensure that vehicles are well prepared for the road and possible meteorological conditions and provide them with the essential equipment needed (e.g. snow chains in winter);
- Implement existing guidelines on vehicle maintenance;
- Implement formal procedures for vehicle defect reporting by drivers.

### 5. Show consideration for other road users and pedestrians

- Educate and train drivers to adopt a "defensive" driving technique. In particular, not to tailgate;
- Remind drivers of the special vulnerability of pedestrians, cyclists and motor cyclists;
- Ensure drivers make the maximum use of motorways and primary routes and avoid residential areas, except for buses and coaches serving the latter.

### 6. Promote the health of their workforce

- Comply with the occupational health responsibilities of employers to their employees;
- Take concrete steps to encourage drivers to adopt a healthy lifestyle and avoid driving under inappropriate medication;
- Inform drivers appropriately about health hazards they may encounter on particular journeys, for example the presence of epidemic diseases.

doubling the  
use of collective  
passenger  
transport by  
bus and coach

Join us!

[www.busandcoach.travel](http://www.busandcoach.travel)



[facebook.com/SmartMoveCampaign](https://www.facebook.com/SmartMoveCampaign)



[@Smart\\_Move](https://twitter.com/Smart_Move)



[SmartMoveCampaign](https://www.youtube.com/SmartMoveCampaign)



[smart\\_move](https://www.instagram.com/smart_move)

# 5 // driver's checklists

# Checklist Against Fire for Buses/Coaches

In order to prevent fire on vehicles, the IRU has worked out a checklist of recommended periodical inspections to be integrated in the maintenance performance activities of the transport operations.

Vehicle maintenance on a regular basis can ensure early identification of vehicle problems and defects likely to cause a fire.

## Driver duties

### Before starting a journey



#### The driver imperatively checks:

- ✓ The tyres' pressure (visual check on a daily basis, test tyres on a weekly basis). In particular dual tyres should not be kissing each other.
- ✓ No liquids are leaking underneath the vehicle (visual check). Ensure that no oil exits from the muffler and that you see no excessive blue smoke (turbocharger oil consumption).
- ✓ The proper functioning of the preheating systems (engine and interior).
- ✓ The exhaust system components are free from debris.

### When operating a vehicle



#### The driver needs imperatively to:

- ✓ Check the coolant temperature gauge.
- ✓ Check fire detection system signal (vehicles must be equipped).
- ✓ Check smoke or heat detection systems for interior compartment (vehicles must be equipped).
- ✓ Check regularly the tyres' pressure monitoring system (if vehicle equipped).
- ✓ Avoid any overheating. Stop the vehicle if the engine, brakes or retarder become overheated/or when sensing unusual odors or smoke, or if noticing smoke visually.
- ✓ Park in a safe area.

- ✓ Avoid overloading because it increases all temperatures!
- ✓ Record in the daily operation report malfunction(s) with mileages and time.
- ✓ Check all warning lights.
- ✓ Check the proper functioning of the retarder (hydraulic or electric).

### After completing a journey



#### The driver needs imperatively to:

- ✓ Inform the technician/next driver of a malfunction.
- ✓ Hand over to the technician or fleet manager the daily operation report (copy).
- ✓ On a daily basis, make a visual check of the engine compartment and surrounding equipments of the vehicle and inform the technician of any problem.
- ✓ On a daily basis, ensure waste and litter is removed from the vehicle.
- ✓ Make sure all external heat sources, e.g. cooking and/or heating equipment is switched off.

### When returning a bus/coach



- ✓ Park the vehicle with the main battery switched off (if applicable). This will disconnect the batteries from the alternator, eliminating a risk of fire due to an internal electrical failure.

## Vehicle maintenance staff's duties



#### The technician in charge of vehicle maintenance needs to imperatively check on a regular basis that:

- ✓ All driver's defect reports are correctly actioned, remedial action recorded and filed.
- ✓ The fire detection systems in the engine compartment are connected.
- ✓ The smoke detection systems in the toilets and the driver sleeping compartment are properly connected.

