

- 1 [Introduction](#)
- 2 [Safety Requirements](#)
 - 2.1 [Personal Safety](#)
 - 2.2 [Dress code](#)
 - 2.3 [Smoking](#)
 - 2.4 [The use of mobile devices](#)
 - 2.5 [Eating and drinking](#)
 - 2.6 [Filming and photography](#)
 - 2.7 [Social media](#)
 - 2.8 [Vessel work and maintenance during cargo operation and at sea](#)
 - 2.9 [Visitors and external parties](#)
 - 2.9.1 [Visitors](#)
 - 2.9.2 [External parties](#)
- 3 [Terminal](#)
 - 3.1 [Unitised cargo combinations](#)
 - 3.2 [Receiving of cargo](#)
 - 3.3 [Cargo measurement procedures](#)
 - 3.3.1 [Measuring company/entity](#)
 - 3.3.2 [Measurement tools](#)
 - 3.3.3 [Measurement guidelines](#)
 - 3.3.4 [Type of cargo to be measured](#)
 - 3.3.5 [Measurement times](#)
 - 3.3.6 [In stow position dimension vs operational dimensions](#)
 - 3.4 [Labelling](#)
 - 3.4.1 [Labelling of factory new cars](#)
 - 3.4.2 [Labelling of high and heavy units](#)
 - 3.4.3 [Labelling of breakbulk cargo](#)
 - 3.4.4 [Port Stickers / Mirror hangers](#)
 - 3.4.5 [Labeling IMDG cargo](#)
 - 3.4.6 [Biosecurity and BMSB \(brown marmorated stink bug\) labeling](#)
 - 3.4.7 [Marking of cargo](#)
 - 3.4.8 [Label specification](#)
 - 3.5 [Receiving of factory new units \(vehicles / high and heavy\)](#)
 - 3.6 [Allowed items in used units](#)
 - 3.7 [Not-allowed items in used units](#)
 - 3.8 [Requirements for shipping used motorhomes](#)
 - 3.9 [Allowed standard items for used motorhomes](#)
 - 3.10 [Motorhomes - Items not allowed](#)
 - 3.11 [Used yacht & boats](#)
 - 3.12 [Receiving of used units](#)
 - 3.13 [Receiving of break bulk \(B/B\)](#)
 - 3.13.1 [Unitised cargo/ piggyback cargo](#)
 - 3.13.2 [Steel products](#)
 - 3.13.2.1 [Steel coils](#)
 - 3.13.2.2 [Wire rope coils](#)
 - 3.13.2.3 [Steel pipes](#)

- 3.13.2.4 [Metal plates](#)
 - 3.13.3 [Rubber products](#)
 - 3.13.4 [Forestry products](#)
 - 3.13.5 [Paper rolls](#)
 - 3.13.6 [Baled wood pulp in units](#)
 - 3.13.7 [Plywood](#)
 - 3.13.8 [Veneer](#)
 - 3.13.9 [Yacht & Boats](#)
 - 3.14 [Stuffing of cargo carriers](#)
 - 3.14.1 [Stuffing/ pre-loading of multipurpose bogie \(MPB\)](#)
 - 3.14.2 [Stuffing/ pre-loading of samson trailer](#)
 - 3.15 [Clean cargo instructions](#)
 - 3.15.1 [National and international requirements](#)
 - 3.15.2 [Contamination](#)
 - 3.15.2.1 [Animal material \(live or dead\)](#)
 - 3.15.2.2 [Plant material](#)
 - 3.15.2.3 [Dirt \(mud, soil, gravel, and sand etc.\)](#)
 - 3.15.2.4 [Food](#)
 - 3.15.2.5 [Water](#)
 - 3.15.2.6 [Oil and grease](#)
 - 3.15.2.7 [Mould](#)
 - 3.15.3 [Special Considerations](#)
 - 3.15.3.1 [Cargo Carriers](#)
 - 3.15.3.2 [Removal of snow and ice](#)
 - 3.15.3.3 [New Vehicles](#)
 - 3.15.3.4 [New machinery/equipment](#)
 - 3.15.3.5 [Used machinery/equipment](#)
 - 3.15.3.6 [Special national requirements](#)
 - 3.15.3.7 [Used tank trucks/fuel tanks etc. \(inc. Those not used for propulsion\)](#)
 - 3.15.3.8 [New motorhomes](#)
 - 3.15.3.9 [Used motorhomes](#)
 - 3.15.3.10 [Wax coated cargo](#)
 - 3.15.3.11 [Covered cargo](#)
 - 3.15.3.12 [Pre-treatment of cargo due to national and international requirements](#)
 - 3.15.3.13 [Responsibilities](#)
 - 3.15.3.14 [Shipper / Cargo Owner](#)
 - 3.15.3.15 [Load Region](#)
 - 3.15.3.16 [Customer care and sales support/commercial](#)
 - 3.15.3.17 [Vessels](#)
 - 3.15.4 [Clean cargo exceptions](#)
 - 3.15.5 [ISPM requirements \(biosecurity check of wooden dunnage\)](#)
 - 3.16 [Dangerous goods \(IMDG Cargo\)](#)
 - 3.16.1 [Not Accepted IMDG](#)
 - 3.16.2 [Limitations](#)
 - 3.16.3 [Approval of dangerous goods](#)

- 3.16.4 [Documentation to vessel and port offices](#)
- 3.17 [Military cargo](#)
 - 3.17.1 [Acceptable military cargo](#)
 - 3.17.2 [Non-acceptable: ammunition, arms, explosives, nuclear components or similar items](#)
 - 3.17.3 [Requirement criteria for military cargo shipment](#)
 - 3.17.4 [Working procedure – military cargo process mapping](#)
- 4 [Cargo operations](#)
 - 4.1 [Supervision](#)
 - 4.2 [Documentation](#)
 - 4.3 [Vessel responsibilities](#)
 - 4.3.1 [Cargo hold](#)
 - 4.3.1.1 [External ramps](#)
 - 4.3.1.2 [Hoistable/liftable panel/deck arrangements and internal ramps](#)
 - 4.3.1.3 [Unused lashings](#)
 - 4.3.1.4 [Preventing theft](#)
 - 4.3.1.5 [Cargo hold ventilation and lighting](#)
 - 4.3.1.6 [Emergency escape routes](#)
 - 4.3.1.7 [Portable cargo securing devices](#)
 - 4.3.2 [Rubber mats handling during cargo operation](#)
 - 4.3.3 [Fire prevention](#)
 - 4.4 [Stevedore responsibilities](#)
 - 4.4.1 [Rubber mats handling during cargo operation](#)
 - 4.4.2 [Tally](#)
 - 4.5 [Operational process](#)
 - 4.5.1 [Pre-operations meeting with stevedore](#)
 - 4.5.2 [Pre-operations alignment with vessel](#)
 - 4.5.2.1 [Vessel confirmation \(Vessel to local port\)](#)
 - 4.5.3 [Ramp meeting](#)
 - 4.5.3.1 [CSI responsibilities](#)
 - 4.5.3.2 [Vessel focus area](#)
 - 4.5.4 [Post-operational meeting](#)
 - 4.6 [Loading/ discharging](#)
 - 4.6.1 [Parking instructions](#)
 - 4.6.1.1 [Disconnecting battery on used units](#)
 - 4.6.1.2 [Battery pole protection against sparks on disconnected battery](#)
 - 4.6.2 [Breakout](#)
 - 4.6.3 [Stowage standards](#)
 - 4.6.3.1 [Stowage distances](#)
 - 4.6.3.2 [Height clearance](#)
 - 4.6.3.3 [Flow stow system](#)
 - 4.6.4 [Vehicle instructions](#)
 - 4.6.4.1 [Factory new vehicles](#)
 - 4.6.4.2 [Used units](#)
 - 4.6.4.3 [Non-starter](#)
 - 4.6.4.4 [Refueling](#)

- 4.6.4.5 [Battery charging \(jump start\)](#)
- 4.6.4.6 [Towing \(of units\)](#)
- 4.6.4.7 [Snow, ice or water on cargo](#)
- 4.6.4.8 [Locked units](#)
- 4.6.4.9 [Key handling and locking instructions](#)
- 4.6.4.10 [Motorcycles](#)
- 4.6.5 [High and heavy \(H&H\) instructions](#)
 - 4.6.5.1 [Rubber tracked units and wooden wheels.](#)
 - 4.6.5.2 [Steel tracked units or steel spike wheels.](#)
 - 4.6.5.3 [Spread load calculation of tracked units](#)
 - 4.6.5.4 [Chassis \(without cabin\)](#)
- 4.6.6 [Breakbulk \(BB\) instructions](#)
 - 4.6.6.1 [Securing arrangements of unitised cargo](#)
 - 4.6.6.2 [Forestry products](#)
 - 4.6.6.3 [Paper rolls](#)
 - 4.6.6.4 [Guidelines to limit/avoid condensation/water damage to deep frozen paper rolls](#)
 - 4.6.6.5 [Baled wood pulp in units](#)
 - 4.6.6.6 [Plywood](#)
 - 4.6.6.7 [Veneer](#)
 - 4.6.6.8 [Steel products](#)
 - 4.6.6.8.1 [Steel coils](#)
 - 4.6.6.8.2 [Wire rope coils/reels](#)
 - 4.6.6.8.3 [Steel pipes](#)
 - 4.6.6.8.4 [Unitising of steel pipes](#)
 - 4.6.6.8.5 [Metal plates](#)
 - 4.6.6.9 [Rubber products](#)
 - 4.6.6.10 [Other break bulk cargo](#)
 - 4.6.6.10.1 [Cable reels](#)
 - 4.6.6.10.2 [Packed liquid cargo](#)
 - 4.6.6.10.2.1 [General](#)
 - 4.6.6.10.2.2 [Handling instructions of packed liquid cargo](#)
 - 4.6.6.10.2.3 [Documentation](#)
- 4.6.7 [Containers, bolsters and roll trailer instructions](#)
 - 4.6.7.1 [Loading/discharging containers/bolsters](#)
 - 4.6.7.1.1 [Container seal and inspection](#)
 - 4.6.7.1.2 [Verified gross mass \(vgm\) of a container carrying cargo](#)
 - 4.6.7.1.3 [Under deck stowage of containers](#)
 - 4.6.7.1.4 [Unitising of bolsters](#)
 - 4.6.7.1.5 [Empty bolsters](#)
 - 4.6.7.2 [Roll trailers](#)
 - 4.6.7.2.1 [Loading/discharge of a roll trailer](#)
 - 4.6.7.2.2 [Operation of Roll trailers exceeding 30-ton gross weight](#)
 - 4.6.7.2.3 [Stacking of empty roll trailers](#)
- 4.6.8 [Specialized cargo instructions](#)
- 4.6.9 [Heavy lifts](#)

- 4.6.10 [Multipurpose bogie \(MPB\)](#)
- 4.6.11 [Manoeuvring/ handling of mpb](#)
- 4.6.12 [Heavy lifts by samson trailer](#)
- 4.6.13 [Manoeuvring of samson platform](#)
- 4.6.14 [Heavy lifts by "jack-up" trailer](#)
- 4.6.15 [Typical heavy project cargoes](#)
- 4.6.16 [Heavy lifts by crane](#)
- 4.6.17 [Weather deck cargo](#)
- 4.6.18 [Loading/discharging weather deck cargo](#)
- 4.6.19 [Stowage of windmill blades on weather deck](#)
- 4.6.20 [Request of arranging power supply to cargo](#)
- 4.7 [Alternative fuel vehicles/units \(AFV\)](#)
 - 4.7.1 [Instructions for ocean carriage of AFV](#)
 - 4.7.1.1 [The shipper/ OEM is required to categorize each AFV unit into one of the following categories:](#)
 - 4.7.2 [Stowage of CGV \(Vehicle/High and heavy\)](#)
 - 4.7.3 [International regulation and recommendations](#)
 - 4.7.3.1 [Vehicles with installed Lithium Batteries](#)
 - 4.7.3.2 [Vehicles fueled by compressed hydrogen or natural \(methane\) gas](#)
 - 4.7.3.3 [Vehicles fueled by CGV](#)
 - 4.7.3.4 [State of Charge requirements \(SOC level\)](#)
 - 4.7.4 [Used alternative fuel vehicles](#)
 - 4.7.4.1 [General customer instruction for shipping of used AFV \(both cars, trucks and H&H\)](#)
 - 4.7.4.2 [Additional requirement for \[BEV\]](#)
 - 4.7.4.3 [Additional requirement for \[PHEV\]](#)
 - 4.7.4.4 [Additional requirement for \[HEV\]](#)
 - 4.7.4.5 [Additional requirement for CGV](#)
 - 4.7.5 [In the event of damage to an AFV new or used](#)
- 4.8 [Cargo securing instructions](#)
 - 4.8.1 [Uniform, axle, and bogie loads](#)
 - 4.8.2 [Securing guideline Car, Vans, Small trucks](#)
 - 4.8.3 [Securing guideline RoRo Cargo](#)
 - 4.8.4 [Stowage on fixed ramps](#)
 - 4.8.5 [Securing of none-self-propelled cargo below 10 mt.](#)
 - 4.8.6 [Rule of thumb for cargo above 10 MT](#)
 - 4.8.7 [Portable securing devices](#)
 - 4.8.8 [Fixed securing device limitations](#)
 - 4.8.9 [Types of portable securing devices](#)
 - 4.8.10 [Securing of vehicles](#)
 - 4.8.10.1 [Rim lashing](#)
 - 4.8.10.2 [Car, vans, small trucks up to 2,5 mt- longitudinal stowage](#)
 - 4.8.10.3 [Car, vans, small trucks up to 2,5 mt - athwartships stowage](#)
 - 4.8.10.4 [Car, vans, small trucks between 2.5 mt & 3.5 mt - longitudinal stowage](#)
 - 4.8.10.5 [Car, vans, small trucks between 2.5 mt & 3.5 mt - athwartships](#)

[stowage](#)[4.8.10.6 Cars stowed on internal ramps](#)[4.8.10.7 Application of chocks](#)[4.8.11 Securing of break bulk \(BB\)](#)[4.8.11.1 Securing of forestry products](#)[4.8.11.2 Securing of steel products](#)[4.8.11.2.1 Wire rope coils/reels](#)[4.8.11.2.2 Steel pipes](#)[4.8.11.2.3 Securing of steel plates](#)[4.8.11.2.3.1 Securing in the transverse direction](#)[4.8.11.2.3.2 Securing in the longitudinal direction](#)[4.8.11.2.4 Calculation example](#)[4.8.11.3 Securing of rubber product](#)[4.8.11.4 Securing of other breakbulk products](#)[4.8.12 Securing of high and heavy \(H&H\)](#)[4.8.13 Securing of bolsters and roll trailers](#)[4.8.13.1 Bolsters](#)[4.8.13.2 Roll trailers](#)[4.8.14 Securing of specialized cargo](#)[4.8.14.1 Securing of heavy roll trailers or other cargo transport units](#)[4.8.14.1.1 Securing of samson trailer](#)[4.8.14.1.2 Attachment of portable securing devices to the vessel](#)[4.8.14.1.3 Attachment of portable securing devices to the cargo](#)[4.8.14.1.4 Composition and application of portable securing devices](#)[4.8.14.1.5 Maintenance of securing arrangements](#)[4.8.14.1.6 Cargo securing calculation](#)[4.8.14.2 Securing of mega containers on weather deck](#)[4.8.14.2.1 120 ft containers \(max load 24 mt\)](#)[4.8.14.2.2 140 ft containers \(max load 43 mt\)](#)[4.8.14.2.3 160 ft containers \(max load 48 mt\)](#)[4.8.14.3 Securing on weather deck](#)[4.8.14.3.1 Securing of yachts on weather deck](#)[4.8.14.3.2 Securing of iso containers on weather deck](#)[4.8.15 Weather dependent lashing \(only applicable to some specific vessels\)](#)[5 During sea voyage](#)[5.1 Cargo checks during sea voyage](#)[5.1.1 Cargo hold checkpoints](#)[5.1.2 Vehicles leaking oil or fuel](#)[5.2 Cargo hold ventilation during sea voyage](#)[5.2.1 Ventilation records](#)[5.3 Cargo separation](#)[5.4 Cargo deck maintenance](#)[5.5 Protection against theft](#)[6 Prevention and damage handling](#)[6.1 Speed limits and safety distances](#)[6.2 Control of driveway/traffic route](#)

- 6.3 [Cargo separation](#)
- 6.4 [Change of destination \(cod\)](#)
- 6.5 [Best practices for damage prevention](#)
 - 6.5.1 [Damage on the entrance of slope way](#)
 - 6.5.2 [Door damage](#)
 - 6.5.3 [Removal of wedges in internal ramp](#)
 - 6.5.4 [Unlashing](#)
 - 6.5.5 [During breakout](#)
 - 6.5.6 [Underneath bumper/spoiler damage](#)
 - 6.5.7 [Damage by chain lashing \(H&H and BB\)](#)
- 6.6 [Damage reporting instructions](#)
 - 6.6.1 [IDR purpose and scope](#)
 - 6.6.1.1 [External terminal use of IDR](#)
 - 6.6.1.2 [Internal terminal use of IDR](#)
 - 6.6.2 [IDR creation](#)
 - 6.6.2.1 [IDR creation - incident or damage occurred during port operations](#)
 - 6.6.2.2 [IDR creation - damages and incidents occurring prior or after port](#)
 - 6.6.2.3 [IDR creation - incident or damage occurring during sea voyage](#)
 - 6.6.3 [IDR classification](#)
 - 6.6.3.1 [Damages classification](#)
 - 6.6.3.1.1 [Damage severity classification](#)
 - 6.6.3.2 [Other types of damages](#)
 - 6.6.3.2.1 [Damages "found in stow" during sea voyage](#)
 - 6.6.3.2.2 [Damages "found-in-stow" by stevedoring before discharge](#)
 - 6.6.3.2.3 [Heavy weather damages](#)
 - 6.6.3.3 [Incident classification](#)
 - 6.6.3.4 [Personal injury](#)
 - 6.6.4 [On-notice letter & customer notice letter](#)
 - 6.6.4.1 [To hold liable party responsible for an incident or damage](#)
 - 6.6.4.2 [Customer notice letter \(CNL\)](#)
 - 6.6.5 [Corrective Action / Preventive Action plan \(CAPA\)](#)
 - 6.6.6 [IDR maintenance](#)
 - 6.6.6.1 [Database](#)
 - 6.6.6.2 [Integration between form.com and sharepoint](#)
 - 6.6.6.3 [Changes to an existing idr report](#)
- 6.7 [Contact information](#)
- 7 [Appendix](#)
 - 7.1 [Portable securing devices](#)
 - 7.1.1 [Inventory of portable securing devices](#)
 - 7.1.2 [Vessel lashing standard \(WW Ocean\)](#)
 - 7.1.3 [Vessel lashing standard \(EK\)](#)
 - 7.1.4 [Inspection and maintenance schemes for portable cargo securing devices](#)
 - 7.1.5 [Actions to inspect the ship's portable cargo securing devices](#)
 - 7.1.6 [Web lashings and wire rope](#)
 - 7.1.7 [Inter-layer stackers, twist-locks, turn-buckles, lashing rods, deck connections, etc.](#)

- [7.1.8 Lashing equipment scrapping guidelines](#)
 - [7.2 Cargo quality audits](#)
 - [7.3 Cargo height increased by ramp angle and overhang](#)
 - [7.4 Standard operating procedure for specialized cargo](#)
 - [7.5 Method of statement](#)
 - [7.6 Operational process](#)
 - [7.6.1 Travel cargo super intendent](#)
 - [7.6.2 Pre-operations](#)
 - [7.6.3 Pre-operations meeting with stevedore](#)
 - [7.7 Battery cable disconnection procedure](#)
 - [7.8 Battery cable connection procedure](#)
 - [7.9 Letter of indemnity for carriage of motorhome \(LOI\)](#)
 - [7.10 Stowage and securing of cars - MariTerm AB](#)
 - [7.11 List of abbreviations \(glossary\)](#)
 - [7.12 Definitions and Concepts](#)
 - [7.12.1 Actual manifested volume](#)
 - [7.12.2 Main carrier](#)
 - [7.12.3 Military cargo](#)
 - [7.12.4 Motorhomes](#)
 - [7.12.5 New and Used vehicles](#)
 - [7.12.6 Specialized cargo definitions](#)
 - [7.12.7 State of Charge \(SOC level checks\)](#)
 - [7.12.8 Rule of thumb method](#)
 - [7.13 Pictures of cargo](#)
 - [7.13.1 Unitised cargo combinations](#)
 - [7.13.1.1 Allowed combination](#)
 - [7.13.1.2 Not allowed combinations](#)
 - [7.14 Cargo handling instructions feedback](#)
 - [7.15 Pocket Guide links](#)
- [8 Updates](#)
 - [8.1 Version 1.4 - January 19, 2026](#)
 - [8.2 Version 1.31 - August 1, 2025](#)
 - [8.3 Version 1.3 - May 8, 2025](#)
 - [8.4 Version 1.2 - Oct 12, 2024](#)
 - [8.5 Version 1.1 - May 31, 2024](#)
 - [8.6 Version 1.0 - January 19, 2024](#)

Introduction

These instructions are designed to provide guidelines around cargo operations on Wallenius Wilhelmsen AS vessels (both owned and chartered).

They are based on long experience as well as incidents & near misses and should be carefully considered in all aspects of a cargo operation. Vessels owned or chartered by Wallenius Wilhelmsen; group companies (WW OCEAN / EUKOR / ARC / ARMACUP) will in this instruction be referred as OPERATOR(S).

The intention is to describe the OPERATORS standards regarding a safe, smooth, efficient and damage free cargo operation during ocean transportation.

These instructions also identify and describe the individual responsibilities of the stakeholders involved in a cargo operation, such as the OPERATORS representative, stevedores, and the vessel's crew.

NOTE: The parts of this instruction that cover the securing of cargo onboard a vessel stipulates the minimum OPERATORS requirements and that they will always be overruled by stricter requirements specified by a vessel's Cargo Securing Manual (CSM).

Safety Requirements

Wallenius Wilhelmsen requires all persons involved in cargo operations to always put the personal safety first.

All work that is conducted during a vessel cargo operations has to be safe by evaluating all situations that occur during work.

Any non-safe operation that potentially can lead to injuries is to be stopped and evaluated. We encourage all our employees and contracted partners to actively think Safety First.

Personal Safety

Each person involved in the handling of cargo must be skilled and qualified to perform assigned duties and must not be under the influence of any drugs or alcohol.

Stevedores shall follow the local Health & Safety regulations and vessel crew their Safety Management System.

Personnel involved in cargo operation must comply with work-rest hour regulations and not be suffering from fatigue.

All drivers of cargo and ship/shore equipment vehicles must have a valid drivers license or have completed a driver training program for the type of unit that is operated.

Safety for forklift drivers is essential onboard vessel, whether or not is vessels or stevedores forklift. Following rules to adhere to but not limited to:

- All forklift drivers shall use the seatbelt while operating onboard the vessel.

- Only trained and authorized individuals should operate the forklift.

- Follow the manufacturer's guidelines for ensuring the safe operation of the vehicle.

- Follow the constructors guidelines and know the capacity of the forklift in use.

- Be mindful of obstacles, including those above head level.

- Use safe practices (Standard Operating Procedures) when working with forklifts.

Dress code

- It is important that all personnel involved in a cargo operation (vessel crew, OPERATORS representatives, stevedores, drivers, lashing personnel, tally, etc.) onboard vessels and in terminals, are dressed correctly. Only working clothes with NO metal buttons, rivets, key rings, zippers, or sharp objects are allowed.
- Exposed communication radios, tools, wrist watches, jewelry and pens and similar personal accessories must be removed or sufficiently covered to avoid damaging the cargo.
- Clothes, gloves, and shoes must be clean to avoid cargo contamination.
- All personnel involved in the cargo operation must wear appropriate high visibility personal protective equipment or the approved coveralls in combination with an approved high visibility safety vest. All authorized visitors attending a cargo operation must wear an approved high visibility personal protective equipment safety vest and be always accompanied.

Smoking

Smoking (including e-cigarettes and vaping) is strictly forbidden in the cargo hold and when involved in cargo operations in the terminal. Smoking is not allowed in any cargo compartment where cargo is present. This includes in any taxi, service car or cargo unit.

The use of mobile devices

The use of mobile devices such as cell phones etc. during cargo operation is not allowed.

Exception, when a mobile device is used as a tool during work.

Eating and drinking

Eating and drinking are strictly forbidden inside vehicles that are part of the cargo and in the cargo hold. Exceptions can be made by the vessel's Master for drinking water, if this is brought up during the ramp meeting, but only at designated drinking areas.

Filming and photography

Cargo owners and shippers (including their representatives) can take photos of their own cargo, only after permission by OPERATORS.

Taking photos for private use of the cargo or cargo operation is not allowed.

Filming of cargo handling and cargo operation is never allowed unless authorized by OPERATORS.

Social media

The sharing in social media of photos/films and/or anything related to the cargo operation is not allowed without permission by OPERATORS.

Vessel work and maintenance during cargo operation and at sea

It is not allowed to perform maintenance work of any kind during the cargo operation or at sea that have a potential of affecting the cargo and cargo hold without the permission of OPERATORS.

These restrictions include but are not limited to:

Greasing of gear/equipment involved in the handling of cargo such as external and internal ramps.

Works to involving painting (In cargo hold and outside in the terminal).

Washing with seawater.

High-pressure air hosing.

Rust chipping.

Hot work and welding.

Engine operations that risk spreading soot from the funnel or stack that can contaminate the berth or cargo.

Heaving lines should only be thrown with extreme caution toward the berth. Special attention should be exercised to prevent hit damage to vehicles during berthing operation.

Visitors and external parties

Visitors

All visitors must be announced at least 24 hours in advance to the local port/terminal responsible. The following permission needs to be granted for access to our vessels:

If the number of visitors is 10 people or less, a request should be sent directly to the Master of the vessel, with copy to Marine Operations management, Ship Management and Chartering department*. The Master will then decide if the vessel has time to host groups onboard.

Groups over 10 people need to be addressed directly to Marine Operation Management, Ship Management and Chartering department* before accepting onboard the Vessel.

Ride along crew, Port ops, Customers, etc. that wish to stay onboard or travel with the vessel between Ports, need to seek approval from Marine Operation Management.

All visitors must have a master's permission to board the vessel.

Note for Time Charter Vessel:

- Any visitors allowance needs to follow vessel Owner's guidelines regarding vessel visits and might require a LOI (Letter of Indemnity)

*) e-mail to: tchire_chartering@walwil.com

When permission is granted from the above, contact with vessel, port agent and other formalities that are required, is the responsibility of the visitor requester.

A visitor is a person not engaged in the vessel's cargo operation or port/state authority personnel.

External parties

External surveyors and/or cargo supervisors are generally not allowed onboard our vessels during cargo operation. This is due to operational safety for cargo and operating personnel. For special

cases, when requested by shipper, e.g., project cargo shipments, exception maybe granted after assessment by local operations or Quality responsible as operators.



Terminal

Terminal/Cargo Handling areas and driving routes must be kept clean and free of debris, such as dirt, trash, pieces of dunnage, steel bands, etc. Warehouse floors shall be kept clean and dry.

Prior to vessel arrival, the dock should be inspected for cleanliness. If any debris is found, it should be removed before the start of cargo operations.

Weather conditions in terminals or berths are to be handled appropriately to avoid accidents and all safety precautions are to be employed to protect employees and cargo. The local OPERATORS representative is responsible for these inspections.

In general, Fencing and Guard rails should be properly positioned in the Terminal to promote safety.

Unitised cargo combinations

Unitised (not including WalWil equipment) cargo combinations, that is self-propelled vehicles or trailers, used to carry additional cargo such as vehicles or breakbulk cargo can be accepted for shipment under strict conditions.

Observe that cargo combinations that cannot fulfill the conditions will not be accepted for shipment onboard any WalWil operated vessels.

Following to be fulfilled for New and Used [main carrier](#)

Unitised cargo is accepted for shipment under strict conditions

1. The main carrier of the cargo combination (either self-propelled or a trailer) must be/have:

- Specially designed to carry the intended cargo.
- No structural damages that reduce driving, towing and/or cargo carrying capacity.
- Axels, tyres, brakes, hydraulic and other such systems must be in full working order to ensure safety and full functionality

Main carriers with worn tyres or tyres not fully inflated will not be accepted for shipment.

- Equipped with sufficient securing points that both the main carrier and the on-top cargo can be properly secured for ocean transportation.
 - Any securing devices (lashing gear) applied by the shipper must show the securing

- capacity (SWL or BL)
- Securing devices must be in good and clean condition with no damages, reducing their stated capacity.
- Additional securing points added to the main carrier, such as extra welded securing points are not allowed.
- The lashing arrangement, securing the on-top cargo on to the main carrier, must be accessible for checking.
- If the main carrier is a used unit, then a valid inspection certificate must be presented.

2. The On-top cargo:

- On-top cargo weights are needed displayed with a label or sticker.
- Securing point same as for the Main Carrier, above.
- The on-top cargo must not drastically alter the centre of gravity or creating a risk for tipping. No calculation needed but experience and seamanship evaluation to be done in case of doubt.
- The cargo loaded on the main carrier can maximum weigh 50% of the carries payload (allowed max weight)

See [Securing arrangements of unitised cargo](#)

Receiving of cargo

Personal effects and non-standard equipment are not allowed in vehicles and High and Heavy (H/H) equipment.

Each unit must have its own key.

Only manufacturer-approved technicians may repair factory new units, and the OPERATORS staff must be informed when a unit is ready for shipment.

Vehicles with any type of failure, including but not limited to mechanical, electrical/electronic failures, or any signs of leakage, must not be loaded onboard any of the OPERATORS vessels or vessels chartered by OPERATORS. These vehicles must remain ashore. If malfunction noted during loading operations, it shall be taken ashore and reported to OPERATORS representatives as soon as possible.

Cargo is to be delivered with only $\frac{1}{4}$ of a tank of fuel. The fuel tank of a self-propelled vehicle powered by Compressed Gas or [CGV](#) may not be more than 50% full. Electric vehicles should be following the [Alternative fuel vehicles/units \(AFV\)](#) instructions in Cargo operations chapter.

Mind the overall cargo condition and be aware of:

- Modified engine combustion vehicles and loose/bare wires visible, radiator damages, braking issues, steering Issues.
- Cargo damaged
- Incorrect or missing center of gravity marking.
- Auto alarms/anti-theft devices which do not disengage.

- Cargo with inaccurately booked dimensions compared to actual dimensions.
- Cargo with insufficient direct lashing points for units over 10 tons
- Cargo with IMDG Labels but not booked as IMDG cargo in booking list.
- IMDG booked cargo with received without proper IMDG labeling.
- Cargo with weak or broken cargo packing (Wooden crates, Boat Cradles)
- Units/vehicles requiring mechanical assistance (i.e., jump starting, starting fluid)
- Cargo without or unclear cargo markings (Dimensions, Vessel/Voyage, POL/POD, Transshipment port)
- Fulfilling or meeting [Clean Cargo Instructions](#).
- All units must be parked at the terminal, with proper distances in line with survey requirements.
- In the event of staging Vehicles must be grouped and sorted by left-hand drive vehicles and right-hand drive vehicles as well as by the height of low sided (LSV) and high sided (HSV) vehicle models.

Cargo measurement procedures

This document contains the basic principles for determining the measurement of Wallenius Wilhelmsen cargoes. This document is to be considered the measurement standard of the cargo offered for shipment.

Measuring company/entity

Measuring to be performed by 3rd party surveyor, Wallenius Wilhelmsen employee, or any other required/approved party.

Audits of Measurement Accuracy will be performed by Wallenius Wilhelmsen Local Port office on request.

Cargo only to be measured while in control of Wallenius Wilhelmsen.

Measurement tools

Controlled and professional equipment to be used for measurement of cargo.

Tape Measure with readout.

Measuring Pole with bubble level.

Digital measuring devices should ensure an accuracy of +/- 1cm and must be used in accordance with the manufacturer's instructions.

Weighbridge/Truck Scale installations for weighing cargo. Digital weight records from cranes are also acceptable if data registering is possible.

Measurement guidelines

All Measurements are to be done in Metric.

L x W x H of targeted Cargo. Length, Width, Height and/or Diameter measurements shall be measured, converted, and/or rounded to the nearest millimeter.

All measurements must reflect true dimensions regardless of any commercial contractual

agreements. The dimension must be reported from Operations within Zero Percent (0%) deviation.

Weight measurements are to be done according to locally approved practice. Minimum booked weight is to be controlled with marking for weight if applicable.

Weight measurements are to be done in gross Kilograms.

Cargo to be staged and measured in its "In Onboard-Stow-Position": "In Stow Position" determined by Operator's representative in POL if disputed.

Buckets and Booms pulled in

Side Mirrors (Fold if foldable and possible prior to measuring)

Exhaust Stacks

Reefer or Air Conditioning Units

Flexible antennas not foldable

Trailer Tongues

Boat Swim Platforms, Out Drives, Radar Arches, Cradles, Trailers, Handles, Taillights.

Any attachments or accessories.

For US exports only, the only exception to this is for flexible antennas on motor homes are not included as motor homes are stowed on the main deck in most instances and no damage will occur to the antenna.

- Cargo Carriers. After cargo items have been measured and stuffing is completed, measure full dimension including the Cargo Carrier (CAC) - Gross dims - and report measurements digitally or manually to the booking office for corrections. This will (Purpose: provide to Operations with true actual dimensions ensuring that the CAC can be safely planned and loaded).

A correct CAC weight distribution and total cargo weight is to be included in the report.

Type of cargo to be measured

1. Break Bulk Cargo - Non-self-propelled:

- All Static cargo.
- All Stuffed Break Bulk, loaded on CAC.
- All Boats and Yachts (new and used).

2. High and Heavy:

- All Used High and Heavy.
- New High and Heavy as per below:

-At beginning of model year or when product is remodeled.

-Modified models (Factory and Non-Factory Customization)

3. AUTOS:

- POV Vehicles: When older than 1980 (as per local practices).

Audits: Control of measurement accuracy on request.

Weight checks as per locally approved practice if applicable.

If in doubt of cargo being part of any of the above categories, please refer to Local Cargo Quality or Booking Office.

Measurement times

Cargo is to be measured during receiving alternative at staging area on date of receipt or according to locally approved practice.

Measurement details to be e-mailed or reported to CCC / Sales Support latest by end of business day. Systems which feed directly into the booking systems must be updated accordingly.

Late Gates arrivals: Cargo received during vessel operation or when cargo is advanced to an earlier vessel must be:

Measured prior to loading.

Advise customer of discrepancies prior to loading, time permitting.

If there is no time to advise customer of measurement discrepancy, the cargo is to be loaded and CCC or Sales Support to be advised on the details immediately by Operations.

If late cargo measurement could cause impact in the operations, this can be exempted based on the approval of the Cargo Quality Representative at the Port of Loading and subjected to re/measurement at Port of Discharge in case of doubt.

In stow position dimension vs operational dimensions

Booking agents must confirm any deviation between Stow Position dimension and Operational dimensions with the Shipper and announce any deviation to the Regional Port and stowing planner Team.

When a cargo unit show any sign on different dimension during operating mode vs. stop-and-stow-mode, (this could be air-suspension function or other features that increase the measures during operating) a communication is to be done with local responsible Wallenius Wilhelmsen Operator a.s.a.p.

Operational dimensions will be used for safe operational purposes.

Labelling

Cargo Identification by humans and electronic devices is essential for an effective operation.

Following rules apply to all cargo units:

- All units, factory new as well as used, must be labelled prior to loading.
- The cargo label must be legible, easy to spot and readable from 1,5 m distance.
- Labels must not be covered, nor partially obstructed by any other sticker or label.
- If a unit is relabeled due to change of voyage, destination and/or dimensions, the new label must be applied on top of the old one or the old cargo label must be replaced.

Minimum required information on the label:

- Port of Discharge (POD) in 5-letter UN/LOCODE notation
- VIN number (all vehicles) or unique identifier (breakbulk) in text form

Preferred, additional information on the label:

Port of Load (POL) in 5-letter UN/LOCODE notation
Dimensions of cargo
Weight of cargo

Labelling of factory new cars

All factory new vehicles must be equipped with a label which adheres to Wallenius Wilhelmsen minimum requirements on labelling.

The labels shall be put on a suitable and visible location, preferable on left side of the vehicle in driving direction:

Preferably on the rear window.

Alternatively, on the furthest bottom position on the windshield. The viewing field of the driver must not be obstructed.

If the label is not showing a machine-readable cargo ID (VIN), the default Wallenius Wilhelmsen group label must be applied in one of the preferred positions mentioned above.

Labelling of high and heavy units

1. In addition to the minimum requirements on [Labelling](#), following applies:
 - Weight of the unit in kilograms.
 - Full dimensions (length, width, height) of the unit in metric system.
2. Where applicable, specify the following:
 - Port of Transshipment.
3. To enable secure, fast, and efficient identification of the unit, the label:
 - Must be positioned on a flat surface.
 - Must be reachable and readable while standing on the ground.,
 - Should be on the left side in driving direction and shall not be adhered to painted surfaces.

If the manufacturer label is not existent or not matching our requirements, the default Wallenius Wilhelmsen Group label must be applied.

Labelling of breakbulk cargo

In addition to the Wallenius Wilhelmsen minimum required information following applies:

Port of Loading (POL) in UN LOCODE notation

Identification of the unit:

Cargo ID

Serial No

Case No

Gross weight of a unit in kilograms

Full dimensions (length, width, height) of the unit in metric system

Where applicable, specify the following:

- Port of Transhipment

The cargo label must be placed on a flat and accessible surface (not on top or bottom sides) so that the label can be easily read and scanned. Cargo labels shall not be adhered to painted surfaces, if avoidable.

If labels are put on packing material made of wood, staples must be used on all four corners of the label to ensure tight fit.

If the manufacturer label is not existent or not matching our requirements, the default Wallenius Wilhelmsen Group label must be applied.

Port Stickers / Mirror hangers

Port stickers and mirror hangers can be used to supplement other labels for identifying the port of destination. When possible, this port sticker should be attached to the present fixed cargo-labels, if available.

