

A guide to workplace transport safety



HSG136 (3rd edition)
Published 2014

This guide provides advice for employers on what they need to do to comply with the law and reduce risk. It will also be useful for managers, supervisors, employees and their safety representatives, as well as contractors, vehicle operators and other organisations concerned with workplace transport safety.

The new guide is much shorter and more streamlined than the previous edition and includes advice on your general legal duties and information on health and safety management. There is also more specific advice on controlling risks associated with workplace transport, which has been restructured into three main areas:

- safe site (design and activity);
- safe vehicle;
- safe driver.

The new edition has been updated to take account of new advice on workplace transport safety and also to reflect changes to relevant legislation and associated guidance. There are new sections on multi-deck vehicles and multi-site deliveries, as well as minor changes to other sections, such as on weighbridges and sheeting.

Contents

Introduction 4

What does this guide cover? 4

Managing workplace transport safety 5

Health and safety law – general duties 5

Risk assessment 5

Managing health and safety 6

Organising for safety 6

Consulting employees 6

Competence 7

Contractors 7

Shared workplaces 7

Safe site – design 9

Traffic routes 9

'Reasonable adjustments' for disabled people 10

One-way systems 10

Large vehicles 10

Segregation of pedestrians 10

Pedestrian crossings 12

Members of the public 12

Automatic, driverless vehicles 13

Visibility 13

Speed 14

Speed humps and cushions 14

Speed limits 14

Signs, signals and markings 15

Lighting 16

Temporary workplaces and unprepared roadways 16

Soft ground 16

Slopes 17

Weighbridges 17

Easy access to fittings and control points 18

Ventilation 18

Safe site – activity 19

Reversing 19

Reversing up to structures or edges 20

Banksman (signaller) 20

Parking 22

Parking areas 22

Hardstandings 23

Safe parking 23

Parking on a slope 23

Coupling and uncoupling 24

Coupling and uncoupling areas 24

Parking brakes 24

Access to 'fifth wheel' area 24

Loading and unloading 25

Deliveries and collections 25

Visiting drivers 26

Loading and unloading areas 27

Loading bays	27
Dock levellers	28
Preventing vehicles moving	28
Load safety	28
Curtain-sided vehicles	29
Multi-deck vehicles	30
Pallets	30
Packing	30
Loading vehicles safely	30
Multi-site deliveries	31
Shifted loads	31
Preventing vehicles from overturning	32
Driving on slopes	32
Driver protection and restraints	32
Tipping	33
Planning	33
Tipping sites	33
Before tipping	34
Unloading	34
Freeing stuck loads	35
Overhead power lines	36
Work at height on vehicles	36
Platforms and gantries	37
Personal fall-protection systems	37
Getting on and off vehicles	38
Walking on vehicles	38
Work at height using lift trucks	39
Trimming, sheeting and netting	40
Trimming	40
Covering loads	40
Automated sheeting	40
Other automatic systems	41
Mechanical sheeting	41
Manual sheeting systems	41
Safe sheeting	42
Safe vehicle	43
Seat restraints and driver protection	43
Vehicle visibility and reversing aids	45
Closed-circuit television (CCTV)	45
Reversing sensors and alarms	45
Maintenance and repair	46
‘Thorough examination’ of lifting equipment	47
Competent person	47
Safe driver	48
Choosing drivers	48
Driver training and competence	48
Lift truck operator training	49
Monitoring and refresher training	49
References	50
Further reading	52
Further information	53

Introduction

1 Every year, about 50 people are killed and more than 5000 people are injured in accidents involving workplace transport (www.hse.gov.uk/statistics). The most common causes are people falling from or being struck by a vehicle, objects falling from a vehicle, or vehicles overturning.

2 This guide provides comprehensive advice for employers on what they need to do to comply with the law and reduce risk. It will also be useful for managers, supervisors, employees and their safety representatives, self-employed people, contractors, vehicle operators and other organisations concerned with workplace transport safety.

3 For a brief introduction to workplace transport safety, look at HSE's leaflet *Workplace transport safety: A brief guide*.¹ For basic, general information for small businesses on managing health and safety, look at HSE's 'Health and safety made simple: The basics for your business' (www.hse.gov.uk/simple-health-safety).

4 'Workplace transport' means any vehicle or piece of mobile equipment used in any work setting. It covers a very wide range of vehicles, from cars, vans, lorries and lift trucks, to less common vehicles and plant such as straddle carriers and rubber-tyred gantries.

5 Vehicles moving on public roads are not usually classed as 'workplace transport', because road traffic laws cover any associated risks in more detail than general health and safety law. However, public roads are often used as temporary workplaces, for example during roadside deliveries, road works or breakdown assistance, so health and safety law applies.

What does this guide cover?

6 This guide includes advice on your general legal duties and information on health and safety management. This is followed by more specific advice on controlling risks associated with workplace transport, grouped into three main areas:

- safe site (design and activity);
- safe vehicle;
- safe driver.

7 'Safe site – design' covers the layout of the workplace, for example traffic routes and their maintenance, the positioning and design of pedestrian crossing points, lighting and signage. The main aim of any design should be the segregation of vehicles from pedestrians.

8 'Safe site – activity' covers activities on a site such as reversing operations, coupling and uncoupling, loading and unloading, tipping and sheeting.

9 'Safe vehicle' covers identifying and choosing the most appropriate vehicle for the tasks and environment and the people who will use it, as well as how it will be maintained.

10 'Safe driver' covers the competence and behaviour of those who operate vehicles.

11 You can also look at HSE's workplace transport website for more information: www.hse.gov.uk/workplacetransport.

Managing workplace transport safety

Health and safety law – general duties

12 As an employer you must:

- ensure that the health and safety of your employees, contractors and members of the public are not put at risk as a result of the work you do;
- have a written health and safety policy if you employ five or more people;
- assess the risks to the health and safety of anyone affected by what you do (including employees and members of the public) and record the significant findings (in writing if you employ five or more people);
- have arrangements in place for effective planning, organisation, control, monitoring and review of preventive and protective measures identified by the risk assessment;
- provide personal protective equipment where there are risks to health and safety that cannot be adequately controlled in other ways;
- provide information, instruction, training and supervision to ensure employees' health and safety at work;
- maintain in a 'safe condition' (without risks to health or safety) any workplace and work equipment under your control;
- consult with employees and their representatives on health and safety matters;
- co-operate and co-ordinate where employers share a workplace.

13 Employees and the self-employed also have duties to look after their own health and safety and that of anyone who might be affected by their work.

Risk assessment

14 You must control the risks in your workplace. Risk assessment is about identifying and taking sensible and proportionate measures to control these risks. You are probably already taking steps to protect your employees, but your risk assessment will help you decide whether you should be doing more.

15 Think about how accidents and ill health could happen and concentrate on real risks – those that are most likely and which will cause the most harm. Monitor your workplace activities involving vehicles (including visiting vehicles) over a reasonable period to build up a clear picture of vehicle and pedestrian traffic movements including, for example, loading and unloading, or collecting waste.

16 Think about new designs/layouts before they are put in place. Also think about the effect of any changes in how things are done, eg different types of vehicle, or having to use different or new routes.

17 Some workers may have particular requirements, for example new and young workers, migrant workers, new or expectant mothers, people with disabilities, temporary workers, contractors and lone workers.

18 Generally, you need to do everything reasonably practicable to protect people from harm. An explanation of what 'reasonably practicable' means is provided at www.hse.gov.uk/risk/faqs/htm.

19 More guidance on risk assessment can be found at www.hse.gov.uk/risk. Also look at the 'Workplace transport checklist' on HSE's website to help you identify the risks in your workplace (www.hse.gov.uk/workplacetransport/wtchk1.pdf).

Managing health and safety

20 Managing health and safety is an integral part of managing your business. The HSE website (www.hse.gov.uk/managing) explains how you can follow a 'Plan, Do, Check, Act' approach:

- **Plan:** Describe how you manage health and safety in your business (your legally required policy) and plan to make it happen in practice.
- **Do:** Prioritise and control your risks – consult your employees and provide training and information.
- **Check:** Measure how you are doing and investigate the causes of any accidents, incidents or near-misses.
- **Act:** Learn from your experience and take action on lessons learned.

Organising for safety

21 Make sure responsibilities for health and safety management are clearly allocated before any work starts so that all employees, contractors, subcontractors, visiting drivers, maintenance staff and other workers understand what they need to do to maintain a safe workplace.

22 It is important to have strong lines of communication to ensure any changes can be quickly put into practice. A clear and simple incident-reporting procedure can help to identify problems early, prevent serious accidents and show how effective your control measures are.

23 Supervision is an essential part of monitoring safe working. The level of supervision should reflect the level of risk and the abilities of employees carrying out the work. However, even where risks are low there will still need to be some supervision to make sure safety standards are being maintained.

Consulting employees

24 You must consult all your employees, in good time, on health and safety matters. In workplaces where a trade union is recognised, this will be through union health and safety representatives. In non-unionised workplaces, you can consult directly or through other elected representatives.

25 Consultation involves employers not only giving information to employees, but also listening to them and taking account of what they say before making health and safety decisions. Issues employers should consult employees on include:

- risks arising from their work;
- proposals to manage and/or control these risks;
- the best ways of providing information and training.

26 Employers should involve employees or their safety representatives when carrying out and reviewing risk assessments as it is a good way of helping to manage health and safety risk. Employers could ask employees what they think the

hazards are, as they may notice things that are not obvious and may have some good, practical ideas on how to control the risks.

27 HSE's leaflet *Consulting employees on health and safety*² has more information.

Competence

28 As an employer, you need to make sure that all managers, supervisors and employees are competent to do their work properly. There are two main ways of doing this:

- **Make sure new recruits are competent.** Have effective recruitment and placement procedures to make sure all those employed (including managers) have the relevant knowledge and experience to be able to do their jobs safely, or can gain these through training.
- **Make sure existing employees are competent.** Provide information, instruction and training to maintain or improve employees' competence, particularly where changes in staff, equipment or procedures are planned. This should take account of employees' abilities and experience.

29 Look at HSE's competence web pages for more advice:
www.hse.gov.uk/competence.

Contractors

30 When you engage contractors or agency workers, you should establish their competence before they do any work. The same health and safety standards that apply to permanent employees also apply to agency workers and contractors. They are likely to need specific job and familiarisation training, and some supervision and monitoring.

31 The site operator (who has overall control of the site) or main employer will need to give the contractor appropriate health and safety information about, for example:

- the workplace;
- the routes to be used;
- the vehicles and equipment on site;
- risks from the activities on site and the controls in place;
- other people on site, such as other contractors or visiting drivers.

32 The site operator and contractors should agree the safety arrangements before they start work. Contractors should be fully aware of any penalties if they fail to follow safe working practices. Look at HSE's leaflet *Using contractors: A brief guide*³ for more information.

Shared workplaces

33 Where two or more employers (or the self-employed) share a workplace (whether temporarily or permanently), they need to:

- co-operate with the other employers so they can meet their health and safety duties;
- take all reasonable steps to co-ordinate the measures they take to meet their legal duties with those taken by other employers;

- take all reasonable steps to tell the other employers about risks to their employees' health and safety as a result of their work activities.

34 Normally, the site operator or a main employer controls the site and they should take responsibility for co-ordinating health and safety measures by:

- discussion with the smaller employers;
- asking other employers to agree to site-wide arrangements;
- liaising with other employers to help ensure they take responsibility and co-operate.

35 Where employees enter a different workplace (for example, to make a delivery or collect goods), consider that workplace as shared.

36 Vehicles on which employees of more than one company are working are also considered shared workplaces, even if it is only for a brief period (for example, during loading and unloading). Both employers are responsible for the safety of their own employees and those of other companies. Those involved in managing this work should agree, preferably in writing, the safety arrangements before work starts.

Safe site – design

37 Every workplace must be safe for the people and vehicles using it. A well-designed workplace that ensures vehicles and pedestrians are segregated will make transport accidents less likely. If you don't have the competence in-house when considering site design, ask for professional advice.

Traffic routes

38 In the Workplace (Health, Safety and Welfare) Regulations 1992, a 'traffic route' is defined as 'a route for pedestrian traffic, vehicles or both'. In the broader context of the Regulations, it also includes any stairs, staircase, fixed ladder, doorway, gateway, loading bay or ramp.

39 When planning workplace traffic routes, take account of the following requirements from the Regulations:

- They must be suitable for the people and vehicles using them and organised so that they can both move around safely.
- Where vehicles and pedestrians share a traffic route, there must be enough separation between them (segregation).
- Pedestrians or vehicles must be able to use a traffic route without causing danger to the health or safety of people working near it.
- Vehicle routes must be far enough away from doors or gates that pedestrians use, or from pedestrian routes that lead on to them, so the safety of pedestrians is not threatened.
- Every traffic route must have a well-drained surface that is suitable for its purpose and must not be so uneven, potholed, sloped or slippery that it might expose anyone to a risk to their health or safety.
- They must, so far as is reasonably practicable, be kept free from obstructions and anything that may cause anyone to slip, trip or fall.
- They must have appropriate markings and signs where necessary for health or safety reasons.

40 The Approved Code of Practice (ACOP) text accompanying the Regulations states there should be enough traffic routes with enough width and headroom to allow vehicles to circulate freely without having to leave the route. Routes should:

- avoid steep slopes (or ensure they are properly signposted if they are unavoidable);
- avoid sharp or blind bends (or use measures such as mirrors to improve vision if they are unavoidable);
- be made of a suitable material, firm and even, and able to safely bear the loads that will pass over them;
- be maintained to provide good grip for vehicles or people, eg gritted or sanded if slippery, with no obstructions, holes or loose materials;
- give prominent warning to limited headroom, both in advance and at the obstruction itself;
- avoid passing close to:
 - any edge, or anything that is likely to collapse or be left in a dangerous state if hit (such as cast-iron columns or storage racking), unless it is fenced or adequately protected;
 - potentially dangerous items unless they are well protected (eg fuel or chemical tanks or pipes).

