



Operations Quality Manual

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Mercedes-Benz



Table of contents

Introduction	5	4. Water Transport	17
1. General instructions	6	4.1. Specially designed car-carrying vessels.	17
1.1. Clothing	6	4.1.1. Equipment	17
1.2. Handling	6	4.1.1.1. Ships	17
1.2.1. Driving manner	6	4.1.1.2. Ship equipment	17
1.2.2. Use of the vehicle	7	4.1.2. Loading/Unloading	18
1.2.3. Rules to be respected when leaving the vehicle	7	4.1.2.1. Before loading or unloading	18
1.2.4. Rules on non-starters	8	4.1.2.2. During loading or unloading	18
1.3. Inspections	8	4.1.2.3. After loading or unloading	20
1.4. Exceptional damage reporting	8	4.1.3. Lashing	21
2. Road Transport	9	4.1.3.1. General lashing procedures	21
2.1. Equipment	9	4.1.3.2. Wheel rim lashing	21
2.1.1. Transporters	9	4.1.3.3. Hook lashing	22
2.1.2. Transporter equipment	9	4.2. Special provisions on Lo-Lo and Ro-Lo vessels designed for car transport	22
2.2. Loading/Unloading	9	4.3. Special provisions on transport in containers .	22
2.2.1. Before loading or unloading	10	4.4. Specially designed Ro-Ro river barges	23
2.2.2. During loading or unloading	10	4.4.1. Barges	23
2.2.3. After loading or unloading	11	4.4.2. Loading/Unloading	23
2.3. Lashing	11	4.4.2.1. Before loading or unloading	23
2.3.1. Securing of vehicles loaded in the direction of the traffic	12	4.4.2.2. During loading or unloading	23
2.3.2. Securing of vehicles loaded in the direction opposite to the traffic.	12	4.4.2.3. After loading	24
2.3.3. Additional securing of vehicles loaded rearmost in an angled position ..	12	5. Compounds	25
2.3.4. Securing vehicles on the top deck	13	5.1. Technical requirements	25
3. Rail transport	13	5.1.1. Yard design	25
3.1. Equipment	13	5.1.2. Yard equipment	25
3.1.1. Wagons	13	5.1.3. Safety measures	26
3.1.2. Wagon equipment	13	5.2. Storage	26
3.2. Loading/Unloading	14	5.2.1. General storage rules	26
3.2.1. Before loading or unloading	14	5.2.2. Parking	26
3.2.2. During loading or unloading	14	5.2.3. Maintenance	28
3.2.3. After loading or unloading	16	5.3. Training	28
3.3. Lashing	16		

Introduction

This Operations Quality Manual is an ECG publication written in consultation and collaboration with the quality departments of the following car manufacturers: Audi, BMW, Daimler AG, Dacia, Ford, General Motors, Mitsubishi, Nissan, Renault, SEAT, Skoda, Toyota, Volkswagen and Volvo.

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 harmonization. Indeed, the standardization of practices will also lead to a reduction in the damage rates and a more rapid and effective handling of the cars.

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 his cars. 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 authorities. Copies of this manual can be downloaded free of charge from www.eurocartrans.org. While translations into other languages are available only the English version is official.

The present manual is only the first step on the path towards a broader harmonization in the industry. The establishment of common damage codes with a table of translation to the manufacturers' own codes as well as the harmonization of audit procedures will be done in the near future. A permanent Working Group coordinated by ECG and gathering delegates of logistics companies and manufacturers will be responsible for supervising this work and, if necessary, extending the cooperation between the LSPs and the OEMs to other fields.

Your comments and inquiries about this manual or the future activity of the Working Group are warmly welcome under the e-mail address info@eurocartrans.org or the telephone number +32 (0) 2 706 82 80.



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1. General instructions

1.1. Clothing

- Personnel must wear clean working clothes at all times (no oil/grease stains).
- Long sleeves and long trousers are obligatory. $\frac{3}{4}$ trousers covering the knees are allowed during hot months.
- No buttons, exposed zips or belt buckles.
- Wearing boots or shoes closed around the foot is obligatory. The shoes/boots must prevent from 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 car.

1.2. Handling

- Vehicles can only be driven by personnel with valid driving licenses that received introduction training to the rules exposed in this manual. The validity of the driving licenses has to be checked regularly, at least once a year.
- Vehicles can be driven only for the purpose of loading/unloading, parking and for working through the schedule of care measures.

1.2.1. Driving manner

- Vehicles must be driven at moderate speed in all the 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 minimize damage probability. In particular, it is forbidden to:

- rev up the engine;
- let the engine warm at idle speed;
- 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;

- drive with windows covered with snow or ice; Snow and ice should be removed only with plastic scrapers and never by letting the engine run to warm the windows;
- drive with open boot lid or doors.

Moreover, it is forbidden to use wipers on a windscreen covered with ice or snow.

NEW

The driver/jockey must immediately stop the engine if an operational fault occurs or if a strange noise is detected.

1.2.2. Use of the vehicle

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:

- 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 objects on/in the vehicles;
- to use any electronic equipment (audio, GPS, telephone, etc...), unless necessary for driving;
- to operate manually electric mirrors;
- to open the roofs;
- to write upon cars;
- to attach labels or stickers on the vehicle, unless the manufacturer has explicitly authorized it and indicated clearly delimited approved areas;
- to use one vehicle for towing or pushing another one;
- to use vehicles as shuttles or for transporting material;
- 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 cars.**

NEW

1.2.3. Rules to be respected when leaving the vehicle

Upon leaving the vehicle for storage/transport, it has to be checked whether:

- the doors, windows, roof, boot lid and cowl are closed;
- vehicles with manual transmission are engaged in 1st gear and have the hand brake (or parking brake) applied (for storage, hand brake must be released);
- vehicles with automatic transmission have the transmission selector lever in "P" position and have the hand brake (parking brake) applied (for storage, handbrake must be released);
- 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.