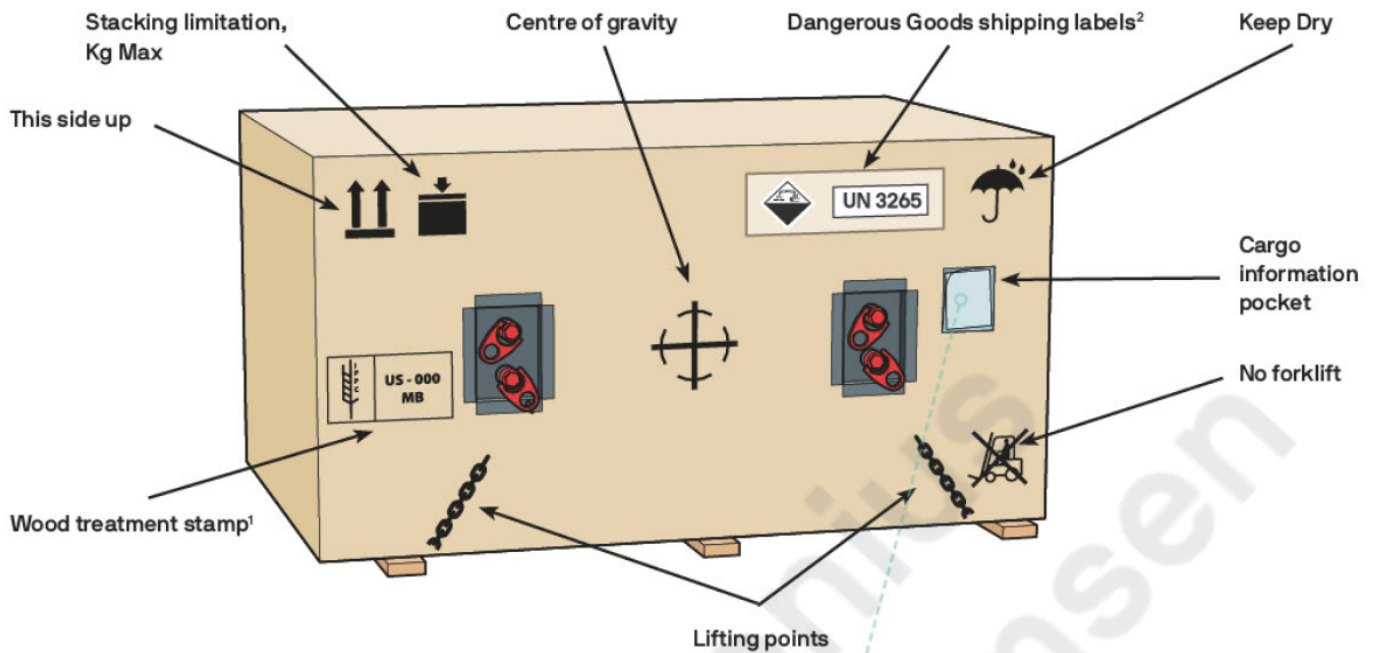
Labeling IMDG cargo

Shipper is responsible to announce IMDG cargo at booking stage. Shipper is also responsible to clearly mark the cargo according the IMDG code. Cargo booked as Dangerous Goods must be controlled in the terminal that those markings are visible and according to the booking.

Biosecurity and BMSB (brown marmorated stink bug) labeling

Labelling to verify proper treatment of cargo against pests, such as the BMSB, might occur on some specific trades and should be placed in very close proximity to the cargo label.

Marking of cargo



The following cargo information must be made available in a plastic pocket or stamped on the packing:

- Port of Load / Port of discharge
- Wood treatment
- Consignee
- Dimensions: Length x Width x Height
- Gross mass
- Position of Center of gravity
- Transport drawings / picture of cargo.

The following information regarding securing points should be considered:

- Where are the securing points located?
- What is the maximum securing load of the securing points?
- Do you have Codes and/or standards that the package complies to?

Label specification

Cargo Label specifications (broken out from [Labelling](#))

Encoded Cargo ID (VIN, S/N, any other unique identifier) as either 1D linear code or 2D QR code.

1D Barcode (linear code)

Minimum size: 100 mm in length, 20 mm in height.

Preferred Symbology: Code 39

2D Barcode

Minimum size: 25 mm x 25 mm

Preferred Symbology: QR Code

Receiving of factory new units (vehicles / high and heavy)

Manufacturers/shippers label to be the main label.

If not usable as for scanning purposes, i.e.

Automatic identification and data capture (AIDC) technology, the following procedure should be followed:

A bar-, QR- or any next generation labels will only be applied to cargo units where labels are not affixed by the shipper and a terminal system is implemented.

Affixing of labels to any window or painted surface on a factory new vehicle is strictly prohibited. Labels may only be put on the plastic protection of factory new autos; the labels shall also be put on a suitable and visible location on the front hood / to the driver's side rear side window. If the unit does not have protective plastic, a mirror hanger is to be used for all kinds of labels. The labels attached on mirror hangers shall be turned towards the windscreen.

Allowed items in used units

Only standard equipment belonging to the unit is allowed inside used unit during ocean transportation. The following is classified as Standard equipment:

- Vehicle/boat toolkit (Battery tools are not permitted).

- Spare tire

- Mounted fire extinguisher

- Items that can be defined as the standard equipment of a vehicle/boat when delivered from the manufacturer to the dealer are allowed.

- Standard equipment such as stereo, speakers, and video equipment in set units must be permanently installed.

- Standard equipment stored in the trunk and lockers must be safely secured.

Not-allowed items in used units

- No personal effects such as clothing.

- No suitcases, crates, or boxes.

- No Flammable or hazardous substances, pyrotechnics flares (like hand flares, etc.), oils, paints, solvents.

- No pressurized cans or containers or any kind.

- No medical supplies or equipment.

- No firearms or ammunition of any kind (even deactivated weapons or spent shells).

- No perishable goods or food stuffs, plants, or vegetation.

No Motorcycles/Scooters, Bicycles etc.

Requirements for shipping used motorhomes

The shipped content of a used unit must only be what is defined as standard equipment for use in relation to the purpose of accommodation. No other items are allowed.

The only acceptable items carried at shipper's own risk are the standard equipment under topic: [**Allowed standard items for used Motorhomes**](#). Such allowed items must be secured, cleaned, and packed in their respective designated areas.

Shipper must supply a signed check list of standard equipment being shipped inside of the units at customer's own risk. The Ocean carrier will not be liable for any type of items inside of the vehicle.

All standard items are to be clean and free of mud or debris. This includes and not limited to bed linen, curtains, and any other leisure equipment. All units/equipment must adhere to Wallenius Wilhelmsen Clean Cargo Guidelines.

Standard equipment must not be intended for exporting or re-selling purpose. Equipment must be available for random inspections by customs officers and authorized personnel. If any areas are to be locked, keys must be delivered together with the vehicle ignition key. Carrier is not responsible for any results or actions taken by customs or quarantine on arrival.

Gas cylinders are only allowed if they are securely fixed, listed in the standard equipment list and accompanied with a valid up-to-date gas-free certificate, which must be attached to the cylinder.

Vehicle interior: The inside of the unit being shipped must appear empty.

A complete set of pictures reflecting the unit interior condition together with items check list must be provided by shipper prior delivery. Units will be surveyed at Port of Load and/or Port of Discharge at shipper's cost.

Units are to be kept locked whilst at the terminal.

Allowed standard items for used motorhomes

All standard items for used units with a purpose-built accommodation area are listed below, and no other item is allowed. Items must be secured, cleaned, and properly packed on their respective designated areas. Items must be available for random inspections. If any areas have been locked, keys must be delivered together with the vehicle ignition key.

Kitchen equipment

- Installed kitchen appliances (like oven, microwave, dishwasher, washing machine, fridge)
- Dishes (like plates, glasses, cups)
- Cutlery
- Pots, pans, strainer
- Can opener, spatula, etc.
- Tupperware containers, freezer bags
- Cooker, Kettle, Portable Cooler

- Kitchen roll, trash bags
- Dishpan, sponge, dish brush
- Gas cylinders (securely fixed) only with accompanying up to date gas free certificate attached to the cylinder.

Bathroom equipment

- Towels
- Toothpaste, shampoo
- Hygiene products (diapers, tampons)
- Toilet paper, wet wipes

Other equipment

- Beddings & sheets
- Pillows
- Mosquito net
- Child seat
- Bicycle
- Motorcycle, if mounted externally, carried on a suitable rack, and fully covered with a tarp or cover.

Camping equipment

- Camping chairs, table
- Picnic blanket
- Grill
- Flashlight
- Road maps, atlas
- Water hose, empty water canister
- Axe for firewood
- Cable reel, extension cord
- Adapters, multiple sockets
- Portable toilet (clean & empty)
- Sleeping bag

Salvage & repair equipment

- Spare tires (max. 4), tire repair kit. No chemical repair kits allowed.
- Vehicle Spare parts (only for private use)
- Jacks
- Toolbox. Battery tools are not permitted.
- Shovel
- Duct tape
- Wheel chocks
- Salvage equipment (like ropes, chains, winches, belts, sand ladders)
- Ladder

- Compressor-only factory fitted.
- Fire extinguishers (securely fixed)
- Emergency generator (adhere to $\frac{1}{4}$ max fuel in the tank – max. tank vol. 450l)

Motorhomes - Items not allowed

- Weapons, ammunition, and any other contrabands.
- Drugs & medicine.
- Perishable goods, plants, any food, spices, etc.
- Flammable and hazardous substances (like aerosol cans).
- Fuels and lubricants.
- Electronic devices (like printers, cameras, computers, iPad, etc.).
- TVs, navigation devices, DVDs, if not fixed mounted in the unit.
- No Cleaning supplies.
- No oil containers.
- Lithium batteries (IMDG Goods).
- Pressurized cans or containers of any type.
- Battery Powered bicycles.
- No Personal effects*

* Personal effects are not allowed in the motorhomes but there is an exception for clothing. A Letter of Indemnity (LOI) is required in order to allow clothing items within the motorhome. The clothing must be stored only in fixed compartments. [The WW LOI template](#) must be used. This documentation ensures compliance and facilitates approval for the carriage of clothing items.

Used yacht & boats

The acceptance criteria are the same as for used units with a purpose-built accommodation area. The shipping operator will only accept loading boat cradles that are constructed and have sufficient strength for sea transportation.

Receiving of used units

Specific requirements

OPERATORS Local office/agent is responsible for ensuring that all stipulated requirements are followed.

Ensure that the cargo is fit for export as per the following guidelines:

Shipper/cargo owner is responsible to ensure that the cargo is safe for shipment.
All Used Units without a battery kill-switch is to have the 12/24 V battery disconnected after loading onboard a vessel. (Exception from disconnection can be found under [Disconnecting](#)

Battery on Used Cars.

- Port of export is to assure control of battery disconnection performance. Vehicles with disconnected batteries shall be added to the exception list on the stowage plan.

Disconnected battery pole shall be covered with suitable protection to avoid spark ignition. See [Battery cable disconnection procedure](#).

For used units that are classified as Alternative Fuel Vehicles (AFV), see the section on [General customer instruction for shipping of used AFV](#) in this document for additional requirements.

No personal effects are allowed in the cargo, be it driving/seating areas, or vehicle trunks or storage spaces. See details in [Allowed Items in Used Units](#) / [Not-Allowed Items in Used Units](#) / (Exception for Motor homes. see [Requirements for Shipping Used Motorhomes](#))

Cargo is to be delivered with only ¼ of a tank of fuel. The fuel tank of a self-propelled vehicle powered by Compressed Gas or [CGV](#) may not be more than 50% full. Electric vehicles should be following the Used AFV regulations in chapter [General customer instruction for shipping of used AFV](#).

Cargo should be clean and meet the intended destinations clean cargo requirements. For details see the Clean Cargo Instruction.

It is advisable to turn off, or otherwise disconnect, installed auto alarm or anti-theft device prior to terminal delivery. 'Pop' out radios shall be removed.

Used units and Motor homes that require electrical supply during the voyage are not accepted. Used Vehicles stowed inside Cargo Transport Units (Containers, Trailers, Trucks) are not accepted. An exception could be given, if the Cargo Transport Units have enough openings for ensuring proper ventilation of the inside atmosphere.

Vehicles with any leakage is not allowed to be loaded until repairs have been completed. If malfunction noted during loading operations, it shall be taken ashore and reported to OPERATORS representatives as soon as possible.

Vehicles with a missing fuel tank cap be refused loading until the opening has been properly covered.

Vehicles without brakes shall be clearly marked with a windshield display and only loaded if safe handling method is secured. (Towbar to be used or loaded on a cargo carrier).

Punctured and flat tires be repaired before loading.

Vehicles and trailers with loose allowed items inside must be properly secured before loading.

Any problems with the steering on a unit must be marked and declared in the exception list.

All windows to be closed. Exception: Local OPERATORS representative can decide to keep a window partly open to allow for manual unlocking.

The ignition key shall be removed and placed in the designated location. If malfunction noted during loading operations, it shall be taken ashore and reported to OPERATORS representatives as soon as possible.

Receiving of break bulk (B/B)

General Considerations

The shipper is responsible for preparing the cargo and its packing for cargo handling and sea

voyage.

The shippers have the responsibility to see that the packing is correctly marked. If the cargo permits outdoor storage, then it is expected to be adequately weatherproof packed. In case cargo is deemed or ordered to be sheltered in the booking process and no full shelter facility is available, cargo should adequately be covered. Center of Gravity marking of the box has to be displayed clearly.

Cases and crates can only be stacked on top of each other if the package is allowing this and does not show visible structural signs of damages.

The cargo must be secured inside the packaging, preventing cargo movement inside during handling and sea voyage. As a general recommendation, boxed/crated cargo should be safely bolted to bottom support beams which are of enough strength and dimension.

The packing itself must be of such strength that it withstands the handling in ports, lashing operation and forces caused by vessel's motion at sea.

Shipper must provide pictures and/or written descriptions of how securing inside the case/package has been arranged. The picture and description should be attached to the unit or made available to authorized OPERATORS personnel. The unit should otherwise be accessible, or have inspection openings to verify securing, if no description is provided.

Units weighing 10 MT, or more is to be equipped with sufficient means for securing, directly connected from cargo to deck. The intended ways of securing, or possible restriction on securing, must be informed by shipper. Securing points must be clearly marked and Minimum Securing Load should be stated.

Exceptions may be granted by authorized OPERATORS personnel if:

Cargo is safely secured inside the package.■ Verified by provided information.■ And/or verified by visual inspection.

Unit is possible to secure.■ According to provided information.■ And/or as per assessment

Package is rigid and can transfer forces from securing and supports to the cargo inside.

Exceptions are to be highlighted and explained for the Vessel Master.

If it is not possible to properly secure the unit without removing the seal or open the case, contact shall be made with an appropriate representative (e.g., Customer Service, booking department, forwarder, shipper, etc.) to seek needed necessary information or get the approval to remove the seal or open the case. If such information or approval is not achieved and it is still not possible to ensure safe securing, the unit shall not be loaded. If In case of cargo is being rejected by the Master or his delegate, all reasons and facts are to be properly communicated to OPERATORS Representative.

Static units exceeding 15 MT for PCTC vessels, and 25 MT for RoRo vessels shall be unitised on a Roll trailer, to prevent overloading of the deck. Exception may be allowed by Stow Planning if proven with deck capacity.

Definitions

Cargo: Cargo by itself; Unpacked Cargo.

Unit: Cargo and its' packing, when proven that it can be regarded as one rigid body.

Authorized Operators personnel: Port & Cargo Operation and Break-Bulk team.

Unitised cargo/ piggyback cargo

See [Unitised cargo combination](#)



Steel products

Steel coils

Steel coils shall be stored under cover unless otherwise instructed by the Local OPERATORS representative.

Plywood shall be placed under the cargo if deemed necessary by the Local OPERATORS representative. Care should be taken not to do not break the steel banding.

Wire rope coils

This commodity shall always be stored under cover. Warehouse floors should be clean and dry and have adequate drainage. If deemed necessary by the local OPERATORS rep., floors should be covered with plywood or similar for small loose coils.

Steel pipes

Steel pipes can be stored in open storage areas unless otherwise instructed.

Small diameter pipes are usually bundled.

Pipes shall be stacked in layers with dunnage between layers.

Pipes less than 6.1m long will very often be unitised on bolsters per instruction from the local OPERATORS representative.

Metal plates

Cargo shall be stowed under cover unless otherwise instructed.

A clean and dry surface is required.

This solid cargo can be stacked using suitable dunnage.

Rubber products

All rubber is to be stowed inside a terminal warehouse that has well-drained and clean surfaces. (Rubber is a temperature-sensitive cargo).

Utmost care must be taken when lifting pallets. Forklift tines should be cushioned in the rear, so that the front end of tines does not protrude beyond pallet.

Crated rubber may be stowed four high in warehouse provided that heavy-duty plywood is used between the first three layers. Note: maximum is two heights high if plywood is not used.

Shrink-wrapped (S/W) rubber should be stowed two heights high only, with heavy-duty plywood between layers.

Damage to rubber pallets shall be reported to the local OPERATORS office as and when such damage is detected.

The stevedore shall, in co-operation with local OPERATORS office, arrange for recouping of damaged pallets.

Forestry products

All forestry products are to be stored in a warehouse or under roof, unless otherwise instructed by OPERATORS representative.

Warehouse floors shall be dry and clean in areas designated for the storage forestry products.

All cargo should be stacked in the warehouse in stable and safe heights.

Plywood, lumber, pallets, and wooden boxes should, to the extent possible, be stored in a separate warehouse from paper rolls.

Paper rolls

All paper rolls are to be turned and inspected for damage prior to placing in load the port of loadings warehouse. All damages present upon receipt at the terminal shall be recorded, and a summary of the damages is to be delivered to the OPERATORS office or local agent in writing, when receiving is completed.

When receiving these products for storage, all rolls shall be placed on a dry and clean

warehouse floor. A layer of heavy craft paper may be used when required.

On-end stacking is safer and more advantageous to for the condition of the paper.

Paper rolls on-end make the best use of storage capacity. When stored for a long period, the reel does not suffer the flattening which can occur on reels which are stacked on the roll.

For truck driver safety, and to avoid excessive pressure on the lower rolls, not more than four full size rolls should not be stacked on top of the other.

The stacks should be straight, i.e., the edges should not overlap.

Damaged paper rolls received from the vessel at the discharge port should be kept separate and later inspected. Vessel Master should be informed regarding the status of the damaged rolls.

The shed doors should be kept closed whenever possible.

Baled wood pulp in units

Wood pulp units shall be stowed/stored on a dry and clean vessel deck and/or warehouse floor. A layer of cardboard may be used when required. Never use craft paper or plywood as this stick to the pulp.

Each unit shall be stored upright, with flaps of wrapping pointing down clamping of units shall be done at the bottom of unit. Clamping on bale strapping or unitizing wires should be avoided. Units should not exceed one height high on trailers, unless agreed to by the OPERATORS representative.

Plywood

Handling of bundles of plywood requires a special thin fork blade. Blades used must be shorter than the width of the bundle. (i.e., not protrude beyond the width of bundles during any operation)

Plywood shall be stowed in the warehouse to a height that is stable and safe to maintain.

Units shall not exceed two heights on trailers, unless agreed to by the OPERATORS representative.

Missing skids under plywood bundles shall be replaced with loose skids to enable fork blades to enter the bundle at discharge port.

When other commodities are to be stowed adjacent to plywood, suitable protection should be used in between the commodities to avoid damage. Loose skids should follow cargo ashore at discharge port(s).

Veneer

Must be stored in warehouse on a clean and firm surface.

Cargo can be stowed up to 4.3m in height if skids are sturdy, and stowage is tight.

Veneer is to be stowed on bolsters from 2.4 - 3.0m in height depending on planned stowage location.

Care must be taken to ensure that all skids rest properly on bolsters.

Cargo should be flush on bolsters to enable stowage of another bolster on top.

When loading two bolsters height, a layer of plywood provided by OPERATORS is to be placed

on top of the bottom bolsters.

Each vertical tier should be secured by steel bands of sufficient strength.

Suitable cushioning material should be used between steel bands and corners of cargo.

Yacht & Boats

The OPERATORS representative only accept load boat cradles that are constructed and have sufficient strength for sea transportation. Unless otherwise instructed, sail-yachts shall be tied down using web lashings or a web sling attached to the yacht per the instructions of the shipper or OPERATORS representative. These lashings shall lead to the vessel's deck and should be moderately tightened to keep web slings tight.

Stuffing of cargo carriers

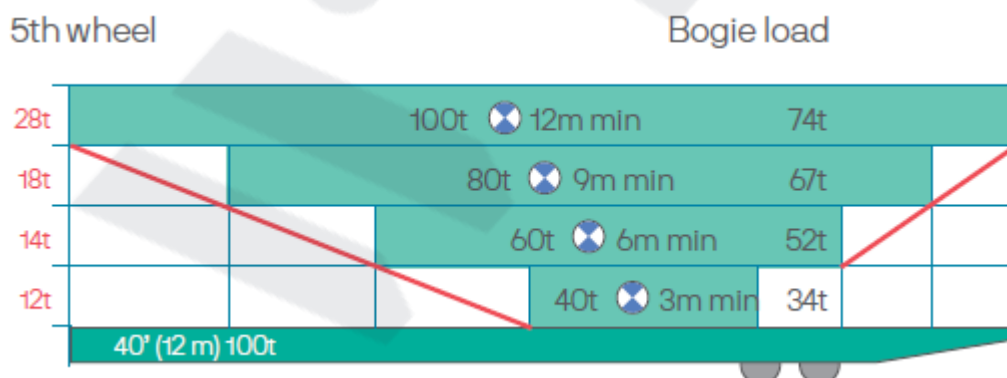
The condition of trailers should be checked by the Terminal/Stevedores and/or OPERATORS representative prior to use.

Adequate dunnage shall be placed in order to protect the Roll trailers wooden floor from damages.

When unitizing heavy or awkward cargo on a trailer, supporting wooden beams with the same width as the trailer should be used underneath the cargo to avoid damage to the trailer's wooden floor. These beams should always rest on a trailer steel frame and steel crossbeam.

The Heavy Lifts' transversal center of gravity shall be exactly in line with the roll trailers center line.

Calculations must be done before Heavy-Lift is placed on a roll trailer to ensure that the capacity of the roll trailer is sufficient and that the positioning of the cargo on the roll trailer is done correctly.



The tool, [“Roll trailer Calculations” \(Excel file\)](#), should be used to determine that the weight on the gooseneck/ fifth wheel does not exceed roll trailer/tug-master/gooseneck capacity. The tool is available for download on OPERATORS Intranet. This control is preferable done during the booking process.

Prior to unitising a roll trailer, the OPERATORS representative or concerned parties must ensure that the port of discharge has the capacity to handle/discharge the roll trailer.

The weight of the cargo shall always be distributed on the roll trailer, with the heaviest parts towards/above the wheels.

Lashings to be applied according to case-by-case assessment, in a symmetrical pattern.

If using roll lash or spanset, proper corner protectors must be used to save the lashing from being cut by sharp edges.

Stuffing/ pre-loading of multipurpose bogie (MPB)

Equipment must be checked for any damages, such as broken wheels, distorted support areas and moving parts.

Lashings to be applied according to case-by-case assessment, in a symmetrical pattern.

If using roll- lash or span-set, proper corner protectors must be used to save the lashing from being cut by sharp edges.

Depending on cargo type, rubber mats and/ or wood dunnage must be placed in-between cargo and turntable.

Tipping/tilting motion of turntable, relative to the cargo, must also be prevented by dunnage/support or by lashings. For heavy cargo, it is preferred to use jack-ups or similar between platform and ground

The cargo must be secured from sliding (all directions), rotation and tipping on both bogies. Full weight of cargo must be considered in each bogie's securing arrangement.

Before start of stuffing/con-vanning, locking device of fifth wheel must be verified closed and locking pin engaged. Visual control should be done before any movement of bogie is performed.

Pull-test by tug-master or forklift can be done to ensure properly locked.

Stuffing/ pre-loading of samson trailer

Intended platform and bogies must be checked if it's fit for operation, before taken into commission.

Following to check:

- Platform frame not dented, twisted, or rusted.
- Lashing points not damaged.
- Wheels not gouged or missing.
- Markings readable (equipment ID number, tare weight, SWL).

Before start of stuffing, locking device of fifth wheel must be verified loosed and locking pin engaged.

- Visual control should be done before any movement of bogie is performed.
- Pull test by tug master or forklift can be done to ensure properly locked.
- If the fifth wheel is not locked, there is a risk that bogie and platform are separated during operation.
- Attending superintendent or stevedore foreman must check that fifth wheel is locked before operation.

It is important that the Samson platform is prevented from any movement. Preferred way is to have the tug-masters connected. Doing this, prevent any involuntary longitudinal movement,

but at the same time there is the possibility to manoeuvre the platform if necessary. The wheels can be blocked using trailer wedges or similar as well.

Depending on cargo type, rubber mats and/ or wood dunnage must be placed between cargo and platform.

The cargo must be secured from sliding (all directions), rotation and tipping on the platform. Weight of the cargo must be transferred to platforms full construction. This means you may need to add transversal beams in order to distribute the load.

If necessary, stoppers can be welded on the platform, but only with Equipment departments approval.

Locking pins (2 on each side of bogie) must be engaged/ locked during stuffing of cargo.



It's important that the 2 MPB's are prevented from any movement during stuffing. Preferred way is to have the tug-masters connected. Doing this prevent any involuntary longitudinal movement, but at the same time there is the possibility to maneuver the MPB's into correct position if necessary. The wheels can be blocked using trailer wedges or similar as well. When considering using Multipurpose bogie equipment, attention must be taken to have good

lashing points in order to prevent any longitudinal movement between cargo and platform. (So, the platforms can't be pushed in/ pulled out by the tug-master)

When stuffing trains, the suspension of the bogies (wheel sets) must be blocked from movement.

Clean cargo instructions

It is the customer's responsibility to ensure that their products are clean when they are delivered to a port for export. The following is a quick but invaluable guide to what to look out for in order to ensure your product is clean enough.

MAKE SURE TO PREPARE YOUR PRODUCTS ON TIME

It is important that products are delivered to the port early enough to ensure ample time to properly inspect and clean or treat the unit in accordance with destination requirements. This is particularly important during BMSB season and the winter months when a majority of the products received require treating or washing before loading, especially those that have travelled over the road on an open conveyance.



Before cargo is loaded it has been exposed to potential sources of contamination many times such as seeds, live bugs, mud, dirt and oil etc. Global cargo flow increases the risk for the spread of plants and animals from their natural habitats to geographical regions where they are considered invasive species. An invasive species is a plant, fungus, or animal species that is not native to a specific location (an introduced species), and which has a tendency to spread to a degree believed to cause damage to the environment, human economy or human health. It is of great importance to assure that cargo is clean and in compliance with all requirements of discharge or transshipment port or region.

The consequence of transporting unclean cargo is not only an increased risk for the global spread of invasive species, diseases, and a reduction in transportation quality, it could also result in large costs and time losses due to biosecurity inspections and cargo quarantine procedures, negatively affecting both the customer and the carrier. Vessel cleanliness and the risk for cross contamination of other

cargo is also an important aspect to why all loaded cargo must be presented for shipping in a clean condition.

For some specific trades [limited exceptions](#) to cargo cleanliness standards maybe granted by Regional Quality department.

National and international requirements

These internal and company specific clean cargo instructions can never overrule any requirements or instructions from international or national authorities.

Contamination

Cargo should always be presented for shipping in a clean condition. In general, all contamination that can be swept, scraped, washed, or picked away shall be removed from the outside and the inside of the cargo before it is handed over to the carrier, unless the cleaning is part of a customer agreement.

Clean cargo requirements substantially vary from country to country and some areas of the world are more exposed to the risk of invasive species than others due to factors such as geographical location, climate, and the existence of vulnerable industrial sectors such as agriculture and farming etc. Countries in these areas usually have very strict clean cargo requirements and an effective quarantine process to protect their borders against the biosecurity threat caused by global transportation.

It is of outmost importance that representatives of OPERATORS, in load and discharge ports or regions, work together with local authorities and customers to determine a level of cleanliness accepted for their specific trade. However, it is important to note that cargo should never be allowed to cross contaminate other cargo, vessel cargo holds or terminal properties in any way.

Animal material (live or dead)

It is very important to make sure that all animal and insect life is removed, dead or alive, including traces of any feces/bird droppings.

Some discharge or transshipment ports or regions require that all cargo has undergone treatment, approved by the authorities in the receiving country, prior to being loaded due to the risk for contamination of live bugs or insects.

Plant material

There should be no traces of plant material such as seeds, twigs, leaves, bark, roots, grass, fruits, or straw on, or inside, the cargo.

Dirt (mud, soil, gravel, and sand etc.)

There should be no traces of loose mud, soil, gravel, lime, asphalt, or sand on, or inside, the cargo, etc. A common problem is “road dust”, which is a thin film of dirt that adheres to units during the road transportation.

“Dirt splashes” is another issue where dirt adheres to tracks, tires, panels, and cargo carriers, mainly during cargo operation. Accepted levels of road dust and dirt splashes are unfortunately hard to judge and a quality representative from the carrier should be consulted for advice if seen needed.

Food

There should be no traces of leftover or spilled food or drink (including drinking water) on, or inside, the cargo.

Water

There should be no traces of water on, or inside, the cargo such as collected on top of tarpaulins and in buckets etc.

Oil and grease

There should be no traces of oil (e.g. stains or leakage), grease and soot etc. on, or inside, the cargo. Exception: to areas where grease is needed example rotating parts; no old/excessive grease applied!

Mould

There should be no traces of Mould (Mold) in or on the cargo, or on packaging, dunnage, pallets etc. related to the cargo.

Special Considerations**Cargo Carriers**

When cargo carriers are used, it is important to not only scrutinize the cargo, but also to consider the cleanliness of the cargo carrier. Cargo carriers must always comply with the same requirements as the cargo they carry. Same goes for cargo under repositioning.

Removal of snow and ice

See topic: [Snow, ice or water on cargo](#)

New Vehicles

Special attention should be given to vehicles and cargo units covered with a protective plastic film, especially under the folds of the plastic as bugs, insects, seeds, and dirt tend to gather in these areas. Convertible tops constructed out of fabric and parts affixed with sticky tape are other areas in need of attention.

New machinery/equipment

Due to the risk for oil leakages from hydraulic and engine arrangements and fittings on new machinery and equipment, these must be checked and given special attention before and during the loading operation.

Used machinery/equipment

Since this type of cargo has often been exposed to several possible contamination sources over a long period of time, it requires thorough cleaning and inspection before being accepted.

Special attention should be given to steel-tracked used units. The tracks tend to harbor a lot of mud, soil and sand and a proper cleaning sometimes require dismantling.

Movable parts such as, hatches, lids etc. as well as hydraulic and engine arrangements and fittings also needs attention to ensure cleanliness and that there are no oil leaks or excessive amounts of grease where seeds, bugs or insects can adhere.

Special national requirements

Some countries, such as Oceania, impose very strict cleanliness requirements on used cargo. These requirements stipulate that used units to some extent will require being disassembled during washing and that a cleaning certificate is accompanying the cargo.

For further details consult the New Zealand Ministry of Primary Industries (MPI) & DAFF (The Department of Agriculture, Fisheries and Forestry).

Used tank trucks/fuel tanks etc. (inc. Those not used for propulsion)

Must be cleaned and certified gas free.

New motorhomes

Should be handled the same way as [new vehicles](#).

Used motorhomes

Used motorhomes require special attention and currently will need to be pre-treatment with heat year around when loaded on vessels bound for Oceania where the biosecurity requirements are strict.

The reason for this is the high possibility that such units have been exposed to the nature for a long period of time and that they offer many hiding places for animal life. Heat treatment is during these conditions the treatment option offering the best result in ensuring that units are free from any kind of animal life. (Gas treatment with Sulfuryl Fluoride (SF) will in some ports be accepted due to the lack of heat treatment capacity.)

Wax coated cargo

Special attention should be given to vehicles and cargo units covered by protective wax coating, especially during the summer season since the wax tend to get sticky in hot weather and cause bugs, insects, seeds, and dirt to adhere.

Covered cargo

All cargo units covered with tarpaulin or similar (such as shrink wrapped) must be inspected under the cover to verify cleanliness.

Pre-treatment of cargo due to national and international requirements

Pre-treatment of cargo is a relative rare measurement. The reason is often that the receiving port or region is unable to arrange for effective treatment of large cargo volumes after discharge or that the risk for invasive species is considered so large that the discharge of untreated units is not allowed by authorities in the receiving country.

Responsibilities

Shipper / Cargo Owner

It is the shipper's or cargo owner's responsibility to ensure that their cargo meets all clean cargo and biosecurity requirements in the Clean Cargo Instructions and in the port or region of load and discharge.

Load Region

The local OPERATORS representative should do their utmost to ensure that all cargo meets the clean cargo requirements in the Clean Cargo Instructions, and all known clean cargo requirements in the discharge/transshipment port or region, before being loaded.

It is the right of the OPERATORS representative to request additional cleaning (at shippers account) of cargo considered not fulfilling above or decline such cargo from being loaded.

Customer care and sales support/commercial

It is the responsibility of the OPERATORS Customer Care and Sales Support/Commercial to communicate any known clean cargo and biosecurity requirements in the receiving port or region during the cargo booking process.

A Clean Cargo Guideline is available for distributions to customers and cargo owners.

Vessels

It is the responsibility of the Vessel Master to consult the local OPERATORS representative during the loading operation if cargo is suspected of not complying with the Clean Cargo Instructions.

It is also the responsibility of the Vessel Master to report any findings of already loaded cargo suspected of being unclean or contaminated.

Issues with contamination of the cargo hold that could cross contaminate the cargo in any way, such as salty water or findings of live animals etc. should also be reported.

Reports should be sent to OPERATORS in the port of discharge and to Cargo Quality or OPERATORS Biosecurity Officer as soon as discovered.

Clean cargo exceptions

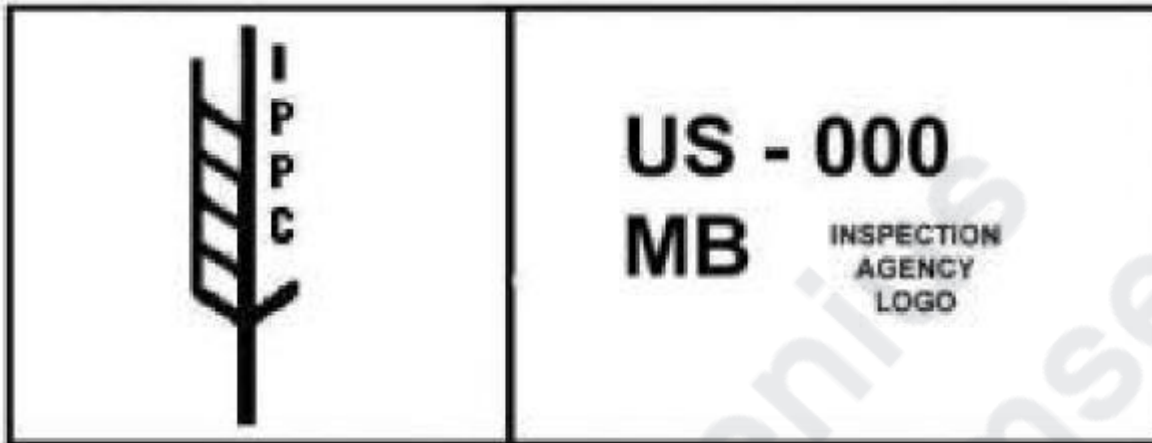
For some specific trades limited exceptions to the cargo cleanliness standards may be granted by the Regional Quality Department.

Suggested points for consideration when exceptions are requested:

- Biosecurity and/or Import Standards in the discharge region
- Risk of bio contamination to the vessel, other cargo or to the discharge region
- Risk of any dirt or debris from the cargo contaminating the vessel
- Ability to survey the cargo
- Any further operational safety and quality risks
- Exceptions are granted on a shipment-by-shipment basis unless otherwise advised by Regional Quality Department

ISPM requirements (biosecurity check of wooden dunnage)

All wood packing material including dunnage must be manufactured, treated, and marked according to the ISPM regulations (International Standards for Phytosanitary Measures). Dunnage that is not ISPM compliant which is left onboard must either be destroyed by an approved process or re-exported.



Sample ISPM logo showing the MB for methyl bromide treatment of the wood.

Treatment code Treatment type

HT	Heat treatment
DH	Dielectric heating
MB	Methyl bromide
SF	Sulphuryl fluoride

Dangerous goods (IMDG Cargo)

Not Accepted IMDG

Unless provided otherwise by the IMDG Code, the following are forbidden from transport:

“Any substance or article which, as presented for transport, is liable to explode, dangerous react, produce a flame or dangerous evolution of heat or dangerous emission of toxic, corrosive or flammable gases or vapors under normal conditions of transport.”

Following IMDG goods is NOT accepted on any of Wallenius Wilhelmsen’s vessels.

Any substance listed in chapter 3.3 of the IMDG Code under special provisions 349, 350, 351, 352, 353 and 900 list certain substances, which are forbidden for transport.

Cargo that is seen as high consequence dangerous goods (high consequence dangerous goods are those which have the potential for misuse in a terrorist event and which may, as a result, produce profound consequences such as mass casualties, mass destruction or, particularly for class 7, mass socio-economic disruption) all classes that shown in table 1.4.1 in the IMDG Code Following UN number are not allowed to ship 0104, 0237, 0255, 0267, 0289, 0361, 0365, 0440, 0441, 0455, 0456, 0500, 0512 and 0513.

Class 1

Class 7

Class 9 Damaged or defect Lithium Batteries- both the ones that are shipped as packed and the ones that are contained/installed in vehicles and equipment.

We do not accept loading/booking of Energy Storage System (ESS), UN number 3536.

Limitations

Following IMO-Classes are PROHIBITED to stow under deck.

Class 2.1

Class 2.3

Class 3 (Flash point less than 23°C)

Class 6.1

Class 6.2

Class 8 (Flash point less than 23°C)

Class 9 UN 2211 and UN3314 (Substances evolving flammable vapors)

Approval of dangerous goods

To ensure a safe handling in respect of human life, environment, vessel, cargo and that the Dangerous Goods is only accepted for carriage on a WALLENIUS WILHELMSSEN vessel if in packed form and according to international and local legislation.

WALLENIUS WILHELMSSEN Policy is to only accept limited volume of Dangerous Goods (IMDG Cargo), which is a part of a larger consignment of other cargo (non-Dangerous Goods) from the same shipper on the same vessel from/to same port!

Team	PIC	Role and Responsibilities of PIC	OWN Fleet	TC Fleet
WALWIL IMDG Superusers	WALWILDG@walwil.com	Check IMDG class of certain DG cargo and declare whether it can be loaded to the ship or not	✓	✓ *
Fleet Portfolio & Chartering	Chartering@walwil.com	Check & get owner's permission on DG cargo loading in case of TC vessel		✓

- * Double check only. Vessel owners' intention is always a 1st priority
- For those who wants to make initial inquiry of DG cargo shipment, please contact to group mail

address

Documentation to vessel and port offices

Stowage Planning is responsible for preparing and distributing the IMDG plan to vessel, local stevedore, and local tally.

The Dangerous Goods Declaration and Packing Certificate shall accompany the Dangerous Cargo List/Manifest until Port of Discharge.

