

# **Safety in Ports Guidance**

## **Interim Draft Guidance SiP010: Ro-Ro and Sto-Ro Freight Operations**



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This document represents an updated version of SiP010 and has been published to provide timely support to the sector. It currently focuses on freight operations.

It is intended that this guidance will be further developed into a single, comprehensive document, incorporating SiP012 Guidance on Ro-Ro Passenger and Cruise Operations, and aligned with guidance from the UK Chamber of Shipping to support a consistent approach across both the ports and shipping sectors.

## 1. Disclaimer

This publication has been made available under the public sector information license and may be used by third parties. It may not be altered in anyway or used outside the terms of the Open Government Licence. [www.nationalarchives.gov.uk](http://www.nationalarchives.gov.uk).

External links are provided to enhance information, but Port Skills and Safety Ltd (PSS) does not guarantee the accuracy of any external links.

Regulations in this document are referred to by title but not year, as they may have been amended post publication. The reader should always seek the current version.

Following this guidance is not a legal requirement, however, by following the guidance, users may ordinarily expect to be doing enough to comply with the law. HSE and other UK government-appointed inspectors who seek to secure compliance with the law and may refer to this guidance in their investigations.

This document provides guidance only and due care and attention must be given to any operation being conducted

## 2. Introduction

This interim guidance covers safe management of roll-on/roll-off (Ro-Ro) and stow-on/roll off (Sto-Ro) operations within ports and on vessels and whilst it refers to legislative requirements and general operations, the overall application details of such legislative expectations are provided within SiP000.

This document represents an updated version of SiP010 and has been published to provide timely support to the sector. It currently focuses on freight operations. It is intended that this guidance will be further developed into a single, comprehensive document, incorporating SiP012 Guidance on Ro-Ro Passenger and Cruise Operations, and aligned with guidance from the UK Chamber of Shipping to support a consistent approach across both the ports and shipping sectors.

Relevant SiP guidance is referenced within this document and a full list of the guidance suite can be found in Appendix 1 or via [www.portskillsandsafety.co.uk](http://www.portskillsandsafety.co.uk). However, [SiP000 Regulatory Framework](#) sets out the overarching principles, approach, and structure that underpin all PSS guidance. The document should be treated as the introduction for all PSS guidance, and it is recommended that it is read first to provide the necessary context for the material that follows.

See also SIP001 Port and Terminal Planning, including trailer park and route planning/design. For lifting planning and operations in general please consult SIP002 General Cargo.

### 3. Hazards

Hazards associated with Ro-Ro and Sto-Ro operations (including on the quay, shore ramp and/or linkspan, and vehicle deck) include but are not limited to:

- a) Vehicle, plant and cargo operations
  - Being struck by moving vehicles and plant.
  - Being struck by lashings that may spring back when being applied, tightened, released or loosened.
  - Being crushed against a fixed object such as a ship's structure or between moving vehicles (e.g. between cargo transport units).
  - Trapping and crushing from the lowering and lifting of cargo such as between trestles and trailers or 'Mafi' units and the deck.
  - Being struck by moving cargo: lashing of cargo and trailer contents to ensure security during passage.
  - Hazards associated with breakdowns and jump starts.
- b) Slips, trips, falls, and access
  - Slips, trips or falls while working on surfaces which may be:
    - Uneven (e.g. due to deck lashing points, frames or deck gratings).
    - Unstable or slippery (e.g. due to the presence of substances such as cargo residue, spilt oil and loose lashing gear).
  - Falls from height:
    - When working or passing near to unprotected edges such as lift shafts, voids, deck openings and ships internal access ladders.
    - Due to a failure to provide and maintain a safe means of access/egress to/from and on board the ship.
- c) Hazardous substances, dangerous goods, and vehicle risks
  - Fire and explosion
  - Handling and storage of fuel.
  - Leakage of hazardous cargo.
  - Carriage, interaction and positioning of dangerous goods.
  - Positioning of vehicles wholly or partially powered by Lithium-ion batteries (EVs).
  - Electrical hazards related to plug in units.
- d) Environmental and occupational health factors
  - Swell and tidal conditions affecting linkspans.
  - Temperature.
  - Fatigue.
  - Musculoskeletal injury from the handling of trestles and lashing gear.
  - Noise and vibration from operating plant and equipment on board the vessel.
  - Fumes from vehicles operating within the vessel and generated by the vessel.

In Sto-Ro operations additional hazards may include but are not limited to:

- Intense movement of cargo handling equipment on the freight decks, such as forklift trucks, and container handlers.
- Movement of unsecured loads.
- Collapsed or unstable stows.
- Additional numbers of personnel involved in the operations.

- Potentially reduced lighting levels.
- Use of cargo lifts, side ports and vessel movement when working from side ports.
- Lifting of handling equipment (e.g. Clamp truck, forklift truck) by use of cargo lifts.

Ro-Ro and Sto-Ro operations should be planned and executed in a way that minimises risks to those involved in the operation, including direct employees, non-permanent employees (NPEs), ship's crew and anyone else that may be affected. While the handling of various types of cargo can be a routine operation, unique or unusual situations with additional or specific hazards may be encountered. In these situations, an additional or more detailed risk assessment will be required.

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#### 4. Health hazards

Ports and vessels should have arrangements in place to monitor and protect the health of personnel who may be exposed to workplace hazards. This may include pre-employment health assessments to establish a baseline, followed by periodic health surveillance based on risk, task, age, and exposure levels. Sources of information and good practice include:

- HSE guidance on [health surveillance](#) and [occupational health](#).
- Medical certification standards, such as the MCA ENG1 for seafarers.
- Welfare requirements under the Maritime Labour Convention (MLC).

Operators should also ensure that substance-misuse policies are in place for both vessels and shore-based staff, supported by clear procedures and expectations.

#### Ventilation

Prior to the start of enclosed deck operations, the ship's ventilation system must be operating effectively. Any concerns about ventilation should be reported immediately to the Ship's Officer.

Operations should be planned to minimise the number of vehicles with engines running at any one time. On vehicle decks, engines should not be started or left idling until the vehicle is ready for discharge. Ventilation fans should be used appropriately, as vehicle exhaust fumes can build up quickly and may present a health hazard.