41 The law that requires traffic routes to be wide enough for pedestrians and vehicles to circulate freely only applies to routes laid out since 1 January 1993. On traffic routes that existed before that date, where it is not practical to widen the route, consider vehicle passing places, traffic management systems (such as one-way systems), or restrictions on parking.

42 Look at HSE's ACOP and guidance *Workplace health, safety and welfare*⁴ for more information. For traffic routes in construction sites, look at regulation 36 of the Construction (Design and Management) Regulations 2007 – see HSE's ACOP *Managing health and safety in construction*⁵ and HSE's publication *The safe use of vehicles on construction sites*.⁶

'Reasonable adjustments' for disabled people

43 The Equality Act 2010⁷ requires employers to make 'reasonable adjustments' to avoid disabled people being put at a disadvantage compared to non-disabled people in the workplace. This means you may need to make some changes to your building or premises for a disabled person who works for you. You can find more information at <https://www.gov.uk/rights-disabled-person>.

One-way systems

44 One-way systems are designed to limit reversing and prevent conflicting movements caused by 'two-way' traffic flow. They should work clockwise around a site, as this is the direction most drivers will expect, unless there are reasons why this would not be a safer option. They need to be clearly marked out using road markings and signs so that drivers can follow them easily. The advantages of one-way systems are:

- they help pedestrians know which direction vehicles are likely to be coming from;
- routes can be arranged to allow for good visibility around corners and at crossing points;
- they are easy to enforce;
- they are particularly useful where site access roads are narrow and visibility is poor.

Large vehicles

45 Large vehicles, especially articulated and drawbar combinations, often need to perform complicated manoeuvres to turn safely, because the trailer swings out behind the tractor unit. If large goods vehicles are using your site, you need to make routes wide enough for them to manoeuvre safely.

46 For more information about how large vehicles move, look at the Freight Transport Association publication *Designing for deliveries*.⁸

Segregation of pedestrians

47 Segregating pedestrians from vehicles, preferably by making routes entirely separate, is the most effective way of protecting them. Consider making pedestrian traffic routes correspond to the paths people would naturally follow when walking across a site (often known as 'desire lines'). Good examples of complete segregation include footbridges or subways, particularly where traffic volumes are very heavy.

48 Keep pedestrians away from areas where people are working in or with vehicles unless they need to be there. Make sure any visiting pedestrians report to the site office and tell them about site safety policies and procedures before they are allowed into areas where vehicles operate. Where appropriate, pedestrians may need to wear high-visibility clothing.



Figure 1 Barriers to protect pedestrians

49 Effective ways to keep vehicles away from pedestrian areas, and vice versa, include:

- clear markings and signs to set vehicle and pedestrian routes apart;
- raised kerbs to mark vehicle and pedestrian areas;
- suitable protective barriers or guard rails, particularly:
 - at the entrances and exits to buildings;
 - at the corners of buildings;
 - to prevent pedestrians from walking straight onto roads, especially from places where they may not be clearly visible to drivers.

50 Provide separate vehicle and pedestrian doors in buildings where possible. Windows or vision panels in doors can help drivers and pedestrians see whether it is safe for them to approach a door.

Case study – Segregation

An employee was injured by a 360-degree excavator, which was operating in a poorly organised scrapyard.

The employee was removing a part from a vehicle when the reversing excavator, which had been converted for use as a vehicle grab, hit him and the track went over his right leg. The excavator was not fitted with devices to improve visibility from the cab, such as rear-mounted convex mirrors or CCTV, and the driver had not received formal excavator training. The excavator was working within 3 or 4 m of the injured worker on a daily basis and had struck him once before.

After the accident, the firm reorganised the yard and fenced off the area where employees were manually dismantling vehicles. The excavator is now used in a pedestrian-free area.

Pedestrian crossings

51 Where pedestrian and vehicle routes cross, provide appropriate, suitably marked and signposted crossing points for people to use, including dropped kerbs where the walkway is raised from the driving surface.

52 Where necessary, provide barriers or rails to prevent pedestrians from crossing at particularly dangerous points. Barriers and deterrent paving can also be used to guide them to the crossing. Pedestrians, cyclists and drivers should be able to see clearly in all directions at crossing points.

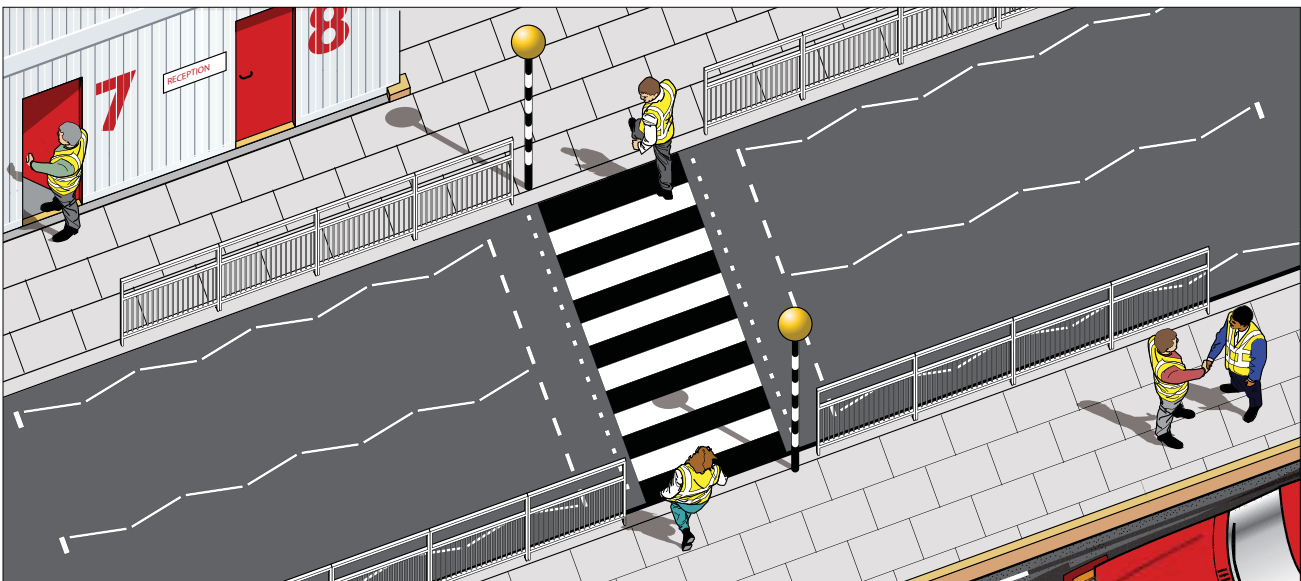


Figure 2 Pedestrian crossing

53 The design of pedestrian crossings should take into account, for example:

- where the crossing is to be located – make sure it provides good visibility and stopping distance;
- traffic flows, both vehicle and pedestrian – consider whether pedestrian crossing lights are needed and how wide the crossing needs to be;
- types of traffic, such as large or heavy vehicles with restricted visibility;
- types of pedestrians, such as employees, visitors or members of the public, and their likely behaviour, eg whether they may be in a hurry to cross;
- relevant highway design standards.

54 Where roads are particularly wide, you may need to consider ‘island’ refuges to allow pedestrians and cyclists to cross the road in stages.

Members of the public

55 Members of the public are unlikely to be familiar with the hazards of a workplace. When they have access to premises the routes they use should, where possible:

- be kept separate from work activities;
- be segregated from vehicle traffic, eg a footway with a raised kerb or a separate path;
- have clear signs to direct visitors to and from car parks with safe access to the area they are visiting;

- be clearly marked using well-understood designs, particularly where pedestrian and vehicle routes cross, eg with zebra crossings or a walking man symbol;
- be as close as possible to where they want to go, for example near the farm or factory shop, toilets, refreshment areas or ticket offices.

56 Consider the needs of the elderly, disabled people and children, for example traffic routes used by people in wheelchairs should be wide enough to allow unimpeded access and ramps should be provided where necessary.

57 If you are in control of retail and wholesale premises used by members of the public, try to provide separate delivery/collection areas. If vehicles have to move through areas used by the public, such as in retail premises, consider scheduling deliveries and collections outside opening hours. Only consider using banksmen as a last resort – also see ‘Banksmen (signallers)’ on pages 20–21.

58 The public should not be allowed in lift-truck operating areas. If a lift truck needs to enter an area when the public has access, such as during normal opening hours in a retail warehouse, there should be a written procedure outlining the precautions (based on your risk assessment), for example putting barriers round the area where the lift truck is operating and giving loudspeaker warnings. See the HSE publication *Warehousing and storage: A guide to health and safety*⁹ for more information.

Case study – Members of the public

An elderly shopper was crushed to death by a lift truck at a DIY store.

The firm claimed that the day of the accident was an isolated incident and control of lift truck movements at the store did not comply with the company’s own guidelines. However, CCTV tapes seized during the investigation showed that lift trucks were used in public areas of the store on a number of occasions during the six months before the accident, and in a manner unsuitable for public areas.

The prosecution was successful and the firm was fined.

Automatic, driverless vehicles

59 On routes used by both pedestrians and automatic (driverless) vehicles, make sure vehicles are not able to trap pedestrians. Provide adequate clearance between the vehicles and pedestrians, and make sure fixtures along the route do not create trapping hazards. The vehicles should be fitted with safeguards to keep the risk of injury low if they hit someone.

Visibility

60 Visibility needs to be good enough to allow drivers to see and avoid hazards. It is related to the speed that vehicles are travelling, and affects the distance they need to avoid hazards by stopping or changing direction safely. It is also affected by, for example, poor light, bad weather and dust.

61 Avoid sharp or blind bends on vehicle routes as far as possible. Where you cannot avoid them, there should be enough visibility at junctions and bends to allow drivers and pedestrians to see each other and any additional hazards. Consider measures such as convex mirrors to help achieve this.

Speed

62 Limiting the speed of vehicles in the workplace is an important part of controlling traffic. The best way to do this is to use fixed traffic-calming measures such as speed humps, narrowed routes (using bollards, raised kerbs or chicanes), and 'rumble' devices (such as rumble strips, rumble areas or jiggle bars). Any measures you use should be signed and clearly visible and, where appropriate, illuminated or reflective.

63 When deciding on the type of traffic-calming measure to use, be aware that they can sometimes increase risks, for example by affecting the stability of some vehicles.

Speed humps and cushions



Figure 3 A lift truck passing through an interrupted speed hump



Figure 4 Example of a warning sign for speed humps

64 Speed humps are a proven way to limit the speed that vehicles move around a site. They are only suitable for routes where vehicles can go over the humps safely. Most industrial lift trucks are not designed to go over them and some emergency vehicles, such as ambulances, need to avoid them. It is often possible to include some type of bypass to allow these vehicles to avoid going over the humps.

65 Warning signs should be clearly visible, and should be far enough from the hump to allow drivers to change their speed safely. The humps themselves should also be clearly marked.

66 Sometimes speed cushions can be used instead of speed humps. They work in a similar way, but do not stretch across the whole road. Instead, they leave some space clear for certain types of vehicle to drive through or straddle the raised areas, for example cyclists or larger emergency vehicles.

Speed limits

67 Speed limits are used widely, but they have to be practical, or drivers will be inclined to break them. To be effective, they should:

- be appropriate for the size and type of vehicle, bearing in mind some vehicles do not have speedometers;
- be based on informed data, by measuring the actual speeds of vehicles across the site;
- take account of the type of load being transported;
- take account of the driving surface and the site layout;
- be appropriately enforced;
- be clearly signed at appropriate intervals.

68 When assessing speed limits, you may need professional advice, depending on the route layout and characteristics of the site.

Signs, signals and markings

69 Signs are necessary to inform drivers and pedestrians about potential hazards and what they need to do. Road signs used to warn or give information to drivers in private workplaces must be the same as those used on public roads, wherever a suitable sign exists. These are set out in the *Highway Code*,¹⁰ the Traffic Signs Regulations and General Directions 2002¹¹ and the *Traffic signs manual*.¹²



Figure 5 Clear signs for arriving drivers

70 Signs should:

- be placed so that people have time to see and understand them and then take action before they reach the hazard;
- be placed where they can be seen, depending on who uses the route. For pedestrians and car drivers their positioning may be similar, but for large goods vehicles they will need to be much higher;
- be clear and easy to understand;
- stand out enough to be noticed;
- be kept clean and well maintained so they are visible at all times;
- be reflective or phosphorescent if they have to be visible in darkness and, where possible, adequately illuminated;
- be regularly reviewed to make sure they are still relevant to the hazard.

71 Traffic lights are useful to control the flow of traffic at busy junctions, at narrow places and at site entrances. Speed sensors and flashing warning signs can help control the speed of traffic. HSE's publication *Safety signs and signals*¹³ provides additional guidance on the Health and Safety (Safety Signs and Signals) Regulations 1996 and more general information on safety signs and signals.

72 Road markings should be used to show, for example, traffic lanes, route edges, priority at junctions, stop lines, no-parking areas and pedestrian crossings. They should also be used to instruct drivers, for example 'SLOW'. White road markings are used to regulate traffic and yellow markings are used to regulate parking. Wherever possible, both should be reflective and those that have faded should be replaced when they are no longer effective.

73 Drivers and pedestrians should be able to expect that the layout, street furniture and markings on site will be similar to those on public roads.

Lighting

74 Every workplace must have suitable and sufficient lighting. All traffic routes, manoeuvring areas and yards should be adequately lit, particularly near junctions, buildings, plant and pedestrian routes. Where vehicles move around when it is dark, ensure the site is adequately lit, without being a nuisance to people in the local area.