Vehicles, Internal combustion engines, Fuel cell engines and battery-powered equipment when packed in a cargo transport unit (Containers, closed trailers/ trucks) must be managed and declared as Dangerous Goods, Class 9 and meet the requirements under SP962 as per IMDG code.

Prior the vessels departure: Local tally shall ensure that the IMDG cargo is entered correctly in the final plan and distributed in line with distribution process. OPERATOR and Stevedores must ensure that the IMDG cargo has been stowed in accordance with vessels Document of Compliance for the carriage of dangerous goods.

Note! Reporting requirements to local authorities must be complied with.

Military cargo

All vehicles/equipment for military use including tanks, trucks and fighters as well as those that have exterior features that resemble military cargo.

Acceptable military cargo

Military trucks. (No arms should be equipped)

Large-sized items such as battle tank, fighter, combat helicopter, artillery machine, which are for official legal use by military troops. (But gun barrel on the tank may need to be dismantled in some cases)



Non-acceptable: ammunition, arms, explosives, nuclear components or similar items

Arms i.e., rifles, carbine, pistol

Ammunition

Pure weapons/explosives



Requirement criteria for military cargo shipment

The following information on the military cargo is required regardless of booking on an Own vessel or TC vessel:

1. General information on the shipment

- Vessel name & voyage number
- Port of Loading
- Port of Discharging
- Type of cargo: Truck / Tank / Helicopter etc.
- Dimension and weight of cargo
- Pictures of cargo

2. Whether there are any explosive/ammunition and/or similar items

- ALWAYS NEED THE CONFIRMATION THAT THERE ARE “NO AMMUNITION / ARMS / EXPLOSIVES /NUCLEAR” IN THE CARGO

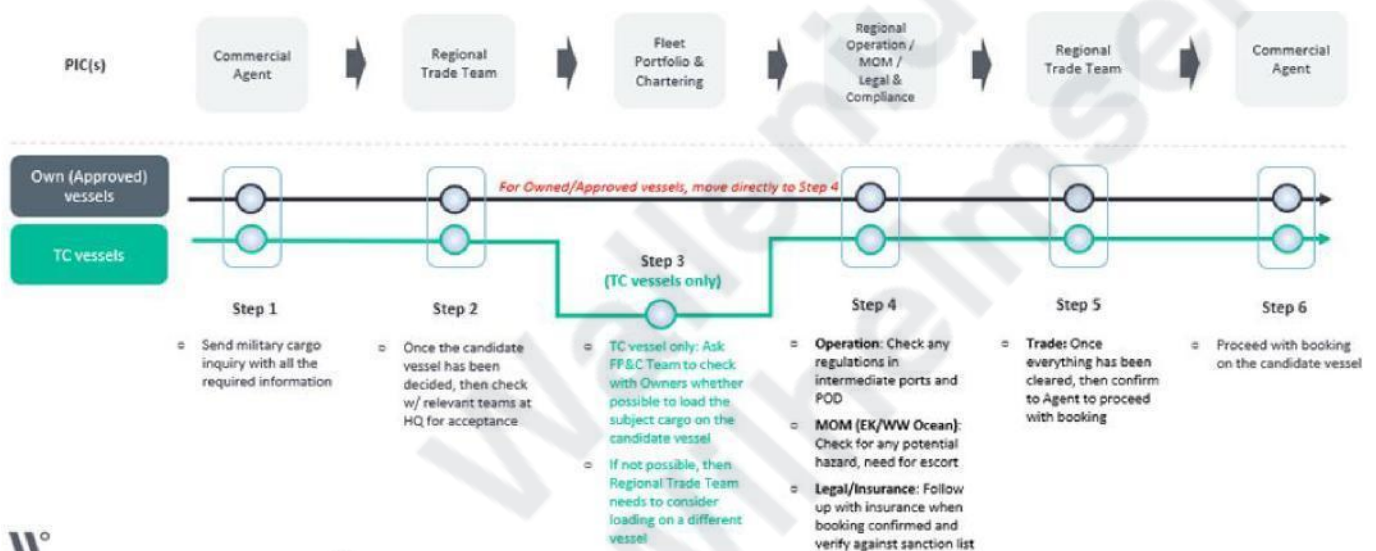
3. Whether there will be any escort to get on board the ship for any purpose (Must have valid medical license cert and applicable visa)

4. Whether there is any caution to be taken for the cargo during sea carriage

5. Copy of export/import license
6. End user certificate
7. Check flag state conflicts.
8. Check Local regulations prohibiting military cargo on board during calling If 5) and 6) are not available, then the shipper needs to provide the shipment agreement (Cover page & Signature page)

Working procedure - military cargo process mapping

The following is the working procedure for booking military cargo:



Cargo operations

Supervision

Any cargo handling operation is to be conducted under the control of OPERATORS representatives. Where and whenever cargo is moved or subject to any operation including lashing/unlashing, shifting, parking, break-out, stowing, or other processes, the operation must be overseen by OPERATORS representatives.

These functions primary task is to ensure:

- Ensure that the cargo operation is performed safely with high quality in accordance with these Cargo Handling Instruction considering cargo quality, utilization of available space, productivity, costs, vessel readiness and scheduling etc.

- That relevant information is distributed between the parties involved, e.g. the vessel, voyage operators, stow planners, stevedores, tally, etc.

- That Cargo Handling Instructions, be it the shipping lines, the manufacturers or other specific orders are followed.

- That damage reporting routines are followed.

- That contaminated cargoes are handled properly.

- That cargoes are positively identified before being discharged or loaded.

If a safety hazard is observed, it should be temporarily corrected and immediately reported to all relevant parties for corrective actions.

Documentation

The following documents to be handled to Master before vessel's departure.

Stowage plan

A pre-plan must be available before cargo operation starts and a final plan must be presented to the vessels before departure. Here is the link to the [Publishing of Stowage Documents](#).

Cargo manifest

As required by PODs, authorities and e.g. canal authorities.

IMDG Documents

As defined in the IMDG Code. See Dangerous Goods in Cargo Handling Instructions.

Exception list

Special information which needs to make a note (e.g. Locked unit, key to C/Officer, tow unit, special comments, etc.) should always be stated in the exception list.

other documents to be cared by Master

Vessel responsibilities

The OPERATORS representative will assist the vessel in every possible way; however, the vessel's crew is responsible for ensuring that adequate crew available for supervision of the stevedores handling of cargo, verification of proper cargo securing, stowage and separation of each different lot for discharge.

The Vessel Master is responsible to ensure that the vessel is ready for the intended cargo operation and that the attending officers and crew are duly informed of their responsibilities and the planned cargo operation and that the crew is properly equipped with approved safety and communications equipment.

Correct cargo handling instructions are followed.

A safe and damage free cargo operation.

The attending officers and crew are duly informed of their responsibilities and the planned cargo operation.

The crew is properly equipped with approved safety and communications equipment.

That the OPERATORS rep. is informed of anything that could affect the cargo operation.

That stability and trim is supervised during cargo operations at the port stay.

**The responsibility for the above activities clearly and solely rests with the Master.
It must be noted that the Master always has the right to refuse cargo if:**

The cargo cannot be lashed in a proper way.

Cargo care / quality does not live up to the OPERATORS clean cargo requirements.

Any other reason that does not fulfil the fundamental requirements of safe cargo handling and seaworthiness of the vessel. (Including cargo with wrong specification or cargo outside of vessel's DG certificate.)

Cargo hold

The vessel crew is responsible to ensure that:

The vessel crew must always be present during the cargo operation to ensure and cover a minimum of two (2) operational sites.

All hoistable deck/panels and ramps are properly positioned according to instructions given by OPERATORS and that protective material is ready for use.

Decks are clean and free from any debris, that overhead beams are checked for loose items (bottles, lashing equipment, etc.) that could fall onto the cargo during the voyage, that equipment (e.g. tension bars, twist locks, stanchions etc.) are available, and that the vessel's equipment (spare parts) do not block any cargo space and are properly secured to prevent any cargo damage.

Fixed securing devices are kept clean, in good condition and free from debris and ice.

Lashing equipment is always in good working condition and available in enough quantity onboard and damaged lashing equipment should be removed from loading area for discharge ashore in convenient port.

Equipment (including rubber mats) are not creating damage-risk to cargo during the discharge-operation.

Driveways/walkways are safe and marked and cones distributed as required.

Lashings hanging from bulkheads, stanchions etc. are properly secured or stowed at appropriate storage areas. (Lashings should not be allowed to hang down to the deck below.)

Deck fillers/protection are put in place to cover any openings in decks or ramps that can result in cargo damages or personal injuries.

Deck edges are clearly marked and fenced off where decks are set in different positions.

Drums, fuel, gas and acetylene cylinders should not be stowed on the car deck.

External ramps

When maneuvering external ramps, the Vessel Master is responsible to ensure that below is considered.

Driveways/walkways are clearly marked and separated by stanchions where so is intended.

Cones are to be used if stanchions separation is not possible. Cones can also be used together with stanchions to further enhance the visibility.

Vessel is required to have enough crew with knowledge how to operate the external ramp.

When setting external ramps, the wharf surface must be protected against damage to the quay.

When the angle becomes too steep (more than 10 degrees), RoRo cargo operation must not continue until the angle is adjusted properly, for side ramp resetting ramp to another lower deck or upper deck.

The heeling angle should always not exceed 3 degrees during cargo operation to avoid damage to stern ramp hinges.

Hoistable/liftable panel/deck arrangements and internal ramps

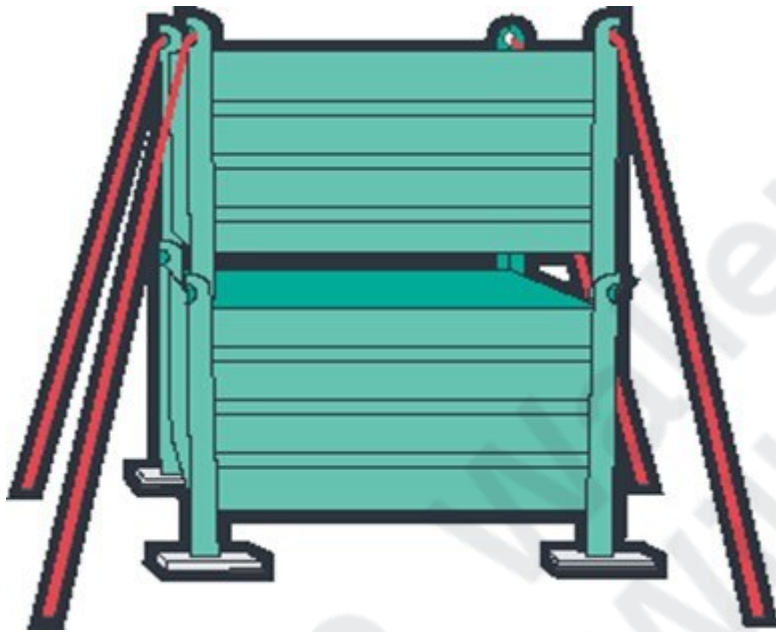
- Hoistable panel/deck arrangements should be adjusted properly in accordance with the pre-stowage plan prior to loading.
- Adjustment of panel/decks to be properly supervised to ensure that latches, hooks etc. is in correct position to avoid damage to panel(s) or cargo.
- Vessel crew should fully understand how to operate the hoistable panel/decks and internal ramps.
- In addition, at least two (2) crew members should always oversee the operation.
- If adjustments are carried out during cargo operation, vessel must discuss this with OPERATORS representative and stevedore foreman.
- All car decks, ramps and lifting appliances should be kept free of water, oil grease or any liquid that might cause a person or vehicles to slip or fall.

Unused lashings

Unused lashing materials and chain boxes should be stored to avoid any cargo damage during sea transit and/or discharging operation.

Full chain boxes only to be stored in three (3) tier height, always ensure proper securing including rubber underneath.

1. All chain boxes / lashing bins must be placed on rubber mats to increase friction.
2. If single tier, lashing can be done with four (4) car lashings, one each corner.
3. If more than one tier stack, roll lash is to be used to each top corner.
4. Loaded chain boxes/lassing bins must not be stacked more than 3 units high. A full box of chains may weigh as much as 800 kg.



Preventing theft

Cargo holds to be controlled during port stay and cargo operation to reduce the risk for loose items and valuable accessories to be stolen. Gas-tight/water-tight doors, passage doors and other access hatches leading to cargo decks where no cargo operation takes place should be closed as much as possible.

Commonly stolen items:

- Ignition and spare keys
- Engine Control Unit (ECU)
- Radio sets
- Fuel injector
- Gear knob
- Navigation system
- Mobile devices

Cargo hold ventilation and lighting

The Vessel Master is responsible to ensure that decks and driveways are adequately lit and ventilated in accordance with SOLAS requirements. (Whenever possible, the cargo hold ventilation should be started 30 minutes before the start of the cargo operation to establish a noticeable airflow through the cargo holds).

The vessel Master should give attention to ventilation management when bunkering operation occurs simultaneously to cargo operation, to prevent bunkering fumes being spread into the cargo hold.

Sufficient lighting should be maintained on all decks.

Broken lighting fixtures, fluorescent lights etc. should be rectified prior loading as far as practical.

Emergency lighting in cargo holds should always be on.

Applicable to the carriage of rubber:

To defend cargo deterioration claims it is necessary for the vessel to produce records showing that customary ventilation routines were followed. Should the necessary evidence be missing or incomplete, it is often difficult for the Club to refuse such assertions.

Emergency escape routes

SOLAS regulation require means of escape so that persons onboard can safely and swiftly escape to the lifeboat and life raft embarkation deck. For this purpose, the following functional requirements shall be met; safe escape routes shall be provided; escape routes shall be maintained in a safe condition, clear of obstacles.

and additional aids for escape shall be provided as necessary to ensure accessibility, clear marking, and adequate design for emergency situations.

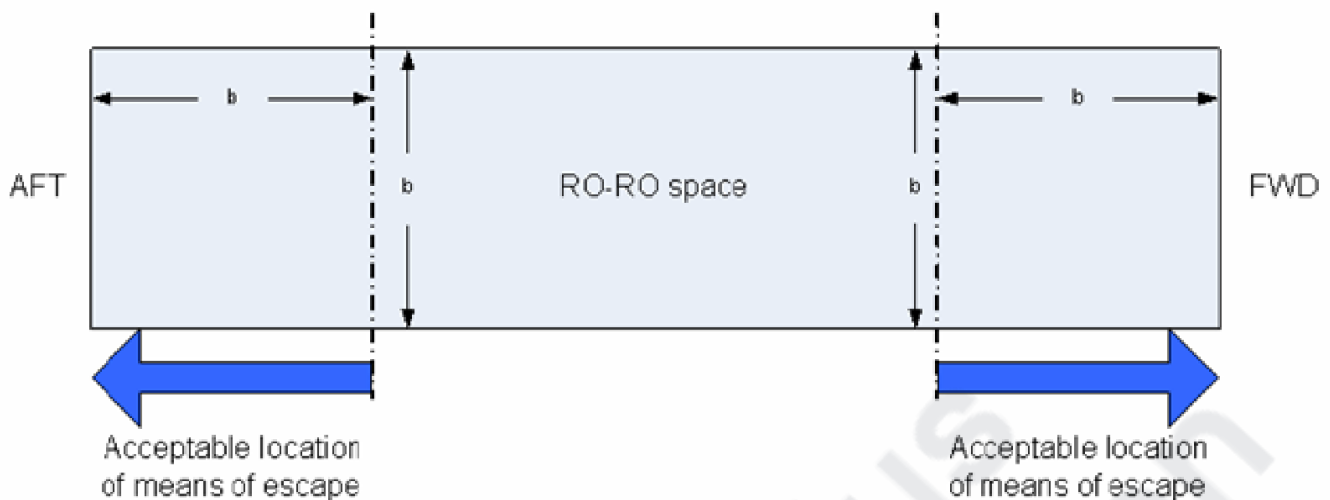
Emergency exits must never be blocked in any way.

General requirements:

Unless expressly provided otherwise in this regulation, at least two widely separated and ready means of escape shall be provided from all spaces or groups of spaces.

Lifts shall not be considered as forming one of the means of escape as required by this regulation.

Means of Escape from Ro-Ro spaces, at least two means of escape shall be provided in Ro-Ro spaces where the crew are normally employed. The escape routes shall provide a safe escape to the lifeboat and life raft embarkation decks and shall be located at the fore and aft ends of the space.



Portable cargo securing devices

Crew must ensure that portable cargo securing devices are readily available prior commencement of cargo operation.

It is the responsibility of the vessel crew to ensure that portable cargo securing devices, in good operational condition, are available according to each operator's minimum standards.

Vessels are required to report the inventory of portable securing devices periodically and in line with each operator's requirements.

Rubber mats handling during cargo operation

To see Vessel responsibilities go to:

[Rubber mats handling during cargo operation](#)

Fire prevention

Vessel crew should keep keen watch throughout the loading and discharging operation so that any faulty conditions of the vehicles can be detected in the early stage. During their watch of cargo operation, pay keen attention to the following points.

When non-start vehicles are being discharged refer to "Handling for the Non-start vehicles or dead cars", "Refueling" and "Battery charging".

Vessel crew should know the locations of portable fire extinguishers so that they can immediately use them in emergency situation.

Especially, in case of handling 2nd hand/used units, portable fire extinguishers must be presented with duty vessel crew on working place. (Early discovery => quick extinguishing => ventilation)

Upon completion of loading, or discharging work in each compartment, gas-tight doors, passage

doors and other access hatch cover must be closed.

Stevedore responsibilities

Be well orientated with this Cargo Handling Instructions of the OPERATORS.

Must ensure safe operation, e.g., by placing signal men in blind and/or narrow areas, cones or otherwise mark designated driveways, alert the crew when risk areas, like open ramps, are seen etc.

Ensure enough supervision.

Have full knowledge of the latest stowage plan.

Be available on-board the vessel during the cargo operation.

Have knowledge of cargo exceptions and any special requirements.

Lashers, drivers, tallies must follow a good working standard. This means e.g. no speeding, not leaving objects on the cargo, no sitting, leaning or resting in or on the cargoes, not use cargo as shuttle buses or for internal transports.

Ensure that damages and accidents are reported according to the shipping lines routines.

Adhere to instructions from the OPERATORS representative, the stevedore foreman or vessel's Master.

Focus on damage prevention and safety.

Report any cargo deficiencies such as damages and missing parts etc. to the stevedore foreman immediately.

Ensure all forklifts and other operational vehicles are properly fueled prior to Cargo operations

Rubber mats handling during cargo operation

It is the responsibility of the stevedores to:

- Lay out rubber mats on ramps to ensure safe and damage free transportation between stow-position and terminal
- Ensure that rubber mats are used as required to prevent metal to metal contact when the unit is in the final stow position.
- Rubber mats shall be placed under the excavator's arms, buckets, blades, and other moving parts before these are laid to rest on the ground/deck.

NEVER secure steel to steel without anti-skid material in between

It is the vessel's/ crew responsibility to:

- Make rubber mats available for the intended cargo in appropriate places.
- Lay out rubber mats in areas sensitive to damage such butterfly D-rings, stretch metal areas or

anti-skid paint sensitive areas.

General instructions and safety focus:

- Operators representative / stevedores should work closely with the vessel to ensure that rubber mats are available when required and also placed accordingly to ensure a safe operation.

Safety Points

Safety points to be acted upon but not limited to:

Rubber mats use in internal and external ramps on the vessel is valid in dry and clean condition.

If oil, ice, moist, water or any conditions effects the rubber mats, that can lead to less friction or slippery conditions during cargo handling, extra caution has to be taken to avoid risk for accidents.

Rubber mats in rampways are only to be used for cargo with steel tracks. Never drive with rubber wheels on rubber mats in rampways.

Tally

It is the responsibility of the tally/stevedore to publish and place a copy of the final plan onboard the vessel ASAP, or latest 30 minutes after completion of operations in each port. The handwritten plans to include same information as mentioned for SPS plans, i.e.: Stowage plan - Auto, Stowage plan H&H, Weights and Units, Traveler, Exceptions List and IMDG plan.

Master has the full discretion not to sail before they have made their adequate stability calculations after receiving the final plan with proper weights onboard.

Operational process

The following process aim at helping all stake holders maintain a clear understanding of roles and responsibilities during cargo and port operations.

A list to cover all checkpoints in the operational process is located under appendixes.

Pre-operations meeting with stevedore

Prior to any load and/or discharge operation, the OPERATORS representative is responsible for arranging a pre-operational meeting with stevedores/sub-contractors.

It should take place prior to start of the cargo operation.

An operations plan including necessary information & procedure should be discussed and agreed upon at the pre-operation meeting.

Pre-operations alignment with vessel

Operators representative shall ensure that the operations plan is communicated, per alignment mail, with the vessel as soon as practically possible.

Estimated time and position of berthing.

Starting time, number of shifts planned, breaks and expected intervals of no operations.

Estimated Time of Completion and Departure (ETD).

Suggested time and place for the ramp meeting.

Number of working gangs.

Working sequence - plan, including panel movements advise and / or cargo-shifting plan if relevant.

Emergency contact procedures and any local safety and security information.

Dangerous Goods list.

If the Master have special request this must be communicated as soon as possible, in order to have enough time for organizing if necessary (example: extra labor might be needed). The Master shall revert on the pre-operational alignment message without delay confirming all understood or ask for clarification/additional information.

Lashing management to be aligned between stevedores and vessel: placing rubber mats on behalf of vessel and on behalf of cargo (anti slip in stow or on ramps)) / moving of lashing / equipment boxes.

Vessel confirmation (Vessel to local port)

Vessel shall revert on the [Pre-operations alignment with vessel](#). It is advisable that for special request Vessel staff does not wait this communication but notify as soon as possible, in order to have enough time for organizing if necessary (where extra labor might be needed).

Vessel specific info should include, but not be limited to, the following items to be communicated back to Port of Operation.

It is expected that pre-plan acceptability has already been aligned between vessel and vessel planner in due time.

That the vessel is ready for the intended cargo operation. Including that ramps and driveway as well as the height of deck panels are set according to instructions given by Ocean operations. Confirming that the pre-plan can be utilized correctly and that the deck space is not occupied with incoming cargo, vessel equipment or lashing storage.

Confirming that information regarding the planned cargo operation is accepted, and if not, state reason and requested corrective actions as well as suggest alternatives.

Confirming the place and time of ramp meeting.

If any remarks concerning stability and trim/list during the operation is expected.

Any safety or security issues and vessel routines in case of emergency, such as evacuation of cargo hold, fire alarm routines etc.

Any issues with the vessel cargo handling equipment (including ventilation).

Other relevant questions or issues affecting the planned cargo operation such as ordering extra shifting of cargo or of additional labor for e.g., hold cleaning or lashing arranging etc.

Maintenance work in port: Non urgent maintenance work in the port (e.g., paintwork, welding, grinding, etc.) that could cause damage to cargo onboard or cargo close to the vessel (i.e., terminals/berths) is under no circumstance allowed. Mind that [Ocean representative in local port](#) and [Vessel](#) do not replace the Ramp meeting except when clearly mentioned in the mutual alignment communication.

Ramp meeting

The Ramp meeting is a mandatory interaction between the vessel's command and the WW representative, normally the Cargo Super Intendent.

The stevedore representative / supervisor should join the ramp meeting as far as practically possible.

The ramp meeting should preferably be conducted prior to start of the cargo operation, if not then this ought to be communicated and agreed as per alignment communication.

The purpose and standard agenda of the ramp meeting is:

Agree on the latest cargo information. ([CSI responsibilities](#))

Ensure the vessel is ready for the intended cargo operation ([Vessel focus area](#))

That all safety and security precautions are in place.

Any changes occurring during cargo operations after the ramp meeting must be agreed between the CSI and the vessel.

If the vessel has received a pre-operations alignment message from the port of operation ([Pre-operations alignment with vessel](#)), the ramp meeting should, at a minimum, confirm that no changes have taken place from what was agreed upon per alignment communication.

For WW representative and vessel command check of topics to the ramp meeting go to: [CSI responsibilities](#) and [Vessel focus areas](#))

Local checklists, on topics to check or control, can be used when so is required to ensure safe and secure operations.

There should be no signing on checklists, only to be used as guiding document.

CSI responsibilities

Following points to consider for the ramp-meeting but not limited to:

High & Heavy and Break Bulk operation information: self-tension and ramp limitation / axle weights / safe cargo carrier handling / specific lashing planning / specialized cargo operation / heating or electric requirements.

Latest version of the cargo/stowage plan, working sequence plan, dangerous goods list and

updated volume for loading/discharging.

Any significant last-minute changes of the pre-plan must be accepted by the vessel's command from a vessel stability point of view.

Information about units with special requirements, restricted height clearance.

Need for maneuvering internal ramps during cargo operation and the control of height clearance.

Landing/loading of cargo handling and lashing equipment.

Used unit information (disconnection of batteries handling)

Exception list notations.

Shifting of cargo during the cargo operation.

Local health & safety requirements, Terminal & Stevedoring policies

Vessel focus area

Following points to consider for the ramp-meeting but not limited to:

Readiness for the intended cargo operation; Including that ramps and driveways as well as the height of deck panels are set according to instructions given by WW Ocean representative or agree when panel and/or hatch operations during the cargo operation including dual split ramp settings and ramp covers will take place.

Vessel danger areas, including critical points for speed, height clearance and narrow driveways.

Change of destination information or transshipment cargo onboard.

Leaking units or none-drivable units to be discharged, damaged units.

Traffic cones, direction marking and safety lines rigging done.

Littering, smoking, eating, and drinking policy / Location of toilets for stevedores.

Cargo holds ventilation management.

Walkways for emergency exits pilots and inspection lanes.

Separation of cargo by discharge port.

Keys hand-over for locked units to be presented if discharged.

Vessel's attendance in the cargo holds during the cargo operation as per OPERATORS cargo handling instructions [Vessel Responsibilities](#).

Coordination of bunker operation for manual sounding needs and walkways.

Any safety/security drills or maintenance work planned to include hot work, no parking areas.

Notify the time needed for vessel to depart in a seaworthy condition, especially when deviating from standard. (stability calculation, security check, equipment, and general securing execution etc.)

Agree on [Post-operational meeting](#)

Any conditions found before or during operations that require corrective actions to ensure a safe operation must immediately be brought to the attention of the vessel's command and the WW OCEAN representative.

Loading/discharging operation should not commence before the conditions are satisfactorily improved.

Any changes or new information during the operation by any party should be communicated as soon as practical.

The Final cargo stow-plan must be delivered to the vessel before departure.

Post-operational meeting

After completion of cargo operations, or as agreed, the Master and OPERATORS representative should meet and agree on that the cargo operation has been conducted according to the cargo handling instructions.

Cargo properly secured to satisfaction of the vessel.

Cargo loaded/discharged according to plan.

If any shifting of cargo has taken place, transshipment cargo or equipment repositioning onboard and added/removed from the cargo plan.

Comments on the stevedore and/or vessel performance.

Any incident or cargo damage notated during the cargo operation.

Vessel ready to depart in a seaworthy condition.

Loading/ discharging

In this chapter subcategories, detailed instructions are available for stowage and handling.

In general, for all cargo to be loaded, following is crucial to be observed and adhere to:

- Personal effects and non-standard equipment are not allowed in vehicles and High and Heavy (H/H) equipment.
- Vehicles with any type of failure, including but not limited to: mechanical, electrical/electronic failures, or any signs of leakage, must not be loaded onboard any of the OPERATORS vessels or vessels chartered by OPERATORS. These vehicles must remain ashore. If malfunction noted during loading operations, it shall be taken ashore and reported to OPERATORS representatives as soon as possible.

Parking instructions

All units must be parked correctly, and during/after parking ensure that:

All wheels are left in the straight position.

Wherever possible or per manufacturer's requirements, there should be no wheels resting on lashing chains, D-Rings, or other obstacles.

All lights are switched off.

Parking brakes are fully engaged.

Gearshifts are left in "1" for manual or "P" for automatic transmissions.

All windows (ventilators) and sunroofs are closed.

All electric power is switched off.

Ignition keys should be removed from ignition locks and placed in the designated location, unless otherwise instructed by the manufacturer.

If a clearly marked main/battery switch is attached to the unit, it should be turned to the off position.

Driver's seat should be in aft-most position for easy exit/entrance of the unit, floor mat and seat protection replaced in correct position.

Before the door is closed, it must be ascertained that it is not set to lock (central locking button can easily be touched when opening/closing the door)

Vehicles with adjustable suspension should be placed in a lower position per manufacturers' guidelines.

Disconnecting battery on used units

All Used units/vehicles is to be disconnect the 12/24 Volt battery system when vehicles have been loaded onboard a vessel.

Port of export is to assure control of battery disconnection performance.

Exceptions:

- When a used unit has a battery main switch for power break.
- When a used unit needs power for safety reasons. (AFV vehicles).
- When a used unit battery cannot be disconnected for any technical reason.

All used units meeting the Exceptions must:

- Be marked with a sticker clearly showing the status for the none-disconnection.
- Be separated from disconnected used units. Example of sticker



Information needed to be shared with vessel and POD on disconnected used

units.

The Vessel:

For safety reasons, the carrier vessel must be informed by POL if there are any used units that are not disconnected onboard.

Port of Discharge:

For efficiency reason POD must be informed by POL of the number of disconnected used units, to enable planning for the re-connection.

Battery pole protection against sparks on disconnected battery

Disconnected battery pole shall be covered with suitable protection to avoid spark ignition. See details in the Appendix under [Battery cable disconnection procedure](#) for detailed instruction. Port of export is to assure control of battery disconnection performance.

Breakout

Drivers should always be aware of vehicle width and length. Excessive steering can cause the rear of a long-body vehicle to collide with another car or vessel structure.

Signalmen should be in place to prevent collisions.

The stevedore foreman should exercise special care when breaking out vehicles in the following areas:

- Tightly stowed areas

- Areas requiring special care due to vessel structures

- Areas requiring sharp turns

Key units must be the first ones to be discharged.

Be careful when opening the driver's door on vehicles stowed tight to bulkheads/pillars/railings or other cargo.

Make sure that the gear is in neutral (N) for manual transmission before starting the engine (always press the clutch for manual shift cars or press the brake pedal for automatic transmissions.)

If the vehicle is dead, **never** move the unit using the electrical start engine.

Strict attention is required to make the breakout safe, and whenever possible, use special "breakout" drivers.

Do not drive over lashings and/or other objects on deck.

Stowage standards

Stowage distances

STOWAGE DISTANCE FOR CAR REQUIREMENTS

Side to side (body or mirror)	10 cm
Passenger side to fixed objects *	10 cm
Driver side to fixed objects *	50 cm
Width of passage – walkway	60 cm
Bumper to bumper	30 cm
Bumper to fixed objects	30 cm
Auto to Breakbulk	50 cm

STOWAGE DISTANCE FOR H/H REQUIREMENTS

Side to side	30 cm
Bumper to bumper	50 cm
H/H to breakbulk	50 cm

Note: If the manufacturer's requirements are provided, they have priority over the above.

*e.g.: bulkheads, stanchions, void spaces, edges of panels.

Height clearance

Clear height requirements to official deck height. (If not otherwise instructed by manufacturer).

In case of low height clearance (less than 10cm), driving speed should be reduced to a minimum in order to ensure safe passage.

CLEAR HEIGHT TO OFFICIAL DECK HEIGHT REQUIREMENTS

Car	5 cm
H/H and Breakbulk	10 cm
Chassis (without cabin)	50 cm

Always ensure that there is sufficient height clearance (min 5 cm from official deck height) for the vehicles to be loaded on the entire driveway as well on the deck intended for stowage.

Always ensure that there is sufficient height clearance (min 10 cm from official deck height) for H/H and breakbulk to be loaded on the entire driveway as well on the deck intended for stowage. Between ramp and flat-deck minimum 5 cm clearance is needed. Please go to following link for ramp-angle instructions: [Cargo height increased by ramp angle and overhang](#)

Flow stow system

The stevedore foreman should inform drivers about the vehicle load/discharge sequence and flow.

Vehicle load/discharge sequence and flow vary according to decks and stowage locations.

Drivers should review the plan closely and drive forward for smooth load / discharge.

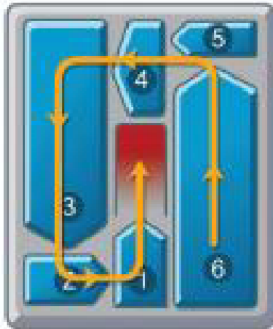
Stevedore foremen should instruct drivers to drive the KEY unit away first and then other car

should follow it with a systematic discharge flow.

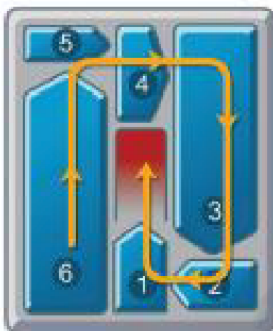
Stevedore foremen must not allow the driver to drive irrelevant car from normal discharging sequence.





An experienced Supervisor/Stowage Man/Parking Advisor or a Foreman must be allocated for each gang or stowage place to assist and direct the drivers into the correct stowage position. Neither this person, nor anybody else, should touch the vehicles to give signals during the work (such as tapping on trunk or rear window)

Counter-clockwise Stowage

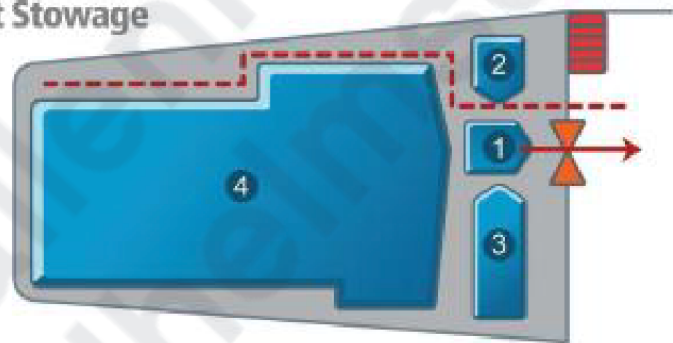





Clockwise Stowage



-  : Stowage direction of vehicles block
-  : Numerical order sign for discharging sequence
-  : Discharging flow
-  : Slope : Slope way in the car deck

Headout Stowage



-  : Passage way
-  : Hold stair way
-  : Gas tight door/water tight door

Vehicle instructions

Factory new vehicles

The following should be observed:

Sitting, stepping, leaning, resting, or climbing on the units must never occur except for entering and driving the unit.

If a unit is equipped with seat and/or floor protectors, the driver must ensure that these are in the correct position before entering and exiting the vehicle.

No unit that is part of the cargo may be used as shuttle van, or any other means of personal transportation, or as a means for towing other cargo.

Electronical accessories (radios etc.) in the units must never be used.

Crayon markings are not permitted on the units.

Headlights must always be kept on during driving as a safety precaution.

Speeding, excessive idling or any abuses of a vehicle like skidding, turning by using the handbrake, etc. are forbidden.

Only assigned/designated driveways are to be used.

Deflating tires in order to be able to drive critical units and obtain better clearance is not allowed.

Wherever and whenever a flat or soft tire is discovered, firstly inflate or pump air into a flat/soft tire. If fail, the tire must be exchanged with the spare tire.

REMEMBER, a unit with flat tire must never be moved on board or ashore.

The following bad driving techniques are prohibited.

Sudden starts and stops. (Except to avoid an accident)

Quick turning and car-racing.

Overtaking other vehicles in the car deck.

Unnecessary engine revving (when either stationary or moving).

Used units

Shipper/cargo owner is to certify that cargo is safe for shipment.

A safety check of used units should be performed prior to loading/after loading taking below into account.

The ignition key should be removed and placed in the designated location.

Batteries to be disconnected on used vehicles. See details in [Disconnecting battery on used units](#) for detailed instructions.

Used Unit to be add to the Exception list stating number of disconnected and not disconnected units.

Vehicles with oil leakage be refused loading until repairs have been completed.

Vehicles with a missing fuel tank cap be refused loading until the opening has been properly covered.

Vehicles and trailers loaded with loose parts be refused loading until the loose parts have been properly secured.

Trailer stacks be properly secured.

Vehicles without brakes be denied loading or loaded as static cargo on a bolster or similar.

Punctured and flat tires be repaired before loading.

Any problems with the steering on a unit must be marked and declared in the exception list.

All windows to be closed.

Exception: Local OPERATORS representative can decide to keep a window partly open to allow for manual unlocking.

Non-starter

It is strictly forbidden to run non-starters on an electric start motor.

The use of any kind of pushing units to move a non-starter is strictly prohibited.
Whenever a non-starter is blocking the discharge operation, pushing the unit aside to a safe place on deck where the problem can be solved is permitted.

Refueling

Refueling may be undertaken under following conditions:

- At least 2 (two) persons be assigned the task of refueling
- At least 1 (one) portable fire extinguisher is available during refueling.
- Any vehicles within the range of 15 meters (50 feet) must have the engine and ignition turned off.
- Cargo holds ventilation is adequate.
- No battery recharging should be carried out simultaneously in the same area.
- Refueling an LPG vehicle is prohibited.
- Smoking is prohibited in the cargo hold.

Battery charging (jump start)

- Stevedores may jump start a dead battery.
 - Cargo holds ventilation should be adequate.
 - The charging operation should be supervised and carried out in a safe manner, considering the risk of fire.
- Certain makes have specific instructions for jump-starting. Technicians must be familiar with these instructions. Should there be any doubt about the correct procedure, the unit should not be touched to avoid damage to the electrical circuit.

Towing (of units)

- Steering and brakes must be in working condition.
- Tow bar is to be supplied, or proper tow vehicle is used. (no chain or slings are to be used for towing)
- Tow vehicle to be clearly marked with towing capacity and labelled with TOWED UNIT clearly visible.
- Unit to be towed must be rubber wheeled and have all wheels in good working order.
- Towing of steel or rubber tracked units is prohibited.

All units requiring towing should be clearly marked "TOW UNIT" on the stowage plan and the exception list.

Towed units are preferred to be placed on main deck to avoid unnecessary risk during internal ramp movement.

Safety evaluation for onboard stowage location should be done before loading considering:

- Cargo weight
- Type of towbar equipment
- Age of unit and equipment
- If a unit is towed up or down in the vessels internal ramp system, suitable safety measures should be taken, such as placing a braking unit in the rear of the tow unit.

Snow, ice or water on cargo

During snowy and icy conditions, contamination might be difficult to discover. Snow and ice could hide dirt from being discovered, but it could also contain dirt that when melting, risk cross contaminating nearby cargo or the vessel cargo hold.

Whenever possible, excessive amounts of snow should be removed before loading.

Any snow remaining on cargo to be agreed with Vessel Master or his representative to ensure vessels stability is continued acceptable for departure & conditions due to melting snow will not cause serious problems to the vessel on the voyage ahead.