Where port personnel are present on the vessel, a COSHH assessment must be completed for diesel engine exhaust emissions and where there is potential exposure to hazardous dusts. This should focus on controlling exposure, identify the risk and use the hierarchy of control to ensure exposure is reduced to as low as reasonably practicable (ALARP). The Workplace Exposure Limit as found in EH40 should be used only to verify that the controls in place are effective, not as a target for acceptable exposure. Monitoring of air quality should be undertaken where appropriate to verify that control measures are effective, and the findings should be used to inform and review the Ro-Ro risk assessment and safe systems of work. This requirement applies to port personnel; the ship operator remains responsible for the health and safety of the vessel's own crew.

Further guidance on Diesel Engine Exhaust Emissions is available at:

[www.hse.gov.uk/pubns/indg286](http://www.hse.gov.uk/pubns/indg286) and HSE COSHH web pages: [www.hse.gov.uk/coshh](http://www.hse.gov.uk/coshh)

#### Dust

Dust may arise on some Ro-Ro decks due to vehicle soiling, rust from ship structures, or dusty cargoes. Controls to reduce dust levels should include, damping down, sweeping decks, and washing vehicles, where appropriate.

A COSHH assessment must be completed if there is potential exposure to hazardous dusts, focussing on controlling exposure, identifying the risks and using the hierarchy of controls to ensure exposure is reduced to as low as reasonably practicable (ALARP). The Workplace Exposure Limits as found in (EH40) should only be used to verify that the controls are effective, not as a target for acceptable exposure.

**Noise**

Noise levels on freight decks may be excessive and a noise assessment should be carried out to determine noise exposure levels and appropriate control measure. Care should be taken where personal hearing protection is used to ensure that communications, such as whistle signals and vehicle horns are not blocked out.

Where hearing protection is provided, it must be compatible with other PPE issued.

**Vibration**

Personnel may be exposed to vibration when operating or travelling on plant and equipment, including terminal tractors, forklifts, and other vehicles used on freight decks and ramps. Whole-body vibration (WBV) surveys should be undertaken where relevant to assess exposure levels and identify tasks or routes that present a heightened risk. Pre-existing medical conditions—particularly back or musculoskeletal issues—can be exacerbated by repeated jolting, uneven deck surfaces, or bumping over ramps. Control measures may include route planning, equipment maintenance, speed restrictions, and adjusting work patterns to reduce exposure.

**Temperature**

Personnel working in terminal tractors and on freight decks may be exposed to temperature extremes. Engineering controls and environmental monitoring should be used to reduce exposure where possible. Job rotation can help manage risk, with assessments determining appropriate rotation periods. The use of temperature gauges provides quantitative feedback to inform decisions, ensuring that work schedules and rotations are adapted to protect all personnel from heat or cold stress, depending on the time of year.

## 5. Pre-arrival and pre-departure considerations

Effective communication, cooperation, and coordination between the vessel and port prior to arrival and departure is essential to ensure safe operations. The level of detail and specifics of communication may differ for one-off or irregular visiting vessels, as opposed to regular runners, and the exchange of information between shore and ship should be done by the most appropriate means.

The information exchange could take the form of a ship to shore checklist including (but not limited to) the following considerations:

- Local procedures and operational constraints.
- Vessel size and configuration.
- Cargo weights and types, including out-of-gauge loads and dangerous goods.
- Lashing requirements, particularly in heavy weather conditions.
- Lashing condition for discharge (especially where unlashed by crew during arrival).
- Any known or suspected cargo movement during transit (e.g. due to severe weather and sea conditions), including actions taken and any restrictions required for safe discharge.
- Deck strength and cargo distribution, and stability information required to support safe loading operations and enable the vessel to ballast appropriately.
- Berthing arrangements, including pilotage, ramp positioning, and mooring suitability.
- Weather conditions and operational constraints.

Risk assessments should be shared and reviewed for simultaneous operations, such as loading, lashing, and passenger movements, to ensure effective coordination and that all parties have a clear understanding of roles, responsibilities, and control measures.

## 6. Planning for safe loading and discharge

Effective planning is one of the key elements of safe loading and discharge operations. Risks from the work should be considered and plans for safe handling made at an early stage. The shipping operator and the port handling company should agree on the equipment and systems that will be used to ensure all loads are handled safely. Both parties should keep each other informed of any changes that may introduce new risks to the vessel, process or personnel.

Planning of these operations should include coordinating the interface between vehicle movements and any personnel required to be on freight decks such as lashers and ship's crew.

Prior to each vessel operation, both port and ship should ensure that relevant information is effectively cascaded to all personnel. Briefings should clearly outline roles, responsibilities, and the sequence of activities, to ensure that all parties understand the risks and control measures in place before work begins. Management systems should be in place to certify what cargo is on the Cargo Transport Unit (CTU), to ensure that loads are handled and stored appropriately. Considerations include:

- Weight distribution (in relation to moving loads in high winds and over gradients or uneven surfaces).
- Storage of potentially incompatible substances within a single location.
- Segregation of hazardous cargoes.

A cargo stowage plan should include a record of the positioning of any dangerous cargo. Such cargo should be segregated and stowed in accordance with the requirements of the International Maritime Dangerous Goods Code (IMDG). Marking the positions of vehicles wholly or partially powered by Lithium-ion batteries on the stowage plan may assist in emergency response.

Effective emergency plans should be held by vessels and ports. It is good practice to check coordination of plans through planned drills.

Machinery selection should be considered at the planning stage, and adequately maintained, to ensure that equipment is suitable for the specific loading or discharge activity. This should include consideration of the type and capability of plant required (for example, forklift trucks, terminal tractors or other internal movement vehicles, and crane lifting capacity), taking account of the loads to be handled, operating environment, and interfaces with vessels and infrastructure.

Planning should also consider operator competence, including any training, assessment, or authorisation requirements associated with the selected equipment. The National Occupational Standards for Port Operations provide a useful reference for the competencies expected of port operatives involved in Ro-Ro operations and the use of plant and equipment.

## 7. Freight delivery by road

Security checks can include Border Force and Counter Terrorism police at security gates and within terminals. To ensure the safety of personnel from these agencies there should be effective communication of operational risks and opportunities for familiarisation with terminal layout. This information should be covered in the port induction process.