- ✓ The B+ (direct battery feed) cable of the alternator and the B+ cable of the starter are properly connected.
- ✓ There are no loose wires and the cables avoid unwanted contact with the ground.
- ✓ None of the liquids, fuel, power steering fluid, engine oil and hub/gear oil can come in contact with a hot surface.
- ✓ No oil is leaking from the waste gate pivot of the turbocharger.
- ✓ Sensors are not a source of leaking.
- ✓ The levels of coolant and oils are fine (check on a weekly basis).

## Vehicle maintenance staff's duties



- ✓ There is no fuel or oil inside the engine compartment on isolation materials.
- ✓ The fuel lines are not leaking.
- ✓ The retarder (gas exhaust, hydraulic or electric) is functioning properly. All environment equipments are without any defects (broken valves, lines, no leaking of fluids).
- ✓ The exhaust system is airtight/isolated.
- ✓ The preheating systems are running correctly (engine and interior).
- ✓ The level of grease in the wheel hubs is sufficient.
- ✓ The status of brakes is in order.
- ✓ The extinguishers are still present in the vehicle and in proper function.
- ✓ The emergency exits function properly.

## Actions to be taken in the event of a fire or emergency



- ✓ (Try to) park the vehicle in a safe area.



- ✓ Apply the parking brake.



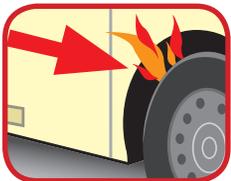
- ✓ Inform the crew to take a safe distance from the vehicle.



- ✓ Open doors in order to let passengers get out fast.



- ✓ Stop the engine. Isolate the battery by activating the master switch where available. Switch off the air-conditioning/heating.



- ✓ Identify the source of the fire.



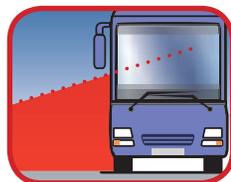
- ✓ Inform the appropriate emergency services, giving as much information about the incident or accident and passengers involved as possible.



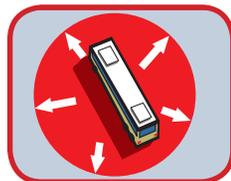
- ✓ Where appropriate and safe to do so, use the fire extinguishers to put out small initial fires. **DO NOT OPEN THE ENGINE COMPARTMENTS IF FIRE OCCURS.**



- ✓ Put on warning vest and place the self-standing warning signs as appropriate. Secure the incident area.



- ✓ Make sure the crew is at a safe distance from the vehicle.



- ✓ Move away from the vicinity of the accident or emergency, advise other persons to move away and follow the advice of the emergency services.

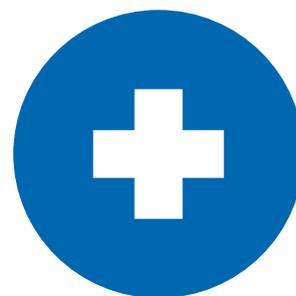
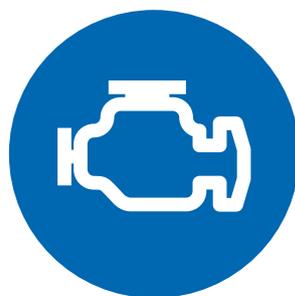
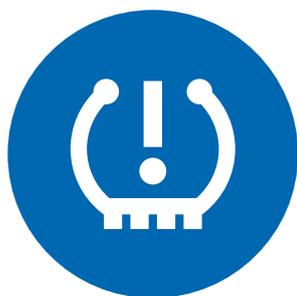
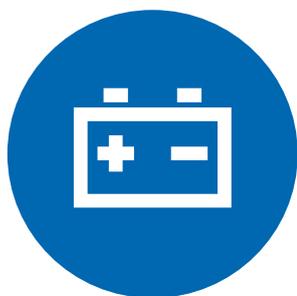


- ✓ Report to company management about the incident.

