Operations Quality Manual for Commercial Vehicles

Version 2, March 2022

ECG The Association of European Vehicle Logistics

Established in 1997, ECG is the Association of European Vehicle Logistics and represents around 100 leading vehicle logistics companies from 28 countries across Europe, including the Russian Federation, Ukraine and Turkey. ECG Members provide transport, distribution, storage, preparation and post-production services to manufacturers, importers, car rental companies and vehicle leasing operators. ECG's Brussels based secretariat works daily to fulfil the core mission of the Association, i.e. Information & Awareness; Education; Networking & Integration; Lobbying & Representation; and Standardisation. For more information, please visit the ECG website: ecgassociation.eu.

This manual is primarily intended to help achieve the highest quality in handling of finished vehicles throughout the industry. Although safety issues are sometimes relevant to this, they are often covered by national legislation and then differ by country. Consequently, this manual may sometimes refer to best practice but in general it avoids making specific reference to safety issues and requirements as responsibility for this lies with the operators.

Contents

Introduction

This Operations Quality Manual is an ECG publication initially prepared by the ECG High & Heavy Working Group, which was created in 2012 as a sub-group of the ECG Quality Working Group to respond to the need for expertise in this specific niche of vehicle logistics.

The idea of establishing common quality standards for the whole industry was born from a commitment shared by the logistics service providers and the manufacturers to improve operational efficiencies by reducing duplication of activities due to the lack of harmonisation. Indeed, the standardisation of practices will also lead to a reduction in the damage rates and a more rapid and effective handling of the vehicles. The present manual is an additional step on the path towards a broader harmonisation in the sector.

This manual is intended to be used as a management/supervisory guide when training staff on handling procedures. This should ensure a consistent approach, however, each manufacturer retains the right to demand a different treatment for its vehicles. This is why the manual often makes reference to the manufacturer's individual requirements. Such particular conditions have to be clearly defined, understood and adhered to by both parties signing the contract. Moreover, these guidelines do not in any way supersede regulations stipulated by various national authorities. Copies of this manual can be downloaded free of charge from http://www.ecgassociation.eu. While translations into other languages will be available only the English version is official.

You can contact the ECG Secretariat with your comments and inquiries about this manual or the future activities of the Quality Working Group at info@ecgassociation.eu or +32 2 706 82 80.

Key:

NEW - additional content compared to the previous version of the Operation Quality Manual

AMENDED - minor change or deletion compared to the previous version of the Operation Quality Manual

1. Definitions

For the scope of this Manual, Commercial Vehicles are defined as vehicles belonging to the following categories:

Trucks

Category N2: Vehicles used for the carriage of goods and having a maximum mass exceeding 3.5 tons but not exceeding 12 tons.
Category N3: Vehicles used for the carriage of goods and having a maximum mass exceeding 12 tons.

Buses

Category M2: Vehicles used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat and having a maximum mass not exceeding 5 tons.
Category M3: Vehicles used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat and having a maximum mass exceeding 5 tons.

2. General Instructions

2.1. Clothing

- Personnel must wear clean working clothes and gloves at all times (no oil/grease stains).
- No buttons, exposed zips or belt buckles.
- Wearing boots or shoes closed around the foot is obligatory. The shoes/boots must prevent slipping.
- Rings and other jewellery are not permitted, unless properly covered.
- It is forbidden to carry in one's pockets sharp objects (pens, tools, etc.) that could accidentally damage the vehicles.
- Working gloves must be worn when working on the truck, the wagon, the ship or the compound. However, they must be removed before entering the vehicle.
- Wearing high visibility jackets or clothes with high visibility elements is highly recommended in compounds. The use of safety helmets is subject to local laws, regulations or guidelines.
- If safety helmets are used for operations, they must be removed before entering the vehicle.
- If not specified above please consult the local safety regulations.

2.2. Handling

AMENDED

- Vehicles can be driven only by personnel with valid driving licenses who have received introductory training on the guidelines in this manual. Subcontractors should also receive training and comply with this manual.
- Vehicles can be driven only for the purpose of loading/unloading, parking and for working through the schedule of care measures.
- It is recommended for the manufacturers to provide the logistics service providers with the dimensions and weight of the whole product range beforehand, to guarantee appropriate preparation for the cargo to be transported and avoid safety and liability problems.

2.2.1. Use of the vehicle

- Vehicles must be driven at moderate speed in all situations. For an indication of the speed limit particular to a given transport mode, please refer to the corresponding section of this manual.
- Vehicles must be driven in such a manner as to minimise damage probability. In particular, it is forbidden to:

AMENDED

  - Rev the engine unnecessarily.
  - Set off rapidly with spinning drive wheels.
  - Slip the clutch at high engine speeds.
  - Drive on the starter motor.
  - Overtake other vehicles.
  - Drive with flat tyres.
  - Have the accelerator pedal depressed prior to starting.
  - Remove the ignition key whilst the vehicle is in motion.

AMENDED

  - Drive with windows covered with snow or ice. Snow and ice should be removed only with plastic scrapers and/or soft brush or de-frost spray
  - Drive with open doors.
  - Use wipers on a windscreen covered with ice or snow.

- The driver/jockey must immediately stop the engine if an operational fault occurs or if a strange noise is detected.
- Vehicles and their equipment must be used only to such an extent and in such a manner that is necessary. The following are strictly forbidden unless the manufacturer has explicitly, and in writing, authorised it:
  - To lean, stand or sit on the vehicles.
  - To eat, drink or smoke in/near the vehicles.

- To remain in the vehicle longer than necessary.
- To place foreign objects on/in the vehicles.
- To use any electronic equipment (audio, GPS, telephone, etc.), unless necessary for driving.
- To operate manually electric mirrors.
- To write upon the vehicles.
- AMENDED To attach labels or stickers on the vehicle
- To use one vehicle for towing or pushing another one.
- To use vehicles as shuttles or for transporting material and/or other persons.
- To detach/remove protection material (such as seat protection).
- To enter/exit the vehicle by other doors than the driver's.
- To wear headphones and listen to music/radio.
- To use cell phones and transmitters while handling/driving vehicles.