NEW

1.2.4. Rules on non-starters

- If the car doesn't start because the battery is flat, it must be jump started using an auxiliary battery, never another vehicle. Always connect the positive (+) pole first, then the negative (-) or earth pole. After jump starting, disconnect the cables in reverse order. Push starting and tow starting are prohibited!
- Jump starting cables must be handled with precaution to prevent damage to the vehicle.
- If the vehicle needs refueling, add a sufficient amount of the correct fuel type (unleaded petrol for petrol engines, diesel fuel for diesel engines).
- If the two previous methods fail, contact the manufacturer of the car.
- A vehicle must never be jumpstarted / refueled by anybody who has not received a relevant training. Whenever possible, non-starters should be handled by specialized personnel and not drivers.
- It is recommended to replace a flat battery by a new one before loading the vehicle on a transport mean (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.

1.3. Inspections

- A thorough inspection of the vehicle has to be performed at each handing point.
- The vehicles must be inspected in the actual condition as they are delivered. It is not permitted for vehicles to be washed or for follow-up treatment to be given before the inspection is carried out.
- In case damage or theft is detected, the damage form must be directly filled in and signed by both the receiving and the transferring party.
- Damage and loss have to be claimed immediately and in any case before any car from the load has been moved and before the departure of the transporter.
- Inspection for damage is to be carried out in daylight or suitable artificial light. If nighttime delivery occurs, the inspection must be carried out the next morning before 12 o'clock.
- If the circumstances render the inspection difficult (dirt, snow, etc...), it has to be noted on the inspection documents.
- Hidden damage can be claimed by the receiving party after the inspection. The maximum period of time after which such a claim is still possible is subject to the provisions of the separate Inspection Procedures Manual.
- For damage inspection procedures refer to the separate Inspection Procedures Manual.

NEW

1.4. Exceptional damage reporting

The central customer must be informed of damages incurred as a result of serious force majeure incidents as soon as they are detected.

2. Road Transport

2.1. Equipment

2.1.1. Transporters

- Only special car transporters may be used for transporting cars; they 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 firm hold without sharp edges.
- Loading ramps must be placed at a sufficiently low angle to enable easy access and prevent damage to the underbody of the transported vehicles. The recommended maximum ramp angle is 8 degrees.
- The upper deck of a special car transporter must be equipped with safety ropes in conformity with the local legal requirements.
- The 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.
- The manufacturer may require inspecting new transporters and/or transporter types before approving them as suitable for the transport of his cars. The details of any such requirement must be clearly stated in the contractual agreement.

2.1.2. Transporter equipment

Special car transporters must be equipped with:

- two sets of ramps of approximately 50-100 cm;
- 3-4 chocks per transported vehicle;
- 1-2 lashing straps per transported vehicle. Lashing straps must be 2.2 m long and stretch maximally by 4%. Moreover, they must be equipped with movable ("sock" type) strap control and meet the norm DIN EN 12195-2. The label on the lashing must not be washed out to a point when it becomes impossible to read (the norm must be clearly visible).

2.2. Loading/Unloading

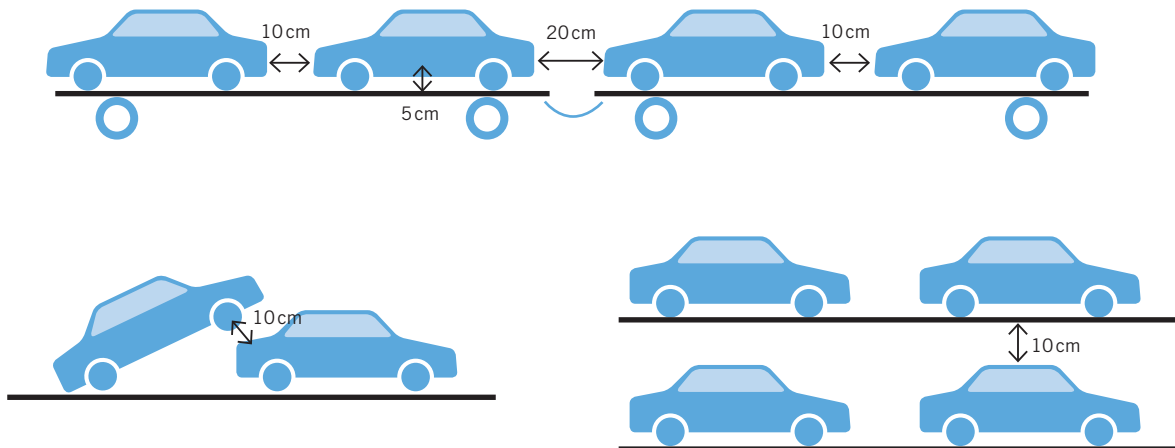
- The rules that follow are specific to the loading/unloading process. Still, the rules on car handling listed in the general section (Section 1.2.) also apply. Personnel must also be trained on these instructions before being allowed to proceed with loading, unloading or other handling.
- When loading, adapt the loaded weight, height and length to the national requirements and to the chosen routes.

2.2.1. Before loading or unloading

- The transporter must be parked on level and firm ground.
- The loading decks must be freed of all lashings, chocks, tools or other objects. It is forbidden to let lashings pending on 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 underbody.
- 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.

2.2.2. During loading or unloading

- Cars must be driven onto/from the transporters at walking speed to reduce the probability of causing damage. Speed must be particularly reduced before driving onto or off the ramps.
- Cars 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 cars, bumper to bumper: a fist (approximately 10 cm);
 - Between the car's roof and the upper deck: a fist (approximately 10 cm);
 - Between overlapping vehicles: a fist (approximately 10 cm);
 - Between a car on the truck and another on the trailer, bumper to bumper: 2 fists (approximately 20 cm);
 - Between the car's underbody and the deck: 3 fingers (5cm absolute minimum).