Removal of snow, ice or water on cargo

- Excessive snow should be removed with a soft brush before cargo enters the vessels cargo hold.
- Iced windows must be de-iced using standard plastic ice scrapers or de-icing spray or by letting the vehicle warm up, special care should be observed when removing ice close to rubber moldings.
- Severe frost on the windshield can be removed with vehicle's window heater.
- Frozen wiper blades should only be released manually.
- H&H units are to be brushed where excessive snow is gathered, where so is possible.
- Roll trailers and flatbeds are to be brushed where excessive snow is gathered.

Water on cargo

- Excessive rainwater in H&H units or on BB cargo shall be removed before loading.

Locked units

Locked units that are not possible to open should be handled as follows:

Must call the vehicle maker's representative/technician if time permits.

Call a locksmith to open the door if time permits.

Use proper tools including air wedges, to open a locked door.

Breaking a side window is the last option. Make sure to consider below:

Contact the local OPERATORS representative/agent to get confirmation.

Tape the designated window as in the pictures below.

Do not remove the fragments of glass.



Key handling and locking instructions

If instructions are given to lock units, below instructions should be followed.

The key or key 's shall be delivered to the vessel in an orderly way and properly marked.

The keys should be marked and separated by POD.

Following information should be stated on each key:

POL and POD

VIN number

Maker / Color

Stowage location (deck and hold)

The POL shall produce one (1) Discharge Key Receipt per POD.

Key(s) should be delivered on-board together with a Discharge Key Receipt.

It is the responsibility of the vessel's Master to control that all keys are accounted for in the POL.

The key receipt shall be duly signed by the vessel Master and OPERATORS representative/agent

upon receipt in POL. (Both to keep one copy each.)

The vessel Master is responsible to deliver keys and a copy of all discharge key receipt 's at the correct POD. Original signed discharge key receipts to be saved on-board.

Locked units should always be stated in the exception list.

Key receipt doc V1.0

Discharge Key Receipt

For Port of Discharge (POD):

(Only one POD per receipt)

Vessel: _____
Voyage: _____

POL Date: _____
POL: _____

[illegible]

This is to certify that above units are locked, and the keys have been delivered to and received by the Master or his representative of the above-mentioned vessel.

Master/Chief Officer/Duty Officer

Port Representative POL

Motorcycles

When stowing a motorcycle on board the vessel, the gear lever must be in lowest gear, the gasoline valve must be shut, and the ignition key switched off, removed, and attached to the handlebars by a string.

The motorcycle should rest on its own stand and be secured with one roll lash across the saddle, with enough protection placed between the saddle and the roll lash.

Four car lashings shall be applied (two at each end). The car lashings must be attached as high

as possible on the motorcycle, and when necessary, a sling may be used to further protect the unit.

High and heavy (H&H) instructions

Unless otherwise instructed in the following paragraphs, the same instructions as for self-propelled vehicles shall apply for these units/cargos.

Direct lashing from deck to steel tracks are acceptable if the OEM has approved such arrangement.

Units of an unusual nature and/or that are complicated to move/operate, must be equipped with written starting, driving, and operating instructions.

Rubber mats shall be placed under the excavator's arms, buckets, blades, and other moving parts before these are laid to rest on the ground/deck. Arms/jibs, etc. must never be left in hoisted positions while in stowage, unless a manual locking device is available and instructed by the OPERATORS representative.

Units, such as wheel loaders, with sections moving individually (articulated) will need to have the locking pin inserted when placed in the final stow position. The same must be removed prior to discharging.

Units equipped with adjustable suspensions such as air suspensions need to have these lowered before securing.

Units with ignition keys: The ignition key must be removed from the ignition lock and placed in a location easily accessible.

Units equipped with a Main Electric Switch, must have the switch in the "off" position when the unit is in stow on board the vessel.

Tracked units should not come in contact with each other in the stow.

Safe working distances should be maintained between all H&H units to ensure proper lashing and operation.

Wheels should be chocked when units are stowed in ramps or otherwise deemed necessary.

Parking brake must be applied.

Loaded semi-trailers should not be supported by their landing legs during ocean transportation unless these are designed for this purpose. They should instead be supported by a trailer horse.

When units with low ground clearance are entering/exiting ramps, rubber mats (or steel plates) should be placed in the ramp entrance to decrease the ramp angle and prevent damages to the undercarriage.

When maneuvering excavators and similar units, it must be ascertained that the arm/jib do not touch the deck above.

Units are to be kept in lowest gear when transiting vessel ramps.

Stevedores are to provide a signalman to assist/guide the driver during final approach to stow position and when "breaking out" of stowage for discharge.

Rubber tracked units and wooden wheels.

These units can easily be damaged during the loading/discharging operation if not handled with care and supervision. The following guidelines should be followed:

Operators of machines are to drive at a slow speed (walking speed), and not make any sharp turns.

Rubber mats are to be laid down on vessel ramps (external & internal) as well as on non-flush (flat) decks.

Rubber mats are to be placed under tracks on non-flush (flat) decks when unit is in a stow position.

Since damages to rubber tracked wooden wheel units are common, stevedores should check for damages prior to discharge.

Steel tracked units or steel spike wheels.

Steel tracked units must be driven on rubber mats to protect the vessel and ensure a safe operation.

Steel tracks and metal wheels/rolls must be resting upon rubber mats once in final stow position. Units can be driven without rubber mats on flat RoRo decks without any projecting lashing fittings like D-rings etc.

Units with steel spike wheels:

This type of cargo must be approved for type of handling on a case-by-case evaluation via Regional operational Quality.

Evaluation is to conclude allowance for discharge as a self-propelled unit in Port of Discharge. Information on weight, dimension and type of spike are needed to evaluate if the unit can be accepted as self-propelled cargo.

As an alternative to self-propelled handling, the cargo maybe accepted as static cargo, loaded on a cargo carrier.

Spiked units can cause damage to terminal ground and vessel decks when loaded as self-propelled cargo.

Units with spike wheels should be loaded on main deck when accepted as self-propelled and shifting, during the voyage, of the unit is to be avoided.

Spread load calculation of tracked units

$(\text{Length of tracks} + 1 \text{ m (stow distance)}) \times (\text{Width of tracks} + 0.5 \text{ m (stow distance)}) = \text{Used m}^2$

$\text{Used m}^2 \times \text{allowable weight on deck} / \text{m}^2 = \text{Allowable weight of unit.}$

Example:

Length of tracks: 4 m (A)

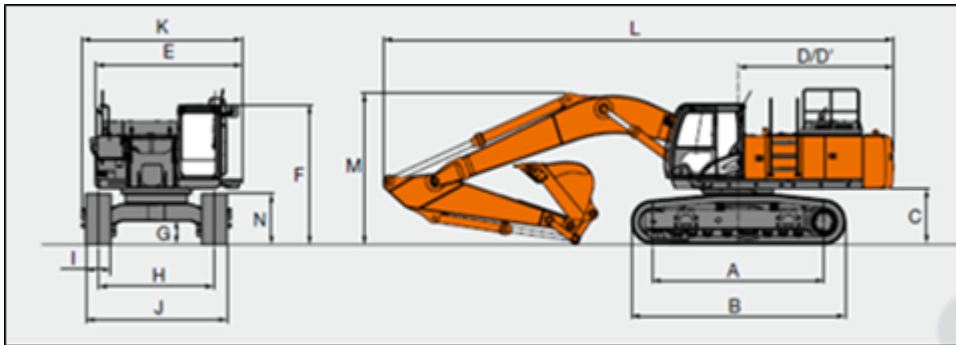
Width of both tracks outer ends: 3.3 m (J)

$(4+1) \times (3.3+0.5) = 19 \text{ m}^2 \times 2 \text{ MT/m}^2 = 38 \text{ MT allowable weight}$

When or if a boom is attached, subtract half of the boom weight, due to boom will rest on deck.

These calculations apply when multiple excavators or steel tracked units are stowed together,

if a single unit, we may add allowable weight to it, in such a case please contact Port and Cargo Operation or Marine Operation Management.



Chassis (without cabin)

Chassis without a fixed driver's seat, proper steering, and safety constraints, are not to be loaded. Chassis with all the above are to be loaded on roll trailers.

Breakbulk (BB) instructions

When handling heavy static cargo such as cases/crates/boxes by forklift, following must be observed:

Only one case at a time should be handled and each should be handled with great care.

The forklift driver should not be allowed to work on his/her own; there must always be a signalman present supervising the safe handling of the case.

Signal man must ensure that unit is completely unlashed, prior to movement.

Forklift blades must reach a minimum of two thirds across bottom of the case. If the case is too wide to meet this requirement, a crane should be provided for lifting. Alternatively, two forklifts may be used - one from each side - but only under strict supervision.

Forklift blades must be placed under a case's bottom supporting timber, not only were permitted to lift. (See marking on unit)

Cases or crates must be sufficiently skidded to ascertain that forklift blades can be inserted without any damage to the bottom structure during handling.

Forklift driver should always proceed at a slow, safe speed and avoid "Quick start and stop", specifically, when backing or turning with cargo.

The driver should not be allowed to drive over chains, roll lash, dunnage, or other loose material, and special care should be taken when driving over fixed chains, D-rings, and other raised lashing points.

Loose breakbulk with steel frames which are stowed directly to the cargo deck should always be placed on rubber mats.

Securing arrangements of unitised cargo

- Unitising and securing of cargo to bolster and/or trailer shall be per instructions from OPERATORS representative.
- During transport from/to vessel minimum required lashing 50% of cargo weight however, port regulations must be followed.
- When unitising cargo with painted surfaces, such as unpacked machinery / excavator arms and bulldozer ploughshare, etc., care must be exercised to avoid scratching the paint. Nylon bands should be used over painted surfaces whenever available; otherwise, cushioning of sufficient size and strength shall be used between chains and painted surfaces to prevent chafing.
- Tying back the tension bars reduce the risk of damage to adjacent cargoes



- Due regard should be paid to the rigidity of cases when securing.
- Corner protectors of sufficient length shall be used on cases of weak construction.



- Breakbulk (other than wooded boxes) that is stuffed on a cargo carrier must be placed on rubber mats or dunnage

See [Unitised cargo combination](#)

Forestry products

All forestry products are to be stored in a warehouse or under roof, unless otherwise instructed by OPERATORS representative.

Warehouse floors shall be dry and clean in areas designated for the storage forestry products.

All cargo should be stacked in the warehouse in stable and safe heights.

Stevedore shall provide suitable means of transport that have smooth flush surfaces free from fixed articles (nails, bolts, etc.) that may imprint roll ends, and beds should be swept dry and clean to avoid imprinting roll ends. Pre-operational inspections and random inspections shall take place during operation, to ensure surfaces of all trailers are always dry and clean.

Transports shall proceed at a safe speed to/from warehouse/vessel to prevent cargo from falling off. All vehicles should use their lowest gear when transiting the vessel ramps.

Safety chains connecting trailer to towhead shall be engaged at all times.

Transport of forestry products shall not take place during rain/snow, unless approved by OPERATORS representative.

Vessel's decks shall be dry and clean. If sweeping is required during the operation, OPERATORS representative or Vessel Master to be advised.

Proper segregation/mark-off shall be given to cargo, as instructed by OPERATORS representative.

Paper rolls and pulp should not be stowed on top of bilges.

Creosote treated wooden products are not accepted for Ocean transport.

Dunnage/air bags of suitable size and strength may be used to choke off voids in stowage, with the approval of OPERATORS representative and vessel Master.

Corner protections should, if possible, extend over a minimum of two reels when lashing.

When loading in ramps, airbags should be close to bulkheads.

Paper rolls

Proper machinery should be utilized in a safe and professional manner to load and off load the trailers, as well as during stowage in vessel. Clamp pressure and condition on face of clamp should be checked prior to the start of operation and regularly during operations.

Roll products should be kept level to ground, trailers and underlying rolls.

No rolls shall be pushed or slid on a trailer or deck.

Rolls shall not exceed one high on a trailer, unless agreed by the OPERATORS representative.

Cardboard sheets of suitable thickness are required to be placed on the vessel's decks prior to stowing rolls. During the winter season, plywood should be placed with approximately 5 cm spreading on the vessels deck prior loading reels.

Rolls shall be stacked straight on top of rolls underneath and be of the same diameter.

During the winter season (January; February; March) a maximum of two-high stowage is permitted.

Guidelines to limit/avoid condensation/water damage to deep frozen paper rolls

Ventilation should be limited to a minimum and preferably from exhaust fans only. It might also be an advantage to commence the limited ventilation as early as possible after loading in cold climate.

However, if stability and stress conditions permit, a change of ballast water (fill ballast water twice a day in the side tanks) and/or DB tanks, whichever is applicable) might help to limit condensation. Note: The seawater temperature will slowly increase the temperature of the cargo compartment and the cargo.

At warmer ports, ventilation of cargo compartments should be kept to a minimum, and to the compartments worked only.

Ventilation of cargo compartments during the voyage should be limited and monitored closely until the cargo is "warmed up" and condensation can be avoided.

REMEMBER...

Ventilation will remove moisture/condensation only if the supplied air (outside air) has a lower dew point (temperature) than the air around the cargo in the cargo compartment.

Baled wood pulp in units

Wood pulp units shall be stowed/stored on a dry and clean vessel deck and/or warehouse floor. A layer of cardboard may be used when required. Never use craft paper or plywood as these sticks to the pulp.

Each unit shall be stored upright, with flaps of wrapping pointing down

Clamping of units shall be done at the bottom of unit. Clamping on bale strapping or unitising wires should be avoided

Units should not exceed one high on trailers, unless agreed to by the OPERATORS representative

Plywood

Handling of bundles of plywood requires special thin fork blades. Blades used must be shorter than the width of bundle. (i.e., not protrude beyond the width of bundles during any operation)

Tongue and groove Plywood should be stacked in separate stacks from ordinary plywood.

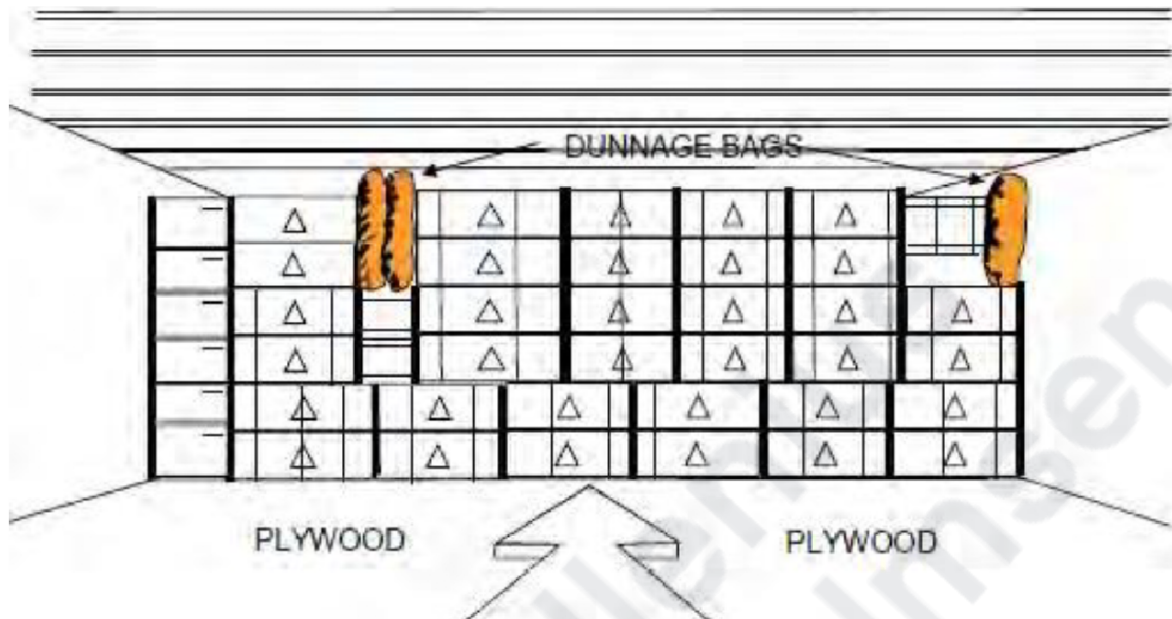
Bundles are to be stacked straight onto underlying bundles.

Plywood shall be stowed in the warehouse to a height that is stable and safe to maintain.

Units shall not exceed two high on trailers, unless agreed to by the OPERATORS representative.

Missing skids under plywood bundles shall be replaced with loose skids to enable fork blades to enter bundle at discharge port.

When other commodities are to be stowed adjacent to plywood, suitable protection should be used in between the commodities to avoid damage. Loose skids should follow cargo ashore at discharge port(s).



Veneer

Skids are to be placed directly on top of each other.
Cargo can be stowed up to 4.3m high if skids are sturdy and stowage is tight.
Lashing should be arranged so that all vertical tiers are secured.

This is best achieved by using corner protectors.

Steel products

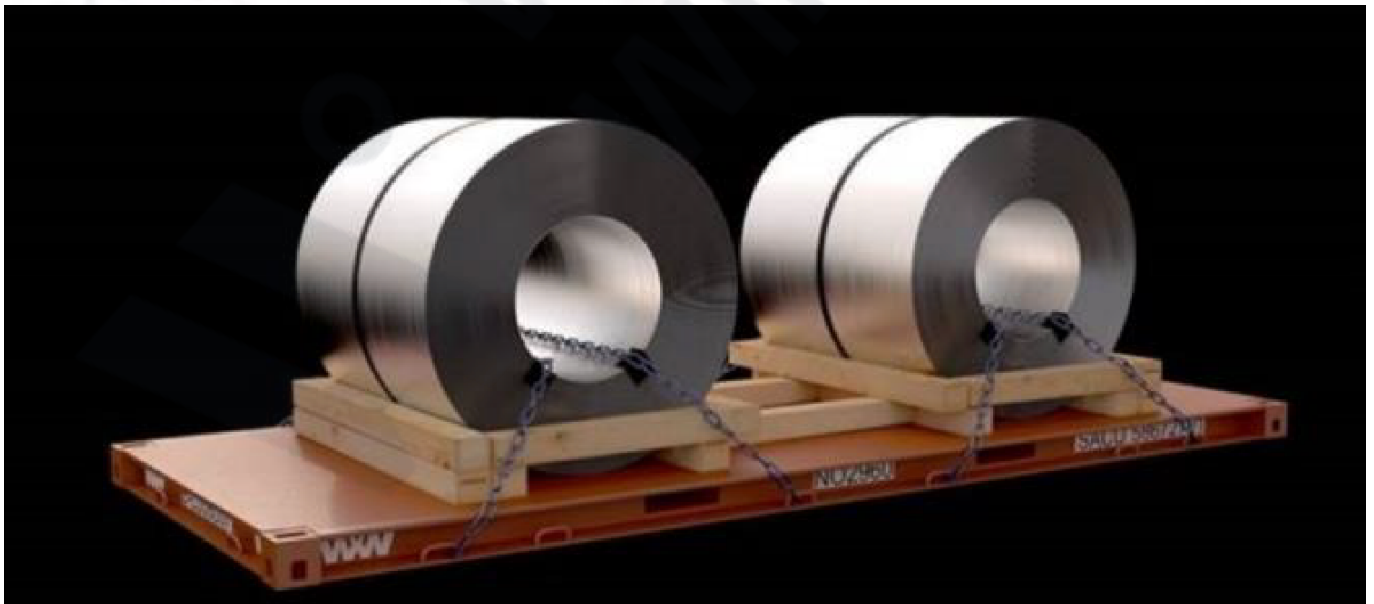
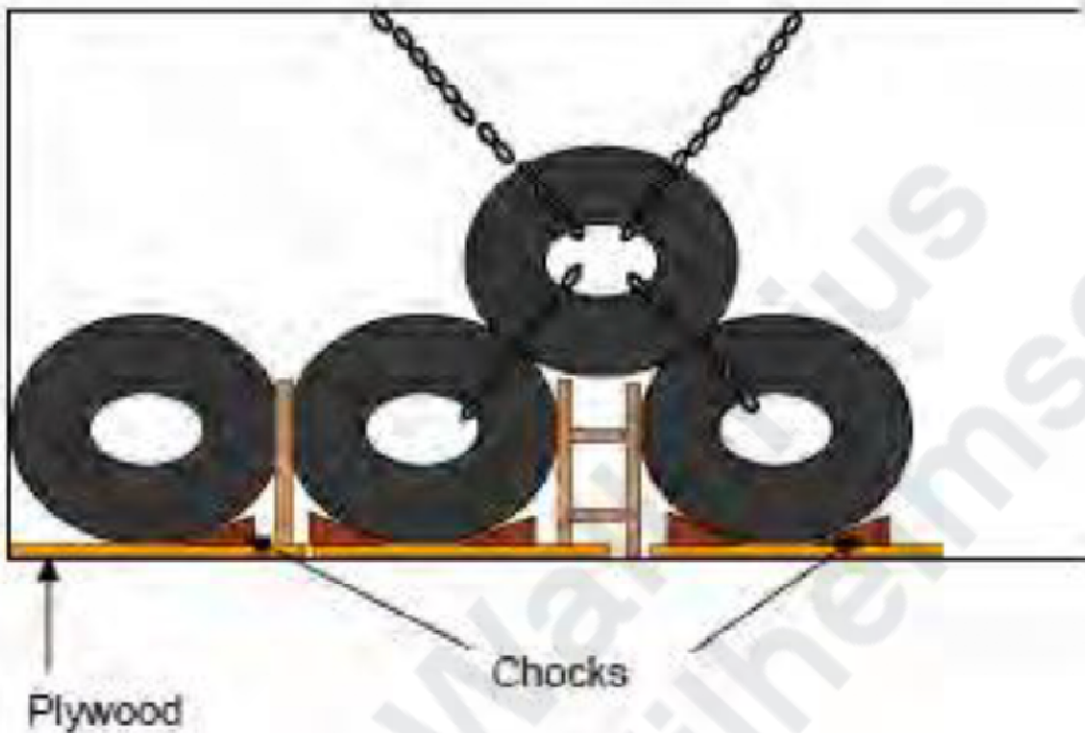
Steel coils

Stevedores are supposed to provide special a forklift attachment (usually a rounded fork) for this commodity. OPERATORS require that this type of equipment be used if available.
Stevedores in ports handling this commodity on a regular basis shall procure such equipment.
Coils shall be properly secured on trailers, by wedges, timber and/or lashings.
Plywood sheet should be placed on vessel decks before stowing this commodity
Large steel coils shall never be stowed more than two high. Smaller coils can be loaded three high if so instructed by the OPERATORS representative and/or Vessel Master.
Timber sticks shall be placed in angle between layers when loading more than one high.
Stowage shall be such that steel coils cannot start rolling if vessel encounters heavy weather.
This means that the coils shall preferably be stowed athwart ship across the hold from bulkhead to bulkhead. If this stowage is not possible, coils shall be stowed longitudinally with "rolling direction" fore and aft. If possible, coils should rest against bulkheads or other cargo strong

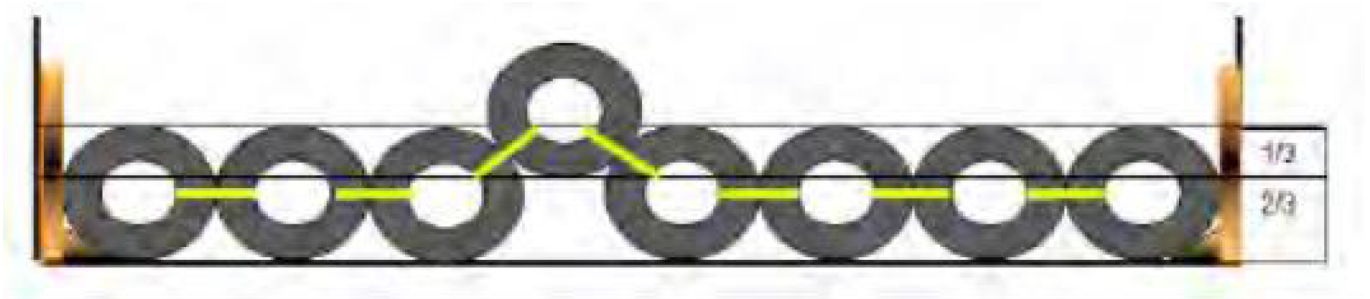
enough to safely secure the coils.

An effort should be made to stow the cargo as tightly as possible.

All voids in stow, regardless how small, shall be choked/braced off by use of timber and/or wedges.



If a full row (from side to side) is loaded, the hold floor should be covered with dunnage, the outer coils of each row should be securely wedged. One option is to place a locking coil as the final coil of the lower layer, which should be located no lower than 1/3 of the coil diameter of adjacent coils.



If the width of the gap is such that the coil could sink lower than 1/3 of adjacent coil diameter, wooden dunnage should be used to narrow the gap.



..or a second locking coil should be inserted.



NOTE: LASHING FROM UNDERNEATH DECK ABOVE CARGO IS NOT ALLOWED IF ABOVE CARGO DECK IS LIFTABLE/ HOSTABLE DECK.

Wire rope coils/reels

Forklifts should handle large wire coils (usually on wooden reels) with blades of sufficient length to reach beyond the reel, so both vertical wooden sides rest firmly on forks. Careful lifting and driving are required so the heavy weight does not result in damage to the wooden ends. Coils/reels shall be properly secured on trailers, by wedges, timber and/or lashings during transport.

Small wire rope coils shall preferably be loaded athwart-ship in narrow areas no more than 3.0 - 4.5m wide and shall be secured by the ship's bulkhead or other strong cargo on either side. If

such stowage is impossible, lashing shall be performed as instructed in each individual case. Plywood shall be placed under small wire rope coils. Large wire rope coils shall either be stowed from one bulkhead to another or with a longitudinal rolling direction fore and aft. Stowage should be as tight as possible. It is only permitted to stow wire reels one high.

Steel pipes

Timber shall be laid on deck before loading commences. Spacing between timbers should not exceed 3.0m.

Pipes shall be loaded in a fore and aft direction unless otherwise specified by OPERATORS representative and/or Vessel Master.

Timber of sufficient strength shall be placed between each layer of pipe. Wedges shall be placed on timber if necessary, to prevent the stack from collapsing during loading.

Pipes shall not be loaded more than 3.0m high unless otherwise instructed.

Since it is required that pipes be lashed for every 2.4m wide stow, care should be taken to place the chains before the container fitting holes/lashing points to be used for lashing are over-stowed.

Unitising of steel pipes

Pipes shall be unitised as instructed.

Usually, pipes shall be placed on bolsters layer by layer, with timber of sufficient strength and dimension between each layer.

Bundles of small pipes should be unitised as above unless otherwise instructed.

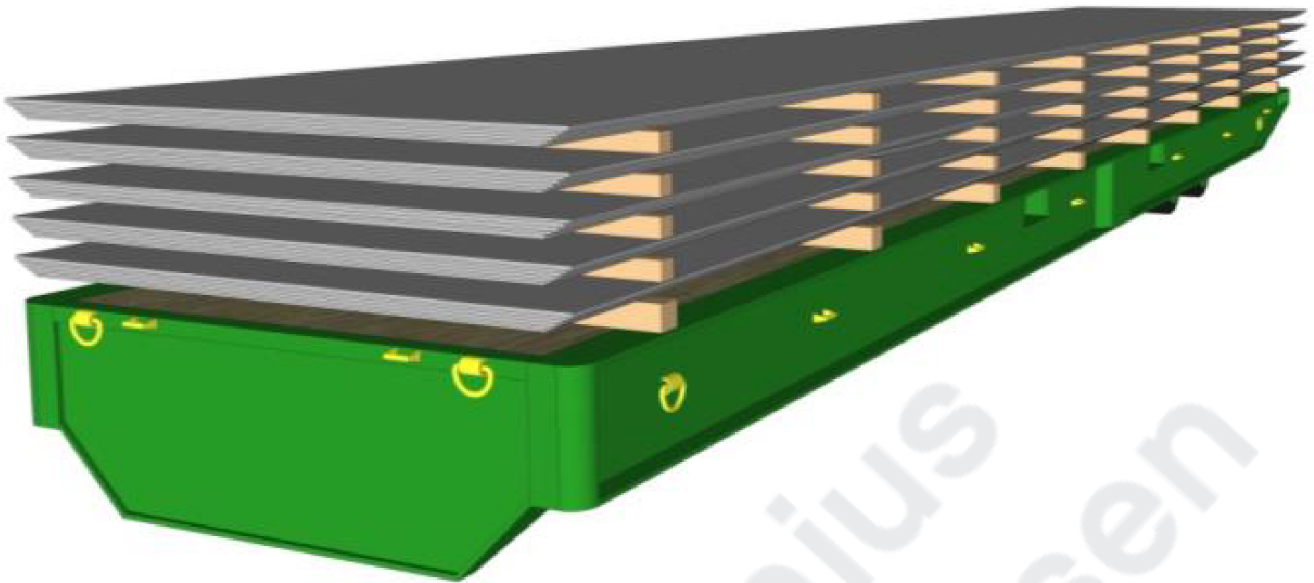
Wedges shall, if required or so instructed, be fastened under each of the outermost pipes on top of timber laid across both ends of bolsters.

Steel banding of sufficient strength must be used. Wire lashings with turnbuckles shall be used if required or so instructed.

Pipes loaded on roll trailers shall always use 3 stanchions on each side regardless of height. If packed in bundles it can be reconsidered depending on way of bundling. i.e., if it can collapse or not.

Metal plates**Preparation in port and loading onto roll trailers.**

As far as possible, groups of plates with similar dimensions shall be loaded together. This produces even ends and sides of the stows on the roll trailer and make it easier to secure the plates properly. Sorting by width shall be prioritized over sorting by length.



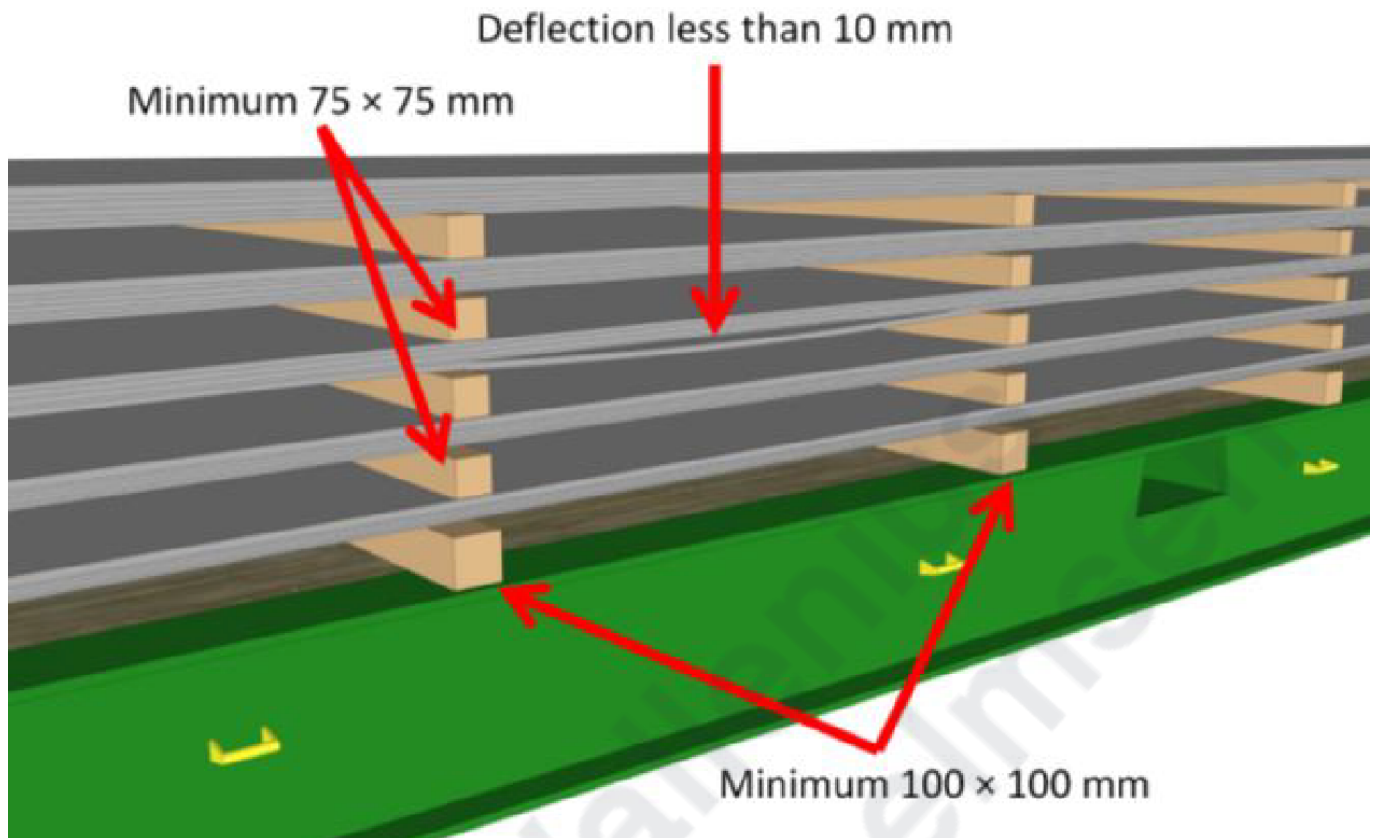
Example of groups of plates with similar dimensions having been loaded together.

The cargo should be loaded so that its centre of gravity is located as near as possible to the roll trailers or flat racks centre, both in the longitudinal and transverse direction.

The groups of steel plates shall be separated by transverse wooden dunnage. The dunnage placed directly on top of the roll trailer flooring shall have a minimum cross section of 100 x 100 mm and shall span the full width of the roll trailer or flat rack. Dunnage placed between the different groups of plates shall have a minimum cross section of 75 x 75 mm, while 100 x 100 mm is preferable as this enables the use of normal forklift forks when de-vanning the cargo carrier.

The longitudinal spacing of the battens shall be such that no plate is allowed to deflect more than 10 mm in vertical direction.

Transverse battens used to separate the groups of steel plates shall be placed directly on top of each other to avoid buckling of the plates.



The transverse battens between the different layers have been placed directly on top of each other in order to avoid buckling of the plates.

Rubber products

Only two layers high are permitted during transport to/from vessel. The utmost precaution must be taken to ensure that the cargo is not damaged during movement.

Transport of rubber shall not take place during rain/snow unless approved by the OPERATORS representative.

Shrink-Wrapped (S/W) rubber can be loaded up to three layers high.

Plywood dunnage should be removed between tiers of rubber pallets during discharging operations from vessel in a safe and orderly manner so as not to damage or contaminate the rubber.

Height/utilization permitting, the preferred stowage is one crate with two high S/W on top in deck No. 1. (on RoRo vessels)

When loading Shrink-Wrapped (S/W) pallets, Plywood shall be used between each layer, with sheets overlapping at least 20cm in order to "bind" the stow together.

Pallets shall be stowed transverse whenever possible. Experience shows that pallets placed in longitudinal stow are more prone to damage during transit, and that kind of stowage should be reduced to an absolute minimum.

Pallets should be stowed right across the compartment from one side to the other whenever possible.

When loading in deck No. 1 (on RoRo) only two pallets high are to be loaded in front of ventilator outlets to allow for proper ventilation during transit. Choking off the first pallet loaded three high in front of ventilator is required.

Some vessels have heated fuel tanks behind the aft bulkhead in deck No. 1 (one). In order to prevent heat damage to rubber, such bulkheads are to be covered by plywood affixed to vertical.

Four-inch wood being raised vertically. A daily temperature reading in the cargo deck/room is required, and the results are to be recorded in the logbook.

Other break bulk cargo

Cable reels

Cable reels are not to be loaded unless a suitable cradle/frame, or similar solution has been attached for each reel.

Cable reel loading must be reviewed by OPERATORS representative. Full technical drawings/information of the support and cargo as well as dimensions will be required.

Athwartships stowage of reels cable reels should be avoided. Cradles must be strong enough to withstand the acceleration forces during ocean transportation.

If cable reels are stuffed on cargo carriers or directly on the deck, the preferable method is to stow cable reels in fore-aft rolling position on the carrier/deck.

If another method is required, Cargo Quality must be informed for guidance and acceptance, full technical drawings of the support and cargo as well as dimensions will be required.

Packed liquid cargo

General

One example of packed liquid cargo is insulation oil that could be accompanying a transformer shipment, insulation oil is normally packed in standardized steel drums. The following instruction is also applicable for other types of liquids that are packed in other types of enclosed tanks/ receptacle or containers.

Packed liquid cargo requires special attention due to the associated risks it could have on our base (RoRo) cargo in case of leakage and contamination.

Handling instructions of packed liquid cargo

Location

Main deck and below (flush decks only - never resting on obstructions)

Stacking limitations

Maximum 2 high

Dunnage is required between the layers

Securing

- Each layer to be individually secured
- Web lashings (no chains) and corner protections to be used
- Each pallet of fluid containers to be strapped and/or shrink-wrapped

Care and Attention

- Extra supervision required during forklift operations
- Slow and controlled handling

Condition of pallets

- Pallets/drums/package to be free of defects/damage/dents
- Drums to be in an upright position

Documentation

At the booking stage the relevant MSDS (Material Safety Data Sheet) for the concerned liquid/oil product must obtain from the customer/shipper. Prior to loading, a copy of the MSDS document must be provided to the vessels Master.

Containers, bolsters and roll trailer instructions

Under no circumstances are personnel allowed to ride on containers and/or container spreaders during container operation.

Unitising of cargo is to be instructed by the OPERATORS representative.

Consolidation on containers/bolsters shall take place only after request from or approval by OPERATORS representative and upon the instruction of the Stowage Planner or concerned party.

When consolidate different ports on same container/ bolster, correct discharge and port rotation must be observed.

When handling containers/bolsters on board by forklift, a signaller must be present at all times in order to guide the forklift driver and, thereby, avoid damage to the containers/bolsters.

Twist lock sockets should be used as per below instruction in vessels equipped with these.

Loading/discharging containers/bolsters

Proper container spreaders shall be used when loading/discharging containers with vessel's crane. Wire spreaders shall under no circumstances be used for 40' laden containers unless approved OPERATORS representative.

Over-height 40' open tops and flat racks shall be handled by a 40' spreader with certified over height gear attached to the corners.

Normal dry cargo containers and open tops shall be stowed with doors facing aft. Aftward ships stowed containers should always be stowed with doors facing inboard.

Reefer containers should be loaded with doors facing forward and reefer machinery facing aft.

For Ro/Ro handling, forklift can be used for 20' containers with fork-pockets only. 40' containers and 20' containers without fork-pockets should be handled with top lift spreader or placed on bolsters or roll trailers.

Forklift blades should be inserted and withdrawn from the container/bolster in a straight angle so that damage to the forklift pockets is avoided.

When landing containers on deck, care must be taken not to land containers on loose twist locks, securing rods, reefer cables, or any other obstructions.