AMENDED 2.2.2. Rules to be respected when leaving the vehicle

- Upon leaving the vehicle for storage/transport, it has to be checked whether:
  - The doors, windows and sunroof are closed.
  - Wing mirrors are folded in if possible
  - Vehicles with manual transmission must be left in neutral and with the hand brake (or parking brake) applied.
  - Vehicles with automatic transmission must be left with the transmission selector lever in "N" position and have the hand brake (parking brake) applied.
  - All electronic equipment is left in the "off" position.
  - All storage compartments are closed to avoid any power drain on the battery during storage.
  - The vehicle is not parked on inflammable materials, such as dry grass or leaves.
  - The seat covers are in a proper position.
  - The driver seat is pushed back.

2.2.3. Special requirements for bus chassis

- The chassis should have a fixed seat.
- The chassis should have a counterweight since it is unbalanced due to the absence of the body.
- If the chassis has no counterweight, it will be considered as not self-propelled cargo and would be treated accordingly (e.g. towed or loaded on a trailer).

2.2.4. Rules on non-starters

- First check the manufacturer's instructions.
- If the vehicle doesn't start because the battery is flat it must be jump started, unless the manufacturer's instructions clearly state otherwise, using an auxiliary battery, never another vehicle.
- Only the starter battery may be used for jump starts.
- To connect the cables follow the manufacturer's instructions.
- Jump starting cables must be handled with precaution to prevent damage to the vehicle.
- If the vehicle needs refuelling, add a sufficient amount of the correct fuel type
- If the two previous methods fail, contact the manufacturer of the vehicle.
- A vehicle must never be jump started/refuelled by anybody who has not received relevant training. Whenever possible, non-starters should be handled by specialised personnel and not the drivers.
- AMENDED It is recommended to replace a flat battery by a new one before loading the vehicle (road transporter, rail wagon, ship or barge). However, this rule must be clearly stated and agreed to by the parties by means of a written contract.

2.3. Inspections

- AMENDED An inspection of the vehicle has to be performed at each handover point, but it depends on the contractual agreements.
- If the circumstances render the inspection difficult (dirt, snow, etc.), it has to be noted on the inspection documents.
- NEW If an inspection is not possible within the agreed time frame (usually 24 hours) due to the dirty vehicle condition or extreme weather circumstances, the customer should be notified to agree on washing of the vehicles or to agree upon an extended acceptance period to perform the inspection.

2.4. Exceptional damage reporting

- The customer must be informed of damages incurred as a result of serious force majeure incidents as soon as they are detected.
- AMENDED The next carrier in the logistics chain should ask the customer for instruction regarding the forwarding of the damaged vehicle.

3. Road Transport

3.1. Equipment

3.1.1. Transporters

- Transporters must be in good condition, painted and rust-free.
- The hydraulic systems must be functioning properly and not leaking.
- The transporters should be equipped with stone guards above the wheels.
- The surface of the decks and ramps must offer good grip without sharp edges.
- Loading ramps must be placed at a sufficiently low angle to enable easy access and prevent damage to the under body of the transported vehicles. The industry standard is a maximum ramp angle of 8 degrees.
- Transporters must respect the local health and safety requirements.
- The loading deck pillars, the ropes and the supports of the safety ropes should be cushioned to secure damage free opening of the vehicle doors.

NEW

- Vehicles must be properly secured on trailers, height and weight regulations must be adhered to.

3.1.2. Transporter equipment

- Special vehicle transporters must be equipped with:
  - Two sets of ramps long enough to permit reaching an 8 degrees angle, ramps should be of sufficient load-bearing capacity.

AMENDED

  - At least 2-4 chocks per transported vehicle, unless there is a different agreement with the manufacturer; design and size of the chocks must be appropriate for Commercial Vehicles.

AMENDED

  - Minimum 4 lashing straps per transported vehicle. Lashing straps must have a maximum stretch of 5% and meet the norm DIN EN 12195-2. The use of a movable (“sock” type) strap control is strongly suggested but not mandatory. The label on the lashing must not be washed out to a point where it becomes impossible to read.

3.2. Loading/Unloading

- The rules that follow are specific to the loading/unloading process. The rules on vehicle handling listed in the general section (Section 2.2.) also apply. Personnel must also be trained on these instructions before being allowed to proceed with loading, unloading or other handling.
- When loading, ensure the loaded weight, height and length complies with the national requirements and those applicable on the chosen routes.

3.2.1. Before loading or unloading

- The transporter must be parked on level and firm ground.
- The loading decks must be cleared of all lashings, chocks, tools or other objects. It is forbidden to let lashings hang from the anti-fall guard (safety ropes).
- The decks of the truck and the trailer must be fixed in a suitable position for loading vehicles without causing damage to their under body.
- All gaps in the decks (wheel indents) must be covered with track sections. The decks of the truck and the trailer must be bridged with connecting ramps.

3.2.2. During loading or unloading

- Vehicles must be driven on/off the transporters at walking speed to reduce the probability of causing damage. Speed must be particularly reduced before driving on or off the ramps.
- Vehicles must be unloaded only under motor power. It is strictly forbidden to push the vehicles off the transporter, to brake with the hand brake or the clutch!
- It must be checked that the following distances are kept (to be measured with one's hand):
  - Between the vehicles, end to end: a fist (approximately 10 cm);
  - Between the vehicle's roof and the upper deck: a fist (approximately 10 cm);
  - Between overlapping vehicles: a fist (approximately 10 cm);
  - Between the vehicle's under body and the deck: 3 fingers (5 cm absolute minimum).
- The driver should always be able to ask for and obtain assistance during operations.

3.2.3. After loading or unloading

AMENDED

- Vehicles with manual transmission must be left in neutral position and with the handbrake (parking brake) applied. Vehicles with automatic transmission must be left with the transmission selection lever in "N" position and the handbrake (parking brake) applied.
- If the vehicles have been loaded/unloaded during the night or under any other conditions that require the use of headlights, they have to be switched off immediately after loading/unloading.
- Vehicles must be locked during transport. Keys must be secured by the driver.
- Vehicles must be lashed for transport according to the lashing procedures in the next section.