NEW

- **The driver should always be able to ask for and obtain assistance during operations.**

2.2.3. After loading or unloading

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

2.3. Lashing

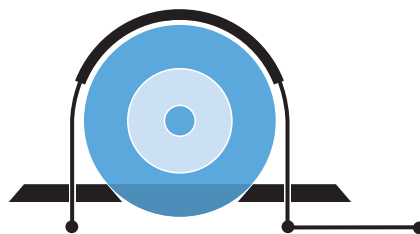
Introductory note: This manual endorses the VDA-VDI lashing standard, which is enforced by the police of the Federal Republic of Germany. Those wishing to cross German territory are obligated to follow it or face prosecution.

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ECG recognises that other lashing standards are used in Europe with excellent results in terms of efficiency and security. For example, a very “intuitive” method established by CAT, Gefco and STVA has now been used for many years in France and on some international routes without any particular security problems.

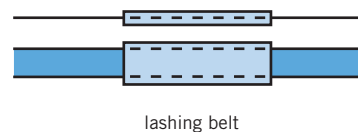
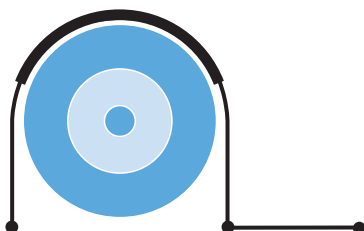
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Three point lashing straps with strap control in combination with wheel chocks must be used. **The use of wheel chocks is not necessary if wheels are secured in troughs or chamfers, that are openings in the ramps/decks which serve for fixing the wheels. The wheel shall enter into the trough/chamfer by ca. 1/6 of its diameter.**



Lashing has to proceed as follows:

- Anchor the first hook to the transporter deck (lashing bar) in such a way that the strap runs as vertically as possible.
- Then tie the strap round the wheel, making sure that the strap control is positioned correctly.

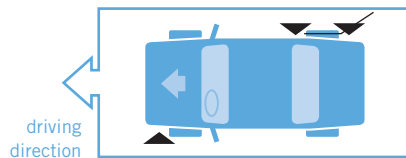


lashing belt

- Anchor the second hook to the transporter deck (lashing bar).
- Anchor the third hook at the anchor point lying laterally away from the wheel and tighten the strap using the ratchet.

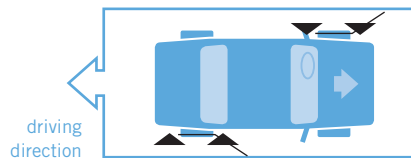
2.3.1. Securing of vehicles loaded in the direction of the traffic

- One wheel chock in front and one behind either rear wheel.
- Additionally secure this rear wheel by means of a three point lashing.
- Diagonally to this wheel place one wheel chock in front of the respective front wheel.
- If wheel chocks cannot be used for technical reasons, an additional wheel must be secured with a lashing strap.



2.3.2. Securing of vehicles loaded in the direction opposite to the traffic

- One wheel chock in front and one behind either rear wheel.
- Diagonally to this wheel place one wheel chock in front of and one behind the respective front wheel.
- Additionally secure both wheels by means of one three point lashing each.
- If wheel chocks cannot be used for technical reasons, an additional wheel must be secured with a lashing strap.



2.3.3. Additional securing of vehicles loaded rearmost in an angled position

NEW

The rearmost vehicle loaded behind the trailer's rear axle or on single car transporter, behind the rear axle of the truck, shall be additionally secured at the wheels of the rearmost axle by means of two wheel chocks and one lashing strap each.



2.3.4. Securing vehicles on the top deck

In case a vehicle cannot be secured with wheel chocks or lashing belts within the protected area of the top deck, either one of the following must be done:

- The loading platform shall be lowered to allow performing of this work from the ground
- The wheels of one axle of the vehicle within the protected area shall be secured by means of two wheel chocks and one strap on each side

If wheel chocks cannot be used for technical reasons, an additional wheel must be secured with a lashing strap.

3. Rail transport

3.1. Equipment

3.1.1. Wagons

- Wagons should be in 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 his 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.
- The profile of the deck must offer a good grip, but may 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 underbody of the transported vehicles. The recommended maximum ramp angle is 8 degrees.

3.1.2. 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.

3.2. Loading/Unloading

The following rules are specific to the loading/unloading process. Still, the rules on car handling listed in the general section (Section 1.2.) also apply. Personnel must also be trained on these instructions before being allowed to proceed with loading, unloading or other handling.

3.2.1. Before loading or unloading

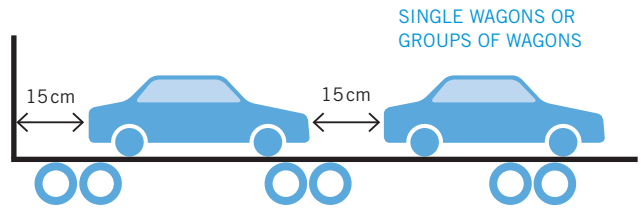
- Wagons should be presented at the loading platforms in the right direction, so as to allow loading and unloading forwards. Reversing the vehicles on the wagons should be absolutely avoided. On fully enclosed wagons, the load direction of the cars must be indicated on both sides of the wagon by means of an arrow (applied with chalk or sticker) to facilitate the unloading procedure.
- 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.
- Wagons have to be prepared for loading: the upper deck must be moved to the loading/unloading position and secured.
- 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 track 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.
- Check the vehicle's height to see if it can be loaded onto the wagon. Some vehicles can only be transported on the top deck. Still, vehicles stowed on the top deck must be low enough to prevent the danger of touching the electric lines.
- It is absolutely forbidden to access the top deck or load/unload if there is an electrical line overhead.
- It is forbidden to step on either of the decks while the upper deck is being raised or lowered.
- Before loading/unloading, the deck must be freed 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.