Consideration should also be given to the provision of suitable physical control measures to protect personnel, such as cab-height booths and designated segregated inspection areas.

Traffic management arrangements should be designed to minimise conflict between vehicles and pedestrians and to avoid traffic conflict points where reasonably practicable. This may include defined traffic routes, one-way systems, segregation of inspection areas, and clear signage and instructions for visiting drivers.

### Coupling and uncoupling trailer parking

The cargo handler should undertake a comprehensive assessment of the risks of the activity to ensure that adequate control measures are in place. Where fitted, trailer park brakes must be used unless there are circumstances where the application of the brake may increase the risk of injury to dock staff and collecting or delivering drivers. If the park brakes are not applied, collecting drivers should be informed of this. Key points to consider in coupling and uncoupling operations include, but are not limited to:

- Design of trailer park (layout, surface condition, gradient, size of bays, backstops).
- Instructions to workers and visiting drivers.
- Control of pedestrians.
- General site rules.

See also:

- SIP001 – Port and Terminal Planning.
- HSE guidance on coupling and uncoupling:  
[www.hse.gov.uk/workplacetransport/information/coupling](http://www.hse.gov.uk/workplacetransport/information/coupling).

## 8. Freight delivery by rail

The safe management of freight delivery by rail within port environments requires effective coordination between rail operators, terminal operations, and those responsible for loading and unloading activities. Arrangements should be in place to ensure that rail movements are planned and controlled, and that risks at the interface with other terminal operations are managed.

Key points to consider include, but are not limited to:

- Coordination of train arrivals and departures with terminal operations to avoid conflict with other activities.
- Clear communication between those in control of rail movements and cargo handling teams.
- Control of access to rail lines, including protection of personnel working on or near the track.
- Safe systems of work for loading and unloading rail wagons.
- Management of vehicle and pedestrian crossings over rail tracks.

See also:

- SIP001 – Port and Terminal Planning.
- Office of Rail and Road (ORR) website:
- <https://www.orr.gov.uk/rail-guidance-compliance>.

## 9. Vessel access

All ships must provide a safe means of access. Providing safe access to a ship is an integral part of ensuring a safe working environment on board. As required by the Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations and The Code of Safe Working Practices for Merchant Seafarers (COSWP). Refer to MGN 53 3 (M) Means of Access: [www.gov.uk/government/publications/mgn-533-m-means-of-access](http://www.gov.uk/government/publications/mgn-533-m-means-of-access).

Requirements for safe access to and on vessels are also included in ACOP Safety in docks (L148) and SIP014 Safe Access and Egress. It is important to ensure coordination between the port and the vessel to ensure landside walkways marry up with walkways on vessel ramps, therefore avoiding the need for personnel on foot to cross the head of linkspan, for example.

No persons, other than those specifically engaged in the manoeuvring of plant or vehicles, including self-drive traffic, should be allowed on the linkspan or ramp during cargo movements.

Any measures adopted for the control of vehicle traffic on vessel ramps or linkspans, particularly single lane linkspans, must be strictly observed.

Ramps and linkspans used by vehicles should not also be used for pedestrian access unless there is suitable segregation of vehicles and pedestrians. This could be by providing a suitable protected walkway or by ensuring that pedestrians and vehicles do not use the ramp at the same time. See also [SiP012 Guidance on Ro-Ro Passenger and Cruise Operations](#).

Linkspans, ramps and associated equipment should be safe and fit for purpose and be routinely inspected and maintained. Ramp surfaces are required to be anti-slip, to ensure that all vehicles using them can do so without risk. The anti-slip treatments that have been applied to ships ramps may be eroded to a degree where water or ice will affect the steering and braking of vehicles using them.

The anti-slip treatments on the ramps should be regularly inspected and prior to use to ensure that vehicles using them can do so without risk.

Ramps should not be used at a slope greater than that for which they were designed.

It is industry best practice that plant or other heavy vehicle should not use a ramp with a slope of more than 10 per cent, unless a competent person is satisfied that the vehicle can safely be moved on that ramp. If necessary, the surface of the ramp should be suitably treated to provide sufficient grip.

A system must be in place to safely manage the movement of vehicles on gradients. Paying special attention to un-braked units and taking into consideration speed, load configuration, angle and trailer weight based on tractor and equipment specifications. Mafi and gooseneck attachments which do not have an interlock should not be used on gradients.

### **10. Cargo deck lifts**

Persons on foot should be prohibited from using a ship's cargo lift, unless there is no alternative safe means of access. A suitable and sufficient risk assessment must be undertaken.

If drivers are required to stay with their vehicles on cargo lifts, then they must remain in their cab with the handbrake applied.

Edge protection should be erected around lift and ramp openings where there is a risk of persons or vehicles falling.

All lifts should be protected by gates or barriers, and these should be interlocked with the lift control system. Visual and audible warning devices should be fitted and used to warn people of lift ramp and ramp lid movements.

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## 11. Vehicle movements

Vehicle movements during loading and discharge must be controlled to allow safe marshalling and positioning of personnel.

The following considerations should be addressed:

- Weather conditions which may affect vehicle movements and load stability, including:
  - Wind, which can affect load stability for high-sided loads or double-stacked containers which are vulnerable to overturning. Consideration of wind conditions is particularly important on exposed areas of the port and linkspans.
  - Rain, ice or snow, which may affect traction, braking, and the safe navigation of ramps and linkspans, especially when handling heavy loads.
- Tidal range and its impact on linkspan gradient, which can affect vehicle control and load security.
- Risk assessment to determine speed limit on linkspans, taking into consideration: width of vehicle lanes, volume of traffic, gradient of linkspan, proximity to and segregation of pedestrians.
- Compound lighting levels to maintain visibility during low-light conditions.
- Traffic management and layout, including container park configuration (e.g. herringbone layout or straight lanes) and traffic lane width to allow safe manoeuvring.
- Implement a robust traffic management plan for the terminal, including designated routes, speed limits, and marshal positions.
- Communication and coordination between terminal staff and vessel loading officers regarding unusual loads or deviations from the plan.

On the vessel a system must be in place to safely manage the movement of vehicles on freight decks and ramps. Taking into consideration factors including speed, restricted driver visibility, lighting, noise, availability of visual aids and warning devices, safe stowage or positioning, and any other activities being carried out at the same time.