3.3. Lashing

- Lashing of vehicles should always comply with local regulations/laws. It is recommended to follow manufacturers' guidelines for lashing.
- It suggested as additional reference to use the VDI (German Association of Engineers) Directive 2700ff part 8.1 and 8.2.
- Three point lashing straps with strap control in combination with wheel chocks must be used.
- Lashing has to proceed as follows:
  - Insert the first hook vertically into one of the track/deck perforations.
  - Lay the lashing with strap control radially over the tyre.
  - Insert the second hook vertically into one of the track/deck perforations.
  - Brace the third hook at an angle to the wheel and tighten the strap using a ratchet.

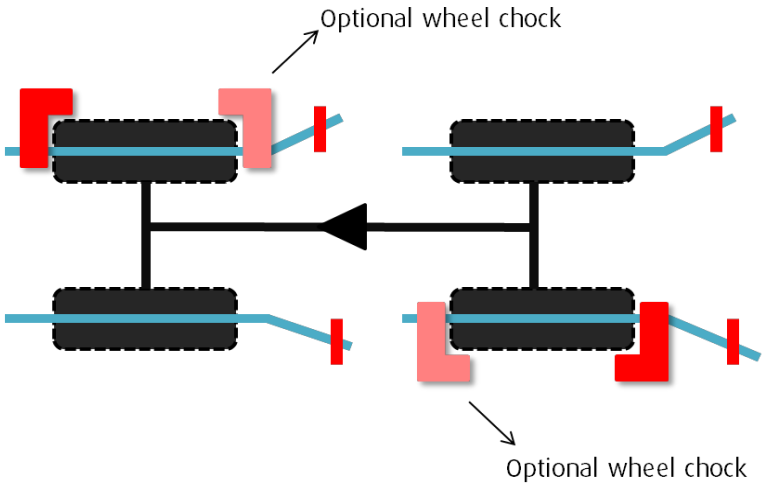
NEW

  - Make sure the lashing belt is properly placed not to damage the brake lead and/or sensor.

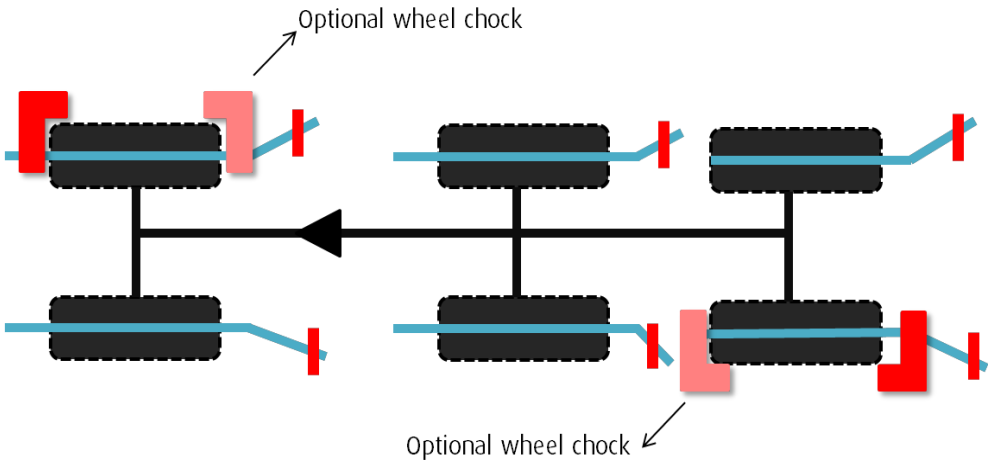
3.3.1. Securing of loaded vehicles (independently of the loading direction)

- All wheels are to be secured using a lashing with strap control.
- Fix one wheel chock in front of one of the front wheels and one behind one of the rear wheels. It is suggested to block diagonally opposing wheels.
- Additional wheel chocks can be placed in front of the rear wheel and/or behind the front wheel. The figures below show possible examples.
- If a wheel chock cannot be applied for technical reasons or due to a specific agreement with the manufacturer of the unit, a further lashing strap is to be attached to the other side of the axle.

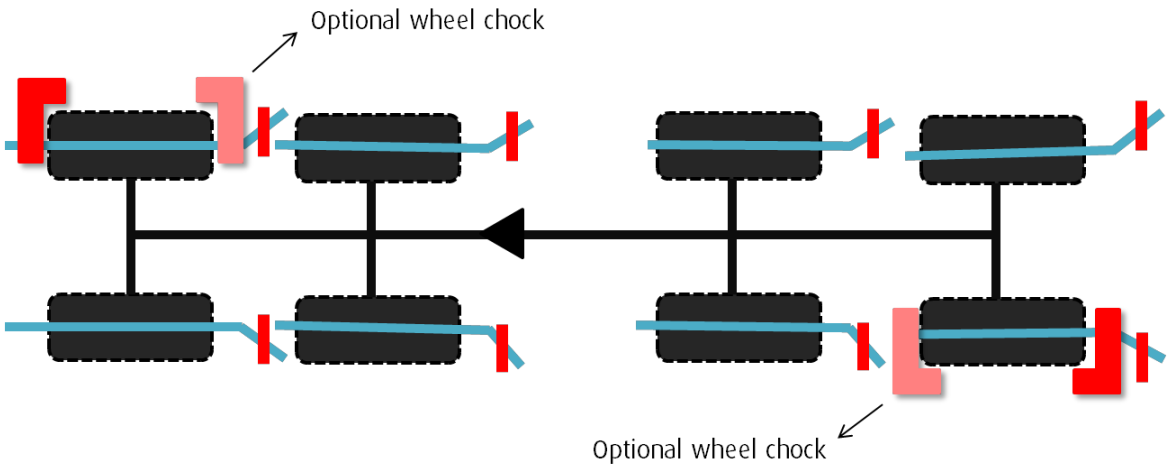
Vehicles with two axles



Vehicles with three axles



Vehicles with four axles or more



3.4. Transport by jockey

- It is mandatory to follow the requirements in this manual as well as reading the truck instruction booklet.
- It is not allowed to carry passengers during transport.
- Smoking is not accepted inside the trucks.
- Plastic protection for the driver's seat may be removed during driving but must be replaced upon delivery.

3.4.1 Driving behaviour

- Drive with care and follow the driving instructions.
- It is important to note that a truck without superstructure has a very low rear axle pressure, which will affect braking distance and stability.
- In case of road work deviations, drive slowly to avoid chippings.
- Avoid driving in convoy, if impossible always use sufficient distance.