This checklist is provided to you by the **IRU Academy**, the training arm of the **International Road Transport Union (IRU)**. See our training programmes on [www.iru.org/academy](http://www.iru.org/academy)

# Winter Checklist for Drivers and Transport Operators

Before the winter season



## Electrical parts

### Drive belt

- ✓ Inspect the drive belt for any cracks or worn rubber (a drive belt can crack under extreme temperatures).
- ✓ Check the belt tension (a loose belt can reduce alternator output and run down batteries).

### Electrical connections

- ✓ Check the electrical connections between the vehicle and the trailer.

### Battery

- ✓ Check battery charging, as cold weather starts make the vehicle battery work much harder.

### Alternator

- ✓ Check the charging rate of the alternator when the system is under full load with all equipment switched on.

## Tyres

### Winter tyres

- ✓ Use winter tyres bearing the marks M+S, M.S or M&S (they offer better traction and handling in a variety of winter conditions, especially when driving in mud and snow).
- ✓ Fit winter tyres at least on the drive axle (check national requirements).

### Tyre pressure

- ✓ Correctly inflate tyres for better grip, braking distance and handling (cold winter temperatures typically reduce tyre pressure).
- ✓ Follow the recommended pressure mentioned in the owner manual.

## Fluids

### Radiator

- ✓ Inspect the condition of the radiator, the hoses and the opening and/or closing of the thermostat.

### Antifreeze

- ✓ Refill antifreeze if necessary, using the antifreeze ratio recommended by the manufacturer.
- ✓ Use a tester to check the fluid for its freeze point while the engine is cold.

### Windscreen washer fluid

- ✓ Use a windscreen washer fluid that does not freeze in low temperatures.

### Fluid levels of power-trains

- ✓ Use high quality power-trains oil (effective in protecting the motor and running gears in cold start situations).

### Oil and oil filter

- ✓ Use the oil recommended by the vehicle manufacturer and check the oil level manually.

### Air dryer cartridge

- ✓ Replace if necessary.

### Water separator

- ✓ Drain the water separator in the fuel system.

## Miscellaneous equipment

### In case of incident/accident

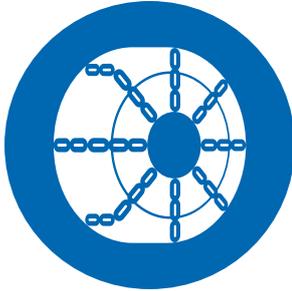
- ✓ Always carry a first aid kit, a map, an ice-scraper, a snow brush, a torch, warning triangles, flares, a tow rope and jump leads, a shovel, a bag of sand, a blanket, winter gloves and a mobile phone.

### Auxiliary cab heating system

- ✓ Check the system works correctly.

## During the winter season

Drivers should exercise extra care when driving on snow and icy roads!



### Tyres

- ✓ A minimum tyre tread for tyres is required (check national requirements).
- ✓ Make sure that the vehicle is equipped with appropriate snow chains.



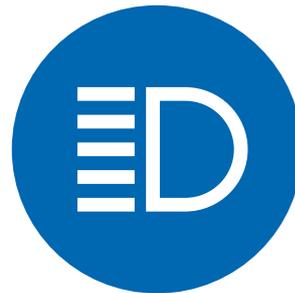
### Cleaning

- ✓ Clear all snow and ice from your vehicle. This will help avoid sheets of ice flying off the vehicle and creating difficulties for vehicles behind.



### Visibility

- ✓ Keep the windscreen, washers, mirrors and lights clean and clear of snow and ice.
- ✓ Make sure that your wiper blades are in good condition to fully clear your windscreen. Road salt and slush can inhibit visibility.



### Lighting

- ✓ Check all lighting systems, headlights for both dipped and full beam, indicators and rear lights, which must not be obstructed by snow and ice.



### Air intake

- ✓ Keep air intake grills free of leaves, snow and ice, remembering also the air intake for your heating system.

*This checklist is provided to you by the **IRU Academy**, the training arm of the **International Road Transport Union (IRU)**.*

*See our training programmes on [www.iru.org/academy](http://www.iru.org/academy)*

# Safe driving in road tunnels for professionals

## Tips for truck and coach drivers



## Typical safety equipment in road tunnels

### Ventilation systems

In the event of a fire the ventilation system either extracts smoke from the tunnel or pushes smoke in a single direction.