3.2.2. During loading or unloading

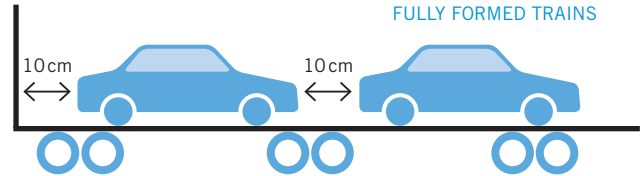
- During loading and unloading operations, vehicles must be driven at walking speed, both on the ramps and on the train, to reduce the probability of damage. Speed must be particularly reduced before driving onto or off the ramps.
- Cars should be loaded or unloaded only by driving forwards. Reversing them onto/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.
- The upper deck should be loaded before the lower deck and unloaded after it.

- It must be checked that the following distances are kept:

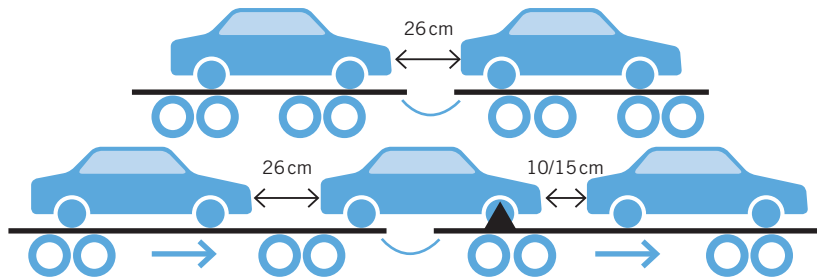
- In single wagons or group of wagons, between the cars, bumper to bumper, or bumper to fixed wagon structure: not less than 15 cm



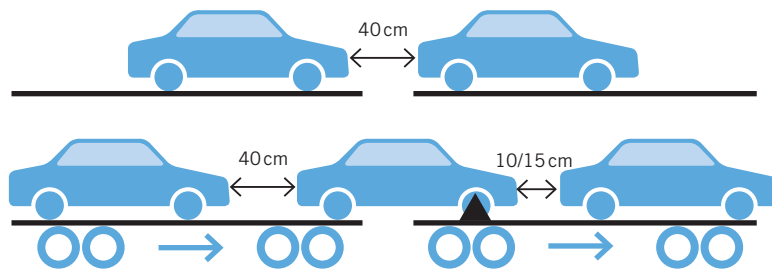
- In fully formed trains, between the cars, bumper to bumper, or bumper to fixed wagon structure: not less than 10 cm



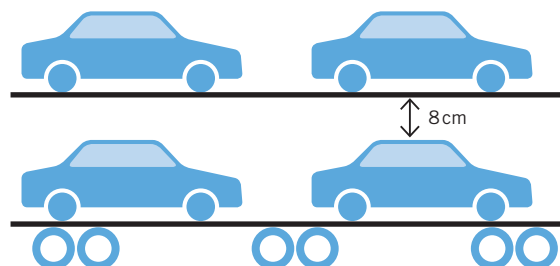
- Between the cars, bumper to bumper, over or next to a short coupling, in the area where the axle is not chocked: not less than 26 cm



- Between the cars, bumper to bumper, over or next to a permanent coupling, in the area where the axle is not chocked: not less than 40 cm



- Clearance between the vehicle's roof and the upper platform: 8 cm (use your fist as a measure)



- A minimum clearance must be kept above the roof of the cars stowed on the upper deck to avoid damage from bridges and tunnels and contact with electric lines. Cars with removable aerials that are stored on the upper platform must have this aerial removed during transport.
- Vehicles loaded over joining parts of the train (short couplings or permanent couplings) can only be put into gear together with the handbrake on when they both block the same axle. Otherwise, only one of the two can be used to allow for extra movement over the coupling.
- All other vehicles should be secured by both engaging the first gear (or putting the transmission selector lever in “P” position for vehicles with automatic transmission) and applying the handbrake.
- Vehicles with pneumatic springing must be transported according to the manufacturer’s recommendations.

3.2.3. 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 cars have been loaded/unloaded during the night or under any other conditions that demand the use of headlights, they have to be switched off immediately after loading/unloading.
- Keys must be removed from the ignition and stored in the door pocket on the driver’s side.
- Cars must be lashed for transport according to the lashing procedures exposed in the next section.

3.3. 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.
- For vehicles placed over short or permanent couplings, the above rule must absolutely be respected. Under no circumstances can a car placed over a coupling be secured with wheel chocks on the two axles!
- 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 car than the tyre.

4. Water Transport

- In general, only specially designed car carrying sea going vessels and inland waterway barges can be used for transporting new vehicles. The security and quality rules that follow apply integrally on this kind of vessels.
- If the manufacturer agrees, cars can also be transported in containers. However, it has to be noted that cars transported in containers are exposed to a significantly higher damage risk. The quality and security standards are then subject only to the local minimum legal requirements and to the contractual agreement negotiated with the logistics services provider.

4.1. Specially designed sea going car-carrying vessels

4.1.1. Equipment

4.1.1.1. 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 recognized 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 perpendicular differences in height must be reduced to a minimum to preclude damage to tyres.
- It has to be checked that no pipes or equipment (push-cars, etc...) are leaking oil.
- All elements on/of the decks should be rust free. In no case should rusted elements enter in contact with the transported cars.
- The holds in which cars are stored must be clean, odor 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 colors. The construction elements most likely to be accidentally run into with cars must be padded to minimize the probability 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 underbody of the transported vehicles. The recommended maximum ramp angle is 8 degrees.
- All connecting and access ramps should offer good grip but may not be sharp edged. Additionally, it is recommended to affix anti-slide tapes to driveways in curve areas.