3.4.2 Mechanical problems

- If a mechanical problem occurs during transport, contact the receiver for instructions. When impossible to reach the receiver contact the manufacturer.

4. Rail Transport

4.1. Equipment

4.1.1. Wagons

- Wagons should be in a good condition, painted and rust-free. Moreover, they should be regularly cleaned, painted and repaired according to a pre-established maintenance programme.
- The manufacturer has the right to inspect all the wagons put to its disposition and refuse those that do not meet the quality criteria.
- Wagons must not have any structural damage, mechanical deck faults or obstacles on the decks that may hinder loading or unloading.
- Wagons should have protective material applied to surfaces that are more likely to come in contact with the vehicle, particularly its doors and bodywork.

AMENDED

- The profile of the deck must offer a good grip, but should not be sharp-edged.
- Loading ramps, whether fixed or mobile, must be placed at a sufficiently low angle to enable easy access and prevent damage to the under body of the transported vehicles. The minimum standard is a maximum ramp angle of 8 degrees.

4.1.2. Wagon equipment

- Each wagon should be equipped with a sufficient number of wheel chocks. As a general rule, there should be 4 wheel chocks per vehicle. However, on some routes and in some countries, vehicles can be fixed with two chocks on one wheel or a double chock, protecting the wheel from the front and from the back, on one wheel.
- Design and size of the wheel chocks must be appropriate for Commercial Vehicles.

4.2. Loading/Unloading

The following rules are specific to the loading/unloading process. The rules on vehicle handling listed in the general section (Section 2.2.) also apply. Personnel must also be trained on these instructions before being allowed to proceed with loading, unloading or other handling.

4.2.1. Before loading or unloading

AMENDED

- Wagons should be presented at the loading platforms in the right direction, so as to allow loading and unloading forwards. Reversing the vehicles on the wagons should be absolutely avoided, unless contractually agreed.
- A loading plan should be drafted before the loading begins and followed throughout the loading process.
- Wagons must be secured by applying the brakes and by using brake shoes so that they don't roll away during loading/unloading.
- Bridging plates must be in place and fully secured.
- Gaps between wagons or wagon sections must be such that no damage can occur to the vehicles' tyres. Removable drive-on ramps or tracks are to be attached when necessary to the fittings provided on the wagon.
- Check that the loading width of the wagon is sufficient for the track of the vehicles being loaded.
- Before loading/unloading, the deck must be free of any materials that might cause damage to the vehicles to be carried (wire, glass, stones, wheel chocks). If possible, snow and ice should also be removed.

4.2.2. During loading or unloading

- During loading and unloading operations, vehicles must be driven at walking speed, both on the ramps and on the train, to reduce the possibility of damage. Speed must be particularly reduced before driving onto or off the ramps.
- Vehicles should be loaded or unloaded only by driving forwards. Reversing them on/off the wagons could cause damage. By exception, loading by reversing is acceptable for the last vehicle on the deck, but only if loading forwards is impossible.
- It must be checked that the following distances are kept:
  - Between the vehicles, or to the front and back end of the loaded wagon: 10cm
  - Vehicles between the wagon units: 20 cm

4.2.3. After loading or unloading

- After loading/unloading, the wagon has to be put in transport mode: bridging plates at both ends of the wagon have to be put in the upward position and secured (in fully enclosed wagons, doors should be closed and secured). Unused chocks should be secured on the wagons to avoid fall down or ejecting on the route.
- If the vehicles have been loaded/unloaded during the night or under any other conditions that require the use of headlights, they have to be switched off immediately after loading/unloading.
- AMENDED Keys must be removed from the ignition and stored according to the manufacturer's instructions.
- Vehicles must be lashed for transport according to the lashing procedures detailed in the next section.

4.3. Lashing

- Lashing of vehicles should always comply with local regulations/laws. It is recommended to follow manufacturers' guidelines for lashing.
  - All transported vehicles must be secured with wheel chocks.
  - As a general rule, four wheel chocks per vehicle should be used.
  - Wheel chocks are to be placed both behind and in front of two wheels on the same axle.
  - The axle to be secured by wheel chocks is the one on which the handbrake and/or gear is applied.
  - AMENDED For vehicles placed over short or permanent couplings, the above rule must absolutely be respected. If a vehicle is placed over a coupling then chocks may only be used on an axles or axles on one side of the coupling and never on both sides.
  - On some routes and in some countries (but only for domestic transport), vehicles can be fixed with two chocks on one wheel or a double chock, protecting the wheel from the front and from the back, on one wheel. It must not be forgotten that this rule is an exception. Before applying it, it has to be checked whether the lashing codes on the selected route allow for such a solution.
  - The wheel chocks are to be placed and removed carefully in order not to damage the tyre. If a lever is used to remove the chock, it must be properly protected.
  - A gap in accordance with the technical requirements for the chock type used must be left between the chock and the tyre.
  - The chock must never touch any other part of the vehicle than the tyre.

5. Water Transport

In general, only Ro-Ro vessels and inland waterway barges can be used for waterborne transport of new vehicles. The security and quality rules that follow apply integrally on this kind of vessels.

5.1. Ro-Ro vessels

5.1.1. Equipment

Ships

- Ships used for transport of vehicles must be in good physical condition. The manufacturer has the right to impose stricter conditions and refuse those ships that do not meet them.
- Ships must respond to internationally recognised quality standards.
- The decks and ramps of the ships must be constructed in such a way that there is sufficient distance between inner pillars for easy, damage free loading and unloading.
- Any gaps in the decks, or between ramps and decks, as well as any vertical differences in height must be reduced to a minimum to preclude damage to tyres.
- It has to be checked that no pipes or equipment are leaking oil.
- All elements on/off the decks should be rust free. In no case should rusted elements enter in contact with the transported vehicles.
- The holds in which the vehicles are stored must be clean, odour free and adequately ventilated. All traces of chemical or greasy substances must be removed.
- Decks and ramps must be well lit. All obstacles (obstructions, stanchions, etc.) must be painted or marked in safety colours. The construction elements most likely to be accidentally run into with vehicles must be padded to minimise the possibility of serious damage.
- All connecting and access ramps must be placed at a sufficiently low angle to enable easy access and prevent damage to the under body of the transported vehicles. The industry standard is a maximum ramp angle of 8 degrees.