Permissible stack weights and deck strength should not be exceeded. Instructions will be advised by OPERATORS representative/Vessel Master.

When trailer is being used for transport, bolsters shall be placed on trailer/chassis twist locks. If trailers without twist locks are used, bolsters shall be properly secured with chain lashings and dunnage.

Container seal and inspection

To ensure that OPERATORS obligations according to the Sea Carrier Initiative Agreement, The Anti-Drug Abuse Act, and Customs-Trade Partnership Against Terrorism are being adhered to, all empty containers with destination USA or beyond are to be inspected and sealed prior to loading. All full and empty containers must be sealed with a high security seal meeting the ISO/PAS 17712 standard U.S. Customs and Border Protection.

In short, the seals marking must contain: the manufacturer's name, type of seal, and a letter "H" (Note "H" stands for a high security seal). This general rule applies to re-positioning of owned, leased and shipper owned containers, as well as empty containers carried as cargo.

The local OPERATORS rep. is responsible for establishing, purchasing of approved seals for their needs, maintaining and monitoring adequate routines and instructions to ports within their respective regions.

Verified gross mass (vgm) of a container carrying cargo

Packed containers' gross mass is verified prior to stowage aboard ship. The shipper is responsible for the verification of the gross mass of a container carrying cargo.

The shipper is also responsible for ensuring that the verified gross mass is communicated in the shipping documents sufficiently in advance to be used by the Vessel Master or his representative and the terminal representative in the preparation of the ship stowage plan.

In the absence of the shipper providing the verified gross mass of the packed container, the container should not be loaded on to the ship unless the master or his representative and the terminal representative have obtained the verified gross mass through other means.

For more details to see full text of regulation, as to below:

a. SOLAS official guidelines

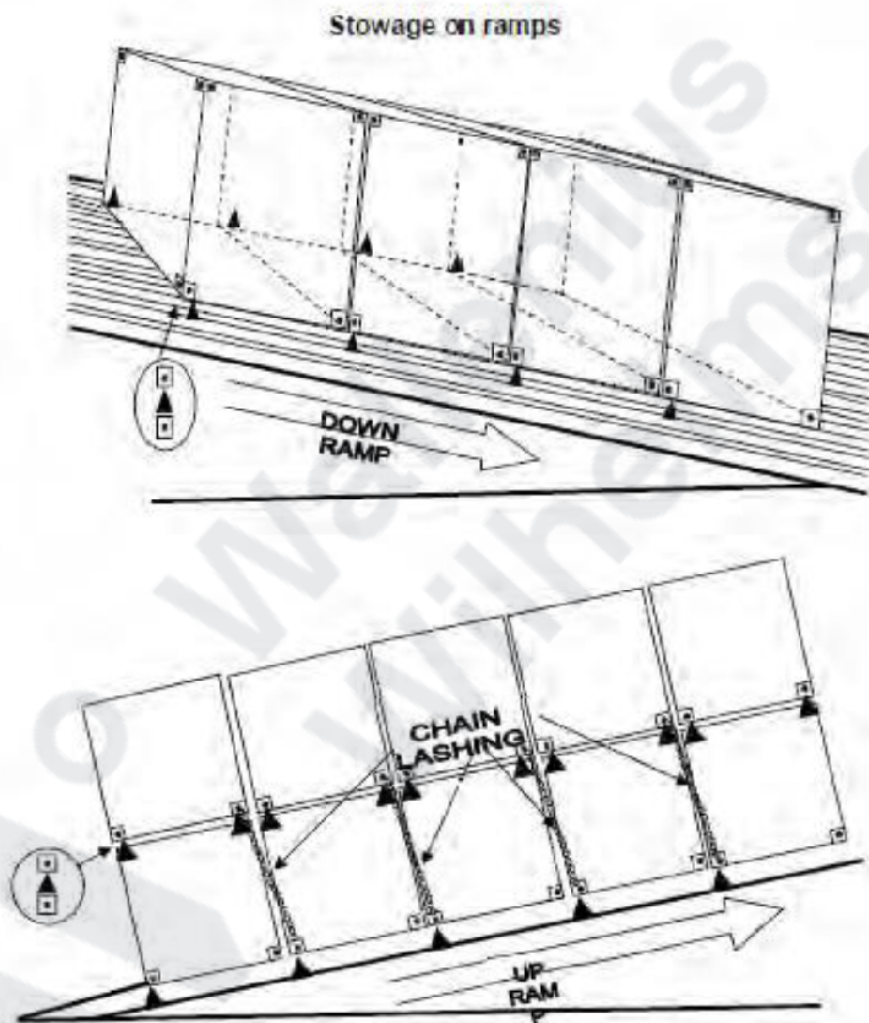
SOLAS_CHAPTER_VI_Regulation_2_Paragraphs_4-6.pdf

b. MSC.1 Circ.1475

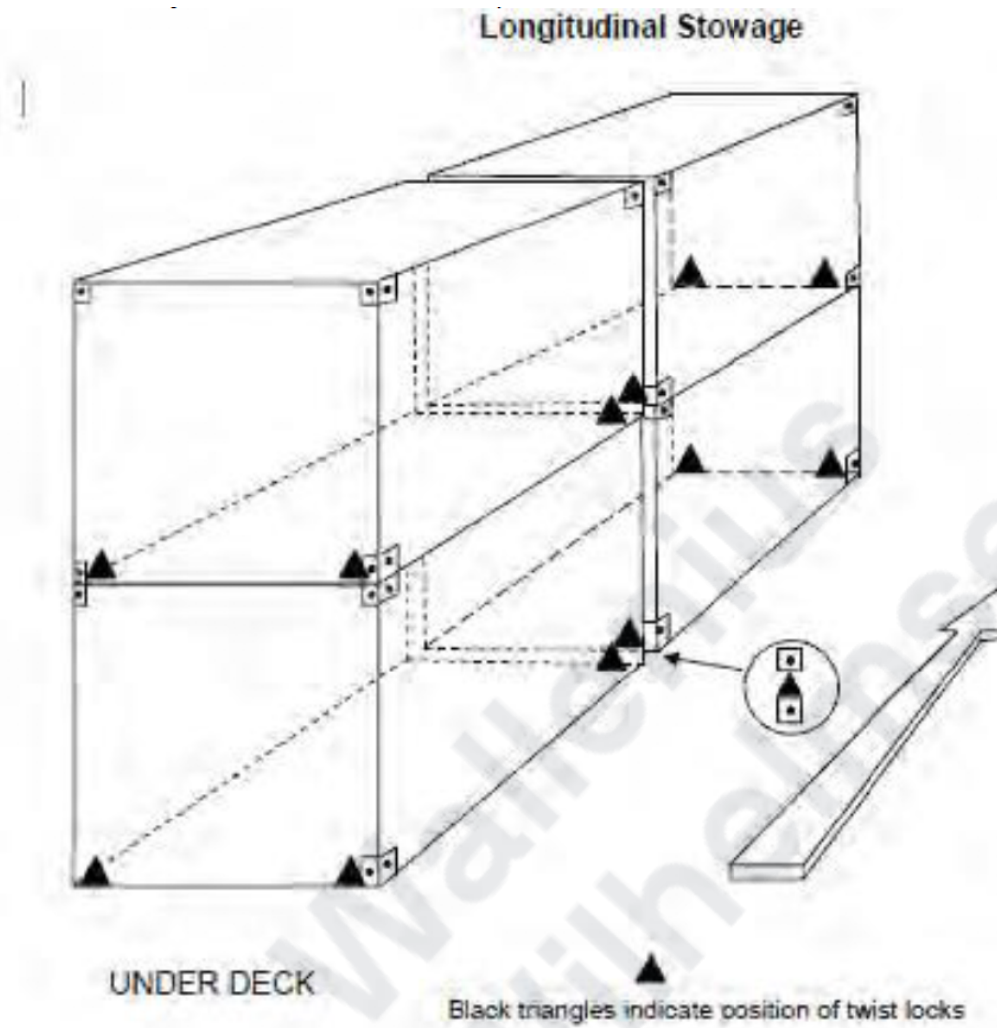
(Guidelines regarding Verified Gross Mass of a Container Carrying Cargo -Secretariat.pdf)

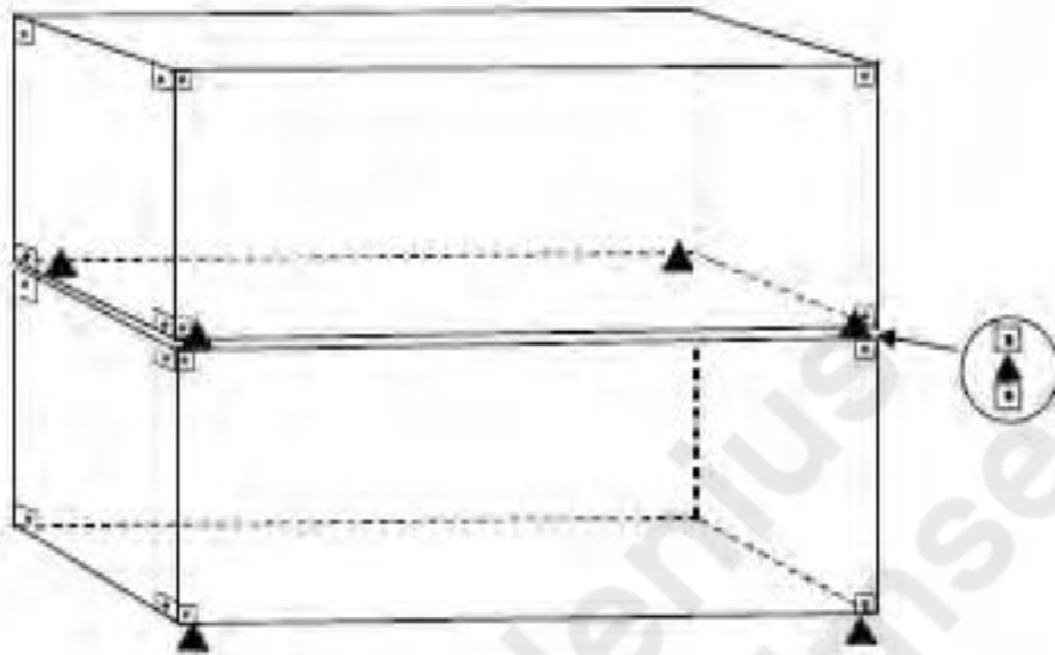
Under deck stowage of containers

This sub-chapter contains illustrations of stowage and securing of containers on cargo decks on the vessel types that have container sockets.



(Two-tier containers are only allowed on deck 4 aft of Pad 10, on the Mark III & IV On the remaining fixed decks only one tier is allowed).





Black triangles indicate position of twist locks

Unitising of bolsters

Cargo unitised on bolsters should, whenever possible, to be stowed in a manner that enables stowage of other cargo or bolsters on top.

When unitising pipes and other steel products on bolsters, wooden sticks and wedges are required to ensure a solid unit. Steel wire/steel/terylene banding must be of sufficient strength and tension. Wooden sticks and wedges must have proper stamps indicating wood treatment. Cases/units shall be placed in the center of the bolster. Longitudinal overhang if any must be equal on the opposite side of bolster. If there is any transversal overhang care must be taken to allow forklift handling (normally, is it only possible to allow overhang on one side). For safe handling, the cargo's center of gravity, both longitudinally and transversely, should be considered before unitising.

Bottom support timber should rest firmly on the bolster. If cargo's bottom support timber rests longitudinally on bolster, timber of sufficient dimension and strength should be placed across the bolster so damage to bottom supports can be avoided during subsequent forklift handling. Suitable cushioning material shall be used where lashing equipment comes in contact with surfaces that otherwise would sustain even superficial cosmetic damage.

Empty bolsters

Empty bolsters shall be unitised in a maximum of six bolsters high per bundle.
Prior to unitising, the stevedore should remove all old lashings/steel banding.
It is important that bolsters are stacked directly on top of each other, so that the corner casting rest firmly in the recess on the underneath bolster.
OPERATORS rep. should always approve the handling of unitised bolsters with crane.
Proper securing devices (Twist-locks, steel bands, etc.) are to be used between each bundle of empty bolsters. When loaded under deck, a minimum of 4 chain lashings should be attached from the uppermost bolster in each bundle to deck or lashed as instructed by Vessel Master or OPERATORS rep.

Roll trailers

If a roll trailer is used as shuttle, always ensure that the cargo is properly lashed during movement.

Loading/discharge of a roll trailer

Attending OPERATORS representative or Local agent and Vessel Master shall be notified before Heavy- Lift, or any heavy roll trailer exits or enters the ship's stern ramp.

When necessary, have the external ramp lowered as much as possible to minimize the ramp angle before the roll trailer enters the ramp.

One or more signalmen shall assist and guide the forklift/tug- master driver.

Make sure that two (2) safety chains are connected between the trailer and the gooseneck. This is extra important on empty or light loaded Rolltrailer handling.

If safety chains are not used, a SOP has to be in place to ascertain safe handling. The SOP is to be confirmed and approved, before operation of roll trailers, by the regional Cargo Quality department.

Extra care shall be taken when crossing gantry crane tracks and other uneven surfaces on the wharf.

Trailers should be kept close to the ground in order to avoid grounding the trailer, the height of the fifth wheel should be adjusted when going up and down ramps.

Sharp turns should also be avoided in terminals.

Drive at a slow and safe speed (max 5km/h).

Approach and enter all ramps/bumps and dips at a straight direction.

All transport should use the lowest gear when transiting the vessel's ramp. (External and internal)

Always ensure that the ramp and deck heights are sufficient for the trailer and its cargo. The person in charge of the transport shall, when transport enters/exits vessel's ramps/decks, determine that there is adequate clearance on both sides of the transport as well as between the cargo and ceiling.

Operation of Roll trailers exceeding 30-ton gross weight**Loading and discharging Roll trailer between 30 and 50 MT GW above main deck:**

- Heavy Rolltrailer (+50 MT) should not be planned and loaded above main deck.
- Roll trailers should always be pushed up the stern ramp and pushed up to upper decks during loading operation.
- During discharge, Tug-master shall always be Infront of the Rolltrailer going down from decks above the main deck and continued out on the stern ramp.

Loading and discharging Roll trailer, between 30 and 50 MT GW, below main deck:

- Heavy Rolltrailer (+50 MT) should not be planned and loaded below main deck.
- If Roll trailer is loaded to a deck below the main deck, the trailer shall be turned on the main-deck, and then proceed downwards to the next deck with tug-master in front (lower side).
 - If turning on main deck is not possible, exception can be allowed for pulling the Roll trailer up the stern ramp if: necessary safety arrangements has been taken for stern ramp handling. This type of arrangement has to be approved by Regional Cargo Quality.
- During discharge, Roll trailers shall be pushed up internal vessel ramps, with the tug-master behind the trailer.
- Roll trailers shall be turned at the main deck so that the tug-master can proceed in front of the Rolltrailer down the ramp.
 - If due to the size of the trailer it is not possible to turn trailer or to avoiding damaging other cargo, and/or to avoid sharp turns, exception can be allowed for pushing the Roll trailer down the stern ramp if: necessary safety arrangements has been taken for stern ramp handling. This type of arrangement has to be approved by Regional Cargo Quality.

Stacking of empty roll trailers

20' roll trailers to be stacked a maximum of 5 units high
40' roll trailers to be stacked a maximum of 4 units high
40' roll trailers to be stacked wheels above wheels
60' roll trailers to be stacked a maximum of 3 units high
72' roll trailers to be stacked a maximum of 3 units high
80' roll trailers to be stacked a maximum of 3 units high

Timber should be used under the wheels of roll trailers without steel plates above the wheels in order to prevent the wheels from breaking through the wooden floor.

It can be applied differently depending on deck height.

Specialized cargo instructions

For "the rule of thumb" and guidelines on numbers of lashings to be used see cargo securing instructions.

For acceptance of specialized cargo, Marine Operations (MOM) of the respective carrier and BB Project team are responsible. OPERATORS representatives are responsible to assist customers in relation to handling, stowage and securing of the cargo.

If stevedores have doubts regarding handling methods and stowage, the OPERATORS representative shall be contacted for advice.

Requirements for special equipment and handling methods shall be followed.

Heavy lifts

Stevedores shall provide gear suitable for handling the heavy-lift cargo unless provided by the shipper. All lifting gear and lifting points used in handling the cargo should be certified for their SWL.

All lifting points, slinging points, and lashing points should be clearly marked.

If handling instructions are provided by shipper, OPERATORS representative shall verify and approve the same.

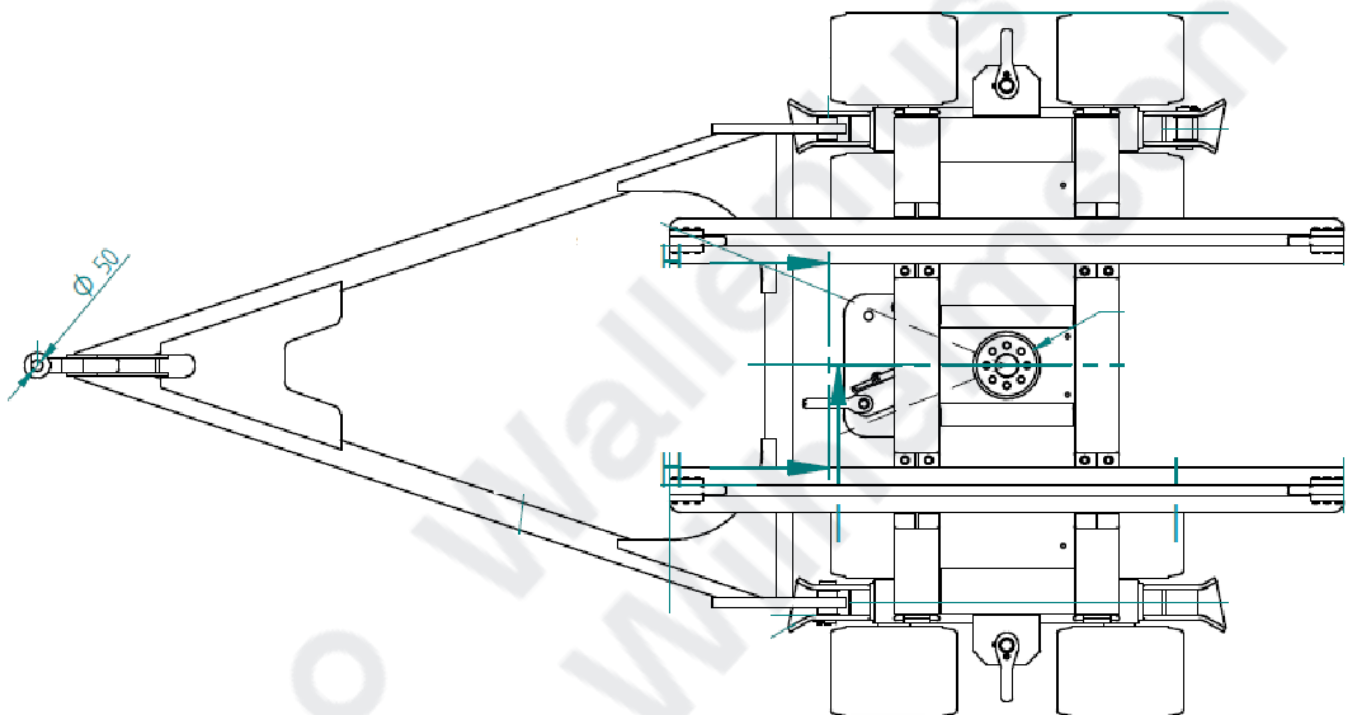
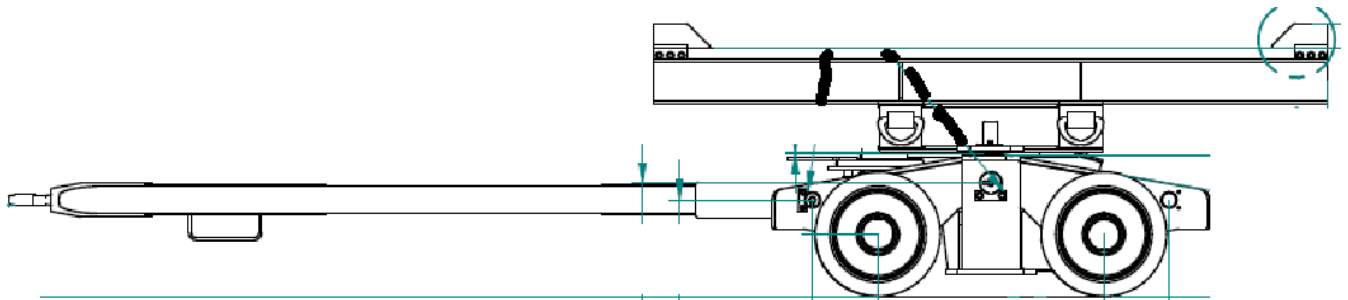
Multipurpose bogie (MPB)

The Multipurpose bogie (MPB) equipment consists of bogie, platform and a tow bar and are always used in pairs.

Cargo intended for MPB must be of self-supporting structure. There are different equipment's which can be attached to the MPB 's in order to overcome this.

Two versions of MPB existing:

Turntable Version 1



Turntable Version 2



Manoeuvring/ handling of mpb

The behavior of the arrangement is the same as turntables on roll trailer. It must be checked how the two Tug-master-operators synchronize their vehicles. Note that it is possible to use forklift as well. (for lighter cargo)

The tug-master/prime mover shall be of a size and weight that will ensure safe transport into and from the vessel from/to the designated place of rest on the terminal. The tug-master/hustler/prime mover must be fitted with a proper towing hook. Enough friction must be obtained before operation continue. (this can be achieved using counterweight)

The driver should test the brakes prior to proceeding up/down the vessel stern ramp and again after the cargo carrier is on the terminal berth/deck.

Transport from terminal to vessel and vessel to terminal shall be at a safe speed. (not to exceed walking speed)

A suitable line of approach over the vessel stern ramp shall be determined prior to loading/discharging, bearing in mind that at no time shall the angle be more than 20 degrees out of the "fore and aft" line of the cargo.

Maximum ramp angle is 6 degrees from main deck horizontal line. Higher angle can be approved, subject enough friction is obtained.

The two drivers and the signalman must be in contact through radio or similar direct communication tool, to ensure correct synchronization.

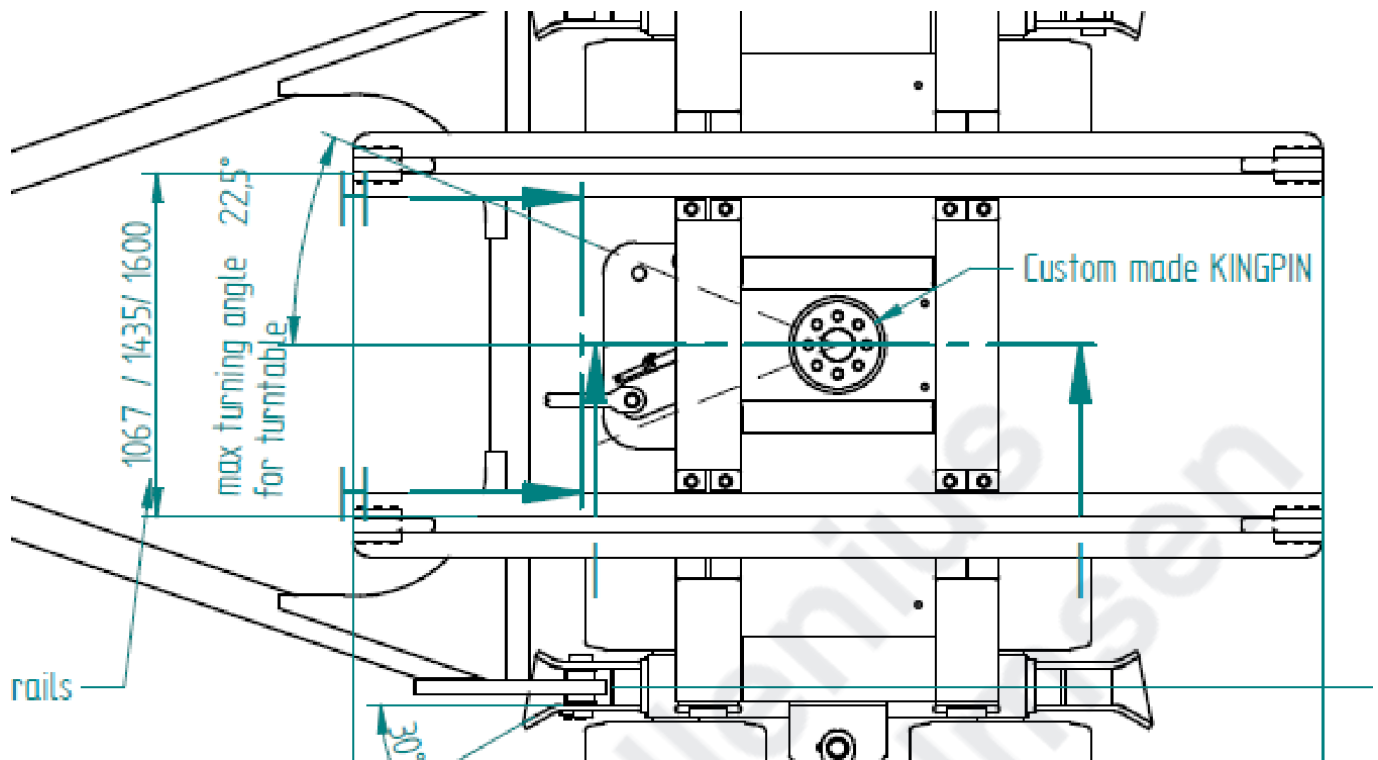
One signalman at each MPB should follow the loading/discharge all the time. He must report immediately any faulty behavior of bogie, turntable, or cargo. He should have the authority to stop the operation if something is wrong.

During operation, the two locking pins (one on each side) must be removed; otherwise, the forces acting on the MPB will be transferred to the cargo and can cause damages. The only time the locking pin should be engaged is when pulling the MPB set out from stow in a straight line. Once there is enough room to connect a second tug-master, operation should stop and locking pin removed. This applies in reverse order during loading.

Pin in steerable position. A securing screw (green) must be removed if position on the pin shall be switched.

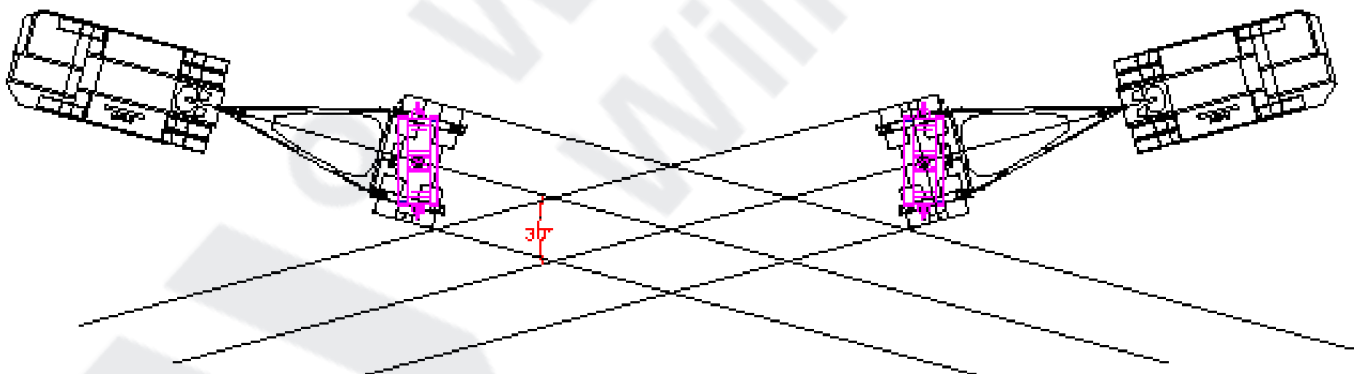


- Maximum turning angle of platform is 22.5 deg, but it is recommended to keep not more than 15 deg, to ensure a safe operation. If reached to maximum turning, the forces will be transferred to the cargo/lashings instead and can cause damages

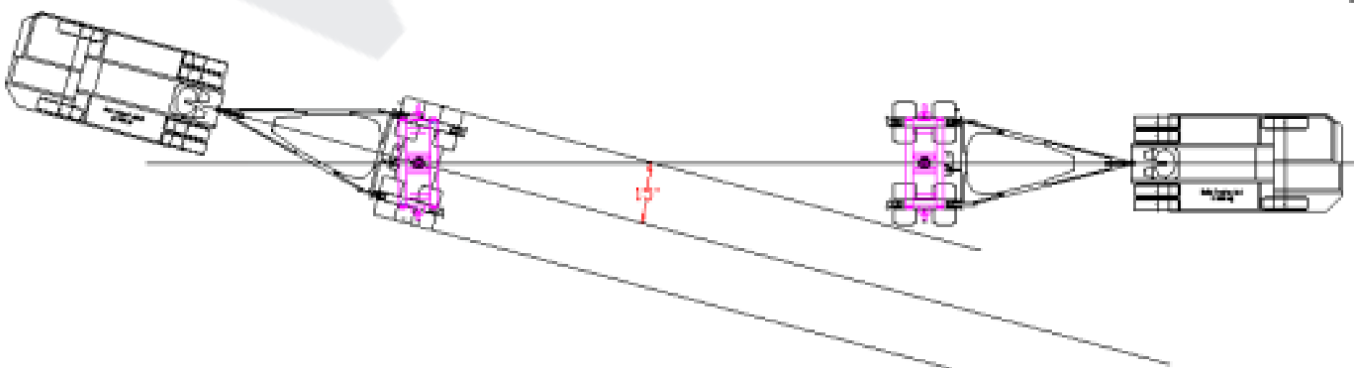


- Maneuvering can be done in three ways:

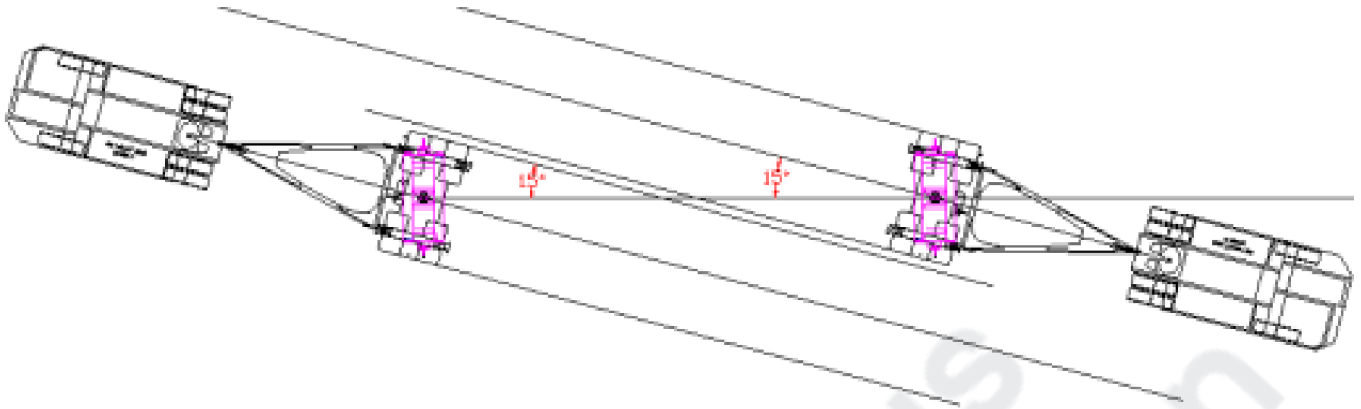
Both MPB turned at the same time => total turning angle is 30 deg



Only one MPB is turned => total turning angle is 15 deg

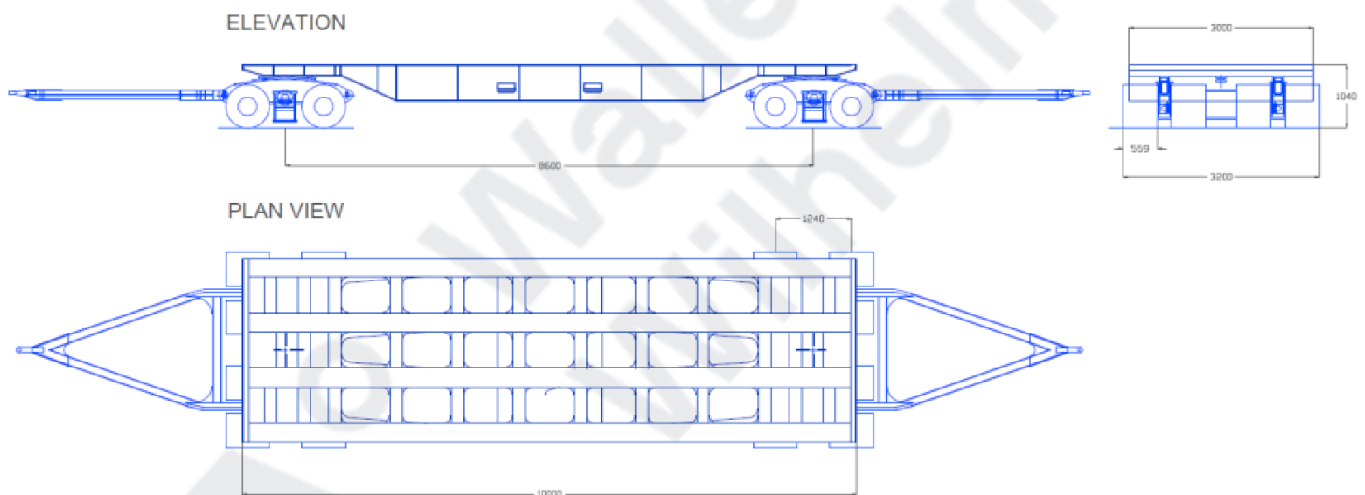


By side-way movement, so called "Crabbing".



Heavy lifts by samson trailer

Samson is a collection name for cargo carriers able to load up to 220MT. They consist of 3 different types of platforms (8, 10 and 16mtr long) and 2 bogies with tow bars.



Principle drawing of 10mtr platform with bogies and tow bars.

Manoeuvring of samson platform

- The tug-master/prime mover shall be of a size and weight that will ensure safe transport into and from the vessel from/to the designated place of rest on the terminal. The tug-master/ prime mover must be fitted with a proper towing hook. Enough friction must be obtained before operation continue. (this can be achieved using counterweight)



- The driver should test the brakes prior to proceeding up/down the vessel stern ramp and again after the cargo carrier is on the terminal berth/deck.
- Transport from terminal to vessel and vessel to terminal shall be at a safe speed. (not to exceed walking speed)
- A suitable line of approach over the vessel stern ramp shall be determined prior to loading/discharging, bearing in mind that at no time shall the angle be more than 7 degrees out of the "fore and aft" line of the cargo.
- Ramp angle is 4-6 degrees from main deck horizontal line. Higher angle can be approved, subject enough friction is obtained. Approval by Port and Cargo Operation or Marine Operation Management.
- If necessary, an additional tug-master can be connected, using wire, to help with pulling during transfer over stern ramp. This is important during rainy/wet conditions.



- It must be checked how the two Tug-master-operators synchronize their vehicles movements. The two drivers and the signalman must be in contact through appropriate means.

Heavy lifts by "jack-up" trailer

SAFE STOWAGE OF HEAVY PROJECT CARGOES

Below basic instructions are given on the safe stowage heavy project cargoes onboard vessels operated by OPERATORS



Typical heavy project cargoes

TYPICAL HEAVY PROJECT CARGOES

CARGO INFORMATION

To be able to accept heavy project cargo, the following information must be available to secure and stow cargo properly:

- principal dimensions with drawings
- photos if available
- gross mass of the cargo
- location of the center of gravity
- bedding areas and particular bedding precautions
- lifting points or slinging positions
- securing points, including details of their location and MSL

LOCATION OF STOWAGE

When considering the stowage position for heavy project cargoes, the typical distribution of

accelerations on the vessel should be kept in mind. The lowest accelerations are found in the amidships sections on main deck.

Wheel based heavy cargoes shall be stowed in a fore-and-aft direction.

For some types of heavy project cargoes Blocks and Beams are used for the stowage onboard. This equipment consists of the items described in the figure below.



DISTRIBUTION OF WEIGHT

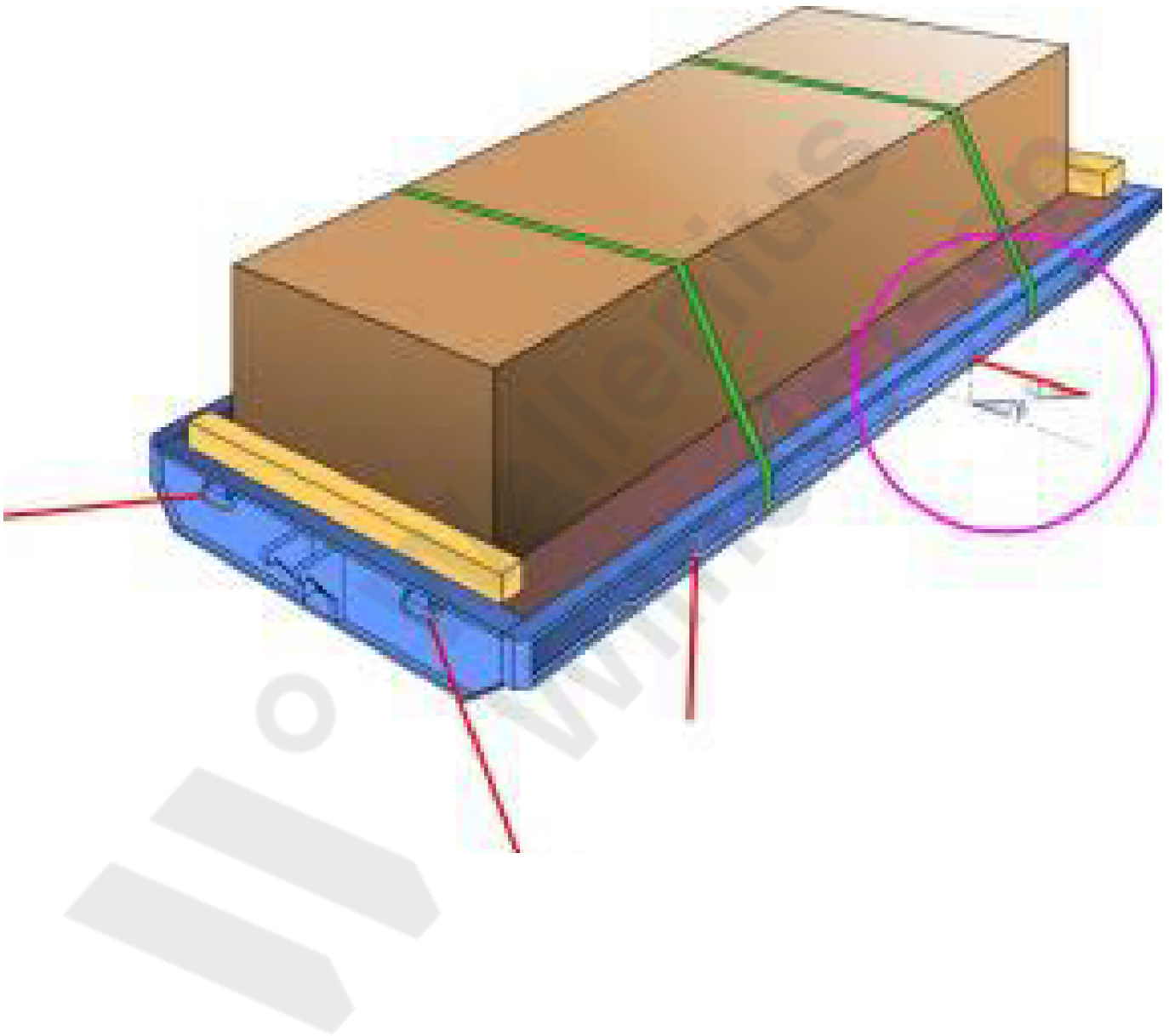
The weight of the cargo should be distributed in such a way as to avoid undue stress on the vessel's structure and suitable beams of adequate strength should be used to transfer the weight of the item onto the vessel's structure. If the maximum allowed deck load per m2 is exceeded special strength calculations should if deemed necessary be performed including instructions for stowage and bedding.