Excessive speed increases the risk of vehicles passing too close to lashing crews or personnel emerging from beneath units. The vessel loading officer is responsible for setting and enforcing an appropriate loading speed, ensuring that operations remain coordinated and safe.

### Accompanied freight

Accompanied freight vehicles require clear coordination from arrival at the port through to loading on the vessel. The following arrangements should be in place:

- a) Holding and identification:
  - Vehicles should be marshalled into a designated holding area before loading.
  - Drivers should receive clear safety and traffic management instructions before entering the port. Port documentation or permits (such as gate passes) may provide a suitable means of communicating key information, including site layout and basic safety rules. Windscreen hangers or dashboard signs can be used to identify vehicles with special requirements (e.g. hazardous cargo, oversized loads).

- b) Route and communication
- Provide route-finding options that are simple and well-marked to avoid confusion, including highway standard signage and well-maintained road markings.
  - Maintain continuous communication between the vessel loading officer and the charge hand ashore.
  - A pre-loading discussion should confirm the loading sequence and any special considerations.
  - During loading, the vessel loading officer should request vehicle types and numbers as required.
  - The charge hand must pass on details of unusual vehicles, such as oversized loads, variations from the plan, or concerns about load security.
  - Provide walkways from vehicle parking areas to welfare facilities.
- c) Marshalling and manoeuvring
- Large goods vehicle (LGV) tractor units are less manoeuvrable than terminal tractors and require additional guidance.
  - Reversing vehicles must be handed between marshals so that they are guided at all times.
  - The handover point to the vessel marshal should be at the ramp head, ensuring continuity of control and visibility.

### **Unaccompanied freight**

Unaccompanied freight operations require additional controls due to the transfer of responsibility for the unit from the road haulier to port operations during loading and discharge. In addition to the general considerations above, the following should be addressed:

- Use of suitable terminal tractors or handling equipment appropriate for the unit type and load.
- Verification of load condition and stability prior to movement.
- Safe parking and positioning of units within the terminal and on the vessel, including use of park brakes, chocks, or other restraints where required.
- Clear identification and management of units with specific risks, such as hazardous cargo or out-of-gauge loads.
- Arrangements for dealing with damaged, unstable, or non-compliant units.

## 12. Personnel on vehicle decks

Safe operations on vehicle decks depend on clear communication, coordination, and shared understanding between all parties. Clear rules and active supervision are essential to prevent collisions, crushing injuries, and other serious incidents. This section sets out key controls for managing these risks.

All personnel have a responsibility to report incidents, near misses and injuries.

### Supervision

Supervision is the active oversight of all personnel on vehicle decks to ensure that operations are carried out safely and in accordance with agreed procedures. Deck officers or designated supervisors must monitor operations and intervene when unsafe conditions arise. This monitoring may be conducted:

- Directly, with the supervisor monitoring a single deck.
- Intermittently, with the supervisor monitoring multiple decks.
- Remotely via CCTV.

In all cases the supervisor must have an effective means of communication with all parties involved in deck operations. Supervision should be undertaken on the vehicle deck where reasonably practicable. Where CCTV is used, it must supplement, not replace, physical deck supervision.

Management of vessel operations should be effective and must include the ability to assess risks and hazards as they arise, ensuring that systems are in place to intervene or stop operations. Where supervision is supported remotely via CCTV, there must be a system enabling immediate stop-work communication.

Supervisors must be competent, identifiable, and have authority to stop work if necessary. Factors to consider when deciding how many people are required on deck for supervision:

- The familiarity of the ship with the port.
- The extent of shared work instructions and risk assessments.
- Weather conditions.
- Loading of non-standard loads.
- Competence and experience of personnel.
- Equipment available.
- Use of technology.

### Line of Sight

Line of sight is the ability of a driver to maintain continuous visual contact with personnel on foot during vehicle movements. It ensures that the driver can see and respond to their position and any signals.

- **Direct Line of Sight:** The driver can see the person without any aid – typically face-to-face or with an unobstructed view, allowing eye contact.
- **Indirect Line of Sight:** The driver can see the person using mirrors, camera systems or intermediate personnel. It is important that the view is clear and uninterrupted.

Field of view is the overall area visible to the driver, but safety rules focus on maintaining line of sight with personnel during active guidance.

### **Position of safety**

Personnel on foot should remain in a position of safety whilst vehicles are moving. A position of safety should be defined in safe operating procedures and is:

- Not in the path of moving vehicles.
- Not between vehicles, trailers, or fixed structures where movement could cause crushing.
- Clear of reversing paths and turning circles.
- Away from blind spots and danger zones identified in SOP diagrams.
- Away from close-range blind spots around terminal tractors and vehicles, particularly immediately in front of the cab, where drivers may not see personnel on foot.
- With an unobstructed escape route in case of emergency.
- Within a designated or marked safe zone, where provided.

Positions of safety must be clearly identified and explained during familiarisation for all personnel joining the vessel.

### **Danger zone**

A danger zone is any area where a person could be struck, crushed, or trapped by or between moving vehicles or equipment. Danger zones are dynamic and move with the vehicle.

### **Marshalling**

Marshalling is the active control and guidance of vehicle movements to ensure manoeuvres are carried out safely, particularly in confined or high-risk areas. The role of a marshal is to call a driver into a space once the marshal is satisfied that it is safe for the driver and vehicle to manoeuvre.

Marshals should be clearly identifiable to drivers; this may be achieved by wearing distinctive high-visibility clothing appropriate to the risk (e.g. a different coloured garment or hat).

Marshals provide an additional set of eyes for drivers manoeuvring in tight spaces and will usually assist the drivers by indicating when the vehicle is far enough back, or if the trailer is out of position. Marshals **MUST** stop a driver if the vehicle is at risk of injury or causing damage.

Whilst actively guiding a vehicle the marshal must be in a position of safety. The marshal must maintain visibility with the driver. Personnel must never enter a danger zone without signalling and waiting for the driver to stop and acknowledge them before they move. The driver then must wait until they know the personnel are no longer in the danger zone.

## Stop signal

The universal signal to stop all vehicle movements is a single whistle blast.