### Tunnel lighting

The lighting systems enable the human eye to adapt to the reduced visibility in tunnels. Emergency exits and stations are fitted with continuous emergency lighting.

### Traffic radio

Signs may indicate the radio frequency for traffic information. The tunnel operator may use this frequency to broadcast emergency announcements.

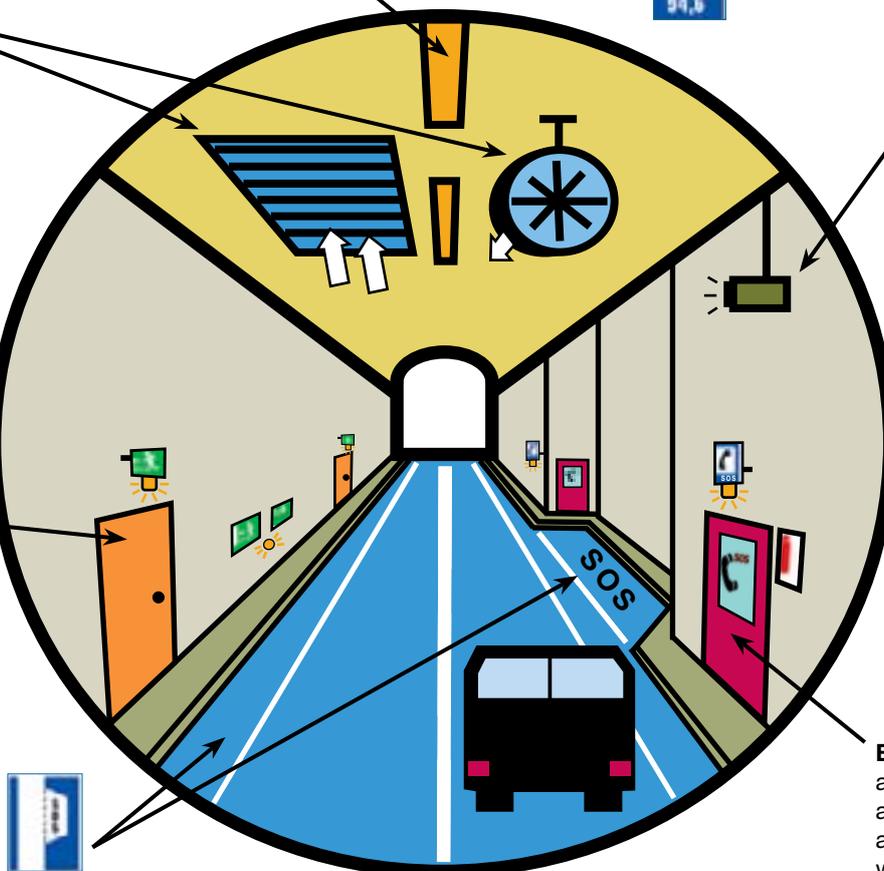


### Traffic surveillance cameras

If there are traffic surveillance cameras and if an emergency call comes from an emergency station inside the tunnel, the images from the camera in that particular section may appear automatically on the monitor in the tunnel operator's control room.

### Emergency exits

These are clearly marked by appropriate signs and lights and have fireproof and smokeproof doors.



### Emergency lanes or lay-bys

If there are either emergency lanes or emergency lay-bys at regular intervals use them, if your vehicle has broken down. Lay-bys usually have an emergency station.

### Emergency stations

are located in the tunnel at frequent intervals. They are normally equipped with:

- emergency phones to the tunnel control room
- fire extinguishers
- push-button alarms

## 1 Before you reach the tunnel



Check your fuel, oil, coolant and the engine temperature. If overheating, stop and let it cool.

Check your brakes and lights.



Ensure any fire extinguishers are serviceable and you know how to use them.



**TRUCK DRIVERS:** Ensure that your vehicle and its load comply with the tunnel regulations. If not, take an alternative route.



**COACH DRIVERS:** Ensure that you know all safety procedures including the evacuation of passengers.

## 2 When you enter the tunnel



**Switch on your headlights.**

Take off your sunglasses.