4.1.1.2. Ship equipment

- Ship and quay operations must maintain adequate stocks of jump leads, premium/super unleaded fuel and diesel fuel to enable non-starters to be loaded and unloaded without problem.
- The vessels must be equipped with sufficient mooring points.

- Mobile chains must be properly taut, so that they do not become more tensioned and touch the underside of the vehicles.
- The vessels must be equipped with a sufficient number of car lashings in good technical condition. The lashings' resistance capacity must be adapted to the type of vehicle transported with a sufficient safety margin.
- Metal parts of the lashings should be protected to preclude damage.

4.1.2. Loading/Unloading

The following rules are specific to the loading/unloading process. Still, the rules on car handling listed in the general section (Section 1.2.) also apply. Personnel must also be trained on these instructions before being allowed to proceed with loading, unloading or other handling.

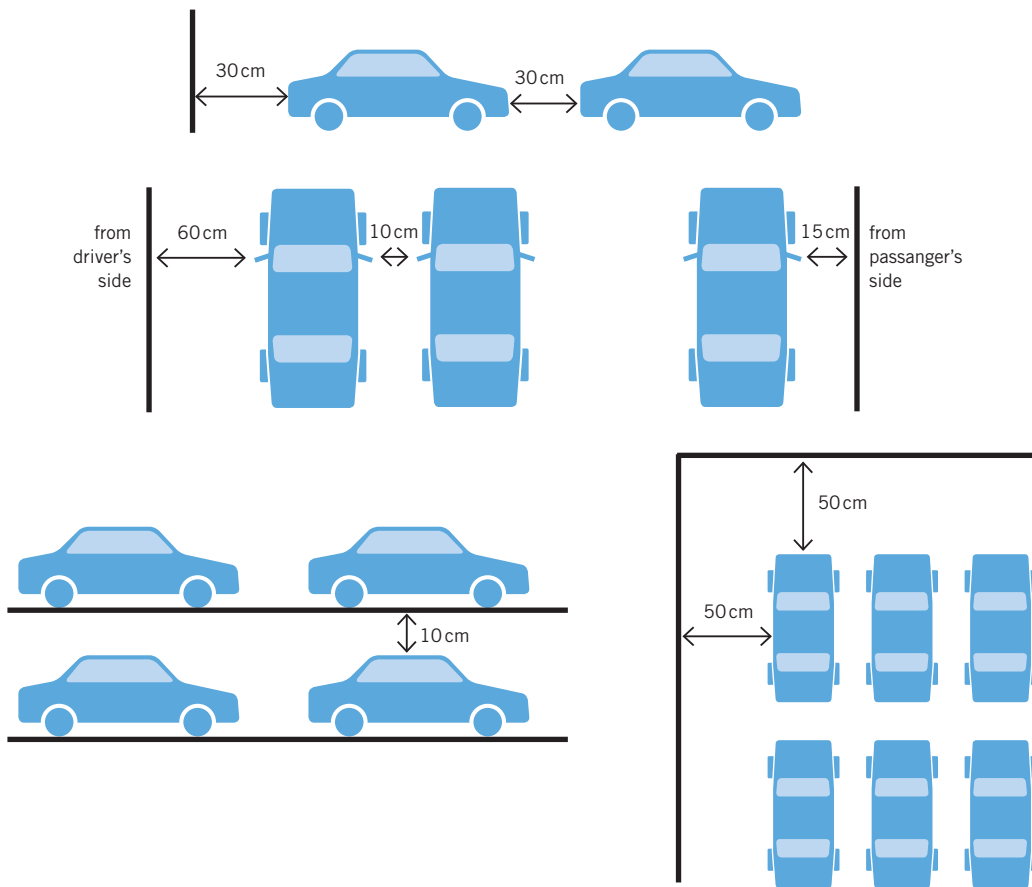
4.1.2.1. Before loading or unloading

- It is the responsibility of the stevedore company to organize a meeting involving the captain of the ship and the port captain to draft a loading/stowage plan. This plan then has to be followed throughout the loading process.
- Before loading, enough driveways and walkways have to be clearly designated and marked, according to the ship's safety requirements.
- The ramps and decks must be set in the position proper 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.
- Vessels must be secured to the quay before loading/unloading begins.

4.1.2.2. During loading or unloading

- All loading/unloading operations must be coordinated by an experienced supervisor.
- Ramp angle should be observed during loading (as it may change because of the tide and the change in ballast when cars are unloaded).
- Vehicles must be loaded by 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.
- Before engaging on a ramp, the front man of a gang of vehicles must ensure that the ramp is free on its entire length. No other vehicle can engage on the ramp before the whole gang has passed.
- Inside the ship, speed must be limited to such an extent as to preclude damage. Moreover, drivers have to comply with the shipping line's imposed speed limits. However, ramps should be negotiated at a sufficient speed to prevent wheels from skidding on the wet surface.
- Headlights must be turned on before driving under the deck.
- Cars with pneumatic suspension must be driven in the highest position and stored in the lowest.
- 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.