AMENDED
- All connecting and access ramps should offer good grip but should not be sharp edged.
- Additionally, it is recommended to affix anti-slip tapes to driveways in curved areas.
- The deck (and the anti-slip tapes) must be able to bear higher load weight to prevent cracks, splits etc.

Ship equipment

AMENDED
- Lashing chains must be properly tensioned to avoid touching the vehicle.
- The vessels must be equipped with a sufficient number of lashing points, in good technical condition.

AMENDED
- The vessels must be equipped with a sufficient number of lashings, soft loops, chocks and other securing equipment in good technical condition.
- The lashings' resistance capacity must be adapted to the type of vehicle transported with a sufficient safety margin.

AMENDED
- Metal parts of the lashings should be protected (no rust) to prevent damage.

5.1.2. Loading/Unloading

The following rules are specific to the loading/unloading process. The rules on vehicle handling listed in the general section (Section 2.2.) also apply. Personnel must also be trained on these instructions before being allowed to proceed with loading, unloading or other handling.

Before loading or unloading

AMENDED
- It is the responsibility of the stevedore company and/or ships representative to organise a ramp meeting involving the duty officer of the ship and the port captain (or equivalent) to study a loading/stowage plan. This plan then has to be followed throughout the loading process.

AMENDED
- Before loading, enough driveways and walkways have to be clearly designated and marked by plastic cones and/or other means, according to the ship's safety requirements.
- The ramps and decks must be set in the correct position for loading/unloading and the internal doors must be opened.
- Decks and ramps must be freed of all loose equipment. Lashings must be secured or stored. In no case can the lashings be left hanging from the bulkheads/stanchions without being secured.
- Make sure that the vessel is set up appropriately for the cargo.

During loading or unloading

- All loading/unloading operations must be co-ordinated by an experienced supervisor.
- Ramp angle should be observed during loading and unloading (as it may change because of the tide and the change in ballast when vehicles are unloaded).
- Vehicles should be preferably loaded in groups of similar dimensions to facilitate their positioning on the loading deck.
- A safety distance adapted to the speed must be kept to the preceding and following vehicle when driving on the ramps and decks.
- Inside the ship, speed must be limited to such an extent as to prevent damage.
- Moreover, drivers have to comply with the shipping line's imposed speed limits.

AMENDED
- However, ramps should be negotiated at a slow enough speed to prevent wheels from skidding on wet surfaces.
- Headlights must be turned on before driving on board the vessel.
- Vehicles with pneumatic/air suspension must be driven in the highest position and stored in the lowest.

NEW
- It is prohibited to use a new vehicle as a stevedore's taxi shuttle.

NEW
- It is prohibited to access the vehicle other than through the driver's door.
- All vehicles must be stored under deck. Any exception to this rule must be accepted by the manufacturer by way of a written contract, agreement or instruction.

AMENDED
- The vehicles should be loaded in a way that permits to unload them forward and easily assessable for the driver to step in or out.
- During loading/unloading, vehicles should be driven forwards. Excessive manoeuvring and reversing should be avoided.
- As far as possible, vehicles should be stowed longitudinally. This way, the risk of the vehicles being displaced during transverse movement of the ship is minimized. If transverse storage cannot be avoided for some vehicles, special security (lashing) measures must be undertaken, according to the lashing instructions under section 5.1.3.
- Manufacturer's recommendations on which vehicles can be stored on ramps or transversely must be respected.
- New vehicles must be stored separately from other cargo and/or used vehicles.
- It must be checked that the following distances are kept, unless otherwise agreed with the manufacturer:

AMENDED
  - Between the vehicles, bumper to bumper: a minimum of 50 cm to be maintained;
  - Between the vehicle's bumper and the ship's superstructure: 30 cm;
  - Between the vehicles, mirror to mirror: 10 cm;
  - Clearance between the vehicle's roof and the upper deck: 10 cm;
  - Between a vehicle and non-automotive cargo: 50 cm;
  - Between the vehicles (passenger's side) and the ships superstructure: 15 cm;
  - Between the vehicle (driver's side) and the ship's superstructure: 60 cm;

After loading or unloading

AMENDED
- After loading/unloading, the vehicle's headlights and other electronic equipment must be switched off immediately.

NEW
- Special attention has to be paid for the PHEV and BEV vehicles, due to their low engine noise.
- When leaving the vehicle after loading, it has to be checked if it doesn't stand on any lashing equipment or any other object that could damage the tyres.
- Wheels must be left in the straight position.
- If the vehicle is equipped with a battery disconnection switch, it has to be activated once the vehicle has been parked in stow position on board of the vessel.
- Vehicles that can't be unloaded under their own power, even after refuelling and/or jump-starting, must be towed by a specialised vehicle and following manufacturer's instructions. Under no circumstances may a broken-down vehicle be towed by another vehicle from the load.
- After loading, vehicles must be lashed according to the procedures in the following section.
- Lashings should be inspected and corrected (re-tensioned) in case of necessity at least every day during the first three days and then every third day. If heavy weather is expected, daily checks should be re-established.

AMENDED
- Vehicles with manual transmission must be left in neutral position and with the hand brake (or parking brake) applied.

AMENDED
Vehicles with automatic transmission must be left with the transmission selector lever in "N" position and have the hand brake (parking brake) applied.
- Vehicles should be kept unlocked during transport. Keys must be removed from the ignition and stored according to the manufacturer's instructions.

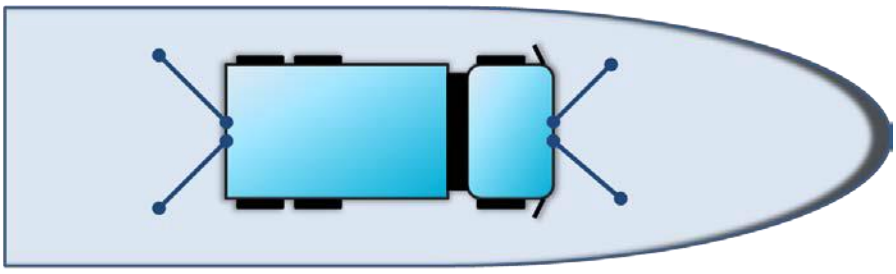
5.1.3. Lashing

- Lashing of vehicles should always comply with local regulations/laws. It is recommended to follow manufacturers' guidelines for lashing.
- All vehicles transported on a ship must be properly lashed.
- Only special lashing for securing heavy vehicles can be used.
- Each vehicle must be secured using a minimum of 4 lashings (used according to manufacturer's specifications). See diagrams below.