Listen to messages on the radio.



Obey traffic lights, speed limits and signs.



Do not use your mobile phone. Do not smoke.

## 3 In the tunnel



**Keep a safe distance from the vehicle in front, even if you are moving slowly or have stopped.**



Do not overtake if there is only one lane in each direction.



Do not make any U-turns or reverse unless ordered to do so.

Do not stop, except in an emergency.

## 4 Traffic congestion



**Switch on your warning lights.**



**Keep a safe distance from the vehicle in front, even if you are moving slowly or have stopped.**



Switch off your engine, if the traffic has come to a halt.



Listen to messages on the radio.



Follow instructions given by tunnel officials or by variable message signs.

## 5 Breakdown or accident



**Switch on your warning lights.**

If possible, drive your vehicle out of the tunnel. If not possible, pull over to an emergency lane, or an emergency lay-by, or the side of the road.



**Switch off the engine, leave the key in the ignition and leave your vehicle.**



Call for help **ONLY** from an emergency station (mobile phones do not indicate where you are calling from).



Say if you are transporting dangerous goods (what type) or passengers (and if any are injured).



Follow instructions given by tunnel officials.



If possible, give first aid to injured people.

## 6 Fire



**Switch on your warning lights.**

**YOUR VEHICLE IS ON FIRE:**

If possible drive out of the tunnel. If not possible, pull over to the side of the road.



**Switch off the engine, leave the key in the ignition and leave the vehicle immediately.**



**COACH DRIVERS: Evacuate all your passengers to safe areas.** (e.g. escape routes, emergency exits or shelters).



**ANOTHER VEHICLE IS ON FIRE:**

**Keep a safe distance from the vehicle in front of you.**



Stop your vehicle as close to the side of the road as possible giving free access for emergency services.



**Switch off the engine, leave the key in the ignition and leave the vehicle immediately.**



**COACH DRIVERS: Evacuate all your passengers to safe areas.**



Call for help **ONLY** from an emergency station (mobile phones do not indicate where you are calling from).



Say if you are transporting dangerous goods (what type) or passengers (and if any are injured).



**Help direct others to safe areas.**



If possible, put out the fire using your extinguisher or an extinguisher available in the tunnel and, if possible, give first aid to injured people.



If not, go immediately to an emergency exit and follow instructions given by tunnel officials.

## Remember

**As a professional, you should guide and help other drivers and passengers in an emergency !  
Smoke and fire can kill – save yourself and your passengers, not your vehicle !**

# ECO-DRIVING SAFELY

## FOR BUSES AND COACHES

Think economically and environmentally!

ECO-driving is not only an easy and cost-efficient way to reduce fuel consumption, greenhouse gases and accident rates, but also an attitude and respect for society as a whole. In order to help drivers adjust their driving behaviour according to different situations, the IRU has developed this checklist of smart, smooth and safe ECO-driving techniques.

### BEFORE THE JOURNEY



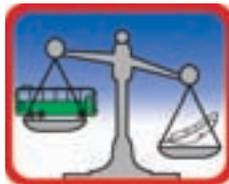
#### Maintain your vehicle

Maintain proper engine oil and air filters to keep vehicles running efficiently. Use the appropriate fuel as recommended by the manufacturer to keep the vehicle engine clean and performing efficiently. Always consult the vehicle's owner manual for proper maintenance.



#### Consolidate trips and use on-board devices

Plan your trips ahead. This will enable you to bypass congested routes and mean less idling. An on-board computer may help to save time and take the right routes.



#### Travel "light"

Remove unnecessary weight from the vehicle.



#### Check your tyres

Keep tyres properly inflated to the tyre pressure recommended by the manufacturer. This alone can reduce the average amount of fuel used by 3-4 %. Under-inflated tyres increase rolling resistance and increase fuel consumption. They also wear more rapidly. Check the vehicle's owner manual or the tyre pressure label for minimum cold tyre inflation pressure. On a voluntary basis Tyre Pressure Monitoring System enables the driver to easily check the tyre pressure directly from the dashboard. Axle alignment on all axles and toe in / toe out on the steering axles should also be checked and kept it as recommended by the manufacturer.