- The direction in which cars must be (un)loaded onto (from) the ship (clockwise or anti-clockwise) must be determined by the port captain before the (un)loading starts and applied in a consistent manner. When loading is finished, the cars of a block that are situated in the most external positions must be easily accessible from the driver's side (enough space must be left for the driver's door to be opened without damage).
- During loading/unloading, cars should be driven forwards. Excessive maneuvering and reversing should be avoided.
- As far as possible, cars should be stowed longitudinally. This way, the risk of the cars being displaced during lateral movements of the ship is minimized. If transversal storage cannot be avoided for some cars, special security (lashing) measures must be undertaken, according to the lashing instructions under section 4.1.3.
- Manufacturer's recommendations on which cars can be stored on ramps or transversally must be respected.
- New cars must be stored separately from other cargo and/or used vehicles.
- Cars should be unloaded in the opposite order to loading: the last car to be loaded is the first to be unloaded.
- It must be checked that the following distances are kept:
 - Between the cars, bumper to bumper: a minimum of 30 cm;
 - Between the car's bumper and the ship's superstructure: 30 cm;
 - Between the cars, mirror to mirror: 10 cm;
 - Clearance between the vehicle's roof and the upper deck: 10 cm;
 - Between a car and other automotive and non-automotive cargo: 50 cm;
 - Between the car (passenger's side) and the ships superstructure: 15 cm;
 - Between the car (driver's side) and the ship's superstructure: 60 cm;



4.1.2.3. After loading or unloading

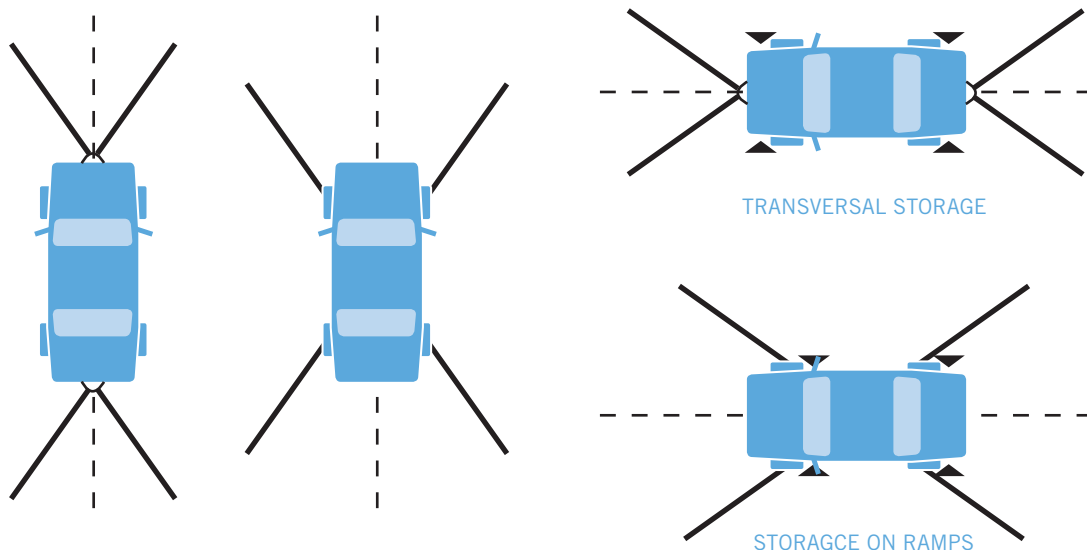
- After loading/unloading, car's headlights must be switched off immediately.
- When leaving the vehicle after loading, it has to be checked if it doesn't stand on any chains, wires, moorings or any other object that could damage the tyres. Wheels must be left in the straight position.
- If the vehicle is equipped with a battery disconnection switch, it has to be activated once the vehicle has been parked in storing position on board of the vessel.
- Vehicles that can't be unloaded under their own power, even after refueling and/or jump-starting, must be towed by a specialized car and following manufacturer's instructions. Under no circumstances may a broken-down car be towed by another car from the load.
- After loading, cars must be lashed according to the procedures exposed 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.
- Vehicles with manual transmission must be engaged in 1st gear and have the hand brake (or parking brake) applied.
- Vehicles with automatic transmission must have the transmission selector lever in "P" 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 in the door pocket on the driver's side.

4.1.3. Lashing

NEW

NEW

- All vehicles transported on a ship must be properly lashed.
- Each vehicle must be secured using a minimum of 4 lashings, two in the front and two in the back. **Regulations on short sea routing might be different.**
- Vehicles stored transversely or on ramps must additionally be secured with wheel chocks. **In case of hook lashing, an additional lashing must be added in the front and in the back (total of 6 lashings)**
- Heavy vehicles must be secured by additional lashings.



4.1.3.1. General lashing procedures

- Lashings must be handled in a way to preclude any damage to the transported cars.
- 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 preclude the vehicle from moving, but shouldn't tighten the car down on its springing.
- Vehicles must be lashed at an angle of – if physically possible – 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 mooring point at each of the sides (left and right) of the vehicle. This way, the car is protected from lateral movements in any direction.
- Vehicles must be lashed either on the rims or on the towing hooks, according to the manufacturer's requirements.

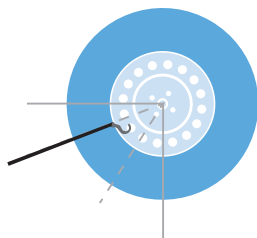
4.1.3.2. Wheel rim lashing

- Cars can be lashed on the rims only if the manufacturer allows it.
- Cars can be lashed on aluminum and steel rims. In the case of steel rims, the plastic wheel protectors have to be absolutely removed from the wheel before the car is lashed to prevent their damaging.
- If lashing on alloy/aluminium rims, fit the loose nylon loop around a wheel spoke and insert the hook into the loop with the hook opening facing downwards. If lashing on steel rims, attach the plastic protected hook directly to the rim, with the hook opening facing downwards.
- For the lashing to be effective, the lashing must be attached to the lower part of the wheel, and it must be aligned with the centre of the wheel. If those conditions are not respected, the wheel might turn during transport the lashing might become loose.
- **Ship's command should apply the best practice keeping loading and lashing sequences with proper timing to avoid any walking between parked vehicles.**