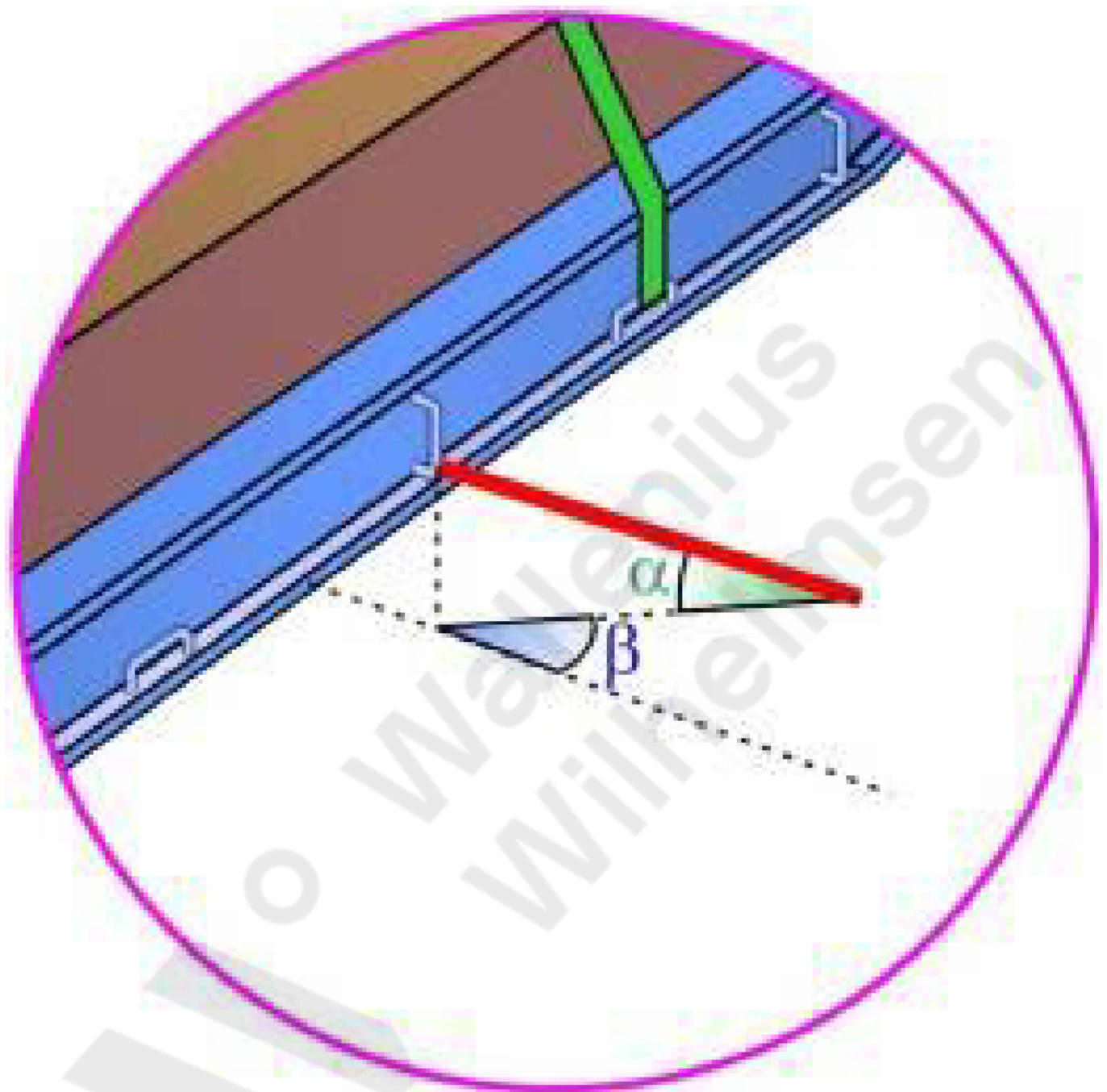
Consultation and approval shall be received from both BB Technical team and Marine Operations Management.

Timber or rubber should be used to increase friction between all surfaces where sliding could occur.

This does not apply to items on wooden cradles, on rubber tyres or with similar bottom materials having a built-in high coefficient of friction. Timber of approved type stamped according to IPPC (International plant protection convention) or hard wood to be used.

The securing devices should be so arranged as to withstand transverse and longitudinal forces and it shall prevent sliding and / or tipping in all directions.





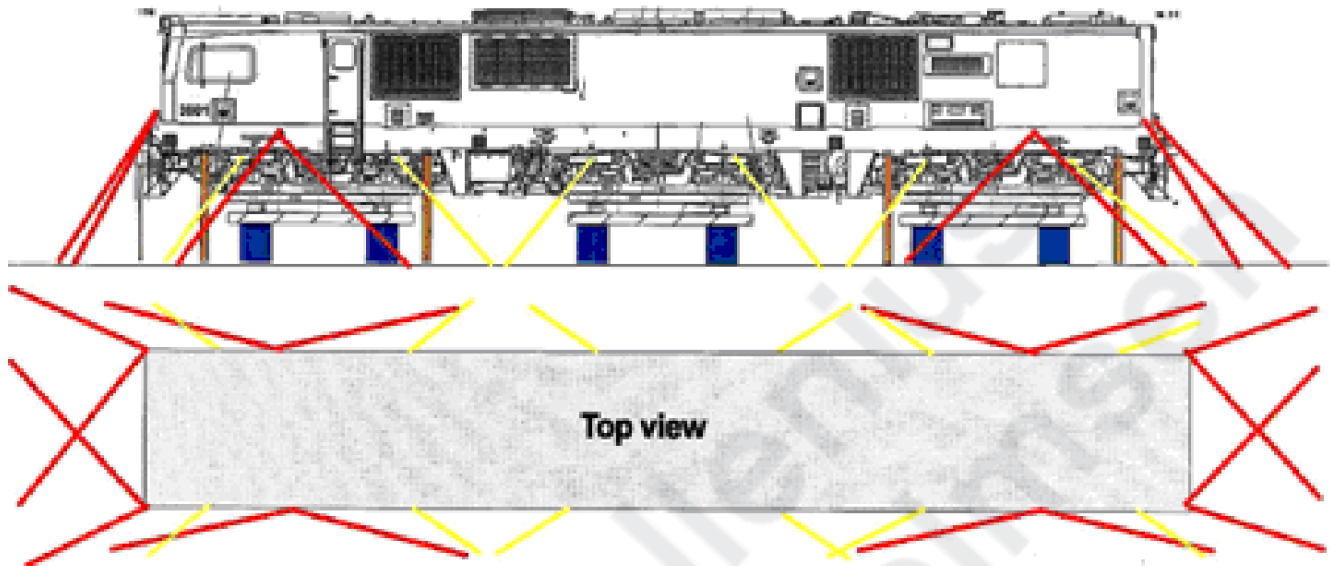
In the figures above the vertical lashing angle α and the horizontal lashing angle β are shown. Most efficient prevention of sliding and tipping in different directions appears for the following values of α and β :

Value of α Value of β Most efficient in preventing

Small	Small	Transverse sliding
Large	Small	Transverse tipping
Small	Large	Longitudinal sliding
Large	Large	Longitudinal tipping

The optimum vertical lashing angle against sliding is between 20° and 30°, while the optimum vertical lashing angle against tipping is generally found between 45° and 60° or larger. Optimum vertical lashing angle for lashings against both sliding and tipping is generally found between 30° and 60°.

Example of lashing arrangements



In the sketch above the red lines are showing heavy duty lashings with MSL 20 ton used on a 140-ton locomotive and the yellow lines show "normal" chain lashings with MSL 7,5 ton. From the sketch above, the vertical lashing angles β for all lashings are favorable to prevent both sliding and tipping, while the transverse lashing angles α for most of the lashings are large and mainly preventing longitudinal sliding.

Special arrangements and instructions are required for each loading/discharging performed by a "jack up" trailer. The OPERATORS representative shall issue those instructions.

OPERATORS representative shall conduct a pre-plan meeting with the "jack-up" trailer operator together with Stevedores to review loading/discharging guidelines and procedures.

Heavy lifts by crane

The floating crane operator and/or shipper are usually responsible for providing the gear required for loading/discharging.

Preparation for loading/discharging heavy lift to/from the weather deck shall be as instructed from Stowage Planning and Port Operations.

Stevedores shall supply the required skilled foremen and laborers to handle the loading/discharging.

Heavy-Lift shall be handled exactly as instructed.

All lifts should be checked for proper weight before loaded onboard.

Weather deck cargo

Under no circumstances are personnel allowed to ride on cargo or vessels and/or terminal equipment during lifting operation.

On certain PCTC'S and Ro-Ro vessels special oversized cargo can be accepted for weather deck stowage.

These cargoes are characterized by their bulk but relatively low weight.

All weather deck cargo must be approved in accordance with Operational Review

Loading/discharging weather deck cargo

Before making any attempt to lift the cargo, regardless of if from deck, water or wharf, Vessel Master, OPERATORS representative and Port Representative are to be notified, and the person in charge of the operation shall check and be satisfied that following is adhered to:

Only suitable and certified lifting gear are used, and that the lifting gear is in good and safe condition.

Spreader bars with a length equal to or more than the cargo's beam are used. (Lifting points for slings to be marked)

Stevedore supervisor or a skilled foreman shall be in charge of the operation, and that the crane driver and signalman have the required skill.

That the cargo is properly slung and balanced safely.

Web slings are always used and/or that suitable cushioning is being placed where steel wires may touch the cargo.

That a minimum of two ropes (tag lines) are attached to the cargo, enabling deck crew to turn and maneuver the cargo as required.

That the lifting of weather deck cargo shall proceed at safest possible speed and jumps, and jerks are avoided.

That the weather deck cargo is positioned as instructed by the person in charge, that the distance to containers or any part of vessel's construction shall be sufficient for safe clearance, and that appropriate lashing can be made with proper angles to the available lashing points.

If a yacht cradle has to be lifted a little in each corner to remove/insert lifting wires, utmost care must be taken to ensure that the yacht's rudder(s) or propeller(s) do not touch the deck and/or berth.

That the actual gross weight of the lift is recorded by OPERATORS during the lift and be registered into the loading papers/traveler. The weight should also be rechecked against information from shipper.

Stowage of windmill blades on weather deck

Blades stowed forward of the Navigating Bridge, shall always have the tip end of the Blade facing aft, this to prevent heavy vibrations.

Blades stowed aft of bridge and somewhat in leeway of wind, may be stowed in both forward and aft direction if space need to be gained.

Request of arranging power supply to cargo

Any inquiries on electric supply to cargo during the sea voyage must be approved in a case-by-case structure, by Marine Operation Management and Quality functions globally or regionally.

The following information from the customer is needed to evaluate the inquiry:

- Voltage, Max Power(kW) and current (A) range for the cargo.
- Sensitivity of the electric frequency (Hz). (Vessels have 60 Hz onboard)
- Connection plug model. Vessel has 440V IT network (3 P + earth) **Picture available below**
 - Cabling and connectors information on the cargo unit. (Description and preferable pictures needed)
- Is the equipment Explosive-classed (YES / NO)
- Any requirements from the customer if regular checks must be carried out by the vessel crew to verify the condition of the connection/ equipment.
- In case any malfunction of the equipment is noted during the ocean voyage, provide contact details for getting assistance on how to proceed.



Additional:

If the inquiry states that the cargo requires power supply whilst under OPERATORS care during storage at POL/POD, OPERATORS rep. in the concerned port has the responsibility to investigate if it would be possible to arrange.

At Inquiry stages the customer must be informed that OPERATORS will not be held Liable for any cargo damages or consequently damages related to if any malfunctions may arise with the electrical supply or on the equipment powered by electricity from the vessel and/or in the ports. WalWil vessels cannot guarantee maintenance on the cargo unit, in case of unforeseen malfunctions on the electrical equipment.

Cost for this service to be advised by WalWil Pricing department.

Alternative fuel vehicles/units (AFV)

Instructions for ocean carriage of AFV

Important: Booking office requires cargo classification to be provided at booking stage and prior to the cargo cut off deadline to ensure proper planning, stowage and safe handling is performed.

The shipper/ OEM is required to categorize each AFV unit into one of the following categories:

A remark must be made that it is an AFV vehicle in the booking system and handled accordingly.

BEV - Battery Electric Vehicle where only source of power for propulsion is a battery

PHEV - Plug-in Hybrid Electric Vehicle where source of power for propulsion is either through battery power or through an internal combustion engine (ICE)

HEV - Hybrid Electrical Vehicle (All none-plug-in Li-battery solution with ICE Engine).

CGV - Compressed Gas Vehicle, where the source of power for propulsion is gas, such as hydrogen, natural gas (LNG), petroleum gas (LPG) and any Hybrid solutions with Li-battery.

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Stowage of CGV (Vehicle/High and heavy)

[CGV's](#) should be stowed in a way that will allow patrols direct access to these vehicles
CGV to be stowed separated from POV/ Used vehicles.

CGVs are permitted to be stowed only on decks that have SOLAS-approved explosion-proof equipment on vessels with keels laid after January 1, 2016. This is a mandatory SOLAS requirement, typically applicable to the two upper decks and the main deck of the vessel. Furthermore, for vessels built before 2016, CGVs can be stowed only on the main deck or liftable decks within the same zone as the main deck.

CGV's loaded on vessel that has not explosions proof equipment; only to be stowed on main deck of the vessel or in liftable decks within the same zone.

CGV's should not be stowed on any deck below the Main deck.

International regulation and recommendations

Vehicles with installed Lithium Batteries

- a. Vehicles with damaged or defective Lithium batteries are NOT accepted for loading. This requirement is based on IMDG Special provision 961.1 "Where a lithium battery installed in a vehicle is damaged or defective, the battery shall be removed.
- b. Shipper/OEM is responsible to follow all international rules regards shipment of their vehicles, such as IMDG Code etc.

Vehicles fueled by compressed hydrogen or natural (methane) gas

The recommendation from IMO, as described in MSC.1/ Circ 1471(see below text) concerning leak-tightness checks and labeling have been adopted as a requirement.

"The shipper should provide a signed certificate or declaration that the vehicle fuel system, as offered for carriage, has been checked for leak-tightness and the vehicle is in proper condition for carriage prior to loading. In addition, the shipper is to mark, label or placard each vehicle, after it has been checked for leak-tightness and that it is in proper condition for carriage. During loading, the crew should check each vehicle for the shipper's markings."

Vehicles fueled by CGV

The following required specific information must be provided from the Shipper / OEM on the gas tank system on their vehicle in well in advance of booking (In advance of first shipment of the concerned CGV model):

Number of gas tank(s)

Filling degree in the gas tank(s) in percentage (%) of max filling capacity. Note that WalWil have max 50% filling of the tank volume. This is seen as the optimal state of charge for such tanks as to overall Safety reasons

State of Charge requirements (SOC level)

- Following is the maximum and the minimum requirements described in below table (to be checked in the vehicles display):

<i>Type of vehicle</i>	Max. SOC	Min. SOC	Recommendation
<i>BEV (Fully battery-operated vehicles and H&H)</i>	50%	10%	30%
<i>PHEV (Plug-in hybrid vehicles)</i>	50%	1%	Low

This requirement is applicable for Battery Electric Vehicles (BEV) and Plugin Hybrid Electrical Vehicles (PHEV). All Hybrids with possibility to drive on the Internal Combustion Engine (ICE) with the electrical mode disengaged, shall do so. Vehicles to be preferable placed in transportation mode onboard.

[Random SOC level checks](#)* to be carried out in export ports. If vehicle or high and heavy cargo is found with higher SOC than in above table this must be reported to the OPERATOR and cargo MUST NOT be loaded onboard the vessel.

WalWil prohibits charging high-voltage batteries onboard, during sea voyages. However, in POD and under discharge operations, HV batteries can be charged with an external charger under supervision. A fire extinguisher must be present during this process and the charging operation have to be supervised all time.

Used alternative fuel vehicles

General customer instruction for shipping of used AFV (both cars, trucks and H&H)

Used AFV's are divided into 4 categories (different propulsion energy systems) that require different information or instructions on the cargo unit, to allow shipment.

For definition of what is considered a used AFV, see [New and Used vehicles](#).

The following information outlines the requirements for used AFV's to be accepted:

A diagnostics (OBD) report from the Vehicle Onboard computer must be included by the customer. The OBD report is to show the following systems in the car/vehicle has no errors or issues:

- High voltage battery system for propulsion of the car/vehicle.
- The electric wiring system in the car/vehicle.

The OBD report has either to be available inside the unit for verification purposes in POL or sent to the responsible operation department in POL in advance. We accept this OBD report from any authorized workshop.

Pictures showing the unit front and back and sides to view any impact damages and overall standard of the unit.

Regional Cargo Quality are responsible to verify and approve OBD report and pictures, if not

delegated to the port responsible.

Verify type of used AFV for specific rules on shipment:

- **BEV:** Loading of used BEV is not accepted onboard Wal Wil Vessel until further notice.
- **PHEV:** Allowed to ship with max State of Charge (SOC level) 50%
- **HEV:** Nothing additional to the OBD document and pictures, described in point 1 and 2.
- **CGV:** The shipper must confirm that the gas-filling volume is below 50% of the tank.

Internal info on CGV: There is stowage regulations on the vessels, always inform Region IMDG responsible or stow-planner before confirming booking of this segment.

To allow shipment, the used AFV unit is to be in a general good condition free of impact damage.

- If customer is in doubt, direct contact with Regional Cargo Quality to be established for judgement. If impact damage is seen when the unit is delivered to the port of export, an evaluation will be done if the units is safe to ship.

Observe:

- In case of any aftermarket battery installations exists on a used unit, **we cannot accept the cargo for shipment.**
- Used units will be inspected in POL and in case above customer information is not fulfilled or correct, **we may not accept the cargo for shipment.**

Additional requirement for [BEV]

BEV (*Battery Electric Vehicle where only source of power for propulsion is a battery*)

- Loading of used BEV units is not accepted onboard WalWil Vessel until further notice.

Additional requirement for [PHEV]

PHEV (*Plug-in Hybrid Electric Vehicle where source of power for propulsion is either thru battery power or an internal combustion engine, ICE*)

- A diagnostical (OBD) report from the Vehicle Onboard computer must be produced from the customer.
- Max State of Charge (SOC level) 50%

Additional requirement for [HEV]

HEV Hybrid Electrical Vehicle (All none-plug-in Li-battery solution with ICE Engine).

ICE engine: Internal Combustion Engine powered by gasoil or diesel.

- A diagnostical (OBD) report from the Vehicle Onboard computer must be produced from the customer.

(Not possible to control SOC level)

Additional requirement for CGV

CGV Compressed Gas Vehicles, where here the source of power for propulsion is gas, such as hydrogen, natural gas (LNG), petroleum gas (LPG) and any Hybrid solutions with Li-battery.

- The Shipper must confirm that the filling degree meets the 50% filling rate of the tank capacity before the vehicle reaches the port.
- Stowage location onboard the vessel for CGV is regulated by IMO and is in detail described in the Cargo Handling Instruction under: Stowage of CGV.
- Used CGV has to be checked that no signs of leakage from the engine, fuel cell, compressed gas cylinder or accumulator exists.

(Mandatory control needed by WW DG group for specific vessel allocation)

In the event of damage to an AFV new or used

Severely damaged AFV vehicles or roro unit are prohibited from being loaded onto a Wallenius Wilhelmsen operated vessel. Damage to a vehicle or RORO unit is considered beyond cosmetic minor damages.

Cargo securing instructions**Uniform, axle, and bogie loads**

Our vessels operate with three (3) different "loads" when it comes to stowage of cargo onboard a vessel.

Uniform deck load (UDL); is the deck maximum permissible load per square meter. Typical loads where cargo spread evenly at square meter utilization such as break-bulk cargo, containerized cargo and bolsters.

Axle loads; load that stress deck structure-based on the axle configuration and tire footprint of a self-propelled unit. Typical cargo is rolling cargo such as Vehicles and heavy vehicles in general. Where the footprint of tires and axle configuration is the main driver for cargo weight

acceptance.

Note, axle loads usually is divided into either two (2) wheel per axle or four (4) wheel per axle.

Bogie loads: similar as axle, but where the axles are close to each other so they will act as one "axle". Typical cargo that is loaded by roll trailer, samson trailers and multi-purpose bogies. Here it also operated with "harbor" and "seagoing" mode, as in harbor a vessel can allow heavier bogie due to no accelerations present, which will be present during voyage.

Cargo that exceeds the vessels specification can be accepted if technical review has been done and approved by Marine Operation Management Oslo (WW Ocean).

Securing guideline Car, Vans, Small trucks

Car lashing: MSL 1.0 MT BL 2.0 MT

Longitudinally stowed

Weight limit below 1.5 MT

All decks:
2 + 2 lashings

Weight limit 1.5 - 2.5 MT

All decks:
2 + 2 lashings

Weight limit 2.5 - 3.5 MT

Athwartships stowed

Deck 9 and below:
2 + 2 lashings and 2 wedges
Deck 10 and above:
3 + 3 lashings and 2 wedges

Deck 9 and below:
3 + 3 lashings and 2 wedges
Deck 10 and above:
4 + 4 lashings and 2 wedges

Internal ramp stowed

All decks:
2 + 2 lashings and 2 wedges*

**) Wedges always positioned in downhill direction*

Deck 9 and below:
2 + 2 lashings and 2 wedges*
Deck 10 and above:
2 + 3 lashings and 2 wedges**

**) Wedges always positioned in downhill direction*

***) 1 extra lashing applied upwards*

Deck 9 and below:

2 + 2 lashings

Deck 10 and above:

3 + 3 lashings

Or all decks:

2 + 2 Rollash for small

trucks/Vans,

provided the lashing holes have
sufficient strength

Main deck and below*:

3 + 3 lashings and 2 wedges

Above main deck:**

4 + 4 lashings and 4 wedges

*) Hold 1, Deck 4-6 (incl. main
deck): 4 + 4 lashings and 4
wedges.

**) Hold 1, restricted weight from
Deck 10 and above: Max 3.4 MT.

Details on athwartship stow, see
CHI "[here](#)".

Main deck and below:

2 + 2 lashings and 2 wedges*

Above main deck to deck 9:

2 + 3 lashings and 2 wedges**

Deck 10 and above:

3 + 4 lashings and 2 wedges***

*) Wedges always positioned in
downhill direction

**) 1 extra lashing applied
upwards

***) 2 extra lashings applied
upwards and 1 extra lashing
downwards

Securing guideline RoRo Cargo
Rollash, MSL 2.5 MT BL 5,0 MT
**Longitudinally
stowed**

2+2 lashings

**Athwartships
stowed**

3+3 + 4 wedges (two in
each direction)

**Internal
ramp
stowed**

2+3 lashings
and 2 wedges

Weight limit 3.5-7 MT
Weight limit 7-10 MT

4+4
rollashings +
4 wedges, (2
wedges at
each end). 3+4
lashings
and 2
wedges

3+3
lashings Above main
deck should
be avoided
and can only
be allowed if
no other
options

Chain (11mm) MSL 7.5 MT BL 15 MT

Longitudinally stowed

Cargo weight/7,5 MT MSL =
number of chains each side.

Athwartships stowed

Not allowed. Athwartship loading (10-15MT) on main deck and below can only be allowed if no other options available. No steel tracks units are allowed. Cargo weight/7,5 MT MSL = number of chains each x 1.5 with 4 wedges, (2 at each end).

Internal ramp stowed

Cargo weight/7,5 MT MSL = number of chains each side + 1 extra chain lashing. Rubber mats are mandatory under steel tracked units.

**Weight
limit
above 10
MT**

Stowage on fixed ramps

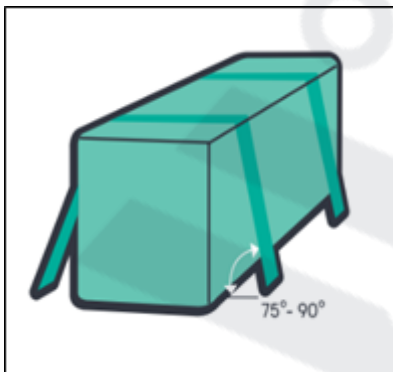
Stowage in Fixed Ramps is only allowed for cargo that is self-propelled. Self-propelled cargo without rubber wheels is to be avoided to stowed in fixed ramps. In cases of not avoidable, final stow position must be properly arranged with rubber mats, see chapter [[Steel tracked units or steel spike wheels](#)] for details.

Ramp capacity can never be exceeded.

Securing of none-self-propelled cargo below 10 mt.

Top-over Lashing Instruction

When cargo does not have any lashing points, top-over lashing (friction securing) can be used. Top-over lashing only increasing the friction so it should not be used on cargo weight above 10 MT.



When using the table for top-over lashing the angle between the lashing and horizontal surface is of great importance. The table is valid for an angle between 75° and 90°. If the angle is between 30° to 75° twice the number of lashings is needed (alternatively the table values are halved). If the angle is less than 30°, another cargo securing method should be used, such as half-loop (loop) lashing.

Top-over lashings should be placed symmetrically on the cargo.

Cargo Weight (t)	2t		4t		6t		8t		10t	
Number of Webblash	2	2	4	2	6	2	8	3	10	4
Number of Chains	2	2	2	2	3	2	4	2	5	2
Surface	Wood	Rubber	Wood	Rubber	Wood	Rubber	Wood	Rubber	Wood	Rubber

Rule of thumb for cargo above 10 MT

The total MSL values of the securing devices on each side (Port or Starboard) should be equal or exceed the weight of the unit. Basically, MSL of lashings should be considered according to determination of MSL. The total of the MSL values in tons of the securing devices on each side of a unit of cargo (port as well as starboard) should equal the weight of the unit in tons.

NOTE: The rule of thumb for cargo above 10 MT, is not valid for Top-over lashing.

The following criteria should be adhered to:

Good friction between the contact surfaces. (At least one of the surfaces should consist of rubber or wood).

Lashings working together should be of about equal length.

For units that are not rigid in form or that have a high center of gravity, the number of lashings should be increased.

Lashing should always be done to the satisfaction of the vessels Master.

Example:

Unit weight = 40MT

MSL for Chain lashings 7,5 MT

Unit Weight/MSL = $40/7,5 = 5,333 = 6$ chains on each side of the unit, a total of 12 chain lashings to be used.

GUIDELINES											
Number of chains (MSL 7,5 MT) to be used on each side (Port as well as Starboard) of the unit to deck.											
10	15	22	30	37	45	53	60	68	75	Total Weight of cargo and cargo carrier (MT)	
2	3	4	5	6	7	8	9	10	Number of chains to be used on each side (P and SB) of the unit		
75	83	90	98	105	113	120	128	135	142	Total Weight of cargo and cargo carrier (MT)	
11	12	13	14	15	16	17	18	19	Number of chains to be used on each side (P and SB) of the unit		

Portable securing devices

All cargo handling equipment supplied for handling OPERATORS cargo must be tested and have valid certificates. This includes gear supplied by stevedores, port authorities, sub-contractors, vessels, and OPERATORS.

All lashing should be done in accordance with this instruction or the manufacturer's requirements, and to the satisfaction of the Vessels Master, as the Master is ultimately responsible for the cargo during transit and the seaworthiness of the vessel.

A vessel's cargo securing manual (CSM) will always overrule this manual if stricter. Ensure that the lashing work is carefully supervised, as this is most critical from a quality and safety standpoint.

The combination chain and sling (Break load (BL) min. 15 MT) should be avoided and is only permitted if no other means of protecting the cargo from damage is available.

Before using a lashing, it must be ascertained that it is in apparent good order and condition.

Lashing equipment should not be used if deemed damaged as per guideline. (See appendix)

Lashing material should not be carried between vehicles in stow. If unavoidable, utmost care should be exercised to prevent cargo damage.

When chains/tensions bars are used to secure the surface of cargo, proper protection between the cargo and chains must be used to protect the cargo from damage. Chains are to be attached to the fixed lashing points in the decks and approved fittings in the bulkheads and overhead. Lashing equipment should not be fastened to hoistable car decks. When chain tension help devices are used (ratchet winders), other than levers, extra precaution is to be conducted, to avoid personal injury and damage to cargo and cargo carrier.

When discharging, all lashing/securing equipment should be detached and completely removed from stow. Detached securing equipment is to be stowed in the designated locations.

When stripping a loaded roll trailer/bolster etc. routines must be in place for retrieving, sorting, and counting the lashing equipment at the same time as the roll trailers/bolsters etc. are stripped by the stevedores. Any damaged equipment should be separated, counted, disposed as per local regulation, and reported as scrap. It is the OPERATORS representative/agent's responsibility to ensure compliance.

It is the vessel crew's responsibility to ensure that equipment not being used is stored in appropriate and safe location (i.e., in bins, hanging at stanchions/sides etc.) and that no lashing equipment is over stowed/blocked with cargo. However, the stevedores are responsible for not leaving any lashing equipment/bins within stow while in the process of securing the cargo.

All Ports shall conduct physical inventory control at regular intervals as per local process or when requested and update lashing equipment system with the result. During these inventories as well as during the work with the lashing material, all damaged and worn-out lashings be taken aside and reported as scrap.

It is the Local OPERATORS representative's responsibility to ensure safe storage for the equipment in their port and to protect the lashing equipment from weather and theft.

It is very important to remind all ports stevedore, vessel crew, OPERATORS Representative that for RORO decks, lashing should not be blocked by cargo which can result in lacking lashing due to this carelessness.

Fixed securing device limitations

Maximum securing load (MSL) is a term used to define the allowable load capacity for a device used to secure cargo to a ship.

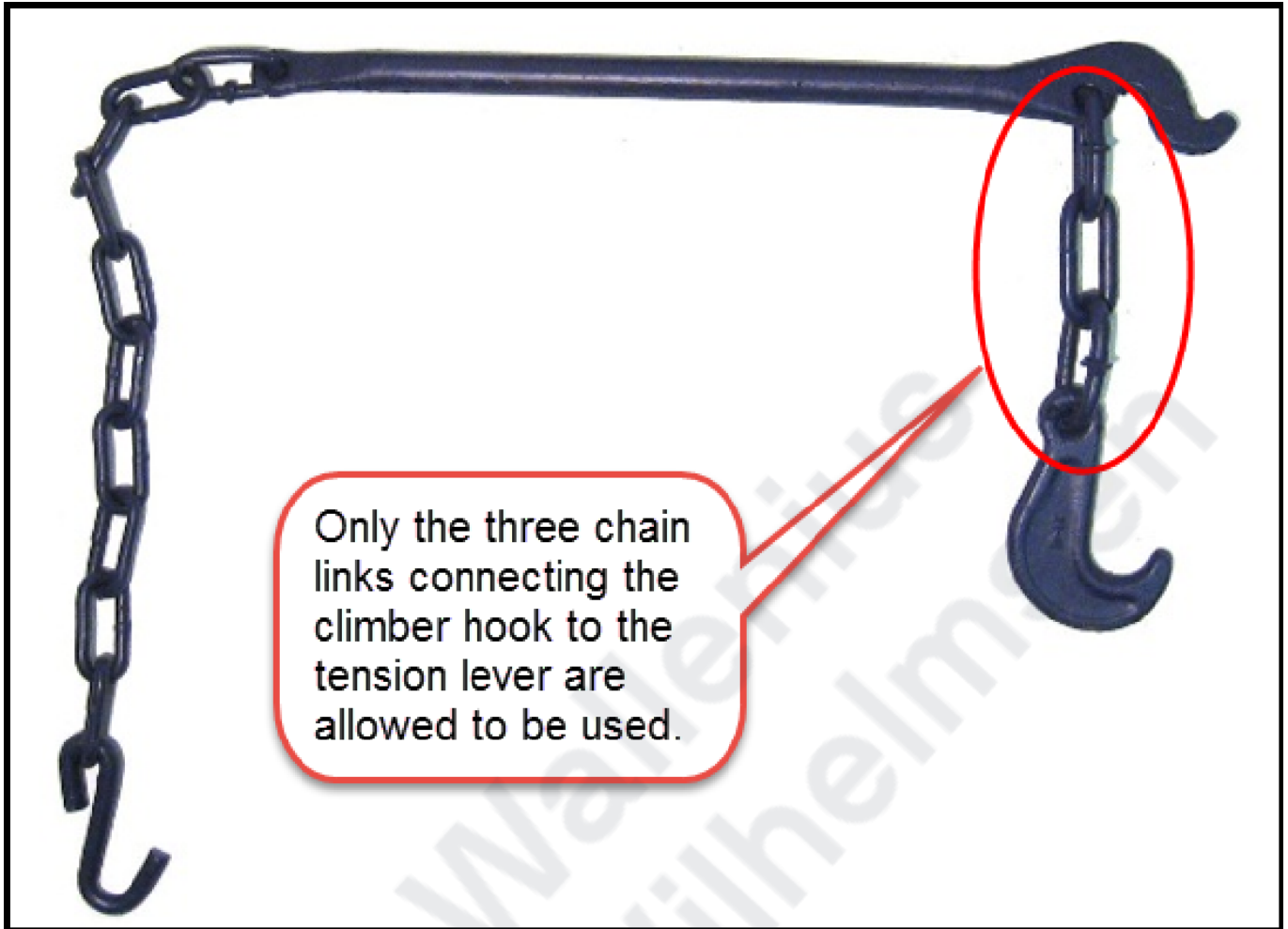
The MSL of a securing device is to be checked before applied in a lashing arrangement. Fixed lashing fittings should have a defined MSL and be certified.

However, OPERATORS can allow alternative lashing fittings to be used if proof of strength can be shown in an acceptable manner.

The load capacity of an applied securing device is limited to the MSL of the device and the fittings to which it is connected, whichever is the least.

Since the diameter of some lashing holes are not designed for OPERATORS chains, the use of the smaller (climber) hook on an extension lever is allowed for use as end securing. It is however important that only the three-chain links between the climber hook and the tension lever are used (see below).





Types of portable securing devices

Description	B.L.	Remarks
Car lashing	BL 2MT	
Roll-lash	BL 5 MT	
10 m Web-lash (WW Ocean)	BL 5 MT	
Large band (EUKOR)	BL 10 MT	
Chain with tension lever	BL 15 MT	
Car Sling	BL 2 MT	
Truck sling	BL 15 MT	
Car Wedge	For car	
Truck Wedge	For truck	

Securing of vehicles

Vehicle(s) must be secured immediately after the vehicle has been stowed.

The lashing material must be moved out from bulkheads, etc. before the units are positioned close to same.

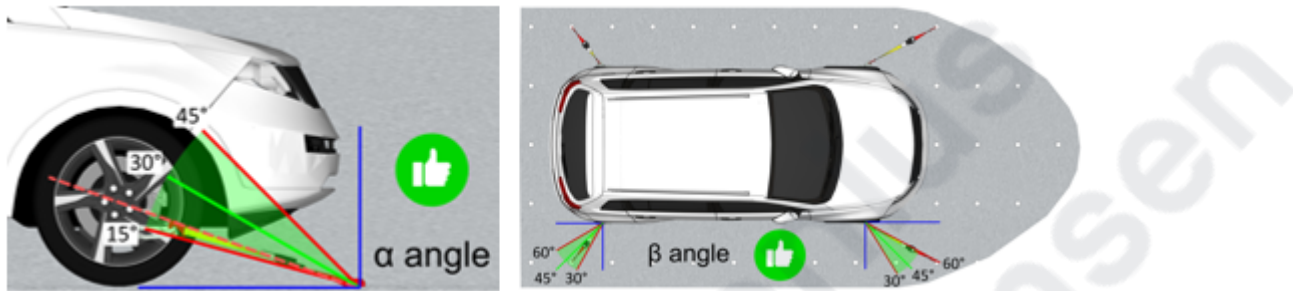
Lashing material should not be carried between vehicles in stow. If unavoidable, the outmost care must be taken to prevent the units from being scratched or dented.

Lashings should only be moved low (under bumper level) when moved between vehicles.

Lasher's or other personal must never lean on any part of the vehicle.

The affixed lashings should never rub any part of the undercarriage (spoiler, bumper, or mudguard) of the vehicle, including tires.

Lashings must only be secured on to the tie down points which have been determined as adequate and safe from a quality perspective according to each manufacturer's model/series. the α -angle should be between 15 - 45° and the β -angle between 30 - 60°.