75 Avoid sudden changes in lighting levels, such as when leaving a dark warehouse into a bright day, as this can affect a driver's vision and make CCTV systems less effective. *The SLL Code for Lighting*¹⁴ (Society of Light and Lighting (SLL)/Chartered Institution of Building Services Engineers (CIBSE)) provides more guidance on lighting. Free fact files on the CIBSE website may also be helpful.¹⁵

Temporary workplaces and unprepared roadways

76 Temporary workplaces (eg construction sites and forestry operations) and other types of site (eg some farms) often have traffic routes for vehicles and pedestrians that change as work progresses, or 'unprepared' routes such as unsurfaced roads or open ground.

77 Where possible, these routes should meet the same basic safety standards that apply to permanent routes. Temporary traffic routes often have uneven ground, lack of road markings and poor driving surfaces. To reduce the risks when using these routes, you may need to consider:

- the competence of drivers;
- providing extra information and instruction to drivers;
- safe systems of work and traffic management;
- supervising drivers;
- providing temporary, moveable barriers (eg concrete sections bolted together or hollow, plastic barriers filled with water or sand), timber baulks or fencing to mark out routes.

Soft ground

78 Ground that has not been prepared to highway specification (or similar) may be firm enough for smaller, lighter or tracked vehicles, but not for larger, heavier vehicles or plant. To prevent vehicles overturning because of poor ground conditions, the ground should be assessed before use and, where necessary, reinforced. This is particularly important during tipping or lifting operations.

79 If outriggers are used for stability, they often need steel or timber pads under each outrigger, selected or designed for each operating location. Most lift trucks are not designed to operate on soft or uneven ground, so use specialist all-terrain lift trucks where appropriate.

80 See HSE's publication *The safe use of vehicles on construction sites*⁶ for more information.

Slopes

81 Steep gradients can make operating vehicles difficult, especially if the surface is made slippery, for example in poor weather. They can also affect how easy it is to manage wheeled objects such as waste containers, roll cages or pallet handlers. In certain circumstances you may need to provide edge or impact protection.

82 Some vehicles can become particularly unstable on slopes. Examples include:

- most lift trucks;
- raised-tipper lorries;
- raised-body tankers involved in transferring powder or bulk solids;
- vehicles with a trailer containing liquids (such as a bowser or a slurry tanker) without effective baffles.

83 Loading and unloading operations taking place on steep slopes may result in both the load and the vehicle becoming unstable. Also see paragraphs 154–156 in 'Preventing vehicles from overturning'.

Weighbridges

84 Weighbridges should be located so they are simple to access and do not interrupt the traffic flow. On busy sites, consider providing separate weighbridges for incoming and outgoing traffic, to allow the operation of a one-way system. On entering the site, clear signs should indicate where the weighbridge is and what a visiting driver should do. Traffic control measures such as access barriers or traffic lights can help with traffic flow and regulate queuing.

85 Driver-operated weighbridges are available which allow entry using a card reader, keypad or automatic number plate recognition, so that drivers don't have to leave the cab. The design of staffed weighbridges and reception areas should preferably allow drivers to stay in the cab while talking to weighbridge staff and exchanging documentation. If neither of these is possible, and drivers have to leave the cab, the vehicle should be switched off and the ignition keys removed. Barriers or similar should also be provided to prevent other traffic encroaching onto the pedestrian route between the weighbridge door/window and the vehicle.

86 Take measures to prevent vehicles falling over the side of a weighbridge by, for example, marking the edges and providing suitable barriers.

87 Make sure systems are in place to restrict vehicle access to the weighbridge during maintenance and repair work.

Case study – Weighbridge edge protection

A worker died when his vehicle toppled over an unprotected edge.

A weighbridge was set near the entrance of a waste-handling site. It was raised about 30 cm above the level of the surrounding ground, and had no edge protection.

An employee driving a 2.5 tonne counterbalance lift truck followed regular practice and drove across the elevated weighbridge when a trailer blocked the normal site access road. The rear left wheel went over a 22 cm vertical edge and the truck toppled onto its side. The truck was not fitted with a seat belt, and the driver died when his head was struck by part of the lift truck frame.

Risk assessments had identified the potential for overturning – and the lack of a seat belt – but no remedial action had been taken. The firm was prosecuted and fined.

Easy access to fittings and control points

88 Consider locating fittings such as intercom systems or barrier buttons by the driver's position on vehicles so they can be easily operated.

Ventilation

89 Avoid using vehicles that generate potentially harmful exhaust fumes in confined spaces, or in places or buildings where the build-up of fumes could pose a risk to health. Always make sure there is adequate ventilation. HSE's Approved Code of Practice *Safe work in confined spaces*¹⁶ explains what you need to do to comply with the law.

Safe site – activity

Reversing

90 Many deaths and serious injuries involving vehicles at work happen during reversing, with poor visibility being the main cause. There are several measures that can help to reduce the risk of reversing accidents, but removing the need for reversing is the most effective.

91 Adopting a one-way system is one of the best ways to reduce reversing operations (see paragraph 44 for more information). If a one-way system is not possible, consider:

- establishing drive-through loading and unloading zones, and parking areas with entrances and exits on either side;
- providing turning areas to allow vehicles to turn and drive forwards for most of the time, ideally a roundabout or 'banjo' type, although 'hammerhead' or 'stub' arrangements are also suitable.

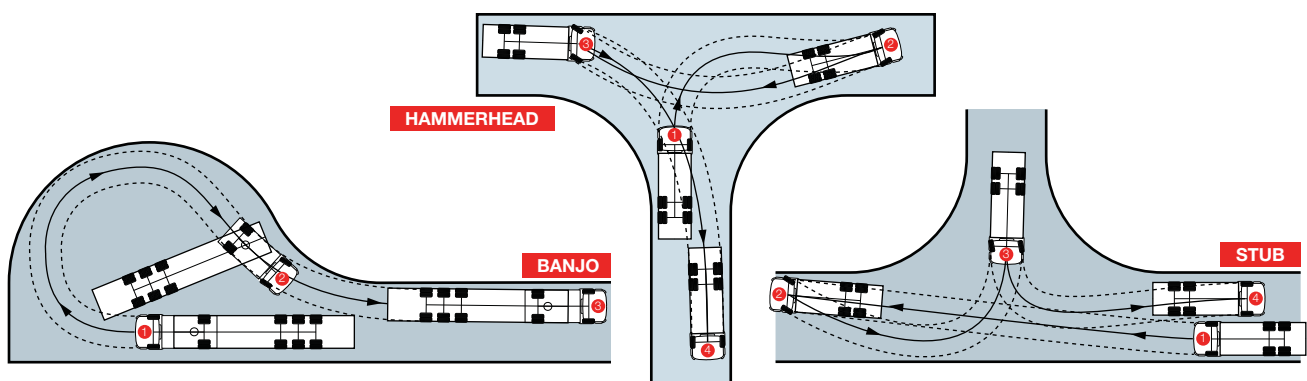


Figure 6 Banjo, hammerhead and stub arrangements

92 If reversing cannot be avoided:

- establish and clearly mark dedicated 'reversing areas' using longitudinal guides or white lines that are clearly signposted for both drivers and pedestrians;
- design or modify existing reversing areas, eg by making them larger, to improve visibility for both drivers and pedestrians;
- exclude non-essential personnel from areas where vehicles are reversing;
- fit fixed mirrors or other visibility aids in the workplace to improve visibility around vehicles;
- consider installing reversing aids on vehicles, such as CCTV and reversing sensors (see paragraphs 224–228 for more information);
- use a trained banksman (signaller), but only when all other options have been exhausted.

Reversing up to structures or edges

93 Where vehicles reverse up to structures or edges (for example on construction and refuse sites), barriers, buffers, bollards and wheel stops can be used to warn drivers where they need to stop. Make sure they are highly visible, sensibly positioned and capable of stopping a vehicle at low speed. Flexible barriers can prevent damage to vehicles. White lines or guide rails on the floor can help the driver position the vehicle accurately.



Figure 7 Concrete wheel stop

Banksmen (signallers)

94 Banksmen should only be used when there is no other way to control reversing risks. Because they often have to stand relatively close to a vehicle when it is reversing, it is very important that they are properly trained and competent. In some industries, banksmen are only used in exceptional circumstances because of the size of vehicles involved.

95 Banksmen should use the standard hand signals used across Europe. These signals may not be enough to cover every situation and the law also allows for specific alternatives to be used if they are more appropriate, including BS 6736: 1986 *Code of practice for hand signalling for use in agricultural operations*.¹⁷ If these signals are still not enough, further signals can be used based on existing signalling practice. Whatever signals are used, it is important that both banksman and driver should agree and understand them before any manoeuvres start.

96 They need to be visible to drivers at all times. Precautions for visibility are especially important in low-light conditions and should include, where appropriate:

- high-visibility equipment, such as bats, batons or flags;
- a high-visibility vest that will distinguish them from other site workers;
- vehicle- or site-fixed visibility aids (such as mirrors, cameras etc).

97 They need to stand in a safe position where they can guide the reversing vehicle and be visible to the driver at all times. If a driver loses sight of a banksman they should stop immediately. In some circumstances, portable radios or similar communication systems can be helpful, although the banksman should still be visible to the driver at all times.

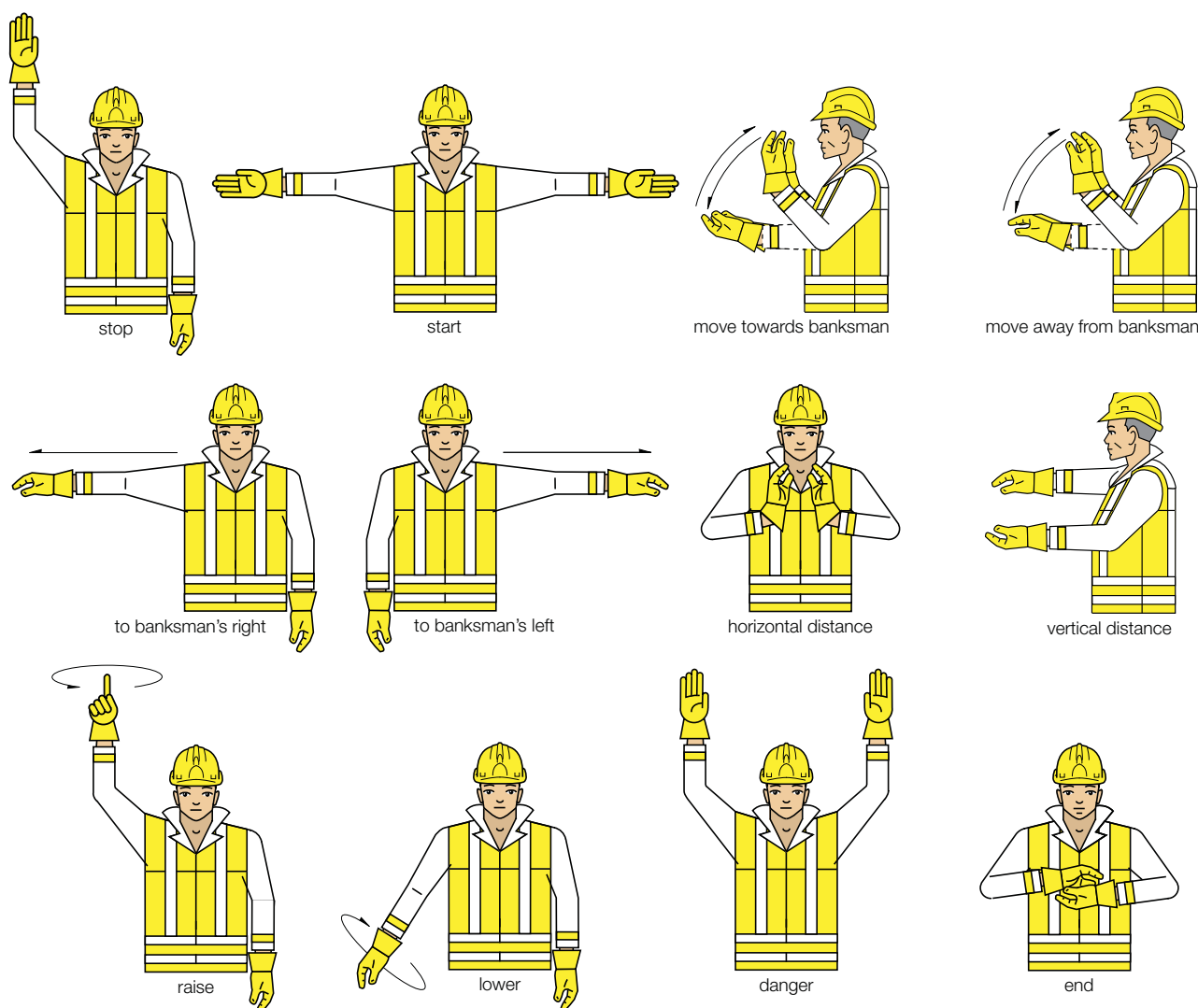


Figure 8 Banksmen signals

Case study – Reversing

A company was fined after a reversing vehicle at its site killed a delivery driver.

The driver was delivering goods when the accident happened. Standing by the side of his lorry after overseeing the removal of its load, he was struck by a reversing lift truck. He died instantly.

The company had failed to carry out a suitable risk assessment for the movement of loads at the site. This would have shown the need for lift trucks to avoid reversing for long distances, and that drivers should be removed from the danger area. They should have installed suitable barriers to prevent pedestrians gaining access to areas where vehicles were working, and established a formal system for supervising site visitors.

It had also become common practice for heavy goods vehicles to reverse onto the site from the public highway, putting pedestrians at further risk of being struck by vehicles.

Since the death, the company has issued health and safety guidelines to all visitors and has improved the supervision of vehicle and pedestrian movements on site.

Parking

Parking areas

98 Wherever possible, provide safe and suitable parking areas, with parking for work-related vehicles separate from that for private cars, motorcycles and bicycles. Clearly signposted and enforced parking areas may be necessary if there is an increased risk of injury from uncontrolled parking.