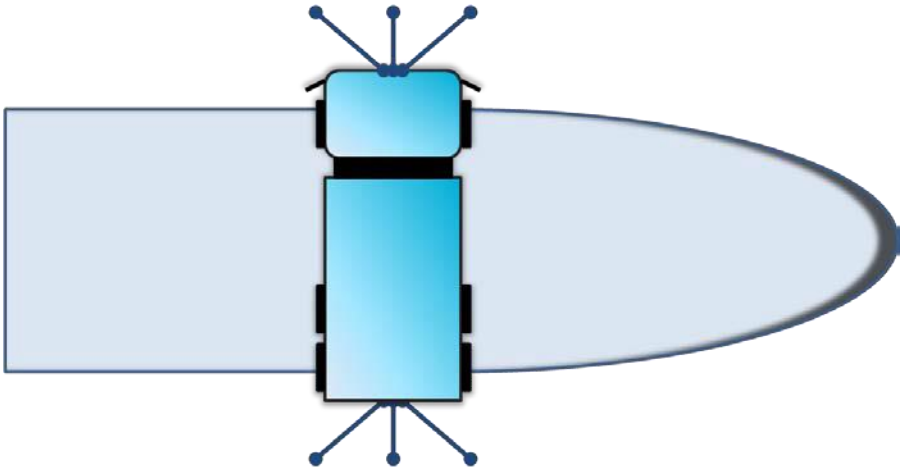
NEW
- Vehicles stored on ramps must be secured using a minimum of 5 lashings and additionally be secured with wheel chocks.

AMENDED
- Vehicles stored transversely must be secured using a minimum of 6 lashings and additionally be secured with wheel chocks.

Lashing for CV between 3t and 7t:

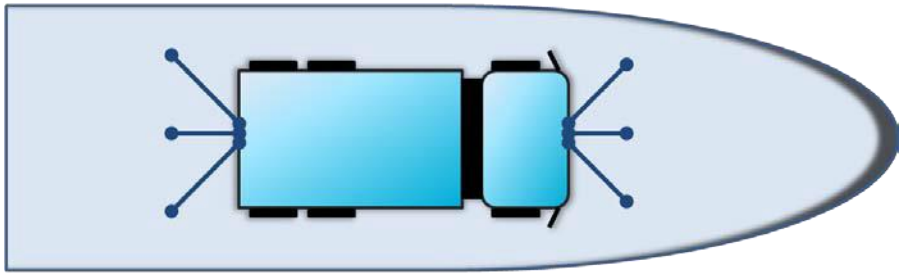


2 lashings at each end for vehicles stowed in fore and aft direction (longitudinally)

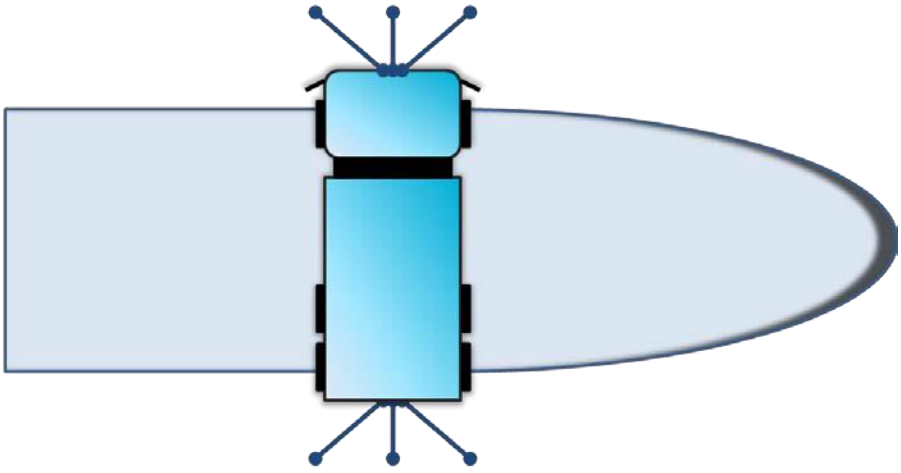


3 lashings at each end for vehicles stowed athwartships (transversely)

Lashing for CV between 7t and 10t:



3 lashings at each end for vehicles stowed in fore and aft direction (longitudinally)



3 lashings at each end for vehicles stowed athwartships (transversely)

- Lashings must be handled in a way to prevent any damage to the transported vehicles.
- The lashings used to secure a vehicle must not touch any other part of the vehicle than the lashing point or any other vehicle after they have been properly tied.
- A vehicle must be lashed immediately after it has been parked for storage and unlashed only after reaching the port of arrival.
- Lashings should be tensioned enough to prevent the vehicle from moving, but shouldn't tighten the vehicle down on its suspension.
- AMENDED Vehicles must be lashed at an angle of 30-60 degrees to the longitudinal axis of the vehicle to prevent lateral shifts during transport. Both at the rear and in the front, at least one lashing must be attached to a lashing point at each of the sides (left and right) of the vehicle. This way, the car is protected from lateral movements in any direction.
- NEW If it is not possible to place a lashing within the required angle of 30°-60° due to poor vehicle stow, obstructions or insufficient lashing points; two lashings must be applied to the same point on the vehicle. One between 0-30° and the other between 60-90°, this way lateral movements will still be prevented.
- It is recommended to have instructions from the manufacturers for the most appropriate lashing method.
- NEW Never apply lashing towards the inside of the vehicle, always away from the vehicle.

5.2. Ro-Ro river barges

5.2.1. Barges

- Barge decks and loading/connecting platforms must be in good physical condition, clean and rust-free.
- Loading platforms must offer good grip but not be sharp edged.