Full calculations can be found ["here"](#)

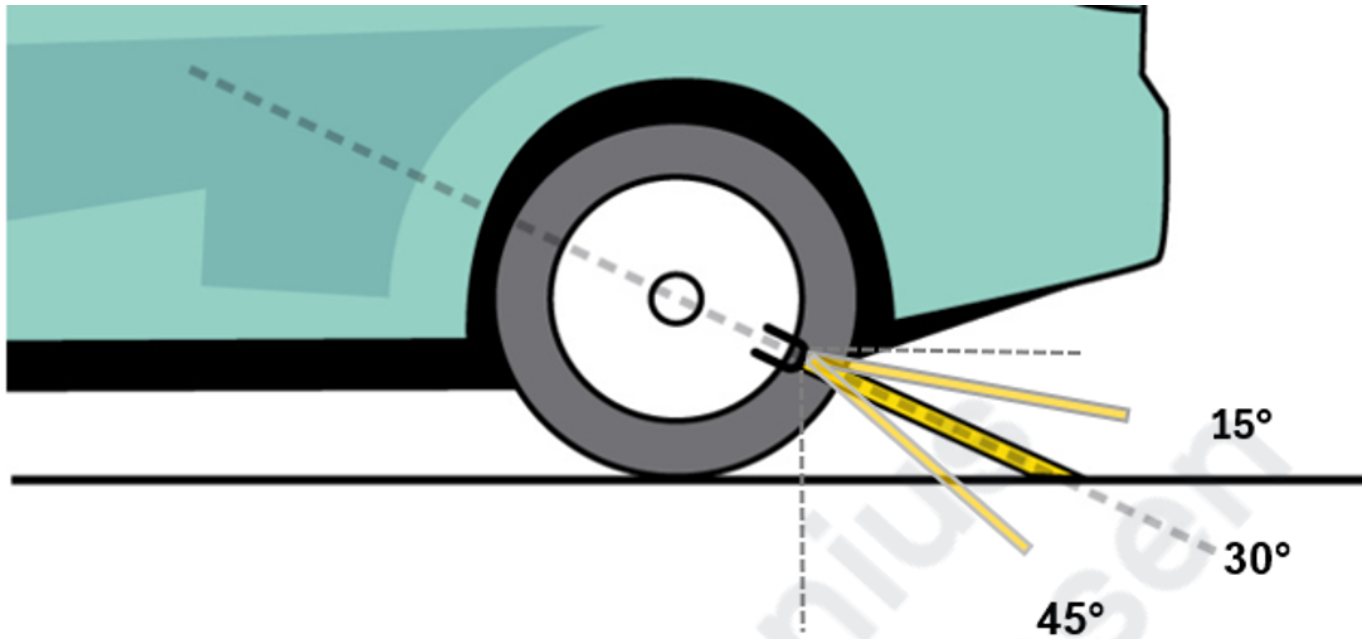
Rim lashing

If a unit is not equipped with adequate tie down points, or the lashings cannot be affixed without causing damages, web-slings should be used between the unit and the lashing.

- N.B. only one lashing per loop of web-sling.

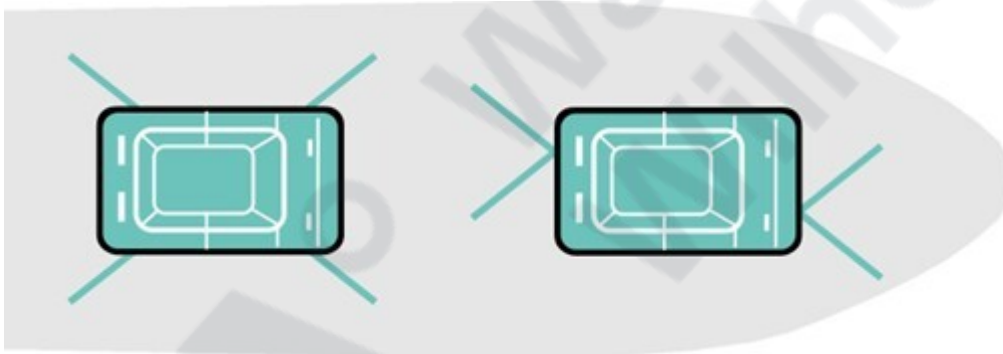
The last solution is to lash the unit to the wheels. (Only the 4 or 8 o'clock spoke to be used)
For steel rims, lash directly.

For aluminum rims, a web-sling should be used in between the lashing and rim.



Car, vans, small trucks up to 2,5 mt- longitudinal stowage

Two car lashings at each end independent of stowage location. Units on internal ramps should also have two rubber wedges placed under the appropriate wheels. (at driver's side).



Car, vans, small trucks up to 2,5 mt - athwartships stowage

For vehicles weight below 1.5 MT

Deck 9 and below:

2 + 2 lashings and 2 wedges (at driver's side)

Deck 10 and above:

3 + 3 lashings and 2 wedges (at driver's side)

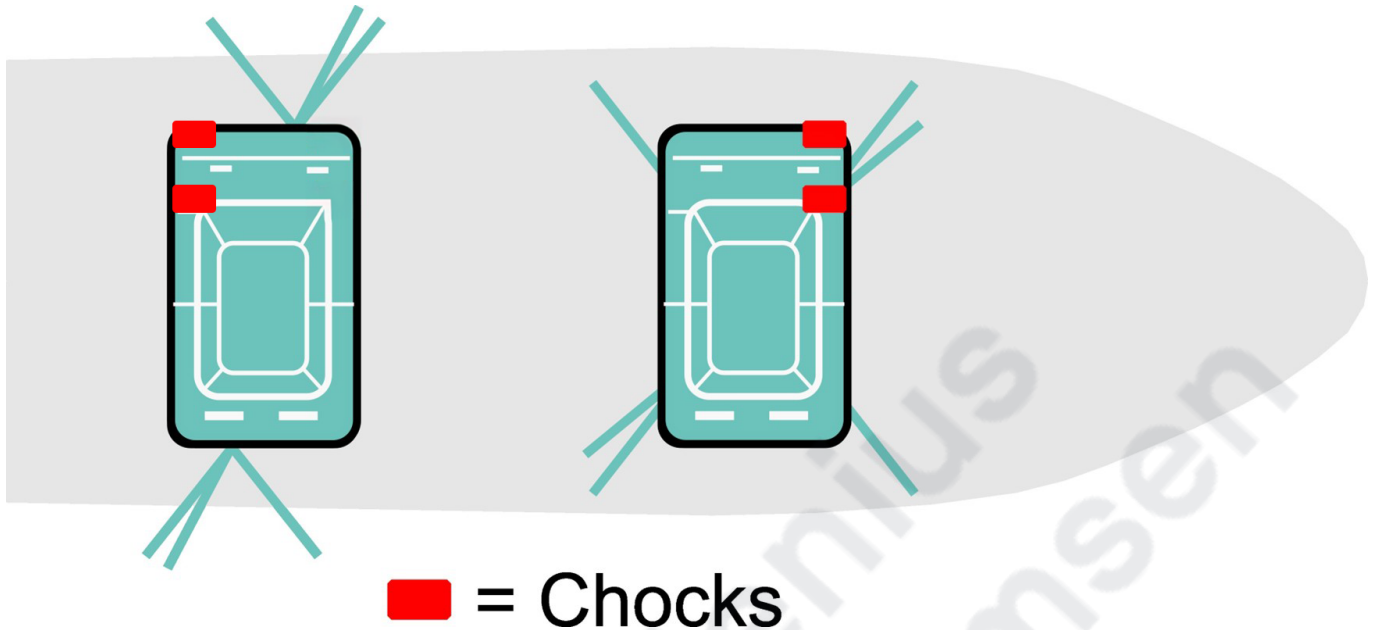
For vehicles weight between 1.5 MT - 2.5 MT

Deck 9 and below:

3 + 3 lashings and 2 wedges (at driver's side)

Deck 10 and above:

4 + 4 lashings and 2 wedges (at driver's side)



Car, vans, small trucks between 2.5 mt & 3.5 mt - longitudinal stowage

Deck 9 and below:

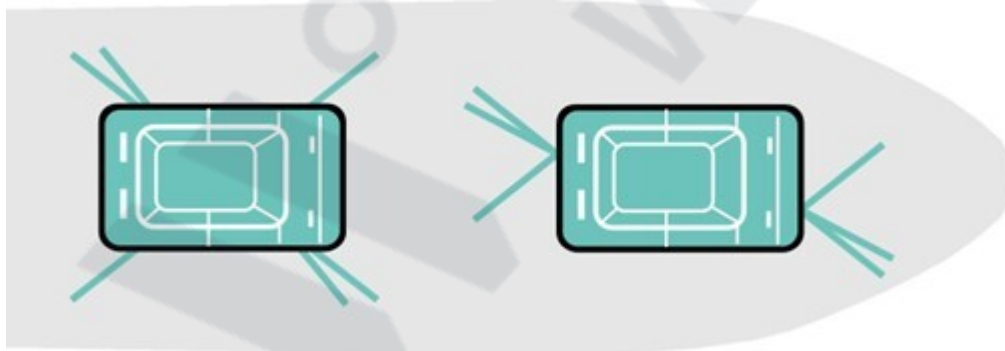
2 + 2 lashings

Deck 10 and above:

3 + 3 lashings

Or all decks:

2 + 2 Rollash for small trucks/Vans, provided the lashing holes have sufficient strength.



Car, vans, small trucks between 2.5 mt & 3.5 mt - athwartships stowage

Main deck and below*:

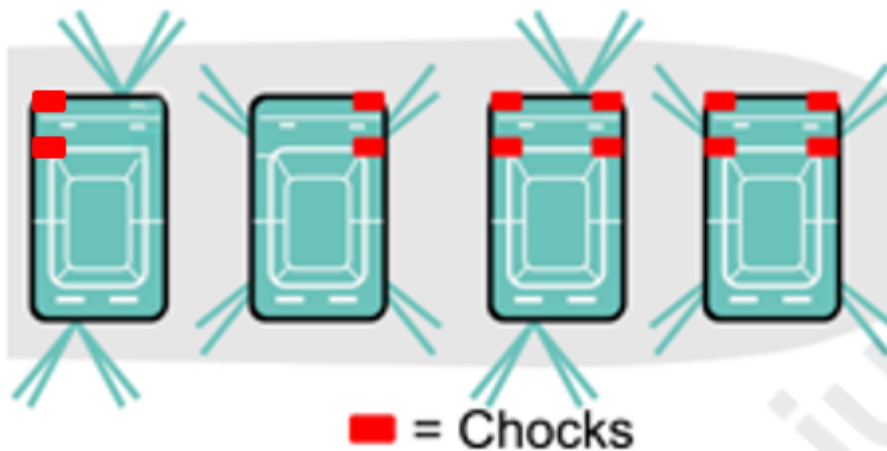
3 + 3 lashings and 2 wedges (at driver's side)

Above main deck:**

4 + 4 lashings and 4 wedges

**) Hold 1, Deck 4-6 (incl. main deck): 4 + 4 lashings and 4 wedges.*

****)** Hold 1, restricted weight from Deck 10 and above: Max 3.4 MT.



Cars stowed on internal ramps

The table below indicates the maximum permissible weight for cars loaded longitudinal in rampways that have been secured with 4 lashings, 2 per end, and at least 2 car chocks placed in downhill direction. If the limited weights in the table below are exceeded, extra car lashings must be applied according to the instructions.



Typical deck levels*:	Hold 4	Hold 3	Hold 2	Hold 1	Holds
Deck 10 and above	2.1 ton	2.1 ton	2.1 ton	2.1 ton	
Deck 7-9	2.8 ton	2.8 ton	2.8 ton	2.8 ton	
Deck 4-6					
(incl. main deck)					
Deck 1-3					

**) On large PCTC vessels, the deck levels typically correspond to the divisions described above. For the exact division of deck levels, please refer to the vessel's Cargo Securing Manual.*

	Max weight 3.5 ton: 4 lashings, 2 per end, and at least 2 car chocks placed in downhill direction
	Limited weight or extra securing: 1 extra car lashing should be applied upwards
	Limited weight or extra securing: 2 extra car lashings should be applied upwards and 1 extra car lashing should be applied downwards

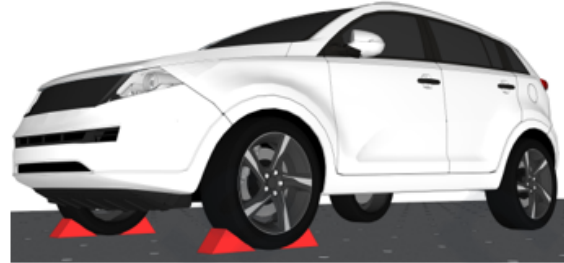
In heavy head seas, the vessel's speed must be reduced to limit excessive longitudinal and vertical forces.

Application of chocks

When used for cars, the chocks shall always be positioned on the front axle in the driving direction of the vehicle.



Car with two chocks placed around one front wheel.



Car with four chocks placed around the front wheels.

Securing and chocking of cars

When chocking cars, the chocks shall always be placed at the unbraked axle. As outlined in the drivetrain overview in section 1.6.2 below, the most critical case is a rear-wheel drive (RWD) vehicle, where both the parking brake and the transmission lock act on the rear axle. This leaves the front axle unbraked, which is where the chocks must be positioned.

For dimensioning cargo securing arrangements, chocks are required for cars stowed athwartships. When correctly placed on the unbraked axle, the chocks ensure that friction is produced at both axles and they increase the efficiency of the lashings in the securing calculations, resulting in a higher securing value.

Securing of break bulk (BB)

Securing of forestry products

OPERATORS dunnage (air) bags of suitable size and strength may be used to choke/brace off voids in stowage. This is with the understanding of and as advised by OPERATORS representative and Vessel Master.

The corner profiles (protections) should, if possible, extend over a minimum of two reels, when lashing reels.

When loading in the ramps, the aim should be to have the airbags close to bulkhead.

Securing of steel products

Wire rope coils/reels

Small wire rope coils shall be lashed with car/roll-lash as instructed by OPERATORS representative / Vessel Master. (below 2 MT)

Large wire rope reels shall be secured by the necessary use of chains, wedges and choking. (above 2 MT)

Voids between wire coil reels should be choked/braced off with timber or wedges, regardless how small the void are.

Due to the nature of this cargo, special instructions will be given voyage to voyage.

Steel pipes

Pipes shall be lashed for every 2.4 m wide stow. (see fig 3.1)

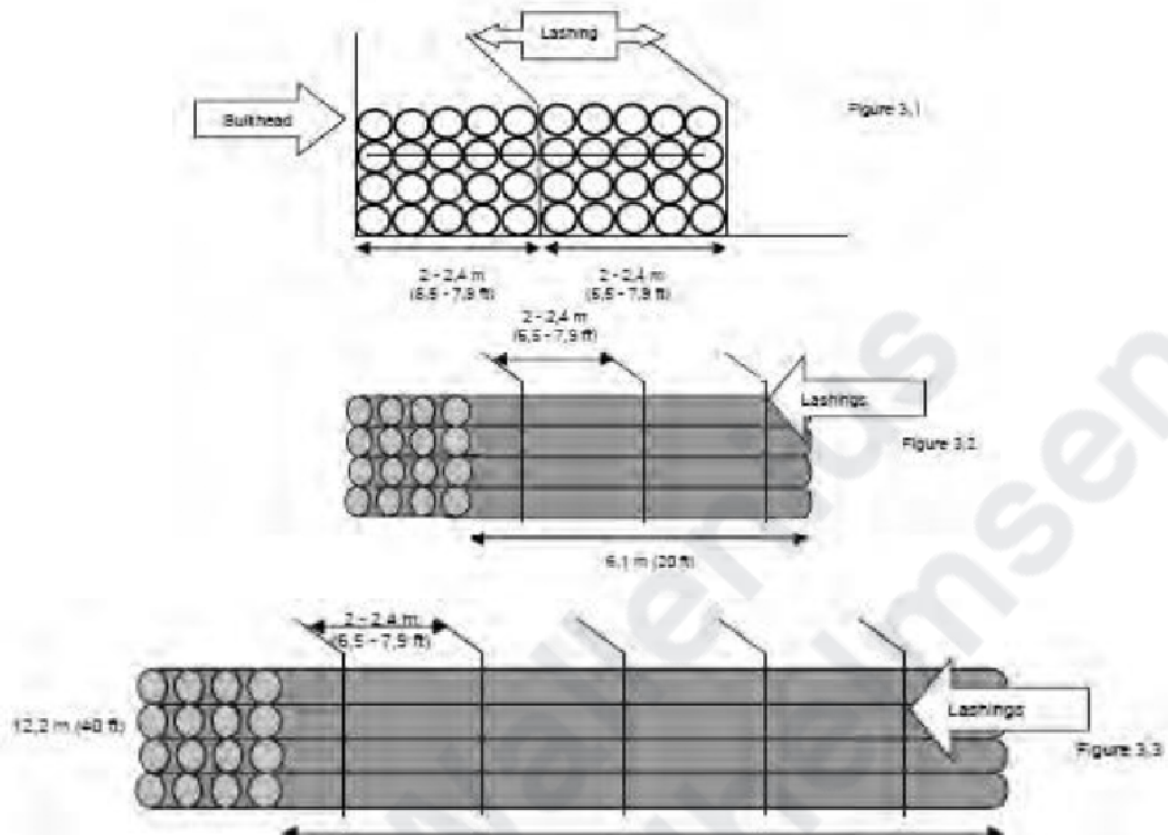
The number of chains required varies with the length and weight of the pipes. For a rule of thumb and guidelines on chains per ton, see table in "[Securing guideline](#)"

For pipes of 6.1m or less, three vertical lashings shall be stretched for every 2.4 m wide stow. (see fig 3.2)

For pipes of 6.1 to 12.2 m or less, a minimum of five vertical lashings shall be placed for every 2.4 m wide stow. (see fig 3.3)

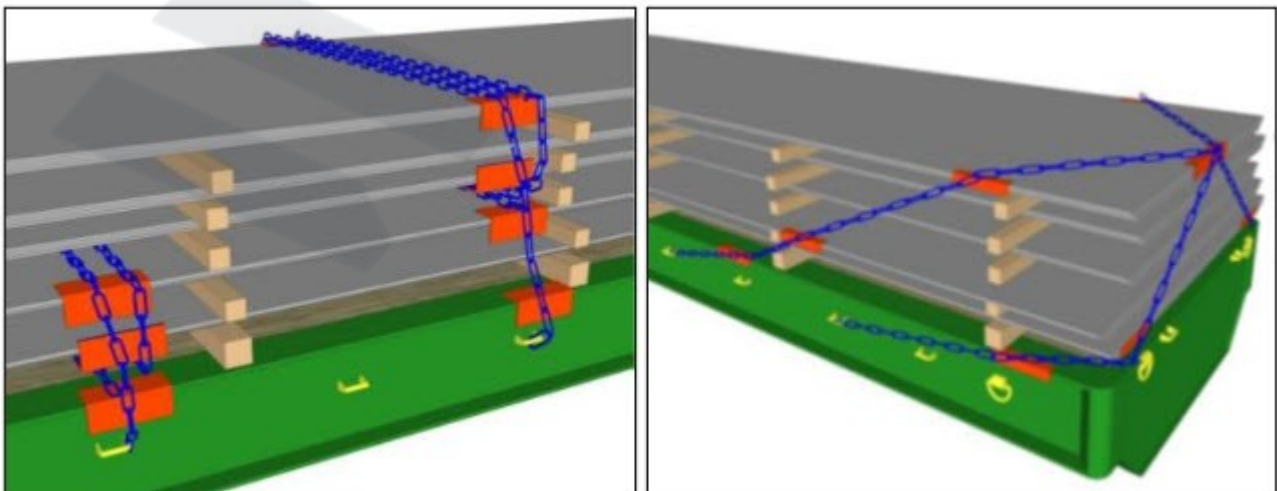
Chains should be fastened in overhead deck or bulkhead and tightened as much as possible.

Chains shall be as vertical as possible to prevent cargo from shifting underneath the lashings during the vessel's movement. Lashing shall not be attached to the vessel's hoistable car decks.



Securing of steel plates

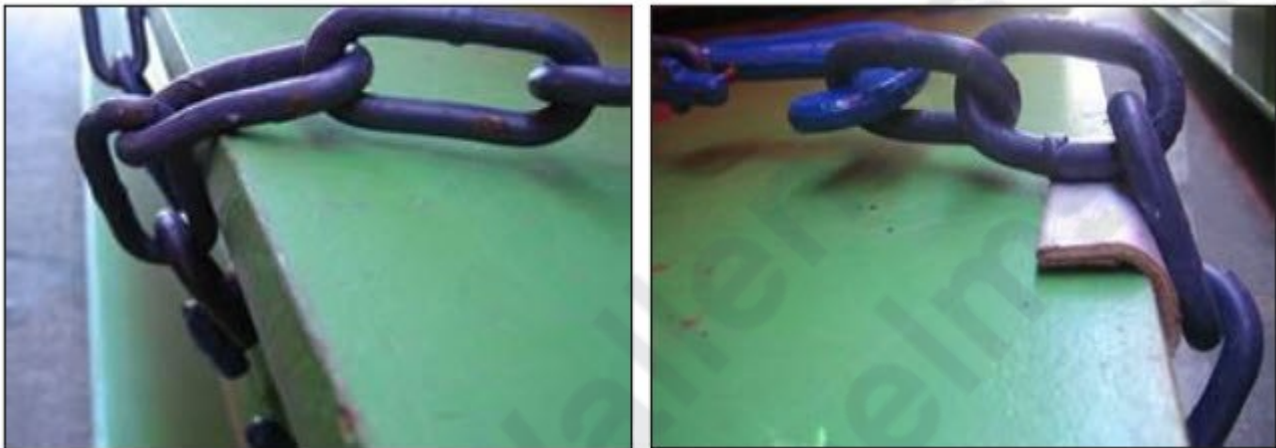
Stacks of steel plates on roll trailers or flat racks shall be secured with **loop lashings** to prevent transverse movement and **spring lashings** to prevent longitudinal movement. The loop lashings shall be applied at several different levels.



1. Example of loop lashings in the transverse direction. 2. Example of spring lashing in the longitudinal direction.

The equipment used should be chain lashings with breaking strength MBL minimum 15 tons and MSL minimum 7.5 tons. Web lashings with similar strength may also be used. If other equipment is used, for example web lashings with MSL 2.5 ton, the number of lashings shall be doubled.

Corner protectors should be used between the lashings and the cargo in order to prevent the edges of the steel plates from being damaged by the chain lashings as well as bending of chain links. Either hard plastic corner protectors or rubber mats can be used.



Chain links may bend over sharp edges. With corner protections this problem is significantly reduced

All lashings shall be placed so that it is possible to retighten them if needed during the voyage. This can mean that two tensioners need to be used on each half loop lashing, one at each end.

Securing in the transverse direction

The following principles should be applied when securing in the transverse direction:

- When the stow of cargo consists of multiple layers of groups of steel plates, pairs of loop lashings have to be applied at least at two different levels.

Several layers of plates can be loop-lashed together. The rule-of-thumb is that half of the layers are loop-lashed together. For example, if there are eight layers of steel plates, four of them are loop-lashed together in the bottom and four in the top. If the number of layers is uneven, the bigger amount is to be secured by the bottom loop-lashings.

The number of loop lashings is to be determined based on the weight of the layers of cargo they encircle as well as the weight of any layers stowed on top of it, see dimensioning tables below.

WEB LASHING - MSL 2.5 TON

Friction factor Secured cargo weight for each loop lashing pair (MSL 2.5 ton)

$\mu = 0.3$ 7.5 ton

WEB LASHING - MSL 5.0 TON

Friction factor Secured cargo weight for each loop lashing pair (MSL 5.0 ton)

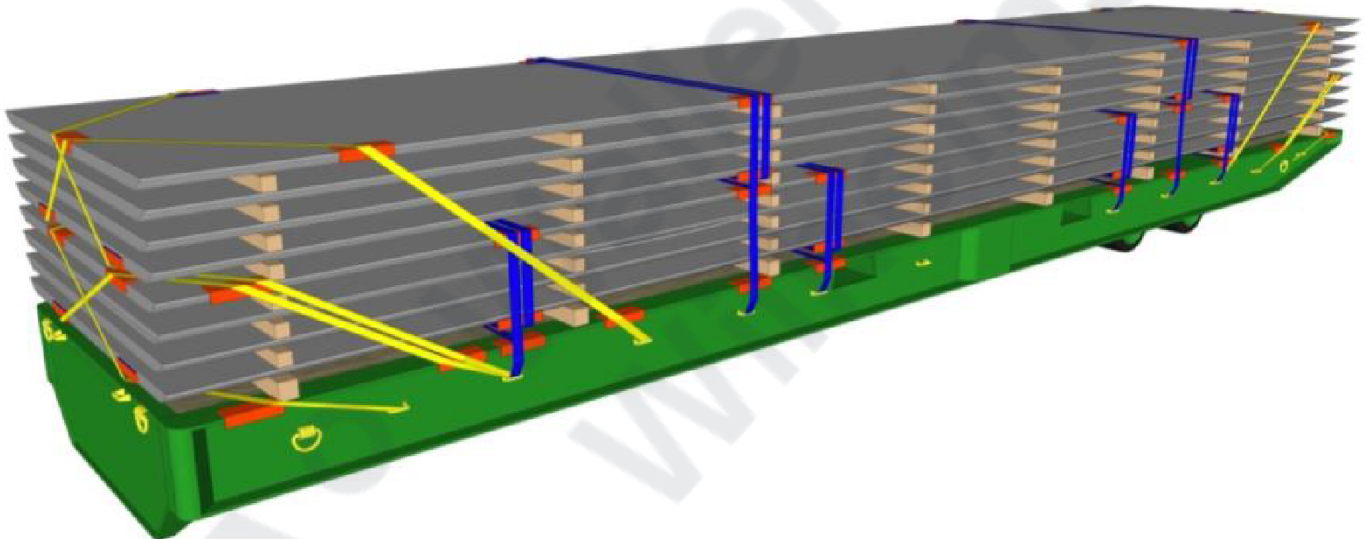
$\mu = 0.3$ 15 ton

CHAIN LASHING - MSL 7.5 TON

Friction factor Secured cargo weight for each loop lashing pair (MSL 7.5 ton)

$\mu = 0.3$ 22.5 ton

4. In case groups are loaded in several sections after each other in the longitudinal direction, each section shall be secured with at least 2 pairs of loop lashings.



Example of cargo in multiple layers. Four of the loops lashing pairs encircle the four bottom layers and two pairs of half loop lashings encircle the four top layers

Securing in the longitudinal direction

The following principles should be applied when securing in the longitudinal direction:

Spring lashings are to be used to secure the plates in the longitudinal direction. The spring lashings are applied in pairs, with the two lashings crossing each other. In case it is not possible to apply the spring lashings so that they are in direct contact with all layers, the primary focus should be to secure the top layers. In any case, cargo representing at least 50% of the total weight should be in direct contact by a spring lashing in each longitudinal direction. The number of spring lashings in each direction is to be determined based on the dimensioning

tables below.

Chain lashing - MSL 7.5 Ton**Friction factor Secured cargo weight for each pair of spring lashings (MSL 7.5 ton)**

$\mu = 0.3$ 102 ton

Web lashing - MSL 5.0 Ton**Friction factor Secured cargo weight for each pair of spring lashings (MSL 5.0 ton)**

$\mu = 0.3$ 68 ton

Web lashing - MSL 2.5 Ton**Friction factor Secured cargo weight for each pair of spring lashings (MSL 2.5 ton)**

$\mu = 0.3$ 34 ton

Calculation example

Steel plates in eight layers are loaded on a roll trailer. Each layer has a weight of 10 ton meaning that the total weight is 80 ton. Wooden dunnage is used between each layer.

Chain lashings with MSL 7.5 ton are used for the securing arrangement consisting of loop lashings for securing of the steel plates in transverse direction and spring lashings in longitudinal direction.

TRANSVERSE DIRECTION:

According to the rule-of-thumb, four of the layers are loop-lashed together in the bottom and four in the top. The number of loop lashings is to be determined based on the weight of the

layers of cargo they encircle as well as the weight of any layers stowed on top of it. This means the following:

Bottom four layers:

Four pairs of loop lashings - $4 \times 22.5 \text{ ton} = 90 \text{ ton} > 80 \text{ ton}$ (Secured for 100% of weight)

Top four layers:

Two pairs of loop lashings - $2 \times 22.5 \text{ ton} = 45 \text{ ton} > 40 \text{ ton}$ (Secured for 50% of weight)

In total six pairs of loop lashings are used to secure the steel plates in transverse direction.

LONGITUDINAL DIRECTION:

The number of spring lashings used for securing the steel plates in longitudinal direction is calculated as follows:

One pair of spring lashings - $1 \times 102 \text{ ton} = 102 \text{ ton} > 80 \text{ ton}$

In total two pairs of spring lashings, one per end, are used to secure the steel plates.

Securing of rubber product

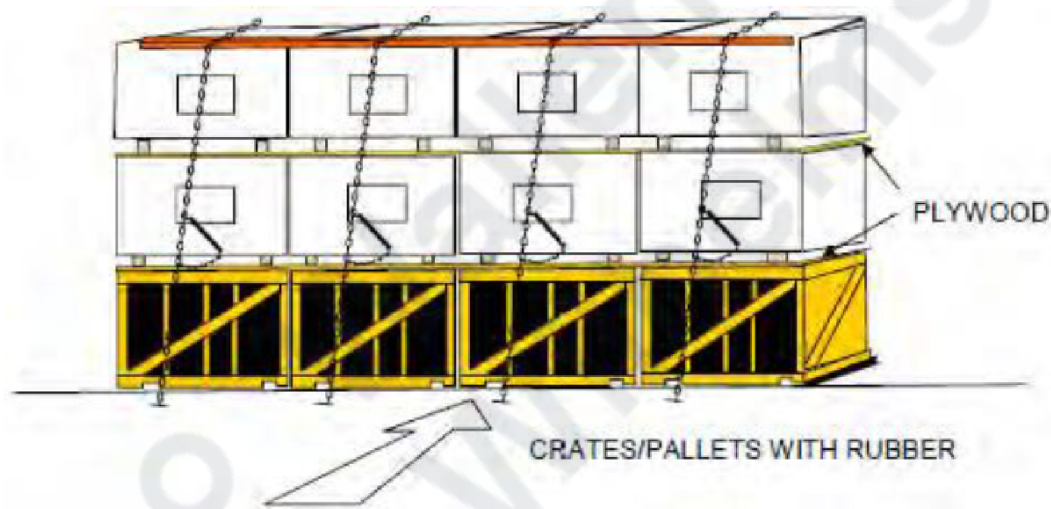
Choking is required for voids exceeding 60cm in rubber stow.

Choking is also required for the third high pallet loaded in front of ventilator outlets.

When securing by lashing chains after completion of stow it is important that every vertical tier is secured properly. This will be best achieved by the use of corner protectors covering more than one pallet.

S/W rubber shall be protected by corner protectors or similar to avoid chafing by the lashing chain.

Crated rubber can be secured by chain lashing and with corner protectors to protect the cargo. Damage to rubber pallets should be reported to Vessel Master and the OPERATORS representative.



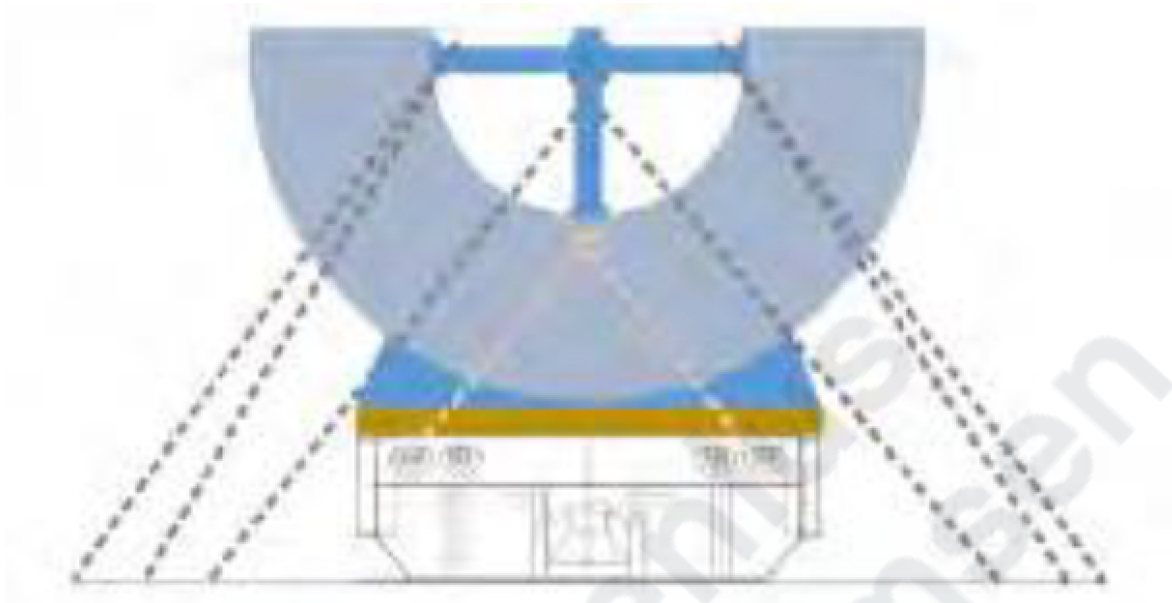
Securing of other breakbulk products

Cable reels

When stowed on a cargo carrier, trailer jacks are required to stabilize and spread the weight, if necessary.

Dunnage on the cargo carrier must be of the highest quality to be able to withstand any imprinting from the cradle construction.

All cable reel 's between 15 MT and 30 MT that are stowed athwartships require a minimum of 4 chains on each side to prevent tipping (rolling) of the unit, plus an additional 2+2 chains attached to the center of the cable reel.



Packed liquid cargo

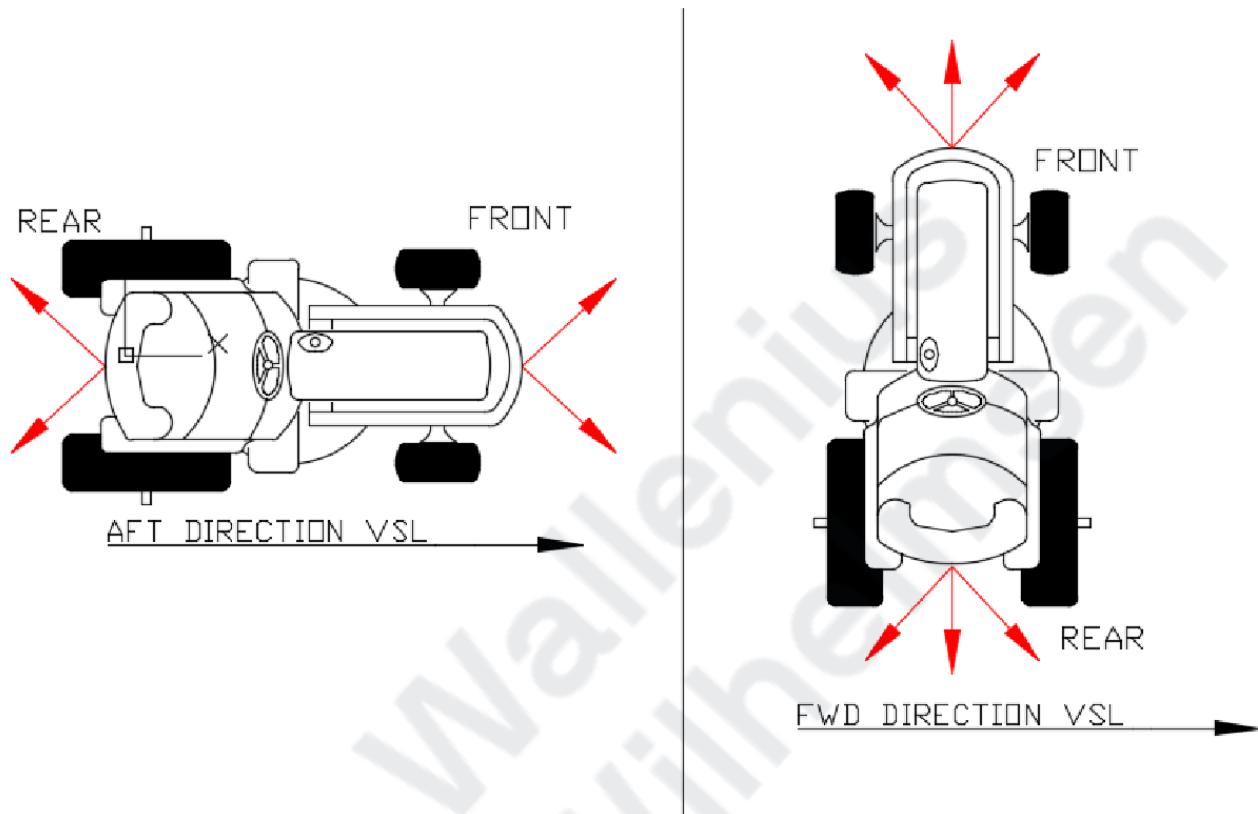


Each layer/tier to be individually secured/lashed
Web lashings (no chains) and corner protections to be used
Each pallet of fluid containers to be strapped and or shrink wrapped together

Securing of high and heavy (H&H)

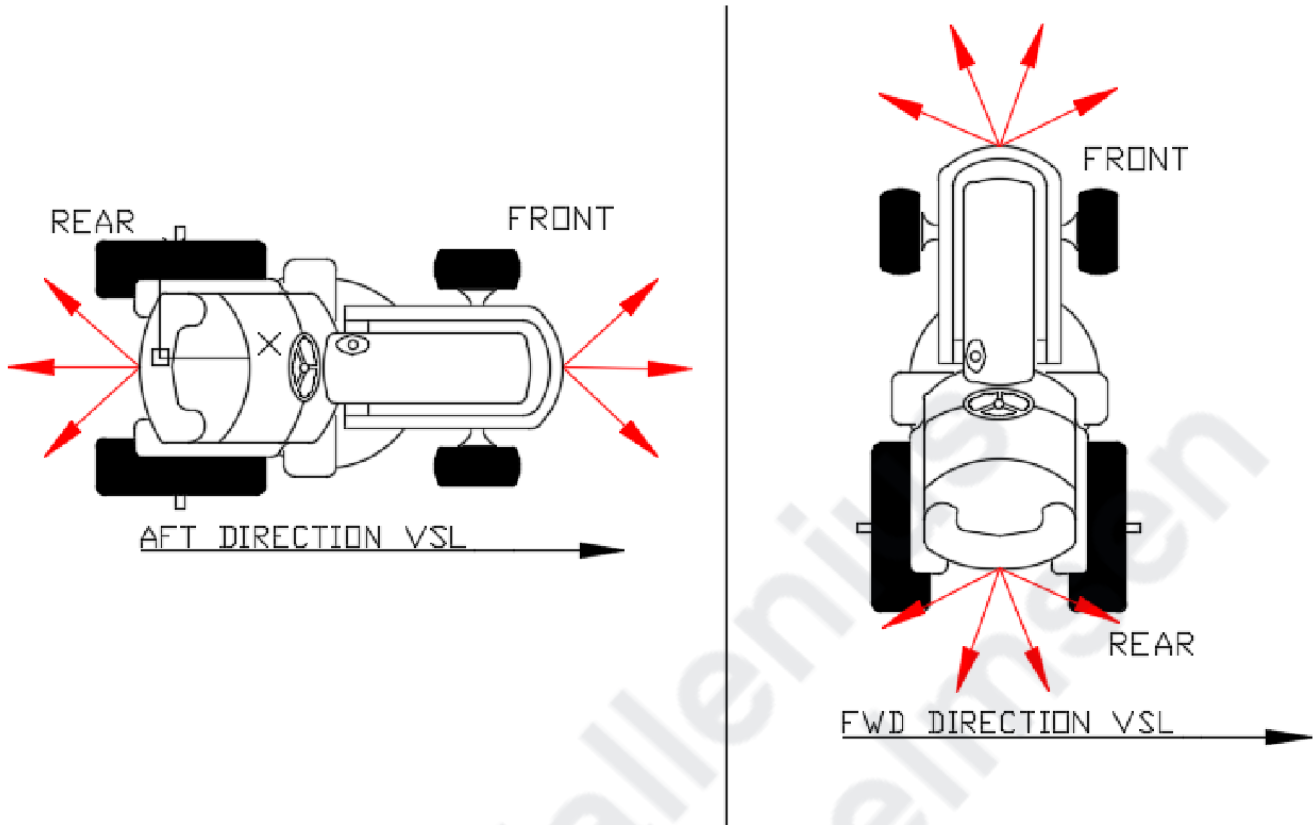
Roro cargo between 3 mt to 7 mt:

Two rollash at each end, when stowed longitudinally, Three rollash at each end, when stowed athwartships, and 4 rubber wedges placed two in each direction.