99 Where possible, drivers leaving parked vehicles should not have to cross potentially hazardous work areas or traffic routes. Physical precautions such as bollards and barriers can help prevent vehicles from crossing into pedestrian walkways.



Figure 9 Pedestrian walkway in car park

100 Parking areas should:

- be clearly signposted;
- not impede traffic routes;
- ensure pedestrians and vehicles are kept apart;
- allow drivers and pedestrians to see clearly;
- be firm, level and well drained;
- be well lit, if possible;
- be as close as possible to where people need to go when they leave their vehicles.

101 Consider providing drive-through parking areas for larger vehicles to eliminate the need for reversing. If this is not possible, then consider reverse parking with the parking bays at an angle to reduce the number of vehicles reversing into the flow of traffic.

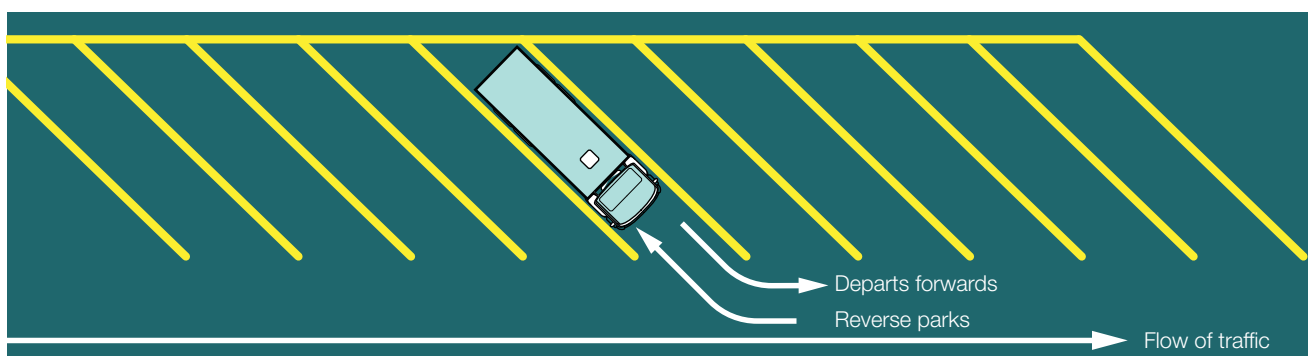


Figure 10 Parking bays angled backwards

102 Bays or lay-bys, where vehicles can be left safely, may be used for parking, as long as they are offset from the flow of traffic and people. They should be firm, level, well lit and clearly marked.

103 If parking is a significant problem, for example as a result of sharing premises with several other companies, then consider a survey of parking demand and availability by professional engineers.

Hardstandings

104 Hardstandings are hard-surfaced areas where vehicles and their trailers can be parked. They should be robust enough to safely support the weight of the vehicle, trailer and load, and they should also be able to withstand the corrosive effect of any spillages, such as fuel, oil and other pollutants. Cement concrete surfaces are preferable to asphalt or bitumen, particularly where vehicles load or unload.

Safe parking

105 Vehicles should be parked on firm and level ground, preferably in a dedicated parking area. No vehicle should be left unattended unless the parking brakes have been firmly applied, the engine has been switched off, the starter key has been removed, and any mounted equipment has been lowered to the ground or secured. Remember the following:

- brakes ON;
- engine OFF;
- key OUT;
- equipment SAFE.

106 Make sure keys are never left in an unattended vehicle and are securely stored when vehicles are parked in workplaces overnight, at weekends or for long periods.

Parking on a slope

107 Although a working surface such as a goods yard may appear level, it will nearly always have a slight incline for drainage. This can cause a vehicle and/or trailer to move if the parking brakes have not been applied. When parking on a slope:

- apply all brakes;
- leave vehicles in gear (if it is safe to do so);
- use wheel chocks or stops where appropriate;
- park vehicles facing up or down the slope, not sideways on. There are some exceptions to this. For example, where operators are working directly in front of the vehicle pointing downhill (such as a farm worker opening a gate), it may be safer to park across the slope to prevent the vehicle from moving if the brakes fail.

108 Drivers should be instructed in the safe use of vehicle and trailer brakes and monitored to make sure they follow those instructions. See the following section on 'Coupling and uncoupling' for more information.

Coupling and uncoupling

109 Most accidents during coupling and uncoupling involve drivers or other people being run over, hit or crushed by moving vehicles or trailers. Drivers are often injured or killed while trying to get back into the cab of a tractor unit to apply the parking brakes.

Coupling and uncoupling areas

110 Hauliers and site operators should make sure that coupling and uncoupling areas are level, firm and well lit. During uncoupling, the trailer will move from being supported by the tractor unit to bearing its own full weight. If ground conditions are poor this can cause it to sink or tip over.

111 Lighting is especially important where coupling or uncoupling happens away from natural daylight as drivers need plenty of light to check that locking pins and safety clips are in place, and cables and hoses have been properly attached. There is also a risk of the driver falling when carrying out coupling or uncoupling operations in poor light. Site operators should provide suitable lighting on site.

112 Vehicle lighting may also be required, especially behind the cab. Hauliers and site operators should also provide wheel-stops and handholds where appropriate.

Parking brakes

113 When coupling or uncoupling hoses, always turn off the engine, apply the parking brakes on both the tractor unit and trailer and, where possible, remove the keys.

114 Never rely on disconnecting the red supply airline ('dropping the red line') as a way of applying the parking brake. Always apply the trailer parking brake using the control button on the trailer. Also see 'Preventing vehicles moving' (paragraphs 133–135).

115 Look at *Safety in docks: Approved Code of Practice and guidance* for advice relating specifically to transport in docks.¹⁸

Access to 'fifth wheel' area



Figure 11 Sliding connector block

116 There should be safe access to the 'fifth wheel' (the area behind the cab, where the trailer connects to the tractor unit), for example steps, a handrail and a suitable platform that provides good grip. This area should be kept clean and clear

to make slipping or tripping less likely. On articulated trailers the Suzie connections can be fitted on a sliding connector block, allowing the driver to make connections from ground level, without having to access the fifth wheel area.

117 It is sometimes not possible to connect hoses after coupling, for example in 'close-coupled' combinations such as temperature-controlled 'reefer' trailers, where the temperature control unit fixed to the front of the trailer means no one can get access to the fifth wheel area. A risk assessment should take account of the risks involved in connecting the hoses before coupling ('split coupling'), and a safe system of work should be established.

118 Look at the Institute of Road Transport Engineers (IRTE) guidance *Coupling or uncoupling and parking of large goods vehicle trailers*¹⁹ for more information on procedures for coupling and uncoupling.

Loading and unloading

119 Loading and unloading are among the most hazardous transport activities in the workplace. People can be hit by objects falling from vehicles, struck by lift trucks, or fall from vehicles.

Deliveries and collections

120 Good communication, co-operation and planning are crucial for safe deliveries and collections because there are usually several people involved, often working for different employers and sometimes speaking different languages. Where possible, agree safety arrangements when the order is placed. These should be confirmed in writing, making it clear who has responsibility for what during loading and unloading. Include details of the load being transported.

121 It is important to remember that drivers are not the only people responsible for the safety of the vehicle and the load. The consignor (the person or company who actually places the load onto the vehicle) and those in control of sites must ensure the loading is carried out safely and that the load will remain in a safe and stable condition until it reaches its destination. Those in control of sites where unloading takes place must also ensure unloading is carried out safely. Hauliers are responsible for ensuring the correct equipment and vehicles are used and their drivers are properly trained and monitored.

122 Drivers are often injured during deliveries and collections. Their employer must ensure they are given adequate safety information beforehand. Simple delivery safety checklists may help them decide whether there are sufficient precautions in place, and to establish criteria for when they can reasonably refuse to continue with a particular delivery or collection. Drivers (including agency staff) should be made aware that they are authorised to refuse or stop loading or unloading for safety reasons. This should be confirmed with the recipient when organising the delivery or collection.

123 When organising deliveries and collections, employers and site operators should also make sure:

- drivers know what to expect when they arrive at a site, for example any restrictions on vehicle size or type, or when goods should be delivered or collected;
- there is a safe system of work for deliveries and collections;
- there is a safe place for drivers to wait during loading and unloading;

- suitable equipment is available to allow safe loading and unloading, for example for drivers delivering at retail outlets;
- there is enough time allowed for drivers to check loads are secure and sheeted properly;
- instructions (in writing) are provided for all those involved.

124 On large sites, consider scheduling collections and deliveries to avoid the start and end of shifts so that large numbers of pedestrians and passenger cars do not conflict with HGV traffic. Also, consider avoiding the times when buildings near your site may be busy, eg the start and end of a school day. For more information on deliveries and collections, look at www.hse.gov.uk/workplacetransport/information/cooperation.htm.

Visiting drivers

125 Visiting drivers should report to the site operator for any relevant instructions such as the workplace layout, which route to follow, and where to park, load and unload. They may not have visited the site before and may not be fluent in English so consider, for example, providing a plan of the workplace at the entrance with clear and concise instructions in several languages, possibly including pictures.

126 It is important for site operators to co-operate with the employers of visiting drivers, to co-ordinate the measures required to help them both meet their health and safety responsibilities.



Figure 12 Example of a sign for visiting drivers

Case study – Deliveries

A site employee suffered severe injuries when he was trapped against a doorframe by a lift truck, driven by an untrained operator.

When a delivery arrived earlier than expected, there wasn't a trained lift truck operator available on site. The delivery driver decided to operate the site lift truck himself to unload. He reversed into pallets, over-corrected and reversed into the site employee.

The site operator should have made sure that only authorised people could use the lift truck. The site operator and the driver's employer should have liaised and agreed procedures for unloading deliveries, including fixing a time for vehicles to arrive with deliveries. The driver should not have tried to operate a site vehicle without authorisation.

Loading and unloading areas

127 When deliveries and collections are made, loading and unloading areas should:

- be in designated places, clear of passing traffic, pedestrians and other people who are not involved in loading or unloading;
- be clear of overhead power cables or pipework so there is no chance of fouling them, or of electricity jumping to 'earth' (arcing) through machinery, the load or people;
- be on firm, level ground, free from potholes and debris;
- have a safe area for drivers to wait that allows them to rest between driving shifts, especially if they may be waiting for several hours, with easy and safe access to toilet, washing and refreshment facilities and shelter in case of bad weather.

128 Although everyone involved in loading a vehicle is responsible for the vehicle being loaded safely, drivers need to make sure their vehicle has been properly loaded, because they drive on public roads. Where drivers need to observe the loading, this should be from a clearly marked, safe position, for example away from moving vehicles, or places where loads could fall.

Loading bays

129 Loading bays are dedicated areas where goods can be transferred from vehicles to a building, such as a distribution centre, and vice versa. They should have at least one exit point from the lower level. Wide loading bays should have at least two exit points, one at each end. Alternatively, a refuge should be provided which can be used to avoid being struck or crushed by a vehicle.



Figure 13 Loading bays

130 The edges of loading bays need to be clearly marked. Some platforms or bays in loading areas may need to be fenced, for example by secure guard rails, to prevent people falling. If fencing is not feasible, other safeguards may be needed.

Dock levellers

131 There is often a difference in height between the loading bay and the vehicle load platform. Choosing the most appropriate type of vehicle will help to reduce this gap.

132 'Dock levellers' are adjustable ramps that can cover this height difference. They should not be extended to a steep slope either

downwards or upwards, as this can mean anything crossing the surface is difficult to control. Anyone using a dock leveller with a hinged lip to connect the ramp to the vehicle load platform should be competent to do this safely as there is a trapping hazard whenever the lip unfolds or folds. See the HSE publication *Warehousing and storage: A guide to health and safety*⁹ for more information on dock levellers.



Figure 14 Dock leveller

Preventing vehicles moving

133 Vehicles should be prevented from moving while they are being loaded or unloaded. This can reduce:

- 'driveaway' incidents, when the driver of a vehicle being loaded drives off from the loading bay unexpectedly. These can have serious consequences, especially if lift trucks are involved;
- 'creep' incidents, when gaps are created between the loading bay and the vehicle, caused by equipment such as lift trucks moving between the loading bay and the vehicle.

134 There are a number of ways to prevent vehicles from moving during loading and unloading at loading bays including:

- vehicle or trailer restraints, such as wheel chocks;
- traffic lights, barriers or other 'stop'-type signals;
- various systems for controlling access to vehicle keys or the cab;
- safe systems of work to make sure the driver knows when it is safe to leave;
- fitting four-wheel braking systems or other effective methods to make sure vehicles cannot move;
- alarm systems that go off if the driver tries to leave the vehicle cab without applying the handbrake.

135 The Institution of Occupational Safety and Health (IOSH) and Freight Transport Association (FTA) joint publication *Loading dock safety guide*²⁰ has more information.

Load safety

Suitable vehicles for the load

136 The vehicle transporting the load should be able to take the full weight of everything it is required to carry, including any loading or unloading equipment, such as a lift truck.

137 No vehicle should ever be loaded beyond its 'rated capacity' (the manufacturer should provide this information) or its legal limit of maximum permitted axle and gross weight limits if it is to be used on public roads. Overloaded vehicles can become unstable, difficult to steer, and have less efficient braking.

138 Where a part of the load is to be picked up or removed in the course of a journey, the effect on gross weight, individual axle weights and on the securing and stability of the load must be taken into account. Although removal of part of the load will reduce the gross vehicle weight, the change in weight distribution may cause individual axles to become overloaded (often referred to as the diminishing load effect).

139 It is important to remember that the weight of the load itself will not be enough to prevent it moving – even heavy loads can move during transport. Friction alone cannot be relied on to keep the load in place.