NEW

SECURING STEEL WHEELS

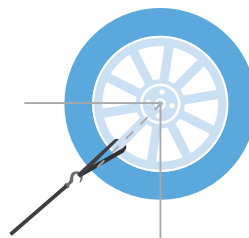
1 belt with flat hook attached to each wheel



--- Attachment axis
— Limits of the attachment area

SECURING ALLOY WHEELS

1 belt with strap or loop extension on each wheel



NEW

4.1.3.3. Hook lashing

- Cars can be lashed on the towing hooks if the manufacturer allows it, and if front and rear hooks are available.
- Lashing a vehicle on the hooks includes the following steps:
 - The shorter end of the car lashing is to be hooked in the towing hook of the car.
 - The other end of the lashing is to be anchored to the ship floor.
 - The lashing is to be locked by pulling at an angle.
- At least two lashings must be attached to each of the lashing hooks.

4.2. Special provisions on Lo-Lo and Ro-Lo vessels designed for car transport

On vessels specially designed for car transport, on which all or part of the decks are not directly accessible to rolling cargo, the rules listed above equally apply. However, in order to limit damage probability, special procedures must be applied for loading:

- Vehicles cannot be loaded or unloaded using a standard crane. A cradle specially designed for lifting vehicles must be used.
- If the cradle is designed for lifting two cars at a time, cars must be loaded by two, never alone.
- When lifted by the cradle, vehicles must have the handbrake applied and be in neutral gear. The engine must be turned on.
- As soon as they are on board of the vessel, vehicles must be handled according to the same rules that apply on a proper Ro-Ro vessel. In particular, cars can never be stowed on top of other cargo or containers!

4.3. Special provisions on transport in containers

- All containers used for car transport must respond to the relevant ISO standards.
- Containers must not have any holes and must be tightly closed to avoid salty water damaging the transported cars.
- If possible, special containers adapted to the transport of cars (containers with removable side walls or open containers) should be used instead of standard containers. Indeed, most cars are too wide for entirely safe loading on a container, as the driver is left very little space to leave the car after parking.
- In standard containers, special protection must be affixed to the container wall in order to prevent damage to the driver's door.
- Cars transported in containers must be properly lashed with four lashings, according to the instructions listed in section 4.1.3. If the container is not equipped with adequate lashing points, these should be nailed to the floor.

- It is strongly advised to additionally secure the cars in a container by using wheel chocks. First, chocks must be nailed to the floor in the back of the container. The car then has to be placed in such a position that its wheels on one axle are protected by these chocks. Only then, an additional pair of chocks should be nailed to the floor in the front of the container to protect wheels on the other axle.
- If cars are to be stacked inside the container, they cannot be stacked at a greater angle than 25 degrees.

4.4. Specially designed Ro-Ro river barges

4.4.1. 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.

4.4.2. Loading/Unloading

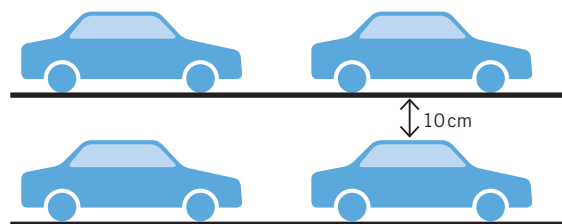
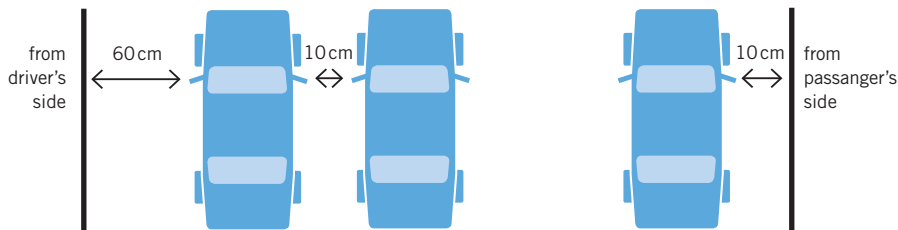
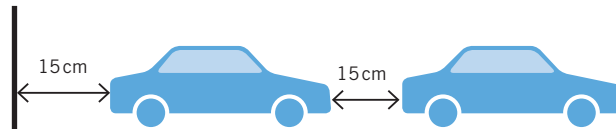
4.4.2.1. Before loading or unloading

- 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 recommended maximum ramp angle is 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.
- For safety reasons, a pathway at least 60 cm wide must be left free on the whole length of the barge on the lower deck.
- Loading or unloading can start only after the captain has given his explicit permission.

4.4.2.2. During loading or unloading

- All loading and unloading operations must be coordinated by an experienced supervisor.
- As far as possible, cars should be stored longitudinally. If transversal 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 underbody of cars.
- Vehicles must be loaded in such a way and 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:
 - Between the cars, bumper to bumper: 15 cm;
 - Between the car's bumper and the ship's superstructure: 15 cm;
 - Between the cars, mirror to mirror (with closed mirrors): 10 cm;
 - Clearance between the vehicle's roof and the upper deck: 10 cm;
 - Between the car (passenger's side) and the ship's superstructure: 10 cm;
 - Between the car (driver's side) and the ship's superstructure: 60 cm.



4.4.2.3. After loading

- Windows and doors must be kept closed but not locked. Keys must be removed from the ignition and stored in the door pocket on the driver's side.
- Vehicles must be left with the hand-brake on and the first gear engaged. Vehicles with automatic transmission must be left in "P" position.
- Vehicles stored on ramps must be effectively secured with wheel chocks to prevent their slipping.