- Anyone on the deck may use this signal if they see a risk or unsafe condition – not just marshals.
- When a whistle is blown, all vehicles must stop immediately and remain stationary until the situation is assessed, and it is safe to continue.
- Operations may only resume after a clear signal is given by the marshal indicating it is safe to proceed.
- Whistles should not be used for any other signal.
- 

This rule ensures that any person can intervene to prevent harm, and that restarting movement is controlled and coordinated.

This must be clearly defined in safe operating procedures and training.

## Responsibilities of drivers

- **Confirm visibility of the marshal** at beginning of active guidance, using direct or indirect line of sight as appropriate.
- **Stop immediately** if signalled by the whistle or if awareness of the personnel on foot is lost at any point.
- **If in doubt; stop** safety always takes priority.
- **Wait for a clear 'safe to proceed' signal** from the marshal before resuming movement after any stop signal.
- **Follow agreed signals and instructions** issued by designated personnel at all times. For further information, see also: Safety signs and signals. The Health and Safety (Safety Signs and Signals) Regulations HSE web page: [www.hse.gov.uk/pubns/books/l64](http://www.hse.gov.uk/pubns/books/l64).
- **Leave adequate space** to allow line of sight and manoeuvring.
- **Line up trailers correctly** once called into the space by the designated person.
- **Stop** when lashing personnel are working in front of the trailer.

## Responsibilities of all personnel on foot

- **Work in pairs where possible**, maintaining line of sight with each other and avoiding positions of danger.
- **Remain in a position of safety** whenever vehicles are moving. Do not enter the path of moving vehicles or stand between trailers and fixed structures.
- **If in doubt; stop.** Safety always takes priority.
- **Carry a whistle at all times** and be prepared to use it to stop operations if there is any potential danger to personnel.
- **Never enter a danger zone without signalling first** (e.g. whistle or agreed hand signal) and waiting for the driver to stop and acknowledge the signal.
- **Use agreed hand signals consistently** when guiding or communicating with drivers.
- **Stay alert to vehicle movements and escape routes**, ensuring a clear path to move away quickly if needed.
- Confirm visibility with drivers before approaching or guiding, as they may not always have personnel in view.

- **Report hazards immediately** to the supervisor or deck officer and stop operations if necessary.
- **Look out for others** work as a team to ensure the safety of all personnel during operations.

All operatives involved in loading and discharging of Ro-Ro and Sto-Ro vessels must wear high visibility clothing, safety footwear and other items of approved personal protective clothing and equipment as identified by risk assessment.

Ro-Ro decks often have potential slip and trip hazards and operatives must be aware of these. They could include but are not limited to:

- Essential deck fittings.
- Treads.
- Lashing points.
- Ribs or deck gratings.
- Lashings.
- Chains.
- Oil or water.

#### **Fitness for work**

Personnel must be fit for work and free from any condition or influence that could impair judgement or situational awareness. This includes, but is not limited to, fatigue, stress, mental health issues, physical impairments or the effects of medication and other substances.

#### **Other personnel**

During Sto-Ro operations, additional controls may be required to deal with other operatives and third parties that may also be working or accessing the operational area.

### 13. Handling trestles and lashing equipment

The handling of trestles on both vessels and landside operations, as well as the use of lashing equipment present several manual handling and trapping issues and therefore a specific risk assessment may be required for these parts of the operation.

All cargo should be secured in accordance with the ship's cargo securing manual and agreed with the ship's master.

Considerations when developing safe systems for handling trestles and lashing operations include but are not limited to:

- The requirements of the ship's cargo securing manual.
- The use of trestles which meet recognised standards.
- The condition, weight and size of trestles.
- The selection of trestles, which should be appropriate for the trailer height and deck layout.
- Deck obstructions, lashing equipment and space restrictions when moving trestles.
- The risk of trapping of hands and feet when positioning and removing trestles under trailers, including the need for effective communication with drivers.
- The release of air on trailer suspension systems.
- The use of suitable lashing points on the ships freight deck and CTUs.
- The number and arrangement of lashings required for the unit type.
- Types of lashing equipment in use, use of hand tools and use of compressed air equipment.
- The application and release of lashings.
- Lashing and unlashings of Sto-Ro cargoes, including the use of nets, access and egress to lashing points on the ship.
- Movement of vehicles and cargo in areas where lashing or unlashings is being undertaken.
- Procedure for lashing or unlashings cargo on inclines, including the use of wheel chocks, internal movement vehicle and unit brakes and coordinated release or application of lashings.
- Double stacked containers including safe access and work at height.
- The use of wheel chocks and unit park brakes, where fitted.
- The type and characteristics of the unit being secured.
- Stowage position on board, particularly for units containing dangerous goods.
- Compliance with the IMDG Code, where applicable.

A regime of preventative maintenance on trestles and lashing equipment, including periodic testing, is required to ensure they are in good working order and a system must be in place to manage faulty or defective equipment. The ownership of trestles can vary, and may be the vessel, the shipper or the port. If defective equipment is found during work, operatives should report this, and the equipment be removed from use until it has been repaired.

## 14. Terminal tractor and trailer connections

### Operation of trailer park brakes

The location of trailer park brakes can vary between vehicles. Arrangements and responsibilities for releasing park brakes must be risk assessed and described in the safe operating procedures, which must be shared with and understood by all parties involved in the loading and unloading operations.

Where park brakes are to be operated by personnel on foot, clear communication with the driver is essential, and measures in place to ensure the driver does not move until the personnel are safely positioned. When the park brake is operated by the driver, personnel on foot must remain in a safe position, away from the vehicle.

### Pull Tests

A pull test must be conducted on every trailer prior to movement. This is a key safety procedure and part of standard driver training. The pull test serves two purposes:

1. **Fifth wheel connection:** Verifying that the fifth wheel is correctly engaged and the trailer is securely attached.
2. **Brake release check:** Confirming that the trailer brakes are released and the trailer can be moved safely.
- 3.

Pull tests must be carried out with all personnel in positions of safety.

### 15. Semi-automatic locking trestles

There are two main types of Semi-Automatic locking Trestles (SAT's) in use, ones that sit on top of the deck and those that have twist locks that lock into the deck of the vessel. Variations of SATs are available and manufacturers guidelines should always be followed.