Anchor points

140 When loads are secured to a vehicle, the places where the load straps are attached are known as anchor points. They should:

- be designed to distribute the forces they receive into the main chassis frame of the vehicle;
- if they have moving parts, move as little as possible to prevent lashings losing tension in transit;
- be compatible with the securing equipment to be used. Attachments should meet the relevant British Standards (for example, eyebolts to BS EN ISO 3266²¹);
- be firmly attached either directly to the chassis or to a metal crosspiece or outrigger (those secured only to wooden members are unlikely to be strong enough).

Load-securing equipment

141 When using load-securing equipment, take account of the following:

- Avoid using sheeting hooks to secure loads as they are only designed to secure a tarpaulin over the load for weather protection.
- Lashings (such as webbing, chains, cables or clamps) should be in serviceable condition and be checked for damage at regular intervals to ensure their tension has not been lost. Use sleeves and/or corner protectors to prevent damage to both the load and the lashing or sheet if it passes over a sharp edge or corner.
- Ropes and buckle straps suspended from a roof rail and/or the curtains of a standard curtain-sided vehicle are generally not suitable for securing a load.

Curtain-sided vehicles

142 A curtain is a thin, flexible sheet, and even when it is reinforced it can usually only resist a moving load by bulging outwards, which can make the vehicle unstable when it is moving. Goods carried in curtain-sided vehicles not constructed to at least BS EN 12642²² 'XL' standard or equivalent should therefore be secured as if they were being carried on an open flatbed vehicle.

143 'XL' trailers are reinforced trailers built to the BS EN 12642 'XL' standard and tested for body strength. They should come with a test certificate explaining the conditions for using them and there should be stickers on the trailer itself to verify its status.

Multi-deck vehicles

144 Multi-deck vehicles are increasingly used because they can transport more goods than normal box or curtain-sided vehicles. There are additional risks with these vehicles, so ensure:

- vehicles are loaded so most of the weight of the load is carried on the lower deck, as a top-heavy load could make the vehicle unstable and lead to rollover;
- only light pallets (weighing less than 400 kg) are placed on the upper deck, with an inner curtain (or equivalent) to retain them;
- heavier pallets and stacked, light pallets are on the lower deck, secured as they would be on a single-deck vehicle.

Pallets

145 When loads are placed on pallets, the driver or consignor will need to check that:

- the pallets are serviceable and of the correct rating;
- the load is shrink-wrapped or properly secured to the pallets in another way;
- the pallets are securely attached to the vehicle, for example by webbing lashings.

146 HSE's publications *Pallet safety*²³ and *Warehousing and storage*⁹ provide more information.

Packing

147 Pack individual parts of a load closely together to prevent them moving, but if this is not possible, use suitable packing (known as dunnage) to fill any gaps, for example timber, folded cardboard, hardboard, high-density foam or air bags. Dunnage should take up as much of the empty space as possible.

Loading vehicles safely

148 Anyone responsible for loading should be given clear instructions and training on how to distribute loads safely on the vehicle so it is safe to drive. Follow these principles where possible:

- Spread loads as evenly as possible during loading, moving and unloading as unbalanced loads can make the vehicle or trailer unstable, or overload individual axles.
- Place the load as close as possible to the bulkhead or headboard. Fill any gap with appropriate dunnage where this is not possible. However, avoid loading drawbar trailers too far forwards – this can lead to a snaking effect as the combination moves.
- Avoid loading to the back of the trailer, because this can cause the trailer to tip backwards (especially for single-axle trailers), reducing the vehicle's grip on the road surface.
- Arrange loads close to the middle of the trailer and slightly forward of it to place enough downward force on the tow bar to keep the trailer coupled, but not putting too much pressure on the tow vehicle suspension or hitch.
- Balance loads across the axle (or axles) of a drawbar trailer so that coupling or uncoupling can be managed easily and safely, and the trailer remains stable.
- Load in a way that will allow for efficient unloading (for example in reverse delivery order) and reduce double handling.

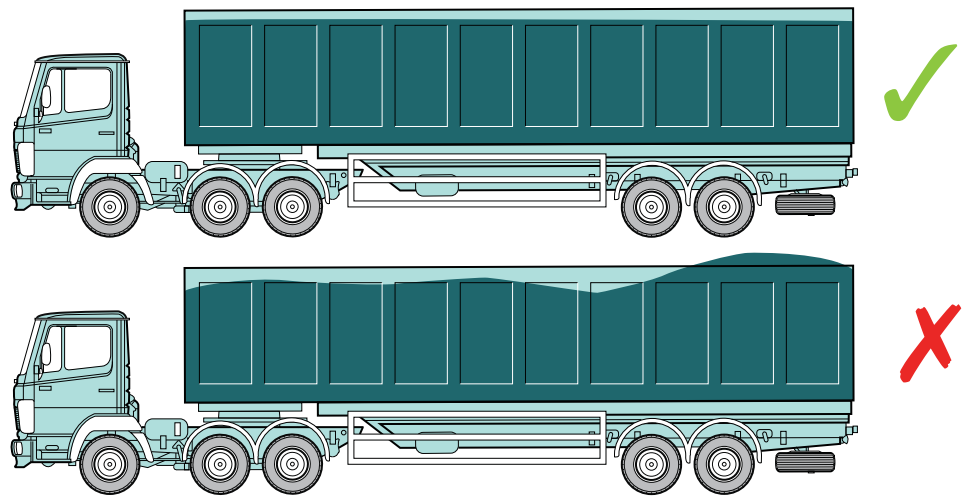


Figure 15 Loads spread evenly across vehicle

Multi-site deliveries

149 Delivering to more than one site is more complicated than delivering to just one site because:

- it increases the number of times people have to rearrange the load between deliveries;
- it increases the number of times tasks have to be performed, for example repeatedly sheeting and unsheeting a load;
- each site will have a different layout and different site rules.

150 Vehicles are often loaded in drop order. As this can have an impact on unloading after the first drop, consider:

- who will unload the vehicle at each drop;
- whether the load needs to be rearranged so the vehicle axles are not overloaded, and who will do this;
- how the diminishing load will be secured, and who will do this;
- the fall-prevention measures required for those who have to repeatedly climb onto to the load bed of a flatbed vehicle, often with no controls (like gantries) at the sites they visit. For more information on how to prevent falls, look at the 'Work at height on vehicles' section (paragraphs 172–195).

Shifted loads

151 Loads that have shifted while being transported can fall from a vehicle. Every driver needs to know how to deal with a load that has moved into an unsafe position. If the load appears to have shifted:

- assess the safety, stability and security of the load before any restraints are removed;
- quarantine the vehicle in a safe area, away from other work, until a competent person has decided on a safe system of work for unloading (a competent person is someone with the necessary skills, knowledge and experience to do the work safely);
- do not open a bulging curtain on a curtain-sider as the load could fall out. Access the load compartment using another route, such as the back door or the curtain on the other side of the vehicle;
- ask for help from the receiving employer or site operator if necessary.

152 The Department for Transport Code of Practice *Safety of loads on vehicles*²⁴ gives detailed advice about securing different types of loads to be transported on public roads. There are also two books produced by the Health and Safety Laboratory: *Transport safety: An operator's guide to safe loading and transport*²⁵ and *Load safe, road safe: A professional driver's guide to safe loading and transport*.²⁶

153 HSE's load safety website also has some useful information:
www.hse.gov.uk/workplacetransport/loadsafty.

Preventing vehicles from overturning

154 Nearly a fifth of all workplace transport deaths are caused by vehicles overturning. Lift trucks, tractors, compact dumpers, tipper lorries, forestry and all-terrain vehicles, multi-deck vehicles and cranes are all more likely to overturn. Ways of making overturns less likely are to:

- plan out suitable routes, avoiding slopes that are too steep, and uneven or slippery surfaces, kerbs or sharp turns;
- maintain traffic routes;
- erect barriers, walls, banks and signs to help drivers avoid unsuitable terrain or hazards such as pits or trenches;
- consider speed restrictions and enforce them where appropriate;
- load evenly according to the loading capacity of the vehicle;
- use vehicles suitable for the task;
- transport loads on lift trucks with loads carried as close to the ground as practicable;
- make sure vehicles are well maintained (also see 'Maintenance and repair', paragraphs 229–232);
- only allow properly trained operators to drive vehicles;
- keep surfaces well-repaired, free of obstructions (such as cables) and clear of debris.

Driving on slopes

155 To help avoid overturns when driving on a slope, drivers should do the following:

- Check the manufacturer's instructions for stability limits and other recommendations for use.
- If driving across a slope cannot be avoided, try to drive forwards up the slope.
- Never turn across a slope while already on it.
- If driving down a slope cannot be avoided, drive down the shallowest part of the slope. It is usually better to drive forward down the slope rather than diagonally, to maintain the stability of the vehicle.
- Never drive a lift truck diagonally down a slope.
- Always drive loaded lift trucks up or down slopes with the forks facing uphill. Without a load, ensure the forks face downhill when driving up or down slopes;
- Keep speed to a minimum on slopes.
- Many vehicles are more stable going uphill than downhill. Being safe to drive up a slope does not mean it will be safe to drive down it.

Driver protection and restraints

156 The severity of a driver injury as a result of a vehicle overturn will be significantly reduced if the vehicle is fitted with driver protection measures and the driver uses them and stays in the cab or seat. See the 'Safe vehicle' section for information on driver protection and restraints (paragraphs 215–221).

Tipping

157 Many tipping vehicles (including rigid-body lorries, tipping trailers and tankers) overturn each year. Consider using vehicles that avoid the need for tipping, for example those with 'walking floor' load bodies and single-door containers with side-release locking mechanisms.

158 Tipping vehicle overturns can be caused by:

- poorly maintained tipping vehicles;
- poorly trained operators;
- imbalanced loads or loads becoming stuck in the tipping body ('freezing'), making vehicles unstable;
- loads shifting around and settling while being transported;
- uneven tipping surfaces putting a vehicle off balance, or unsuitable ground;
- vehicles reversing too far;
- turning with a raised body;
- striking overhead obstructions;
- high winds.

Planning

159 When tipping is being organised, it is important that the haulier and the person or organisation receiving the load exchange written information, including details of the load, safe tipping procedure, characteristics of the site (for example uneven ground and overhead cables) and where the load should be tipped. They should also agree their responsibilities and make those who will actually do the work aware of this information.

160 Drivers should be able to refuse to begin tipping if they are not satisfied that it would be safe, with the confidence that their decision will be supported by their employer.

Tipping sites

161 Tipping should take place in well-lit areas on ground that is level and stable and clear of overhead hazards such as power lines and pipework. There should be sufficient clearance between the top of the tipped trailer and any obstacle overhead. Also see the 'Overhead power lines' section (paragraphs 170–171).

162 At sites where level and stable ground conditions cannot always be guaranteed (such as waste disposal sites), make sure tipping faces are suitable and safe, for example well compacted with no steep side slopes.

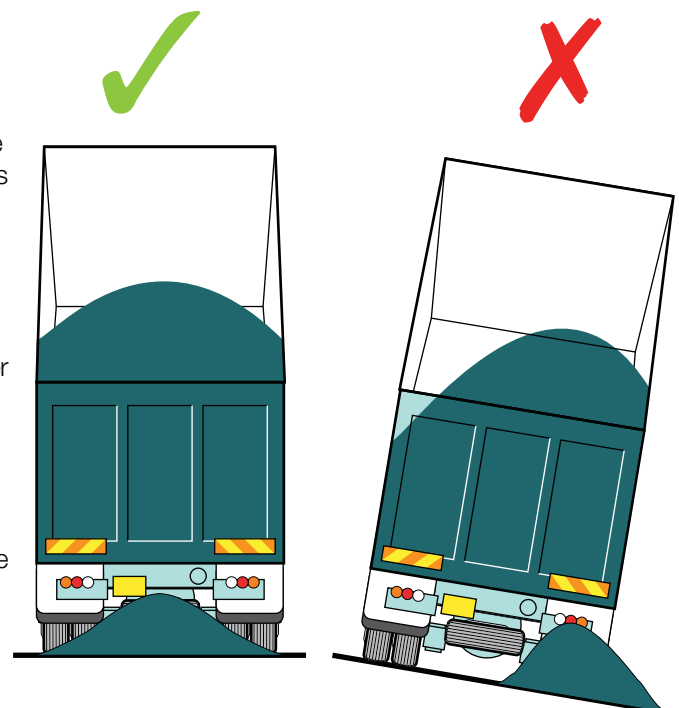


Figure 16 Vehicles should be parked on level ground

163 Reduce the need to reverse as much as possible and use suitably sized wheel stops to help position vehicles correctly. If other machinery (eg an excavator) is handling the tipped load, make sure the tipper driver is not exposed to risks from that machinery or load.

Before tipping

164 Before tipping starts, the driver should check that the load is distributed evenly across the vehicle. This is particularly important where:

- the load might have slipped sideways or too far forwards, as this may overload the tipping gear;
- the load has shifted sideways or backwards, which could make the vehicle topple over;
- there is a risk of the load ‘freezing’ down one side as a result of movement or settling, which could cause an imbalance.

165 Make sure only those who need to be there are in the tipping area.

Unloading

166 When tipping, take account of the following:

- If the vehicle has not been properly prepared, discharging loads while tipping can damage parts such as hatches or tailgates.
- Make sure the tractor unit and trailer of articulated vehicles are aligned.
- Make sure there is enough space for a vehicle to manoeuvre.
- If loads are tipped too quickly a vacuum can be created behind the load, damaging both the sheeting and the vehicle. Loosen sheets enough to make sure a vacuum does not form.
- If a load is too high for the bar across the discharge area, it can stick or break the bar.
- Open the tailgate before tipping and remove it if necessary. If a load strikes the tailgate it could break it, or force the tipping body to break away from the tipping ram and be thrown backwards.
- Secure rear doors of the ‘barn door’ type safely in the open position before tipping as they can move uncontrollably in the wind.
- For grain or other similar deliveries, where a ‘grain hatch’ allows the driver to release a certain amount of the load before opening the tailgate, open the hatch and allow the flow to stop completely before continuing to open the tailgate. Some dusts, such as malt and grain dust, are hazardous to health so make sure precautions are in place.
- Static electricity can be created when a load is released through a sleeve, pipe, chute or nozzle, increasing the risk of a fire, electrocution, or explosion for some materials (such as powders or refined oil products). To avoid this, use suitable equipment, such as earthing straps. Never use parts of the delivery equipment as an improvised earthing route.