5. Compounds

5.1. Technical requirements

5.1.1. Yard design

- All areas of the compound must be coated with asphalt/concrete or paved.
- 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 in their lower parts for damage prevention.
- In the case of port terminals, compounds should be protected from saltwater spray.
- All vegetation must be systematically removed from the compounds and their immediate surroundings. Parking cars under trees is strictly forbidden as resin and leaves can seriously damage car paint.
- Compounds must be divided into separate areas dedicated to:
 - Car storage
 - Truck loading/unloading
 - Truck rest (if trucks are to be parked for longer time on the compound)
- Port compounds must additionally contain a sufficiently big area dedicated to load forming and bulk dispatch.
- Personal car parking must be separate from the rest of the compound.
- Car parking (storage) bays must be designed according to the parking instructions presented in section 5.2.2. and clearly painted 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.

5.1.2. Yard equipment

- The compound must be equipped with a sufficient number of hydrants and fire extinguishers according to the fire protection regulations of each country.
- 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 (diesel and unleaded petrol) on the compound.
- Additionally, vehicle identification systems must be available on-site for fluent stock management.
- Other yard equipment elements (battery testing equipment, compressors, car wash) may be required by the manufacturer and must be available on site if the contract so stipulates.

5.1.3. Safety measures

- Compounds must be surrounded by a fence of at least 2 meters of 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 authorization.

5.2. Storage

The rules in this section concern specifically car handling in compounds. Still, the rules on car handling listed in the general section (Section 1.2.) also apply. Personnel must also be trained on these instructions before being allowed to proceed with vehicle handling.

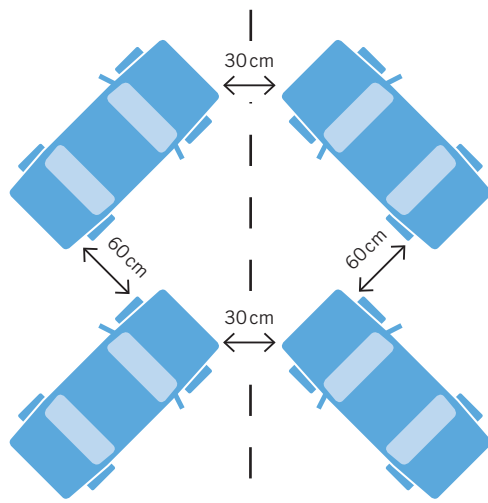
5.2.1. General storage rules

- Cars with manual transmission must be secured by engaging the first gear.
- Cars with automatic transmission must have the transmission selector lever in "P" position.
- The handbrake must be released.
- Ventilation traps should be left open.
- 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.
- Cars 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.

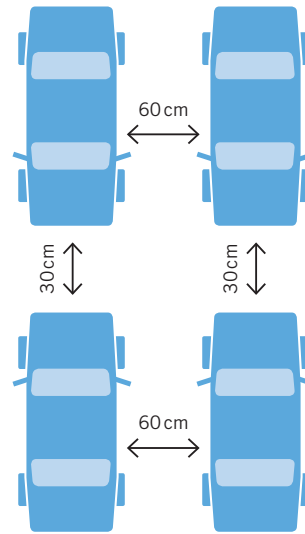
5.2.2. Parking

- 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:

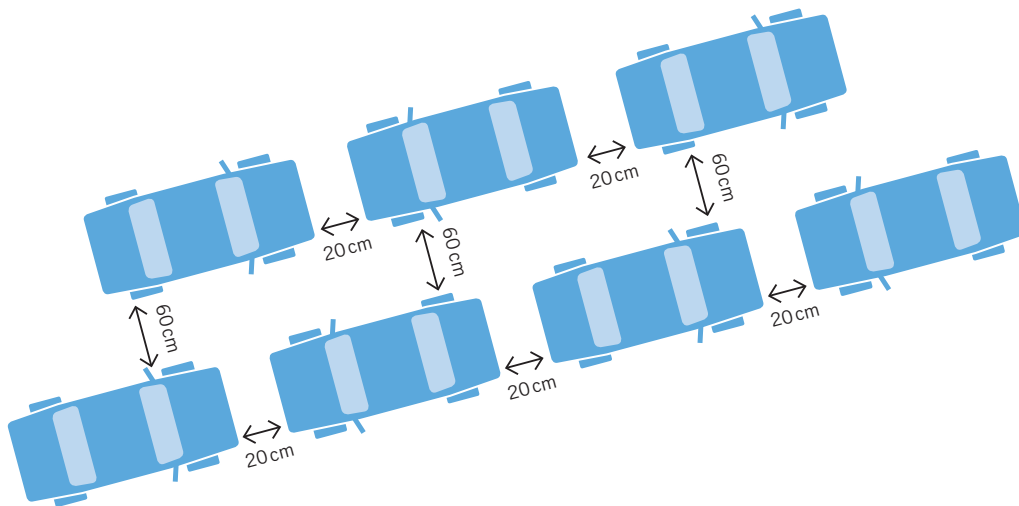


HERRINGBONE



BUMPER TO BUMPER

- In the storage, direct shipping and loading zones:
 - Between the cars, bumper to bumper: 30 cm;
 - Between the cars, side to side (excluding mirrors): 60 cm.



- For block shipping:
 - Between the cars, bumper to bumper: 20 cm;
 - Between the cars, 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.

5.2.3. 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 1) must always be respected.

5.3. Training

- The compound operator is entirely responsible for the implementation of the quality standards enounced in this manual.
- In order to achieve the best quality results, the compound operator must regularly train his 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 staying in contact with the manufacturer.

Amendment proposal

THE FORM CAN BE SENT BY FAX TO (0032)(0)27068281 OR BY E-MAIL TO INFO@EUROCARTRANS.ORG

Amendment proposed by:

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NAME

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COMPANY

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ADDRESS

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TEL

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FAX

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E-MAIL

Current wording/page number

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