5.2.2. Loading/Unloading

Before loading or unloading

- Loading platforms must be placed at a sufficiently low angle to enable easy access and prevent damage to the underbody of the transported vehicles. The industry standard is a maximum ramp angle of 8 degrees.
- Before loading starts, the leader of the stevedoring shift and the captain must check whether among the vehicles to be loaded any are leaking oil and could damage the vehicles stored on the lower deck.
- Loading or unloading can start only after the captain has given his explicit permission.

During loading or unloading

- All loading and unloading operations must be co-ordinated by an experienced supervisor.
- As far as possible, vehicles should be stored longitudinally. If transverse storage cannot be avoided for some vehicles, they must be secured with wheel chocks.
- Vehicles must be loaded and unloaded at walking pace. They must be manoeuvred carefully in order to avoid damage.
- The slope of the loading ramp must be observed and corrected during loading/unloading, so that the ramp doesn't become too steep because of the change in ballast and provoke damage to the under body of vehicles.
- Vehicles must be loaded in such a way and in such an order that each vehicle, when parked for transport or entered for unloading, can be accessed through the driver's door without any risk of touching neighbouring vehicles. Vehicles can only be entered/left through the driver's door, never through other doors or the window!

- It must be checked that the following distances are kept, unless otherwise agreed with the manufacturer:
  - Between the vehicles, bumper to bumper: a minimum of 30 cm for unlashed vehicles and 50 cm for lashed vehicles;
  - Between the vehicle's bumper and the ship's superstructure: 15 cm;
  - Between the vehicles, mirror to mirror (with closed mirrors): 10 cm;
  - Clearance between the vehicle's roof and the upper deck: 10 cm;
  - Between the vehicle (passenger's side) and the ship's superstructure: 15 cm;
  - Between the vehicle (driver's side) and the ship's superstructure: 60 cm.

After loading

- Windows and doors must be kept closed but not locked. Keys must be removed from the ignition and stored according to the manufacturer's instructions.
- AMENDED Vehicles with manual transmission must be left in neutral position and with the hand-brake (or parking brake) applied..
- AMENDED Vehicles with automatic transmission must be left with the transmission selector lever in "N" position and have the hand brake (parking brake) applied .
- Vehicles stored on ramps must be effectively secured with wheel chocks to prevent their slipping.

6. Compounds

6.1. Technical requirements

6.1.1. Yard design

AMENDED

- All areas of the compound must be coated with asphalt/concrete or paved to prevent damage unless otherwise agreed with the manufacturer.
- The surface of the compound where the units are handled must have a sufficient load bearing capacity.
- Compound surfaces must be pot hole free.
- Compound yards must be properly drained.
- All compound areas must be clean. Removal of loose objects/debris from the ground must be performed at regular intervals.
- Compounds must be sufficiently lit. Lighting posts and other obstacles must be cushioned and marked in their lower parts for damage prevention.
- In the case of long stay of vehicles in port terminals, the cargo should be protected from saltwater spray.
- All vegetation must be systematically removed from the compounds and their immediate surroundings. Parking vehicles under trees is strictly forbidden as resin and leaves can seriously damage vehicle paint.
- Compounds must be divided into separate areas dedicated to:
  - Vehicle storage
  - Truck loading/unloading
  - Truck rest (if trucks are to be parked for longer time on the compound)
- Port compounds must additionally contain a large enough area dedicated to load forming and bulk dispatch.
- Personal car parking must be separate from the rest of the compound.
- Vehicle parking (storage) bays must be designed according to the parking instructions presented in section 6.2.2. and clearly identified on the ground. Moreover, each parking bay must be fully identifiable by a clearly indicated, easy to follow system of numbering and lettering.
- Internal ramps and slopes must be sufficiently flat to prevent damage to the underbody of the vehicles. The recommended maximum ramp angle is 8 degrees.
- Protection against natural sources of damage is recommended. In any case, compound operators should have action plans for all adverse weather events.

6.1.2. Yard equipment

- The compound must be equipped with a sufficient number of hydrants and fire extinguishers according to the local fire protection regulations.
- There must be a sufficient number of jumpstarting equipment in good condition.
- Portable tyre pressure checking equipment must be available on site.
- There must be a sufficient reserve of fuel on the compound.
- Additionally, vehicle identification systems must be available on-site for fluid stock management.
- Other yard equipment elements (battery testing equipment, compressors, machine wash) may be required by the manufacturer and must be available on site if the contract so stipulates.

6.1.3. Safety measures

- Compounds must be surrounded by a fence of at least 2 metres in height. It is recommended for the fence to be topped with barbed wire.
- Natural (steep hills, dense vegetation) or artificial (concrete/stone base) obstacles should complement the fence in anti-theft protection.
- The compound entrance must be equipped with a gate barrier and must be guarded.
- The whole compound area must be under constant camera supervision or a similarly effective surveillance system. Moreover, it must be patrolled by security personnel.
- Access to the compounds must be restricted to the personnel. Visitors' access to the compound must be subject to individual authorisation.

6.2. Storage

The rules in this section concern specifically vehicle handling in compounds. The rules on vehicle handling listed in the general section (Section 2.2.) also apply. Personnel must also be trained on these instructions before being allowed to proceed with vehicle handling.