167 Some tipper vehicles have partitioned bodies to keep sections of the load separate. If a vehicle with partitioning doors has a load which takes up more than one compartment, always use the doors and lock them to control the weight in accordance with the design. If this is not done, the rear doors can spring open under the pressure of the load. Never release partitions while the body is being tipped.

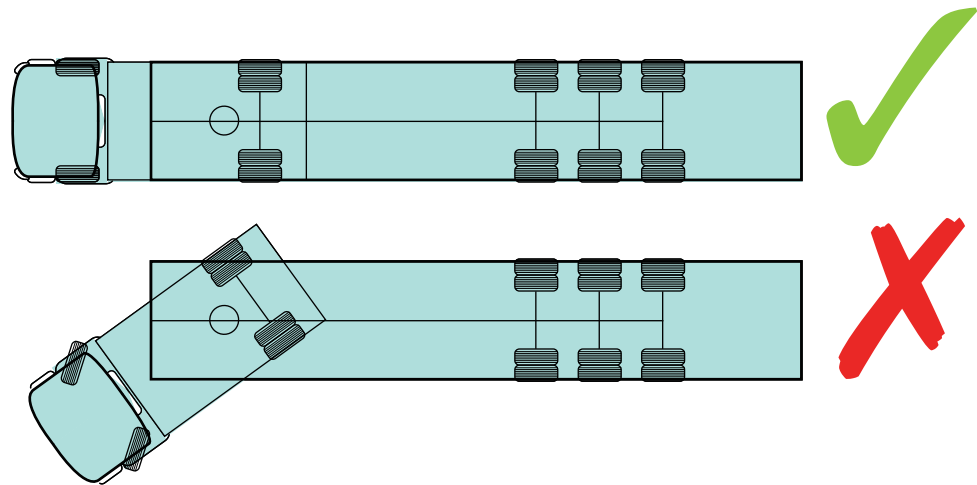


Figure 17 Articulated vehicles should be parked straight

168 Drivers should:

- never use the 'power take-off' (PTO), which shifts power to the tipping pump if the vehicle is in gear;
- not leave the control position when raising or lowering the body and not apply straps to hold controls in position;
- be able to tell when the body is fully tipped and stop the tipping pump as soon as possible before releasing the tipping gear;
- drive a few metres forward to make sure the load is clear, after checking that the load is at the bottom of the tipped body. If they have to leave the cab to carry out this check, they should fully apply the brakes, turn off the engine and (if possible) remove the keys;
- never stand or walk immediately behind the vehicle when the body is raised during tipping;
- never go beneath a tipped trailer unless it has been securely propped with a suitable body prop;
- never jump out of a lorry that is falling over.

Freeing stuck loads

169 When the load becomes stuck while tipping, create a safe zone around the vehicle in case a stuck load suddenly moves. Never:

- try to dislodge the load without lowering the body first;
- drive the vehicle and stop it suddenly ('jogging');
- enter the body of a tipper lorry while it is raised.

Case study – Tipping

A lorry driver suffered a broken leg when scrap steel fell from the trailer of his vehicle.

Some scrap steel had stuck in the vehicle trailer after tipping. The driver re-tipped the trailer and then, without lowering it, walked round behind it to check that the scrap was discharged. Some scrap dislodged and fell onto him.

When he realised that some scrap had stuck in the trailer, the driver should have lowered the trailer body and freed the remaining load before re-tipping.

Overhead power lines

170 The most effective way to prevent vehicles coming into contact with overhead lines is by not carrying out work where there is a risk of contact with, or close approach to, the wires. The law requires that work may be carried out in close proximity to live overhead lines only when there is no alternative and only when the risks are acceptable and can be properly controlled. See HSE publications *Avoiding danger from overhead power lines*²⁷ and *Working safely near overhead power lines*²⁸ for more information.

171 If a vehicle makes contact with an overhead power line and the situation cannot be made safe immediately, drivers should:

- leave the vehicle by jumping as far clear as possible;
- **never** make contact with the ground and the vehicle (or anything touching the vehicle) at the same time as this could complete an electrical circuit and may cause serious injury or death;
- immediately make sure no one else comes into contact with the vehicle, or anything touching it, while it is still touching the power line and make sure the surrounding area is cordoned off;
- contact the local electricity supplier to arrange for the power supply to be cut off. If you don't know the electricity supplier's number, call 999.

Work at height on vehicles

172 Falls from vehicles are very common and account for around a third of all workplace transport injuries, many while loading and unloading. They are often caused by:

- slipping while walking on loads;
- tripping on ropes or torn sheets, causing overbalancing;
- wearing inappropriate footwear;
- poor working surfaces made worse by bad weather;
- poor means of access onto and off the vehicle;
- a lack of awareness and training.

173 Employers must take suitable and effective measures to prevent anyone from falling a distance that is likely to result in injury. This includes getting on and off a vehicle trailer or climbing into and out of a vehicle cab. Before working at height, work through these simple steps:

- Avoid work at height where it is reasonably practicable to do so.
- Where work at height cannot be avoided, prevent falls using either an existing place of work that is already safe or the right type of equipment.
- Minimise the distance and consequences of a fall by using the right type of equipment where the risk cannot be eliminated.

174 Do as much as you can from the ground, for example by using gauges and controls that are accessible from the ground.

175 If work at height cannot be avoided, collective control measures should always take priority over personal control measures. Collective measures protect everyone who is at risk (ie more than one person at any one time), for example gantries or platforms fitted with guard rails, and they usually require no action by the user to work effectively.

176 Personal control measures rely upon personal protective equipment (PPE) and only protect the individual, for example a personal fall-protection system. They usually require the user to do something for them to work effectively, such as putting on a safety harness correctly and connecting it via an energy-absorbing lanyard onto a suitable anchor point.

Platforms and gantries

177 Where vehicles have their own access system and working platform, such as on tankers and tipper lorries, these may be used in preference to site-based systems. However, the working platform should be suitable for the work being carried out and the edge protection to the working platform should be suitable and sufficient. Edge protection would typically include a rigid upper and intermediate guard rail which incorporates a self-closing gate. Some vehicle-based systems, such as those found on many tankers, only have one side rail, so permanent site facilities may offer increased protection. Operators of vehicles which have their own access system and working platform should ensure:

- the platform and access area are adequately maintained, kept clean and free of debris;
- employees have had suitable training, for example to erect collapsible guardrails on platforms;
- they are only used by authorised personnel.

178 Most site-based platforms are simple drive-through or drive-past structures. They should be designed so that drivers are able to pull up closely alongside the platform to prevent falls between the vehicle and the edge of the platform. Most platforms are a fixed height and width, so cannot be adapted to accommodate vehicles of different sizes.

179 Gantries can be used where many different-sized vehicles are expected and normally consist of a platform with an overhead beam that extends over the vehicle. A personal fall-protection system is attached to the beam. They provide greater flexibility in terms of vehicle size, but rely on the user being trained, and monitoring to make sure they are used properly.

180 Platforms and gantries should have a safe way for people to get on and off them. Stairs are preferable to ladders on site-based platforms.

Personal fall-protection systems

181 These systems are likely to be either ‘work restraint’ (which will prevent a person approaching an area from which they can fall) or ‘fall arrest’ (which does not prevent falls, but minimises the consequences of a fall). Select suitable work-restraint systems ahead of fall-arrest systems.

182 Any decisions about using fall-protection systems should be made following a risk assessment and their use should be properly supervised and managed. There are a number of elements to these systems, typically an anchor point, a lanyard and a harness, which should all be compatible with each other. The equipment should be inspected regularly (see HSE’s publication *Inspecting fall-arrest equipment made from webbing or rope*²⁹).

183 You should train workers and instruct them in how to use the work equipment properly. They should have received appropriate practical and theory training from a competent person (the supplier of the system or in-house trainers who have been trained and assessed by the system supplier) before they use it.

184 If you are using a fall-arrest system, you should have a rescue plan in place in case you need to retrieve a worker who has fallen (www.hse.gov.uk/falls/harness.htm).

Getting on and off vehicles

185 People climbing onto and off vehicles, trailers or other structures should use a well-constructed ladder or the vehicle's steps and maintain at least three points of contact (with their hands and feet) at all times. Never use parts of the vehicle which are not designed as hand or footholds (such as mudguards, bumpers, tracks or hooks).

186 Never jump down from a vehicle, as this is much more likely to lead to injury. The exception to this is jumping clear of vehicles when you have contacted an overhead power cable where there is a risk of electric shock if you climb down (also see 'Overhead power lines' – paragraphs 170–171).



Figure 18 Access to vehicles – steps and handrails

187 Where possible, use steps in preference to ladders but both should:

- be level and comfortable to use, with sufficient tread;
- have the same features as those on site-based ladders or stairs;
- be well built, properly maintained and securely fixed;
- have a slip-resistant surface;
- not allow material such as mud, grease or oil to build up (for example, use grating to allow mud etc to pass through a step);
- have the first rung or step positioned so that it can be easily reached, ideally approximately 40 cm from the ground, and no more than 70 cm.

188 Select vehicles which incorporate proper handrails or handholds. Handrails are preferable to individual handholds as they can be used without having to let go of the rail.

189 Where possible, walkways should be made of slip-resistant grating or another slip-resistant material. Walkways, steps, ladders and handrails should be away from wheels if possible, to prevent thrown mud making them slippery.

Walking on vehicles

190 If you have to stand on a load or on a vehicle, there is a risk of a fall, so:

- always make sure there are suitable measures in place to prevent a fall;
- do not walk or lean backwards, especially near the back or open sides of a vehicle (for example during sheeting);
- never stand on a load once it is attached to lifting equipment (for example a crane or a lift truck).

Case study – Falls

A joiner suffered severe head injuries when he fell from the top of a stack of timber on the back of a flatbed lorry.

The joiner was helping to unload the delivery when he climbed on top of a timber stack. While edging along the stack, he lost his footing and fell. An unloading bay with a concrete platform was available to provide safe access for unloading vehicles, but was not used.

The joiner should have received training and instruction on how to unload safely, using the unloading bay. Supervision should have ensured that he followed those instructions. Because instruction was not provided, the joiner should have waited in a safe area until unloading had finished. The need for people to go onto the load area of the vehicle should be eliminated where possible.

Work at height using lift trucks

191 Primarily, lift trucks are intended for lifting materials and not people. People should never be lifted on the forks or on a pallet, or similar, balanced on the forks of a lift truck because they can easily fall off. In certain circumstances where the work has been planned, lift trucks can be used with integrated working platforms to allow people to work at height.

192 Integrated working platforms are attachments with controls that are linked to and isolate the truck controls so that only the person in the platform can control the movement of the lift truck and the platform.



Figure 19 Integrated working platform

193 Non-integrated working platforms are attachments with no controls in the platform, so a person in the platform cannot control the height of the platform or move the lift truck. All truck and platform movements are controlled by the truck operator. Restrictions apply to non-integrated platforms.

194 Before using a working platform on a lift truck, make sure you are familiar with the requirements of HSE's guidance note *Working platforms (non-integrated) on forklift trucks*.³⁰

195 Look at HSE's website (www.hse.gov.uk/work-at-height) for more information on falls from height.

Trimming, sheeting and netting

Trimming

196 Some loads will need trimming to make sure they are properly balanced before being transported, sheeted or netted. Trimming is common where loading using a bucket or hopper has left a load unevenly spread.

197 Avoid walking on loads while trimming. As well as the risks of falling from height, they are often uneven or unstable. They may appear to be solid even though there are gaps or 'voids' under the surface (common with aggregate loads). Use the working platform of a vehicle or a site-based working platform instead.

Covering loads

198 There are a number of reasons to cover a load, including:

- keeping materials hot, such as bitumen or asphalt;
- keeping materials dry, such as quicklime;
- to protect the environment and comply with the Environmental Protection Act 1990;³¹
- to prevent loss of load during transit and comply with road traffic legislation;^{32, 33}
- protection from the weather.

199 Sheeting and netting can involve risks from working at height and manual handling. To reduce these risks, consider other ways of covering the load, such as protecting each unit separately, using pre-packed loads, or using alternative vehicles such as curtain-siders or closed containers that do not require sheeting.

200 When covering a load, consider, in order of preference:

- automated or mechanical sheeting systems which do not require people to go up onto the vehicle;
- manual sheeting systems which do not require people to go up onto the vehicle;
- work platforms to provide safe access to carry out sheeting from the platform without having to access the load;
- a gantry with a work-restraint system to prevent a fall.

Automated sheeting

201 Where possible, use automated sheeting systems as they allow the driver/operator to sheet and unsheet the load from ground level at any site. They remove the risks of falling from height and manual handling injury and help to reduce vehicle turnaround times. They are generally electrically, pneumatically or hydraulically powered, purpose-built assemblies attached to the vehicle body, which can be adapted to fit most vehicle types.

202 Drivers using these systems should know what to do if they fail to operate. They should not attempt to repair the fault unless they have appropriate access equipment and are competent to do the work.

Other automatic systems

203 Some sheeting systems are partly automated and require some effort from the driver to move the sheet. There are manual handling risks associated with these systems.

204 Some use arches over the front and back ends of the trailer, allowing the operator to pull the sheet across the load from the side, and others use crank handles to move the sheet from the ground, or retracting rollers that can be either spring-loaded or remote-controlled.