Both types of SAT lock onto the fifth wheel pin of the trailer and have a fifth wheel pin of their own which then locks into the terminal tractor allowing both trestle and trailer to be moved around together.

This type of trestle can remove some of the hazards associated with a person having to locate or position traditional trestles underneath trailers when they have been drawn into position, and many of the manual handling issues associated with traditional trestles.

However, the use of SATs does introduce some additional hazards which need to be considered including:

- The gap between trailers is reduced which can increase the potential risk of crushing.
- The requirement for personnel to move down the side of the terminal tractor to put on the connector which increases the people / plant interface.

When coupling to a trailer with a SAT:

- Ensure the correct terminal tractor type is used.
- Complete a surge check to ensure the trailer is fully locked on

When coupling or setting down trailers on the vessel using SAT with locking twistlocks, the SAT should be correctly positioned, with the airlines connected and the park brake on, before the connector is attached.

Where possible, attaching and detaching the connector should be undertaken by the terminal tractor operative to avoid deck personnel being exposed to the risks of crushing, becoming stuck or trapped by inadvertent movement of the terminal tractor.

A suitable storage area for should be provided for SATs, which prevents them from being knocked over during handling. Drivers should not attempt to connect to free standing SATs as they are likely to fall over. They should be safely positioned in the storage location before being connected.

## 16. Trailer types

### Cassettes and trans-lifters

Cassettes are a type of trailer designed for use with a tractor unit and trans-lifter. They can be used to transport any type of cargo but are often used to transport containers and tanks, and frequently double stacked (two containers double stacked and locked together). Their main purpose is to be able to be stack containers to maximise the payload on board Ro-Ro vessels. (also see sub section [double stack containers](#) below).

Cassettes can be blocked stowed across the deck of a vessel and because of their stability do not always require any securing (this would be determined in conjunction with the vessel Master and the vessel specific securing requirements).

When moving cassettes on ramps, the method of movement should be determined through the risk assessment, taking into account load, stability, ramp gradient, and operating conditions. Any movement, whether pushing or pulling, should be planned to maintain control, minimise the risk of collision or rollover, and ensure the safety of personnel and equipment. If transporting double stacked containers or tanks, it is important to ensure that the greater weight is on the bottom to ensure stability. Trans-lifters should be set at a height that avoids grounding on ramps while maintaining stability. This is particularly important where ramp gradients are increased, such as during periods of high or low water. Routes to storage areas should be designed to reduce sharp turning and take into account any adverse camber and be free from overhead obstructions. Speed should always be reduced during cornering to avoid roll over.

Hazards associated with the use of cassettes and trans-lifters include but are not limited to:

- Length of unit and turning circle.
- Height restrictions on vessels.
- Turnover due to inappropriate speed.
- Poor stability and weight distribution (top heavy).
- Poor visibility when pushing.
- Bottoming out when coming off steep ramps.
- Failure to centralise causing the trans-lifter to crab.
- Poor ground conditions.
- Additional hazards when transporting double stack container and tanks.
- Positioning of twin tanks (heaviest tank should be forward).
- Hazardous content of tanks.
- Live loads (e.g. liquid, hanging meat) shifting causing changes to the centre of gravity.
- Adverse weather conditions.

### Double stack containers

Control measures should be put in place to ensure double stack container operations are safely managed, these may include but are not limited to:

- Planned routes that are communicated in advance, taking into consideration height restrictions, tight turns, road camber, ramp gradients and other relevant features.

- Speed limits set through risk assessment, taking into account equipment manufacturer's guidelines and operating conditions, and enforced appropriately.
- All container weights should be verified as gross container weight.
- Mafi's or cassettes should not be loaded above their safe working load (SWL).
- The top container must not be heavier than the bottom container.
- Risk assessments should determine the configuration of containers loaded on mafi trailers or cassettes.
- Extra caution is required when driving on Ro-Ro bridges and vessels, to ensure that there is sufficient headroom available.
- Twistlocks must be locked prior to movement.
- Operations should take into account environmental conditions, including wind limits, to maintain stability and safety.

### Hydraulic goose neck trailers

The main additional risk associated with hydraulic equipment is entrapment in the hydraulic mechanism and personnel operating such equipment should be trained in their use. Controls include but are not limited to:

- Only the person operating the hydraulic gooseneck should be in close proximity to it when in operation.
- The hydraulic system operator should keep clear of the mechanism while operating.
- When lowering the gooseneck, gradually open the hydraulic valve to slowly lower the gooseneck while under control.

### Skeletal trailers

Different axle configurations, lengths, and designs affect handling, turning, and swept paths. Each trailer may behave differently, so all movements should be **carefully planned and managed**, taking into account trailer characteristics, deck layout, and personnel safety.

When positioning skeletal trailers with separate the rubber feet for parking or stowing, it is important that the feet are placed correctly to ensure the trailer remains stable. These types of trailers require firm and level surfaces for parking. Consider the additional risks for personnel positioning rubber blocks directly under trailer.

Skeletal trailers have different lashing point locations compared to standard trailers and lashings must be connected to the appropriate points.

### Laden tank containers

The movement of liquids inside tank containers can create longitudinal and transverse forces on the vehicle and trailer combination during acceleration, braking, cornering, and movement on vessel ramps. Internal baffles or surge plates may help reduce liquid movement, but they should not be relied upon as the only control measure.

Where laden tank containers are moved on vessel ramps, particularly to decks other than the main deck, the operation should be specifically risk assessed. The assessment should consider:

- The tank fill level.
- Whether the tank is fitted with baffles or surge plates.
- The ramp gradient
- Deck conditions.
- Route, speed, and turning movements.
- Tractor capability, trailer braking arrangements and coupling arrangement.
- Load rating (including maximum payload, axle loads, and load distribution limits), twist locks or other securing arrangements.
- Terminal tractor and trailer manufacturers' operating limitations.

The trailer used should be suitable for the specific task. Where non-braked roll trailers, terminal trailers, or similar equipment are used, the risk assessment should confirm that they are appropriate for the load, route, ramp gradient, and operating conditions. Braked trailers or chassis should be used where required to control the risk of jack-knifing, loss of control, or overturning.