### DURING THE JOURNEY



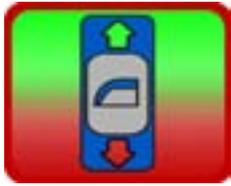
#### Drive at a steady speed

Try to maintain a steady speed by using the highest gear possible and by avoiding unnecessary acceleration and braking. The engine power to keep a steady speed is lower if you do not continuously brake and accelerate. Anticipate the traffic flow by looking ahead as far as possible. The cruise control on motorways helps smooth driving. Reduce speed in strong headwinds or heavy rain.



#### Accelerate and brake smoothly

Avoid fast starts and hard braking; they waste fuel and wear out some vehicle components more quickly, such as brakes and tyres. Maintain a safe distance between vehicles and anticipate traffic conditions to allow more time to brake and accelerate gradually. Accelerate smoothly from a stop and brake softly to save fuel.



### Close windows at high speeds

Do not drive with the windows open unless you keep your speed under 60 km/h. Driving with the windows open at highway speeds increases aerodynamic drag on the vehicle and increases fuel consumption. Remove any article that impairs the vehicles streamline effect.



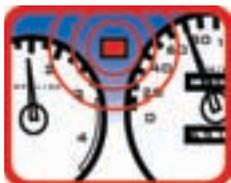
### Decelerate smoothly

Every time you use the brakes, you waste energy. Try to use the vehicle's motion energy as much as possible. Use the retarder and the engine brake to reduce speed when approaching a traffic light. Close to the traffic light, operate the brakes for a final standstill. This will also reduce wear on the brakes, lower exhaust emissions, cut off fuel supply and make the ride comfortable for your passengers.



### Slow down and watch speed

Drive at the maximum legal speed to save fuel and enable more free-flowing traffic, try not to overtake other vehicles at unnecessarily high speed. Environment authorities estimate a 10-15 % improvement in fuel economy by following this tip. Aim for a constant speed.



### Check engine light

Today's vehicles have sophisticated on-board diagnostics (OBD) systems that continually monitor the operation of your vehicle. When the OBD alert light comes on, there is the possibility that your emissions are increased and your fuel economy is going down. Replacing a faulty sensor could result in a fuel economy improvement of as much as 40%. When the OBD light goes on, see your vehicle's maintenance expert for more information.



### Minimise use of heating and air conditioning

Use heating and air conditioning selectively to reduce the load on the engine. Decrease your use of the air conditioner; it can help you save 10-15 % of fuel. Park your vehicle in the shade.



### No idling

Today's engines do not need a warm up. Gently drive away immediately after starting the vehicle. Prolonged idling increases emissions and wastes fuel, therefore try to avoid engine idling. Necessary time intervals to obtain optimal working conditions of the vehicles after first engine start and after engine stop may be checked in the vehicle owner's manual.

Keep out of congested areas and find an alternative motorway solution rather than going through the city centre. This might take a few minutes longer, but will allow for saving on fuel consumption, less wear on brake linings, clutch plates and gearbox, all while minimising driver fatigue and reducing the risk of accidents.



### Drive off from standstill – but always try to avoid stopping

When the traffic lights turn green, accelerate quickly, but try not to press the acceleration pedal more than halfway. Sharp acceleration is very fuel-consuming. Shift up the gears as soon as possible. Diesel engines vary; almost all of them need to shift before 1,500 rpm and some at even lower rpms. It is very efficient to shift from a fast pace to the highest gear: modern engines work more efficiently when a high engine load is used. On modern vehicles, use only the minimum number of gear changes: usually only 4 to 6 changes required from standstill to cruising speed.

**Drivers, don't hesitate to take special ECO-driving courses!**



**IRU Permanent Delegation  
to the European Union**

32-34, avenue de Tervueren  
Bte 17  
B-1040 Brussels  
Belgium

Tel: +32-2-743 25 80  
Fax: +32-2-743 25 99  
E-mail: [brussels@iru.org](mailto:brussels@iru.org)  
Web: [www.iru.org](http://www.iru.org)