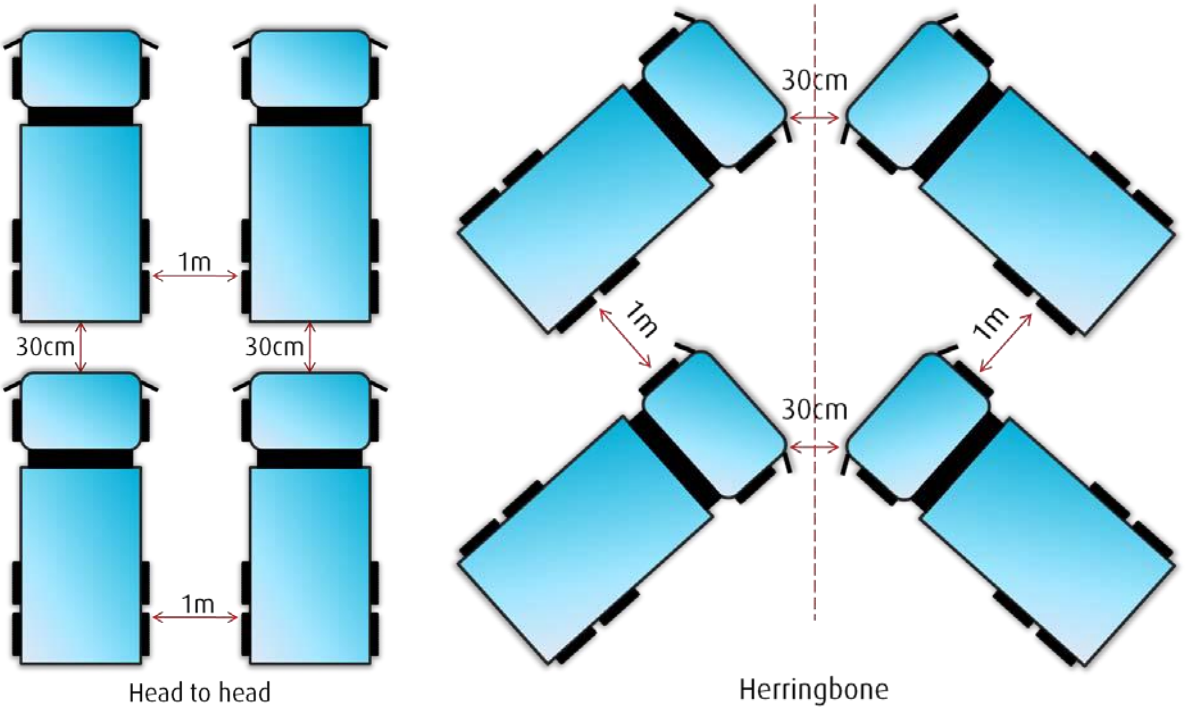
6.2.1. General storage rules

- Vehicles with manual transmission must be left in neutral position and with the handbrake (parking brake) applied. Vehicles with automatic transmission must be left with the transmission selection lever in "N" position and the handbrake (parking brake) applied.
- Writing on the windscreen and/or windows is forbidden. Easily removable stickers can be used if allowed by the manufacturer and only in specifically indicated areas.
- Vehicles left for storage must have their keys removed from the ignition. Keys must be managed according to the manufacturer's requirements.
- It is forbidden to change the original folded position of the exterior mirrors.
- For longer storage, the battery should be disconnected.

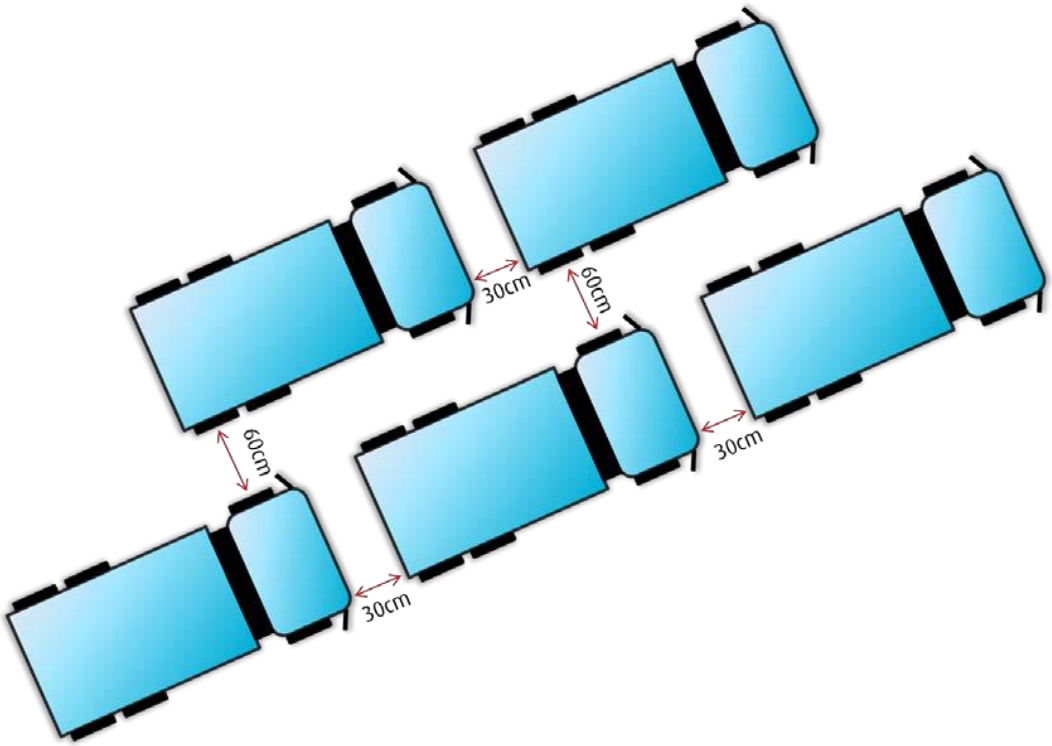
6.2.2. Parking

- Vehicles must be parked with their left tyres over the left parking line, or in another consistent manner.
- Vehicles should be parked in the compound according to one of the following patterns:
  - Herringbone.
  - 90 degrees - head to head.

- The design of the storage area must take into account the following minimum measures between the vehicles:



- In the storage, direct shipping and loading zones:
  - Between the vehicles, end to end: 30 cm
  - Between the vehicles, side to side (excluding mirrors): 60 cm



- For block shipping:
  - Between the vehicles, end to end: 20 cm
  - Between the vehicles, side to side: 30 cm

- If vehicles are going to be inspected before loading or employees need to pass between the vehicles intended for block shipping, the side separation must be a minimum of 60 cm.

6.2.3. Maintenance and workshop services

- The standards of workshop services and maintenance of cars in storage are subject to the contractual agreement with the logistics service provider. However, the handling rules listed in the general section (section 2) must always be respected.

6.3. Training

- The compound operator is entirely responsible for the implementation of the quality standards in this manual.
- In order to achieve the best quality results, the compound operator must regularly train its staff in respect to the quality standards expressed in this manual.
- In port compounds, the compound operator must make sure that the stevedore company complies with the quality standards.
- It is recommended that the compound operator designate a quality manager, responsible for the implementation of the quality standards on the compound and contact with the manufacturer.

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