Figure 20 Front-to-rear sheeting system

Mechanical sheeting

205 Mechanical systems involve more manual handling than automated systems and generally spread a traditional sheet across the load, from end to end or from side to side. Here are some examples:

- A sheet on a roller, mounted on a mast or a raising air tower behind the cab, is dragged out over the load by mechanised arms on the trailer, or sometimes just by being pulled or guided by a rope while the sheet is unwound using remote control. Take extra care when using these systems in windy conditions.
- A sheet tensioned by wires on pulleys runs along the top of the vehicle sides covering or uncovering the load. This can be effective but can be hindered by heaped loads and the gathered sheet can take up a lot of space. Sometimes the sheet does not make a complete seal over the load and can flap when not in use, putting a strain on the equipment.
- A sheet on a framework is manually cranked from the side of the vehicle to overlap in the centre, or to lift the framework up and over the load from front to rear.

Manual sheeting systems

206 Some systems involve the driver/operator moving the sheet manually. Where possible, this should be done from the ground.

Nets

207 Nets are easier to handle than sheets and can often be thrown over the load from the ground. If you use nets:

- never use them to secure a load beyond their maximum rated capacity;
- make sure they are properly tightened, according to the manufacturer's instructions;
- the mesh size needs to be less than the smallest item the net is expected to hold (although this will not always apply to nets used over loose bulk loads).

Platforms and gantries for manual sheeting

208 If manual sheeting cannot be carried out from the ground, then first consider using a working platform with adequate edge protection, eg guard rails on all sides, to prevent people having to walk on the vehicle or the load. If this is not possible, then use a gantry fitted with a work-restraint system at both the sheeting and unsheeting points. Also see the 'Work at height on vehicles' section for more information about platforms and gantries (paragraphs 177–180).

Safe sheeting

209 If there are no fall-prevention measures in place at the site, drivers should refuse to sheet or unsheet the vehicle. This decision should be supported by their employer.

210 Whatever method of sheeting or unsheeting is used:

- Make sure vehicles are parked on level ground with their parking brakes on and the ignition key removed.
- Use designated sheeting areas away from moving vehicles and pedestrians, preferably sheltered from strong winds and bad weather.
- Regularly check that the sheets and the straps and ropes used for pulling and securing the sheet are in good condition and replaced when necessary.
- Regularly inspect, repair and maintain sheeting mechanisms, platforms, gantries and personal fall-protection equipment (like harnesses and lanyards).
- Make sure there is enough time and space to safely sheet the load before leaving the site.
- Train and instruct staff on how to operate and maintain sheeting systems and personal fall-protection equipment and monitor how they are used.
- Always consider how to unsheet the load safely at its destination.

Safe vehicle

211 Every employer and self-employed person must make sure that any work equipment used (which includes vehicles) is suitable for its purpose. When buying or hiring a vehicle, consider what it is to be used for, the environment in which it will operate and who will operate it. You may also find it helpful to consult those who will be expected to operate it. Look at HSE's Approved Code of Practice *Safe use of work equipment*³⁴ for more information.

212 The design of vehicles used on public roads has to meet specific legal standards, set out in the Road Vehicles (Construction and Use) Regulations 1986.³³ Most vehicles used in the workplace should meet this standard, but in some cases there are specific supply standards for mobile plant, for example some lift trucks.

213 Most non-road mobile work equipment must meet the requirements of the Machinery Directive (2006/42/EC), which has specific requirements relating to the design and construction of all machinery. Guidance can be found in HSE's leaflet *Buying new machinery*.³⁵

214 There need to be guards on dangerous parts of the vehicle, for example power take-offs, chain drives, or exposed hot exhaust pipes.

Case study – Safe vehicle

The driver of a lift truck was injured when he was struck by a pallet falling from the back of the goods vehicle he was unloading.

The goods vehicle was loaded with pallets of flat-packed cardboard boxes, packed three pallets high. The forks did not reach high enough to unload the top pallet, so the driver tried to unload the top two pallets in one go. The top pallet toppled and fell approximately 3 m, hitting the driver.

The lift truck did not have enough reach and was therefore not suitable for the task. A lift truck with protection against falling objects was also needed for work where objects could fall on the driver. It is the employer's responsibility to provide equipment that is suitable for its intended use.

Seat restraints and driver protection

215 Most workplace vehicles manufactured recently will already be provided with the measures required by the law. However, you should still ensure that people only use vehicles with features to reduce risks (so far as reasonably practicable) such as safe and comfortable seats, restraints and rollover protection.



Figure 21 Rollover protective structure (ROPS)

216 Where there is a risk of overturning, vehicles should be fitted with a structure such as a ROPS (rollover protective structure). A suitable restraint system should always be provided, unless such a system would:

- increase the overall risk to safety;
- make the equipment significantly more difficult to operate (and so not be reasonably practicable);
- not be reasonably practicable to install.

217 Lift trucks with either a mast or ROPS should, if not already fitted, be provided with restraint systems (such as a seat belt) where appropriate, if such systems can be fitted to the equipment. If worn, they prevent workers being crushed between the truck and the ground in an overturn.

218 Site operators and employers should check that operators are wearing seat restraints. Where seat restraints are fitted, they should be worn at all times, unless a risk assessment concludes otherwise. Exceptions might be a warehouse lift truck operator picking orders in a warehouse (or similar work), where the surface is good, vehicles move slowly, and operators need to get in and out of the truck frequently. Where this is the case, instructions should be clear and enforced.

219 Vehicles should be fitted with additional protection for those working outdoors in bad weather or in an inhospitable working environment (such as cold stores or foundries).

220 Where there is a risk of being struck by falling objects, the vehicle should be fitted with a falling-object protective structure (FOPS).

221 Passengers should only be allowed on a vehicle if it is designed to accommodate them safely, with suitable seating and restraints.

Case study – Weather protection

An employee received fatal injuries when he was crushed between the mast and the top of the overhead guard of an industrial counterbalance lift truck.

He accidentally operated the mast tilt with his boot as he climbed onto the dashboard to wrap plastic film over the overhead structure to protect himself from heavy rain. The lift truck engine had been left on and the handbrake off.

Although eight lift truck drivers worked for the firm, several had not had refresher training for many years, and two had received no training at all. The use of cling film for weather protection was common, as was the fitting of wood or metal covers on lift trucks.

The truck was mainly used outside, but the company had not assessed the need for a cover. Appropriate weatherproofing should have been fitted, access to the bulkhead should have been restricted, and accidental use of the controls prevented by fitting a transparent half-screen.

The firm was prosecuted and fined.

Vehicle visibility and reversing aids

222 It is important that drivers are able to see clearly around their vehicle, so they can see hazards and avoid them. Vehicles should also be clearly visible to pedestrians and other vehicles in the workplace, so consider fitting, for example, additional lights, reflectors and flashing (or rotating) beacons (as well as horns for drivers to warn others that they are approaching).

223 Some types of vehicle (such as straddle carriers, large shovel loaders and some large quarry vehicles) often have poor visibility from the cab. Visibility can be poor to the side or front of a vehicle as well as behind, and loads on vehicles can severely limit visibility from the driving position. Consider fitting extra mirrors, reversing alarms or sensors, and CCTV where visibility is reduced. Lift trucks and compact dumper vehicles in particular have reduced forward visibility when they are transporting bulky loads.

Closed-circuit television (CCTV)

224 CCTV can cover most blind spots and may be appropriate for some vehicles where the driver cannot see clearly behind or around the vehicle. Colour systems can provide a clearer image where there is little contrast, for example outside on an overcast day. However, black-and-white systems normally provide a better image in lower light or darkness, and usually come with infrared systems, which can be more effective than standard cameras. Multiple-camera systems are being developed to provide a 360-degree view on a single monitor.

225 Monitors should have adjustable contrast, brightness and reverse image selection and may need a hood to shield them from glare. CCTV reversing cameras fitted in a high position in the rear of the vehicle provide a better angle for the driver to judge distance and a greater field of vision. This will also keep the camera clear of dust and spray and out of the reach of thieves or vandals.

226 CCTV systems have the following limitations:

- they require drivers to check them regularly and react to any obstructions;
- camera lenses need to be cleaned regularly to be effective and may be affected by bright sunlight or reflections from wet surfaces;
- it can be difficult for drivers to judge heights and distances on CCTV monitors;
- the area covered by the camera may not cover all blind spots;
- drivers may become complacent about checking behind them and rely too much on the CCTV;
- operators of CCTV need to be trained to use the equipment properly.

Reversing sensors and alarms

227 Sensing systems are increasingly being fitted to road-going vehicles as parking aids. Some workplace vehicles use laser, radar or ultrasonic sensors to slow down or stop vehicles when they sense an object or person while reversing (eg some lift trucks, construction and quarrying vehicles). Some systems also give an audible or visual warning to alert the driver. Sensing systems may not be as effective where they would be set off very often, although some now incorporate features to prevent unwanted alarms. It is important that they are tested regularly.

228 If reversing alarms are fitted they should be kept in good working order and be loud and distinct enough so they can be heard. Sometimes they may be drowned out by other noise, or may be so common on a busy site that pedestrians do not take any notice. It can also be hard to tell exactly where an alarm is coming from.

Case study – Reversing aids for rider-operated lift trucks

A major company suffered fatalities involving reversing, rider-operated lift trucks. The company worked with their truck suppliers to apply presence-sensing reversing sensors to their trucks. The system is automatically active when reversing. The speed of a reversing forklift is restricted to a walking speed and when a person or object is detected by the sensors it slows to a crawl speed. An audio-visual alarm to the driver is also provided.

The system differs from conventional presence-sensing equipment in that it slows the truck down instead of just raising an alarm, and the detection zones around the truck have been customised for the particular application and environment. This is part of an overall programme to control transport risks which also includes site changes and training for both drivers and pedestrians.

Maintenance and repair

229 Every employer must make sure that work equipment is maintained in an efficient state, in efficient working order and in good repair. Carry out inspections of vehicles and associated equipment to ensure this happens, including daily driver checks before using the vehicle and regular preventive (planned) maintenance inspections based on time or mileage. Always follow the manufacturer's guidelines on regular maintenance.

230 Employers should give drivers a list of daily checks to be signed off before vehicles are driven. Drivers will need instruction or training in how to carry out these checks and should be monitored to ensure they are carrying them out properly. There should be a simple system for reporting any problems and deciding if the vehicle is safe to use or if it needs to be taken out of use while waiting to be repaired.

231 Planned maintenance inspections should comply with the manufacturer's guidelines and include:

- the braking system. Vehicles should have suitable and effective brakes, both for general service and for parking. Brakes need to be connected and working properly and, if they are independent of one another, they need to be properly balanced;
- the steering system;
- the tyres, which should always be inflated to the correct pressure, have good tread (if designed to have tread) and generally be in good condition;
- mirrors and any fittings that allow the driver to see clearly or detect hazards (for example, CCTV cameras and sensing systems);
- windscreens, windscreen washers, wipers and lights;
- any warning devices (for example, horns, reversing alarms or lights);
- any ladders, steps, walkways or other parts that support people or make it easier for them to access parts of the vehicle;
- any pipes, pneumatic or hydraulic hoses, rams, outriggers, lifting systems or other moving parts or systems;
- regular monitoring of lubricant and hydraulic fluid levels, and pneumatic pressure levels;
- any specific safety systems, for example control interlocks to prevent the vehicle or its equipment from moving unintentionally;
- headboards, anchor points and sheeting hooks for damage or distortion, particularly welded joints;
- vehicle-mounted equipment such as lifting or delivery equipment.

232 Each year many people are injured while carrying out vehicle maintenance and repair. You should ensure there are safe systems of work in place for this type of work to reduce the likelihood of injury. You can find more information about this in *Health and safety in motor vehicle repair and associated industries*.³⁶

Case study – Maintenance

A shunt driver fell from a lorry cab because of a faulty door. He hit his head on a concrete floor at his company's depot and died some days later from his injuries.

The company had failed to deal with the faulty handle because of a 'systemic failure' in its vehicle checks. The shunt vehicles were treated as low priority for repairs and maintenance, and vehicle servicing was often late. The company was prosecuted, fined and ordered to pay costs.

Since the accident, new vehicles have been bought and maintenance improved.

'Thorough examination' of lifting equipment

233 Lifting equipment must be 'thoroughly examined' at appropriate intervals to make sure it is safe to use. The intervals between thorough examinations should be at least every 12 months, or in accordance with an examination scheme drawn up by a competent person. The competent person will issue a 'report of thorough examination' and this must be retained by the employer for two years or more, depending on the circumstances.

234 Lifting equipment used to lift people, even on an occasional basis, and lifting accessories must be thoroughly examined at least every six months, or in accordance with an examination scheme drawn up by a competent person.

235 Thorough examination certificates are not required for lifting equipment less than one year old (or six months for machines used for lifting people). In these cases, a copy of the manufacturer's Declaration of Conformity covers this requirement of the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER). HSE's Approved Code of Practice (ACOP) *Safe use of lifting equipment*³⁷ explains how to comply with the Regulations and other circumstances where a thorough examination may be required.

Competent person

236 The ACOP states that the competent person who carries out the examination should have appropriate practical and theoretical knowledge and experience of the lifting equipment to be thoroughly examined to enable them to detect defects or weaknesses and to assess their importance in relation to the safety and continued use of the lifting equipment.

237 The guidance in the ACOP also says it is essential that the competent person is sufficiently independent and impartial to allow objective decisions to be made. This does not mean they must be employed from an external company. Employers can use people within their own organisations if they have the necessary competence. However, if they do, they must ensure that their 'in-house' examiners have the genuine authority and independence to ensure that examinations are properly carried out and any necessary recommendations are made impartially.

238 See www.hse.gov.uk/work-equipment-machinery for information on LOLER and the Provision and Use of Work Equipment Regulations 1998 (PUWER).

Safe driver

239 The law states you must take account of your employees' health and safety capabilities when you give them tasks and make sure they are adequately trained:

- when they are recruited;
- when they are exposed to new hazards in the workplace.