Manufacturer speed limits and any other operating restrictions for the tractor and trailer combination should be identified and included in the safe system of work.

## 17. Specialised cargo and operations

In addition to CTU's, Ro-Ro vessels may carry any type of cargo on wheels or tracks capable of being rolled on or off the ship. In addition, Sto-Ro ships may carry any cargo that can be carried onto the ship on a Mafi or trailer and then loaded to the ships deck (e.g. casework and steel). See section [Securing for Sto-Ro load and discharge](#).

When complex equipment or one-off loads are carried, arrangements should be made with the owner or shipper for a representative to be present to supervise or undertake the loading or unloading operation.

Some wide or oversized units may straddle two lanes. Clear arrangements are needed to guide the driver into the correct position, ensuring adequate spacing, and allowing lashings to be applied safely.

Rear-wheel steer units have significantly different turning circles and handling characteristics. Safe systems of work should account for this, including space requirements, positioning, and communication with deck personnel.

### Trade cars for import and export

Cars, vans and trucks carried on pure car carriers (PCC), pure car and truck carriers (PCTC) or conventional Ro-Ro vessels should be the subject of a suitable and sufficient risk assessment.

Consideration must be given to the movement of drivers on the vehicle decks, including safe access to and from vehicles. Operators must also ensure the safe movement of drivers between the vessel and storage areas by controlling the speed of vehicles onboard, when driving to and from the vessel, and within vehicle compounds in the terminal area. Operators should also consider the safe stowage and discharge of vehicles, including coordination of movements during loading and unloading.

Consideration must also be given to the securing and un-securing of vehicles including the manual handling risks involved. Where these activities are undertaken by the ship's crew, a clear understanding of responsibilities between all parties should be established and documented.

A safe procedure for dealing with non-starting vehicles and breakdowns should be adopted (see subsection below).

### Non-standard vehicles

Where non-standard vehicles requiring specific operating knowledge (such as buses) are loaded or discharged unaccompanied, personnel responsible for these operations must be familiarised with the correct procedures for starting, controlling, and manoeuvring the vehicle.

### Empty trailers

Empty trailers that have been stacked together must be made safe. This may include:

- Locking.
- Lashing.
- Stanchions.

### **Mobile plant cargo**

The loading and unloading of mobile plant as cargo, often requires terminal operatives to drive the equipment on and off the vessel. It is impractical to ensure operators are fully trained in operating every type of plant equipment. However, operatives required to load or unload plant equipment should be familiar with the equipment concerned, and able to safely drive it along the ship's ramp and freight decks. For mobile plant with external controls, operatives must be aware of how to use these safely. All familiarisation required for mobile plant movements should be documented.

Mobile plant cargo which has to be driven on or off the vessel by port operatives should be parked and stored in a safe and secure area. This area should not obstruct traffic or pedestrian routes.

When mobile plant is being moved or stowed on board the vessel, personnel should be kept well clear of the operation until it is safely positioned, shut down, and ready to be secured. Tracked units may present additional risks due to reduced traction on steel ramps and freight decks. Control measures, such as the use of suitable rubber matting for travel and stowage, should be considered to reduce the risk of slipping or loss of control.

Companies and ships masters should develop procedures in their safety management systems to reject certain vulnerable cargoes when vessels are expected to encounter adverse weather on passage.

### **Livestock**

Livestock may be carried in specialised vehicles, or in trailers or horseboxes. Operators should assess the risks of vehicle stability, ventilation, and containment, and must ensure that any cargo containing live animals is handled in accordance with relevant animal welfare regulations.

### **Breakdowns and non-starting vehicles**

A safe procedure for dealing with breakdowns and non-starting vehicles should be established and agreed with the ship's Master. This should include but is not limited to:

- Complex starting procedures for non-standard vehicles.
- Safe arrangements for refuelling vehicles, particularly on freight decks or in ships' holds (e.g. petroleum or liquefied petroleum gas (LPG) powered vehicles should be refuelled in a safe well-ventilated area and not in a confined space).
- Towing operations.
- Punctures and wheel changes.
- Jump starting of vehicles and the safe use of batteries. See HSE guidance on using electric storage batteries safely (INDG 139).  
<http://www.hse.gov.uk/pubns/indg139.pdf>
- Arrangements for managing non-starting electric vehicles (EVs), recognising that these cannot be jump started and may have specific requirements or restrictions for towing and recovery.

For some items of mobile plant and equipment, additional expert mechanical assistance and risk assessment may be required in the event of breakdowns.

## 18. Dangerous goods

The requirements of the [Dangerous Goods in Harbour Areas Regulations](#) (DGHAR), the [International Maritime Dangerous Goods Code](#), (IMDG), and other relevant legislation which may apply to the transport, storage or handling of the cargo, must be taken into account.

All dangerous goods should be labelled, handled, stowed, and segregated in line with the requirements set out in the IMDG code and locations agreed with the responsible person on the vessel. These should be stowed in line with the document of compliance and identified on the stowage plan.

Procedures should be in place for dealing with spillages and leaking of dangerous goods. All such incidents should be reported and recorded.

For certain cargoes, it is necessary to have specifically trained personnel available to advise on the safe systems of work these include:

- Explosive Security Officers.
- Radiation Protection Advisor or Supervisors.
- Dangerous Goods Safety Advisors.

All personnel involved in the handling of dangerous goods should receive training appropriate to their role in the transport chain, in line with the requirements of the IMDG Code.

### 19. Securing for Sto-Ro load and discharge

With Sto-Ro general cargo (e.g. casework and steel). Consideration should be given to:

- How the load can be safely (un)secured.
- The type of equipment to be used.
- The condition and security of the load when moving on Mafi and trailer.
- How the material will be safely handled and (un)stowed on freight decks.

Risk assessments should cover the safety of personnel in the vicinity of cargo being moved from the loading position to a safe area nearby for securing. All parties involved in the loading of vehicles should cooperate to ensure that the load is safe to be moved from the loading position.

It is important to differentiate between the two stages of the journey:

- The initial transfer of a load - from the loading or unloading position to a safe area nearby for proper securing.
- The onward journey from that safe area – the journey to the main road or storage area.

No matter how short the journey, the load must be appropriately secure. However, there is a risk associated with strapping loads and apply twistlocks in cargo handling areas. Therefore, the level of securing required for the initial transfer stage should be determined through risk assessment, and safe areas should be identified for applying and removing securing straps.

Factors to consider when identifying the extent to which the load needs to be secured for the initial transfer include:

- The type of load (e.g. bulk, bundled).
- The stability of load.
- The method of stacking.
- The type of vehicle.
- The length of journey.
- The road surface.
- Speed.
- Weather conditions

Control measures may include:

- Containment of the load using stanchions, chocks, or blocks.
- Controlling pedestrian or other access to the area.

For the onward journey the load should be properly secured to the lorry or trailer.

## 20. Appendix: Safety in Ports guidance

[SiP000 Guidance framework](#)  
[SiP001 Port and terminal planning](#)  
[SiP002 General cargo](#)  
[SiP003 Container handling](#)  
[SiP004 Timber handling](#)  
[SiP005 Mooring operations](#)  
[SiP006 Transfer of bulk liquids and gases](#)  
[SiP007 Loading and unloading of dry bulk cargo](#)  
[SiP008 Storage of dry bulk cargo](#)  
[SiP009 Lighting](#)  
[SiP010 StoRo & RoRo operations](#)  
[SiP011 Sources of occupational health information](#)  
[SiP012 Ro-Ro passenger and cruise operations](#)  
[SiP013 Management of non-permanent employees](#)  
[SiP014 Safe access and egress](#)  
[SiP015 Confined spaces in ports](#)  
[SiP016 Emergency planning in ports](#)  
[SiP017 Guidance on fitness for work and health surveillance](#)  
[SiP018 Safety induction and training](#)  
[SiP020 Water safety](#)  
[SiP021 Access to small craft](#)  
[SiP022 Biomass](#)

## 21. Appendix: External links referred to in this document

Links to information provided by other organisations and referred to in this guidance are provided here for ease of reference. Port Skills and Safety has no control over the content of external websites and the documents referred to may move or no longer be available from those organisations.

HSE pages on health surveillance and occupational health.

<https://www.hse.gov.uk/health-surveillance/overview.htm>

<https://www.hse.gov.uk/health-surveillance/occupational-health/index.htm>

HSE guidance on Diesel Engine Exhaust Emissions

[www.hse.gov.uk/pubns/indg286](http://www.hse.gov.uk/pubns/indg286)

HSE pages on Control of Substances Hazardous to Health (COSHH):

[www.hse.gov.uk/coshh](http://www.hse.gov.uk/coshh)

Workplace exposure limits (WEL)

<https://www.hse.gov.uk/pubns/books/eh40.htm>

HSE guidance on Coupling and Uncoupling:

[www.hse.gov.uk/workplacetransport/information/coupling](http://www.hse.gov.uk/workplacetransport/information/coupling).

Office of Rail and Road (ORR) website:

<https://www.orr.gov.uk/rail-guidance-compliance>.

Code of Safe Working Practices for Merchant Seafarers (COSWP);

[www.gov.uk/government/publications/code-of-safe-working-practices-for-merchant-seafarers-coswp](http://www.gov.uk/government/publications/code-of-safe-working-practices-for-merchant-seafarers-coswp)

MGN533 (M) Means of access

[www.gov.uk/government/publications/mgn-533-m-means-of-access](http://www.gov.uk/government/publications/mgn-533-m-means-of-access).

Safety in Docks ACOP L148:

[www.hse.gov.uk/pubns/books/l148](http://www.hse.gov.uk/pubns/books/l148)

Health and Safety (Safety Signs and Signals) Regulations 1996:

[www.hse.gov.uk/pubns/books/l64](http://www.hse.gov.uk/pubns/books/l64)

HSE Guidance on using electric storage batteries safely (INDG 139)

[www.hse.gov.uk/pubns/indg139.pdf](http://www.hse.gov.uk/pubns/indg139.pdf)

Dangerous Goods in Harbour Areas Regulations 2016:

[www.hse.gov.uk/pubns/books/l155](http://www.hse.gov.uk/pubns/books/l155)

Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002:

[www.hse.gov.uk/fireandexplosion/dsear](http://www.hse.gov.uk/fireandexplosion/dsear)

International Maritime Dangerous Goods Code (IMDG):

[www.imo.org/en/Publications/IMDGCode](http://www.imo.org/en/Publications/IMDGCode)

## 22. Appendix: Further information and guidance

These links are provided to enable members to find further information which may be relevant to this guidance. Links are correct at the time of publication but Port Skills and Safety has no control over the content of external websites and the documents referred to may move or no longer be available from those organisations.

Control of Vibration at Work Regulations 2005:

[www.hse.gov.uk/vibration/wbv/regulations](http://www.hse.gov.uk/vibration/wbv/regulations).

Managing Health and Safety in dock work HS(G):

<https://www.hse.gov.uk/pubns/books/hsg177.htm>

Ramps and linkspans:

[www.maib.gov.uk/publications/investigation\\_reports/2010/ben\\_my\\_chree.cfm](http://www.maib.gov.uk/publications/investigation_reports/2010/ben_my_chree.cfm)

<http://www.hse.gov.uk/ports/linkspans-walkways.htm>

Securing vehicles:

[www.maib.gov.uk/publications/investigation\\_reports/2009/stena\\_voyager.cfm](http://www.maib.gov.uk/publications/investigation_reports/2009/stena_voyager.cfm).

[www.gov.uk/government/publications/mgn-418-roll-onroll-off-ships-stowage-and-securing-of-vehicles](http://www.gov.uk/government/publications/mgn-418-roll-onroll-off-ships-stowage-and-securing-of-vehicles)

[www.gov.uk/government/publications/mgn-341-Ro-Ro-ships-vehicle-decks-accidents-and-access](http://www.gov.uk/government/publications/mgn-341-Ro-Ro-ships-vehicle-decks-accidents-and-access)

IMO guidance on: "Code of Safe Practice for Cargo Stowage and Securing" (CSS Code).

<https://www.imo.org/en/ourwork/safety/pages/css-code.aspx>

Vehicle safety:

<https://www.hse.gov.uk/workplacetransport/information/vehicles.htm>

Workplace transport:

<https://www.hse.gov.uk/workplacetransport/index.htm>