Choosing drivers

240 Your procedures for recruitment, checking references, induction, training, supervision, auditing and assessing competence should ensure that workers are capable of operating the vehicles and attachments they use at work, in all of the environments in which they are used.

241 HSE recommends that when choosing people to operate a vehicle in the workplace the initial requirements should be the same as those needed to drive a vehicle on a public road. With a few exceptions, people in the UK must be aged 17 or over and have passed a driving test. For large goods vehicles there are specific age limits and test requirements for different categories of vehicle. You can get more details on driving licence requirements at www.gov.uk under 'driving licences'.

242 Drivers of vehicles in a workplace will often need many more skills than those normally required when driving on a road. Many workplace vehicles have very specialised attachments to do their jobs, and there are many other skills relating to tasks like loading, unloading, trimming and sheeting. Only trained and authorised drivers should be allowed to operate workplace vehicles.

243 Drivers should:

- be fully able to operate the vehicle and related equipment safely;
- receive comprehensive instruction and training so that they can work safely;
- have a mature and responsible attitude;
- have a reasonable level of both physical and mental fitness. Fitness should always be judged individually as some less physically able people develop skills to compensate.

244 Where possible, match the requirements of a particular vehicle, task and situation with the levels of fitness and abilities of the driver. For example, people who operate industrial lift trucks should usually be able to fully move their whole body, to allow them to maintain a reasonable awareness of the hazards around their vehicle and climb in and out of it without difficulty.

245 You can find detailed advice on the medical standards for fitness to drive on UK roads in the Driver and Vehicle Licensing Agency (DVLA) publication *At a glance*.³⁸ These standards provide a good guide for medical fitness to operate vehicles in the workplace as well.

Driver training and competence

246 The amount of training each driver needs will depend on their previous experience and the type of work they will be doing. Your risk assessment should help decide the level and amount of training needed. Where appropriate, check that the

information they provide about their previous experience is accurate, for example that references to training schemes and other qualifications are supported by certificates.

247 Even when trainees provide evidence of previous training or related work experience, it is advisable to test them to ensure they understand the job they have been asked to do and are capable of doing it.

248 The information, instruction and training provided should cover areas such as:

- the layout of the workplace routes;
- how and where to report faults or hazards;
- procedures for reporting accidents;
- how to use the vehicle and equipment safely;
- information about, for example, particular dangers, speed limits, parking and loading areas, and procedures;
- what personal protective equipment they need for the task they are going to do, and how to use it;
- information on the structure and level of supervision that will apply, and the penalties if they fail to follow instructions and safe working practices;
- how to follow any emergency procedures.

249 Even experienced people should be monitored to make sure they are working in accordance with both the training they have received and any safe systems of work.

Lift truck operator training

250 For more information about choosing lift-truck operators, look at HSE's Approved Code of Practice *Rider-operated lift trucks: Operator training and safe use*.³⁹ This is also a good basis for choosing operators for other types of vehicle. It sets the legal minimum standard of basic training people should receive before they are allowed to operate certain types of lift truck (even if they only operate the equipment occasionally) and provides detailed guidance about how to meet this standard.

Monitoring and refresher training

251 People lose skills if they do not use them regularly. An ongoing programme of reassessment and refresher training will usually be necessary for all drivers and operators, to make sure their skills remain up to date. Even if drivers regularly operate vehicles, regular refresher training or reassessment will help them:

- maintain good driving habits;
- learn new skills where appropriate;
- reassess their abilities.

252 There is no specific time period after which you need to provide refresher training or formal assessment. However, you may decide that automatic refresher training or a retest after a set period (for example 3–5 years) is the best way to make sure employees remain competent. If you adopt this approach, you will still need to monitor their performance in the interim, in case operators need extra training before the set period ends. Keeping training records will help you to identify when refresher training might be needed.

253 If there are changes in the workplace which mean that employees are exposed to different risks, make sure everyone receives suitable safety training before they are exposed to those risks. Training is particularly important for maintenance and repair work.

References

- 1 *Workplace transport safety: A brief guide* Leaflet INDG199(rev2) HSE Books 2013 www.hse.gov.uk/pubns/indg199.htm
- 2 *Consulting employees on health and safety: A brief guide to the law* Leaflet INDG232(rev2) HSE Books 2013 www.hse.gov.uk/pubns/indg232.htm
- 3 *Using contractors: A brief guide* Leaflet INDG368(rev1) HSE Books 2013 www.hse.gov.uk/pubns/indg368.htm
- 4 *Workplace health, safety and welfare. Workplace (Health, Safety and Welfare) Regulations 1992. Approved Code of Practice and guidance L24* (Second edition) HSE Books 2013 ISBN 978 0 7176 6583 9 www.hse.gov.uk/pubns/books/l24.htm
- 5 *Managing health and safety in construction. Construction (Design and Management) Regulations 2007 (CDM) Approved Code of Practice L144* HSE Books 2007 ISBN 978 0 7176 6223 4 www.hse.gov.uk/pubns/books/l144.htm
- 6 *The safe use of vehicles on construction sites: A guide for clients, designers, contractors, managers and workers involved with construction transport HSG144* HSE Books 2009 ISBN 978 0 7176 6291 3 www.hse.gov.uk/pubns/books/hsg144.htm
- 7 *The Equality Act 2010* (c.15) The Stationery Office 2010 ISBN 978 0 10 541510 7 www.legislation.gov.uk/ukpga/2010/15/contents
- 8 *Designing for deliveries* Freight Transport Association 2006 www.shop.fta.co.uk/p-181-designing-for-deliveries-guide.aspx
- 9 *Warehousing and storage: A guide to health and safety HSG76* (Second edition) HSE Books 2007 ISBN 978 07176 6225 8 www.hse.gov.uk/pubns/books/hsg76.htm
- 10 *The Highway Code* www.gov.uk/highway-code
- 11 *Traffic Signs Regulations and General Directions 2002 (as amended)* The Stationery Office www.legislation.gov.uk/uksi/2002/3113/contents/made
- 12 *Traffic Signs Manual* Department for Transport www.gov.uk/government/publications/traffic-signs-manual
- 13 *Safety signs and signals. The Health and Safety (Safety Signs and Signals) Regulations 1996. Guidance on Regulations L64* (Second edition) HSE Books 2009 ISBN 978 0 7176 6359 0 www.hse.gov.uk/pubns/books/l64.htm
- 14 *The SLL Code for Lighting* Society of Light and Lighting/Chartered Institution of Building Services Engineers 2012 ISBN 978 1 906846 21 3 www.cibseknowledgeportal.co.uk
- 15 Chartered Institution of Building Services Engineers (CIBSE) factfiles www.cibse.org/knowledge/topic/lighting
- 16 *Safe work in confined spaces. Confined Spaces Regulations 1997. Approved Code of Practice, Regulations and guidance L101* HSE Books 2009 ISBN 978 0 7176 6233 3 www.hse.gov.uk/pubns/books/l101.htm

- 17 BS 6736:1986 *Code of practice for hand signalling for use in agricultural operations* British Standards Institution
- 18 *Safety in docks: Approved Code of Practice and guidance* L148 HSE Books 2014 ISBN 978 0 7176 6572 3 www.hse.gov.uk/pubns/books/l148.htm
- 19 *Coupling or uncoupling and parking of large goods vehicle trailers* Institute of Road Transport Engineers (IRTE) 2006 www.soe.org.uk/resources/technical-guides
- 20 *Loading dock safety guide* Freight Transport Association/IOSH 2013 http://www.fta.co.uk/export/sites/fta/_galleries/downloads/health_and_safety/Loading_dock_safety.pdf
- 21 BS EN ISO 3266: 2010 *Forged steel eyebolts grade 4 for general lifting purposes* British Standards Institution
- 22 BS EN 12642:2006 *Securing of cargo on road vehicles – Body structure of commercial vehicles – Minimum requirements* British Standards Institution
- 23 *Pallet safety* Plant and Machinery Guidance Note PM15 (Fourth edition) HSE Books 2014 www.hse.gov.uk/pubns/pm15.htm
- 24 Department for Transport *Safety of loads on vehicles: Code of Practice* (Third edition) The Stationery Office 2002 ISBN 978 0 11 552547 6 <http://webarchive.nationalarchives.gov.uk/20120214192454/http://www.dft.gov.uk/pgr/roads/vehicles/vssafety/safetyloadsonvehicles.pdf> Also available via: www.hse.gov.uk/workplacetransport/loadsafty
- 25 *Transport safety: An operator's guide to safe loading and transport* Health and Safety Laboratory 2012 ISBN 978 0 9561228 3 4 www.hsl.gov.uk/hsl-shop.aspx
- 26 *Load safe, road safe: A professional driver's guide to safe loading and transport* Health and Safety Laboratory 2012 ISBN 978 0 9561228 4 1 www.hsl.gov.uk/hsl-shop.aspx
- 27 *Avoiding danger from overhead power lines* General Guidance Note GS6 (Fourth edition) HSE Books 2013 www.hse.gov.uk/pubns/g6.htm
- 28 *Working safely near overhead power lines* Agriculture Information Sheet AIS8(rev3) HSE Books 2012 www.hse.gov.uk/pubns/ais8.htm
- 29 *Inspecting fall arrest equipment made from webbing or rope* Leaflet INDG367 HSE Books 2002 www.hse.gov.uk/pubns/indg367.pdf
- 30 *Working platforms (non-integrated) on forklift trucks* Plant and Machinery Guidance Note PM28 (Fourth edition) HSE books 2013 www.hse.gov.uk/pubns/pm28.htm
- 31 *Environmental Protection Act 1990* <http://www.legislation.gov.uk/ukpga/1990/43/contents>
- 32 *Road Traffic Act 1991* www.legislation.gov.uk/ukpga/1991/40/contents
- 33 *Road Vehicles (Construction and Use) Regulations 1986* The Stationery Office www.legislation.gov.uk/uksi/1986/1078/contents/made

34 *Safe use of work equipment. Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and Guidance L22* (Third edition) HSE Books 2008 ISBN 978 0 7176 6295 1 www.hse.gov.uk/pubns/books/l22.htm

35 *Buying new machinery: A short guide to the law and your responsibilities when buying new machinery for use at work* Leaflet INDG271(rev1) HSE Books 2011 www.hse.gov.uk/pubns/indg271.htm

36 *Health and safety in motor vehicle repair and associated industries* HSG261 HSE Books 2009 ISBN 978 0 7176 6308 8 www.hse.gov.uk/pubns/books/hsg261.htm

37 *Safe use of lifting equipment. Lifting Operations and Lifting Equipment Regulations 1998. Approved Code of Practice and guidance L113* HSE Books 1998 ISBN 978 0 7176 1628 2 www.hse.gov.uk/pubns/books/l113.htm

38 *At a glance: Guide to the current medical standards of fitness required to drive* Driver and Vehicle Licensing Agency (DVLA) www.gov.uk/government/publications/at-a-glance

39 *Rider-operated lift trucks: Operator training and safe use. Approved Code of Practice and guidance L117* (Third edition) HSE Books 2013 ISBN 978 0 7176 6441 2 www.hse.gov.uk/pubns/books/l117.htm

Further reading

Design manual for roads and bridges www.dft.gov.uk/ha/standards/dmrb

Driving at work INDG382(rev1) HSE Books 2014 www.hse.gov.uk/pubns/indg382.htm

European best practice guidelines on cargo securing for road transport European Commission http://ec.europa.eu/transport/road_safety/vehicles/doc/cargo_securing_guidelines_en.pdf

Guidance on workplace transport port and terminal planning HSE/Port Skills and Safety guidance sheet SIP001 www.hse.gov.uk/ports/publications.htm

Guide to maintaining roadworthiness: Commercial goods and passenger carrying vehicles DVSA 2014 www.gov.uk/government/publications/guide-to-maintaining-roadworthiness

Health and safety made simple: The basics for your business Leaflet INDG449 HSE Books 2011 www.hse.gov.uk/pubns/indg449.htm
Microsite: www.hse.gov.uk/simple-health-safety

Institute of Road Transport Engineers (IRTE) technical guides: <http://www.soe.org.uk/resources/technical-guides/>

Kerbside loading guidance Transport for London (TfL) 2009 <http://www.tfl.gov.uk/cdn/static/cms/documents/tfl-kerbside-loading-guidance-2009.pdf>
Local Transport Notes www.gov.uk/government/publications/local-transport-notes

Road safety audit Chartered Institution of Highways and Transportation (CIHT) 2008 www.ciht.org.uk/en/publications/index.cfm/-road-safety-audit-2008

Safe transport in the waste and recycling industry WASTE09(rev1) HSE 2014 www.hse.gov.uk/pubns/waste09.pdf

Traffic Advisory Leaflets www.gov.uk/government/collections/traffic-advisory-leaflets

Work at height whilst loading and unloading transport Construction Plant-hire Association (CPA) 2009:

<http://www.cpa.uk.net/freedownload/?CIG%2520Publications%7E%7E%7ECPA-0902-BPG-Working-At-Height-Loading-and-Unloading-Transport-100720.pdf>

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

British Standards can be obtained in PDF or hard copy formats from BSI: <http://shop.bsigroup.com> or by contacting BSI Customer Services for hard copies only Tel: 0845 086 9001 email: cservices@bsigroup.com.

The Stationery Office publications are available from The Stationery Office, PO Box 29, Norwich NR3 1GN Tel: 0870 600 5522 Fax: 0870 600 5533 email: customer.services@tso.co.uk Website: www.tsoshop.co.uk. (They are also available from bookshops.) Statutory Instruments can be viewed free of charge at www.legislation.gov.uk where you can also search for changes to legislation.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

This publication is available at www.hse.gov.uk/pubns/books/hsg136.htm.

© Crown copyright If you wish to reuse this information visit www.hse.gov.uk/copyright.htm for details. First published 09/14