Roro cargo between 7.0 mt & 10 mt:

Three rollash at each end, when stowed longitudinally, Four rollash at each end, when stowed athwartships, and 4 rubber wedges placed two in each direction.



Roro cargo above 10 mt:

Shall to all extents possible be lashed directly with chains. The combination of chain and sling (BL min. 15 MT) should be avoided and used only if no other means exists to protect the cargo from damage. Chain lashings attached to painted surfaces require protection.

The chains must always be attached symmetrical around the unit and attached in approved lashing points.

Number of chains per lashing point need to correspond to the strength of the lashing point.

Units above 10 MT are NOT allowed to be stowed athwartships.

EXCEPTION:

Athwartship loading (10–15MT) on main deck and below can only be allowed if no other options available.

No steel tracks units are allowed.

Cargo weight/7,5 MT MSL = number of chains each x 1.5 with 4 wedges, (2 at each end).

Busses, with no lashing points, low clearance and defined as H&H (max. 15 MT) may be lashed with rollash to prevent damage. Additional wedges and lashings according to rule of thumb should be used, as required.

See also chapter "[Securing guideline](#)"

NOTE: WOOD WHEEL UNITS TO BE STOWED ON MAIN DECK.

Securing of bolsters and roll trailers

Bolsters

Bolsters shall be placed on twist-locks on vessel's decks unless otherwise instructed. If vessel's deck does not have twist lock holes; chain lashing should be used.

If the nature of the cargo is such that bolsters cannot fit on twist-locks, it is permissible to place bolsters on suitable anti-skid material rubber mats provided for that purpose.

Bolsters resting on at least two twist-locks do not require extra lashings unless otherwise instructed.

All bolsters placed on anti-skid material or wood rubber mats shall be lashed as advised by Vessel Master / OPERATORS representative.

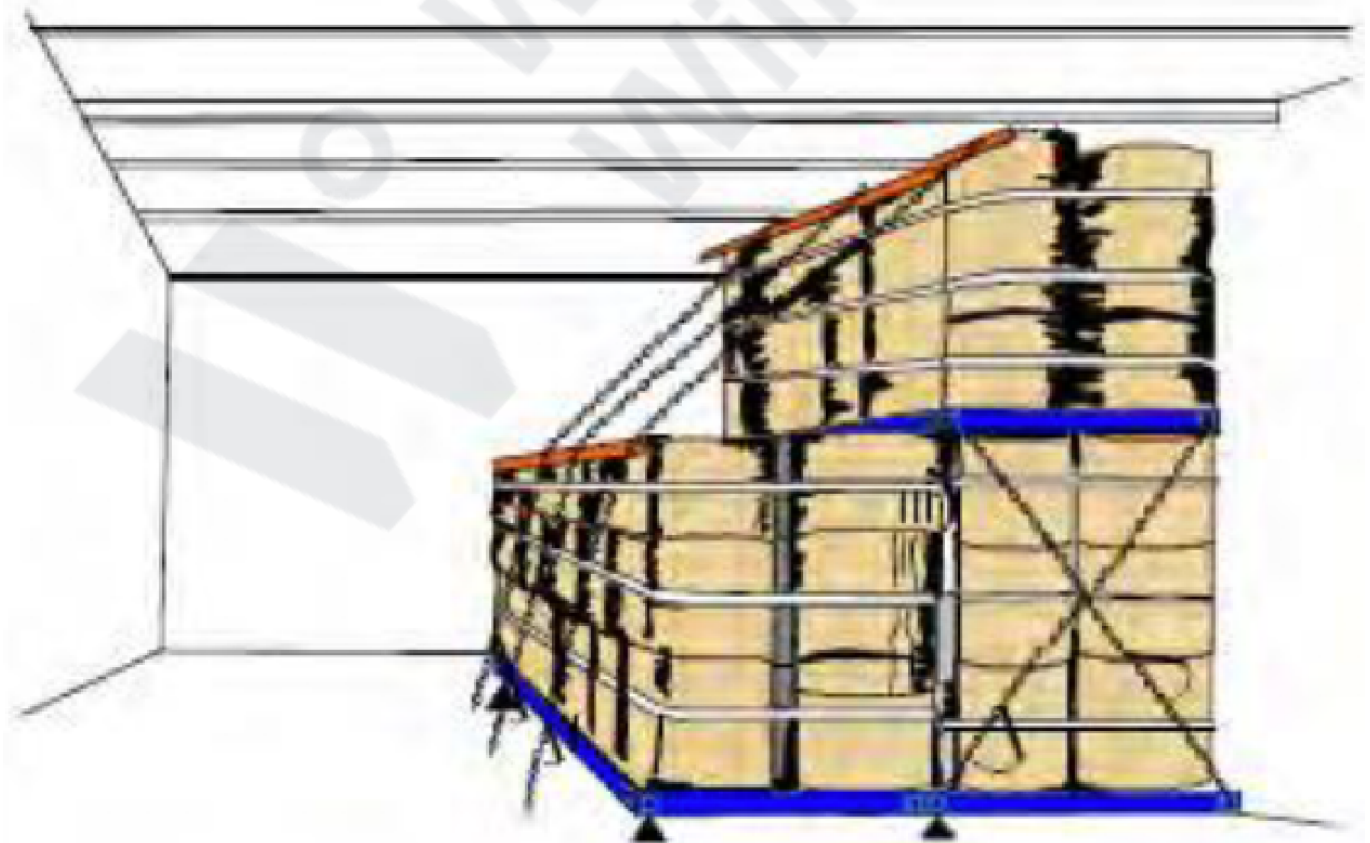
Chain hooks shall be affixed to bolster's corner castings whenever possible.

The angle of chains shall be such that the bolster is well secured in all directions.

Unless one of the unit's rests on twist locks securing bolster to bolster should be avoided when stowed next to each other on the same level.

Bolsters stacked two high or more require extra attention when securing. Due consideration should be paid to the weight, height of cargo, etc.

If stevedore or lashing foreman is in doubt as to the lashing requirements, Vessel's Master or OPERATORS representative should be consulted.



Roll trailers

Cargo wider than a roll trailer should be supported by a vertical timber placed between the lift's support timber and the vessel's deck to prevent tipping.

Jacks/timbers shall be placed under heavy roll trailers' side rails or as instructed.

Athwart ships stowage of roll trailer is not permitted.

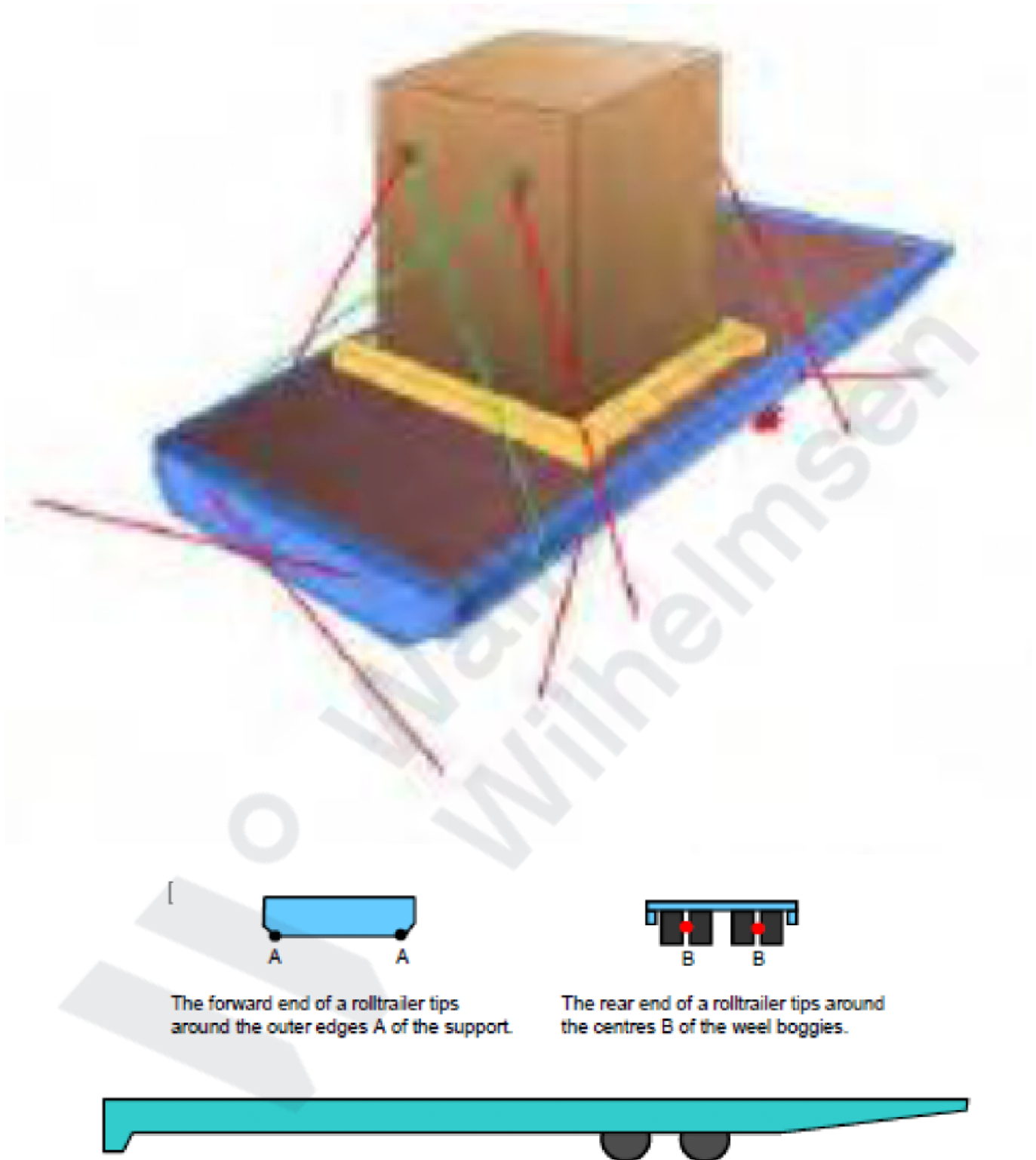
Always ensure that trailers and cargo are secured against tipping and sliding. Lashings should, as far as practical, be arranged from the cargo to deck to support the full weight.

Gooseneck end shall always rest on anti-skid material. (rubber mats or timber).

Securing of cargo to the deck above must never take place if the overhead deck or deck section is hoistable.

Securing of specialized cargo**Securing of heavy roll trailers or other cargo transport units**

For heavy project cargoes stowed on roll trailer or other cargo transport units, lashings should as far as possible be drawn from the goods to the vessel's deck and not only from the roll trailer to the vessel's deck.



Since the support width in the forward end is larger than in the wheel end, the tipping risk of the roll trailer is increasing by the amount of load placed on the wheel end of the unit.

To investigate if there is a risk of tipping of a unit, the vertical distance from the tipping point to the Centre of Gravity (CoG), H_{tp} must be compared to the horizontal distance from the tipping point to

CoG, Btp.

There is a risk of transverse tipping on main deck or below on board the OPERATORS vessels if:

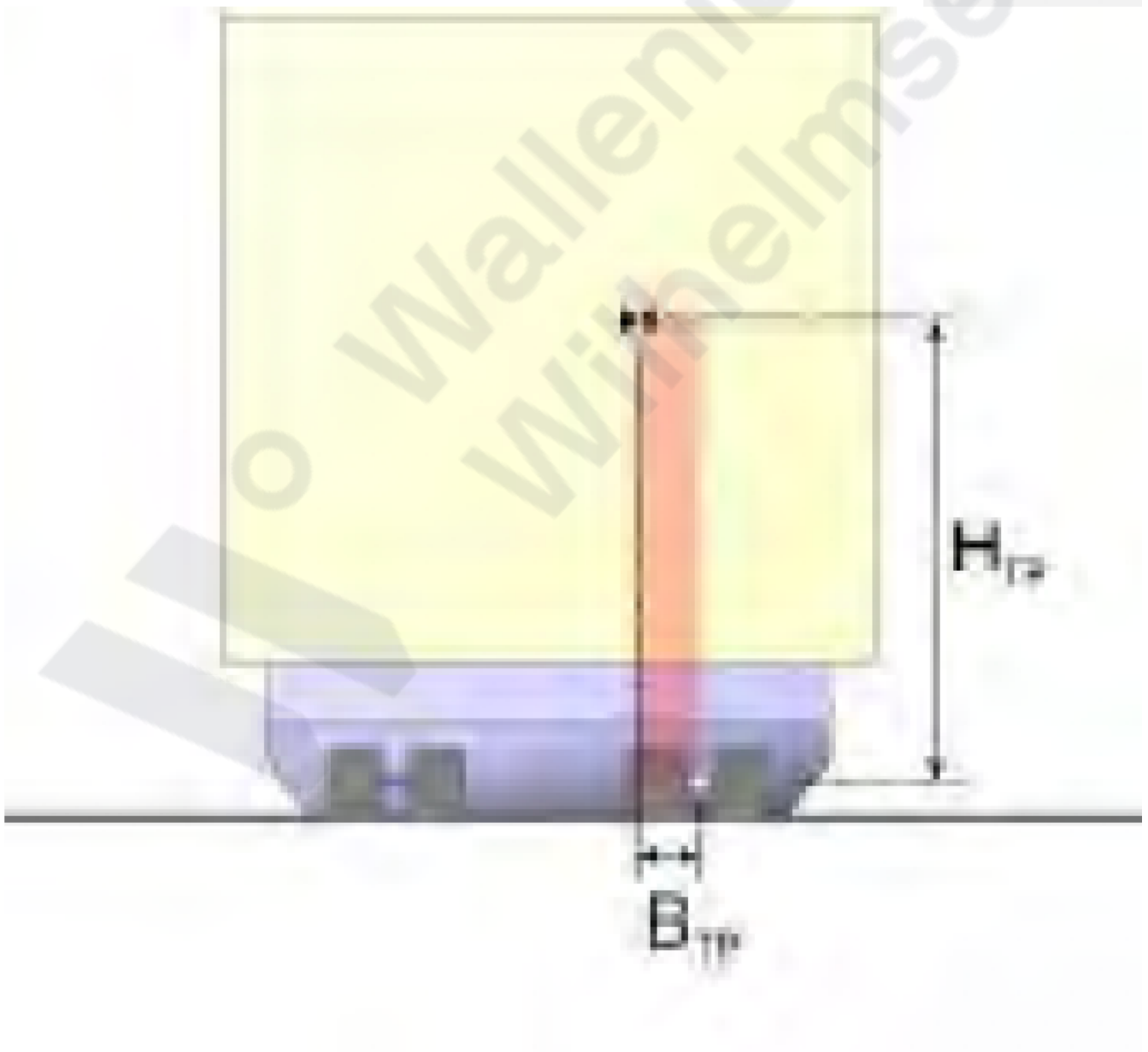
$HTP/BTP \geq 1.5$

HTP: Height above deck transversal position.

BTP: Bottom transversal position.

This is valid for transverse accelerations below 6,65 m/ s² (0,68 g).

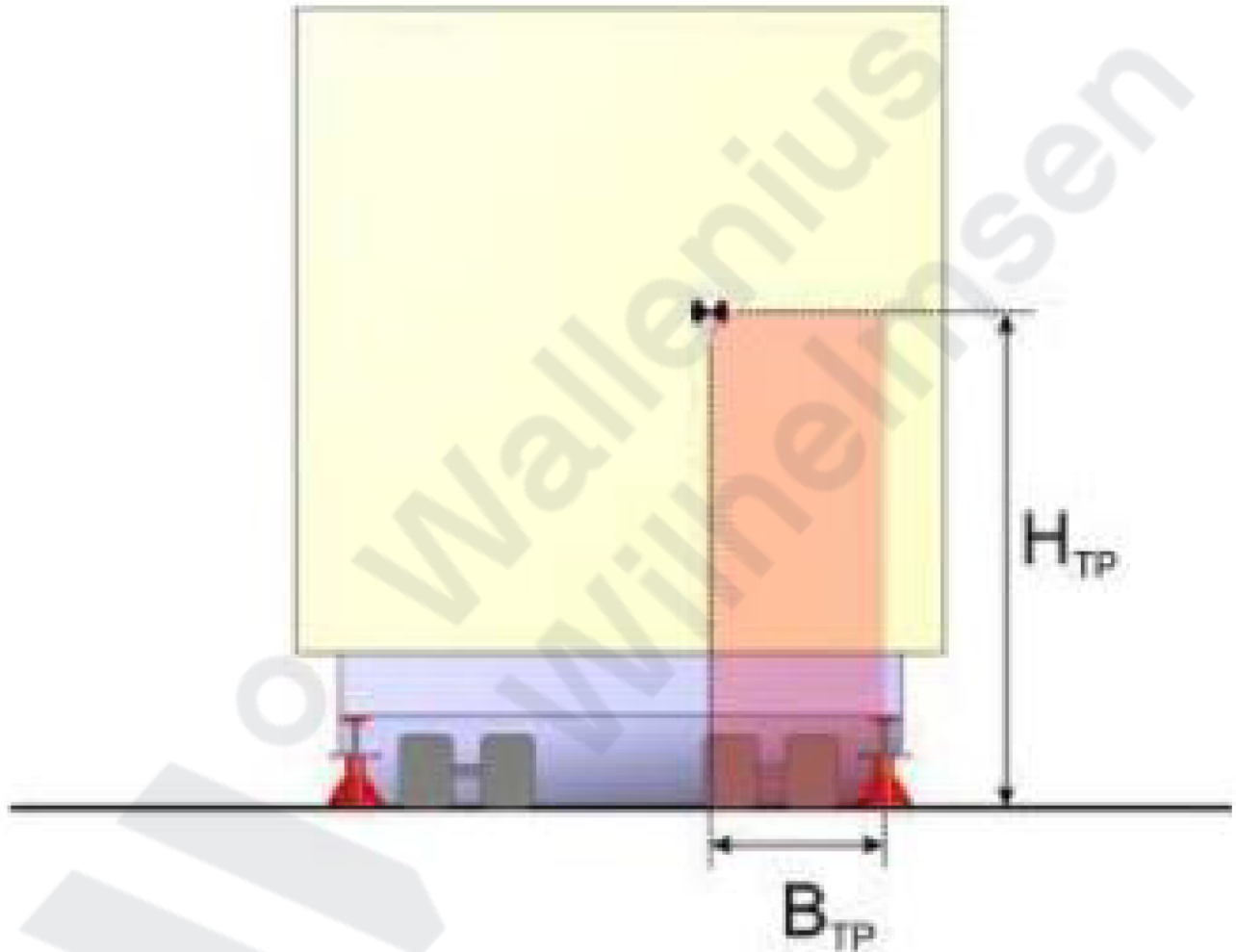
When there is a risk of tipping the number of lashings preventing tipping must be increased.
Alternatively, supporting jacks or timber can be used



By using jacks, the tipping point is changed and thereby the relation (H_{TP}/B_{TP}) is reduced.

On roll trailer the supporting jacks or timber should be placed in the wheel end.

Securing points on the goods should be used as much as possible to prevent sliding and tipping of the entire unit when stowed on board the vessels.

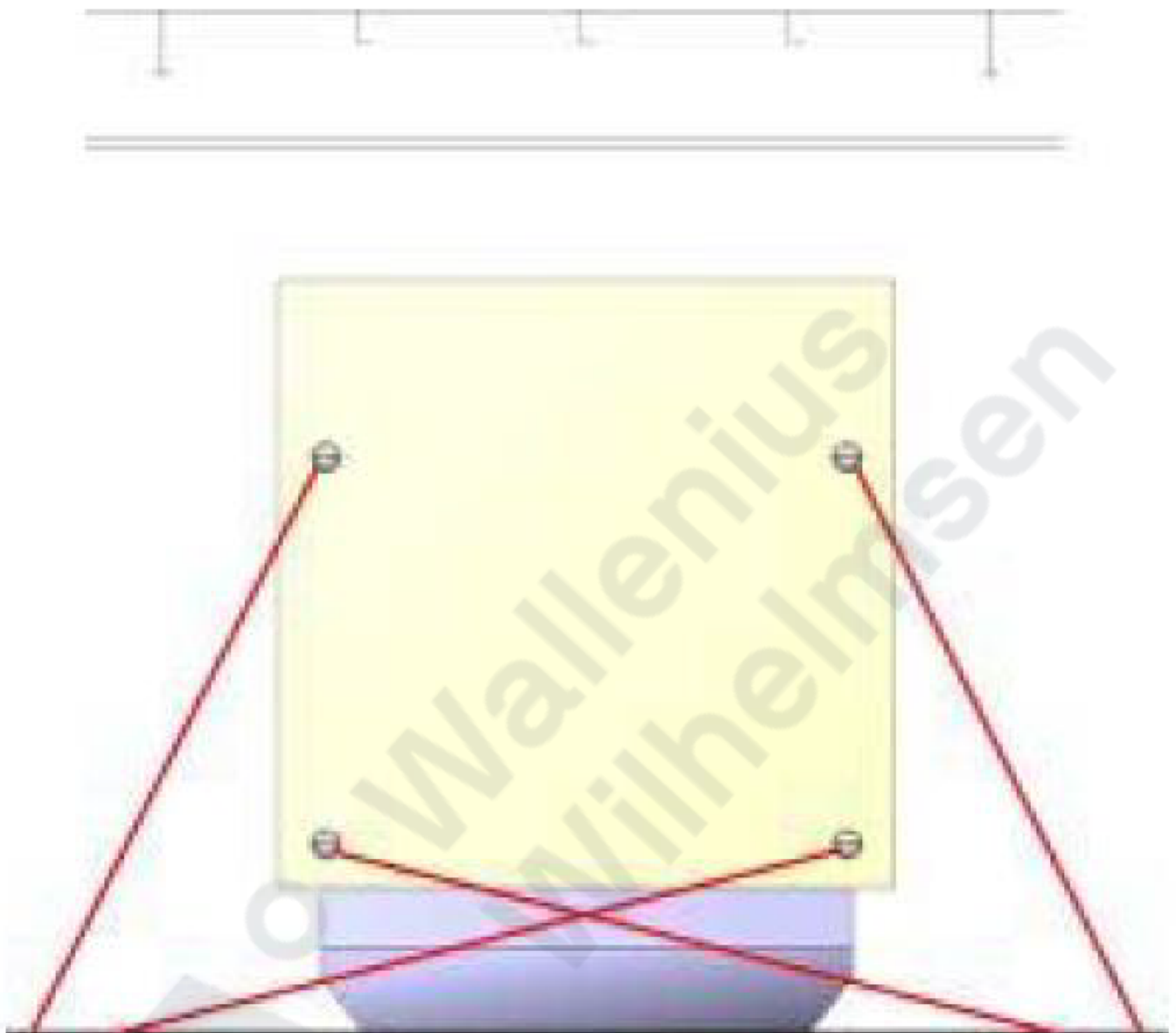


The arrangement shown in this sketch is efficient for preventing both transverse sliding and tipping.

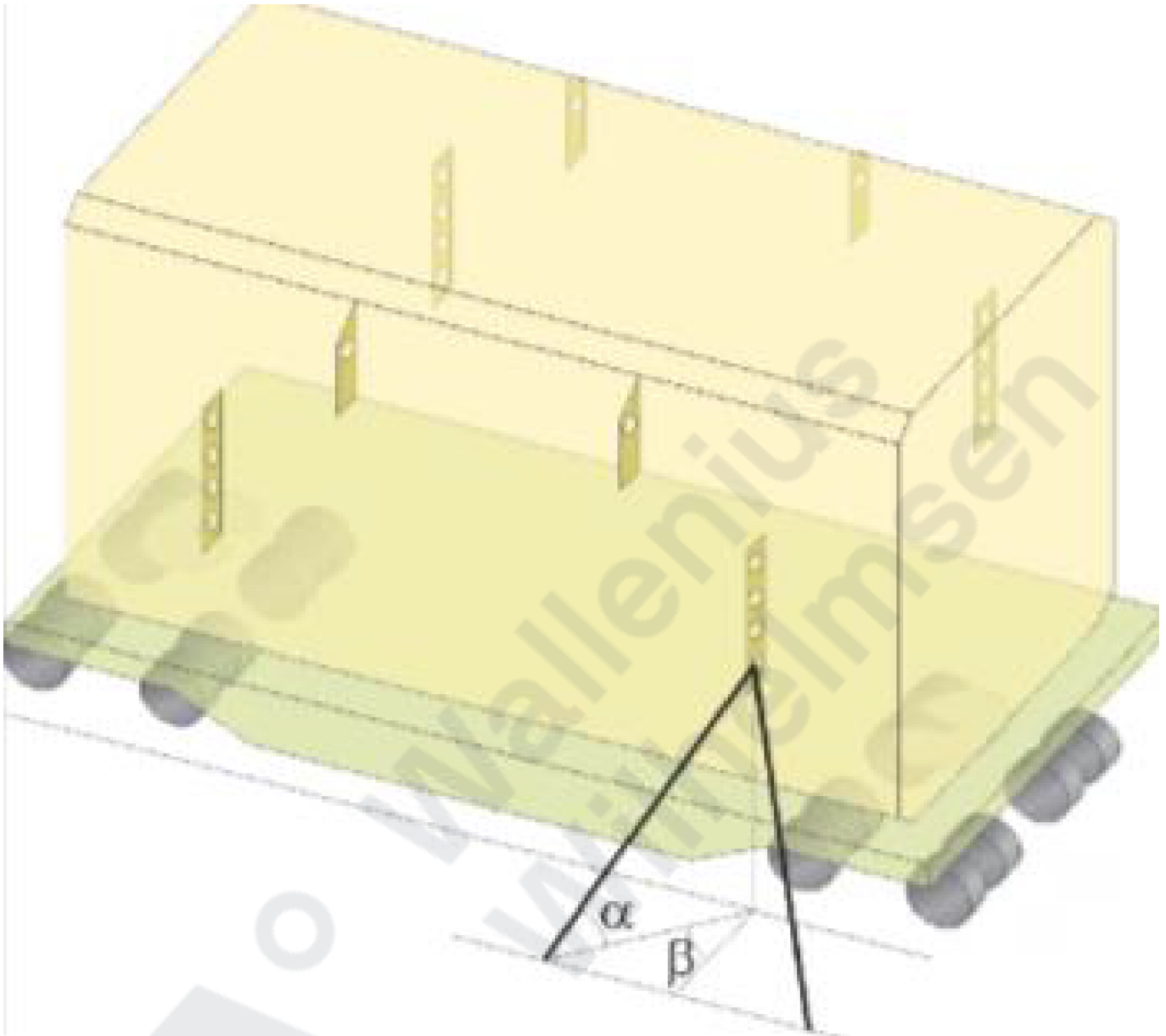
The best effect of lashings to prevent tipping is obtained by a lashing drawn in a straight line towards the largest lever arm to the tipping point.

In reality, it is seldom possible to place the lashing in this direction.

If, owing to circumstances, lashings can be set at large vertical angles only, sliding must be prevented by timber shoring, welded fittings, or other appropriate means.



Securing of samson trailer



Lashing angles

$a_{min} = 30^\circ$ $a_{max} = 60^\circ$

$b_{min} = 30^\circ$ $b_{max} = 60^\circ$

Table (2)

The **"rule of thumb"** should be used when determining the number of chain lashings to be used on each side for securing of the SAMSON trailer and cargo. The lashings must be applied at angles within the range given in table (2). The lashings must be placed symmetrically in a fore and aft direction, with the same number of chains pointing forward and aft.

Weights over 180 tons must be calculated using Lashing calculation program.

Total weight of the unit in tons / MSL in tons for the chain lashing.

Ex. Unit weight = cargo weight + trailer weight (180 + 20 = 200 tons)

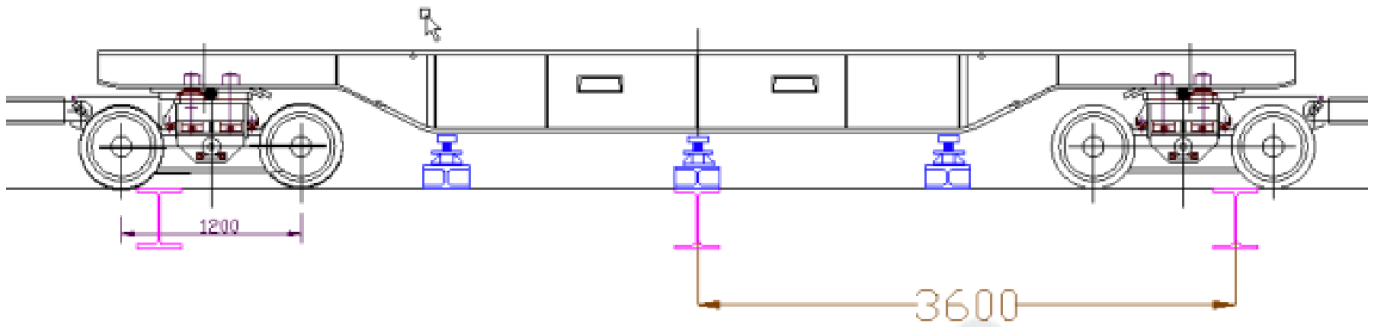
MSL chain lashing = 7.5 tons

$200/7.5 \sim 26.7 \rightarrow 27$ chain lashings on each side of the unit.

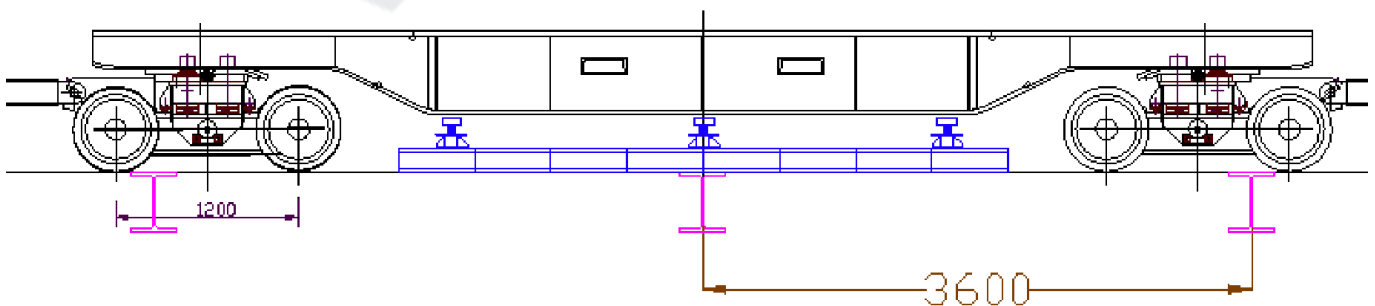
- There are no brakes on the bogies, thus stoppers must be used. Special made stoppers are available. These are painted in distinct red colour and has D-rings for chains (either connect to each other or to deck). Standard truck stoppers can be used as well.



- It's important to support the platform when unit is onboard. This can be achieved in several ways, but the correct and most efficient way is to position the support on top of vessels transversal beams as far as practical possible. Each platform-longitudinal should have support.

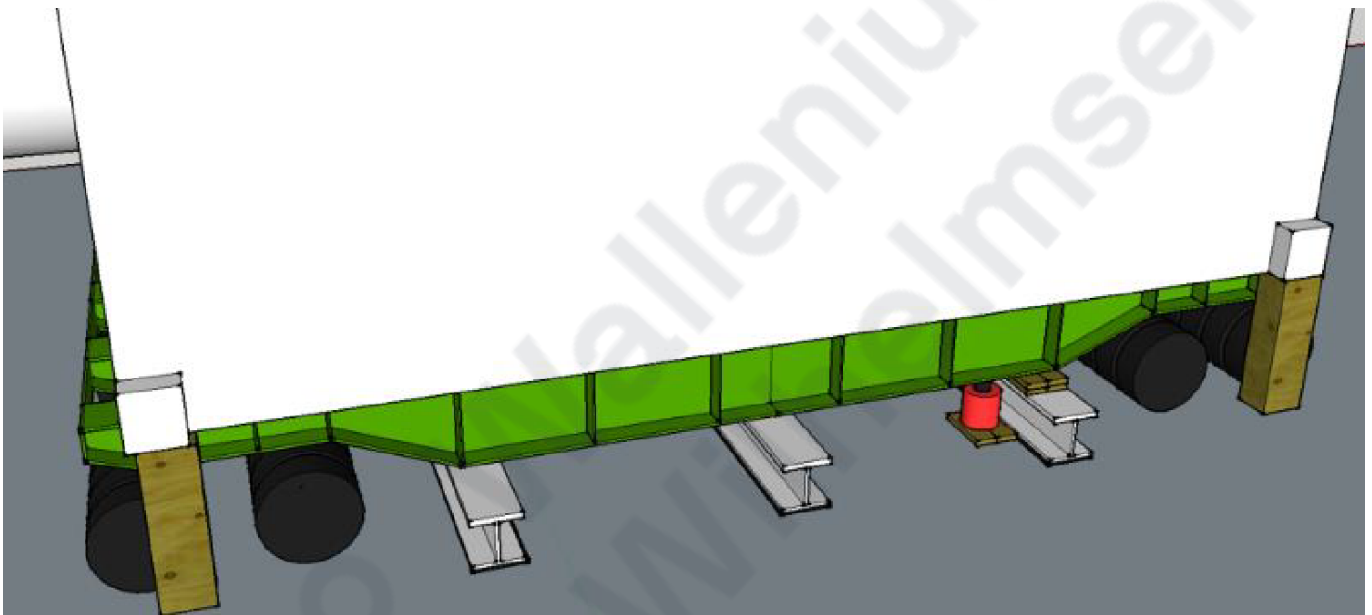


- Under certain conditions, supporting beams can be placed longitudinal. This can only be approved by the Technical department of the respective carrier (OPERATORS).





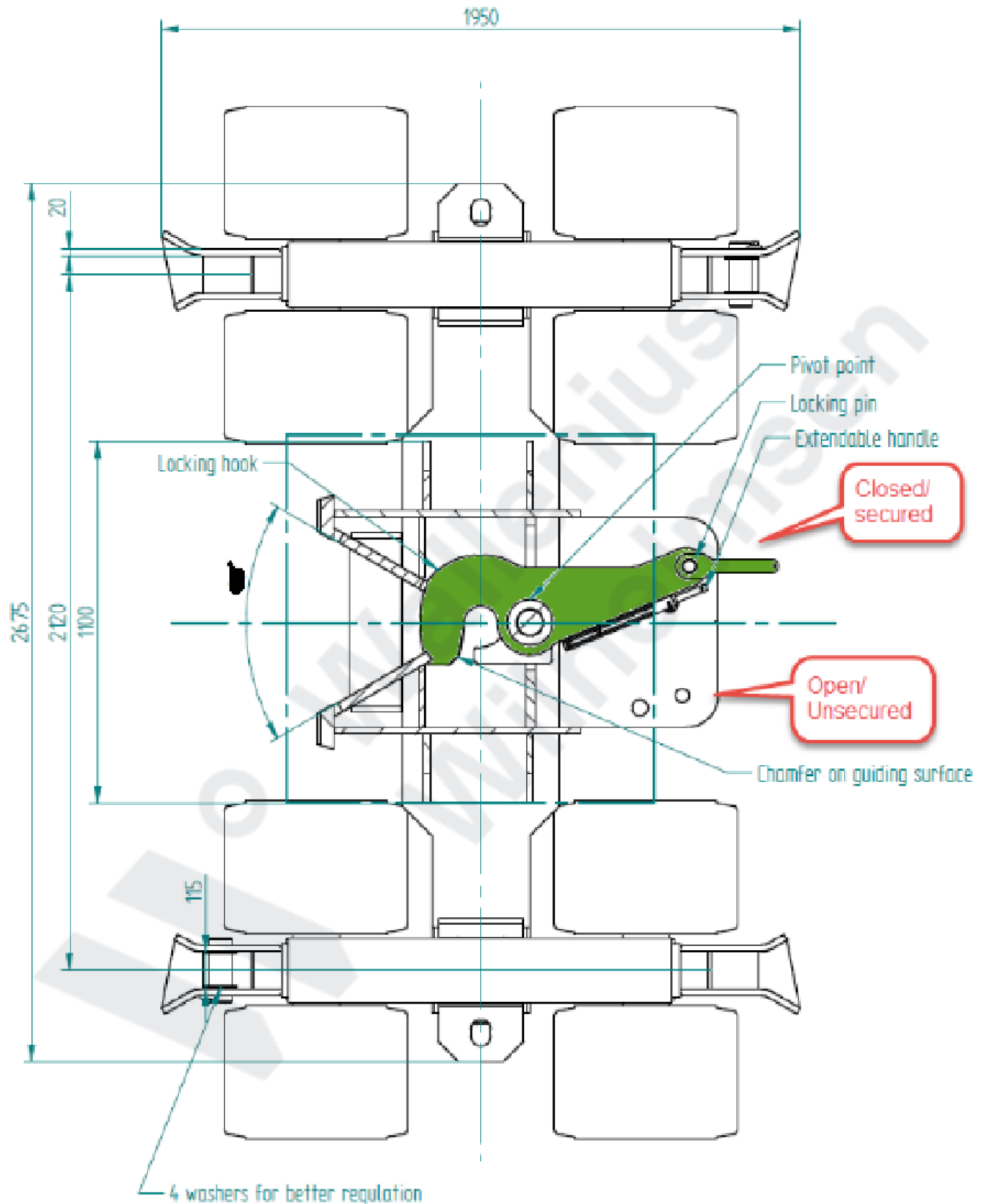
- Position or remove beams from underneath platform with hydraulic jack:



- Slide the beam under platform
- Place the jack close to beam
- Lift jack until you can fit/ remove wood from the beam
- Remove the beam
- There are also called "pallets" which are used with hydraulic jacks







Attachment of portable securing devices to the vessel

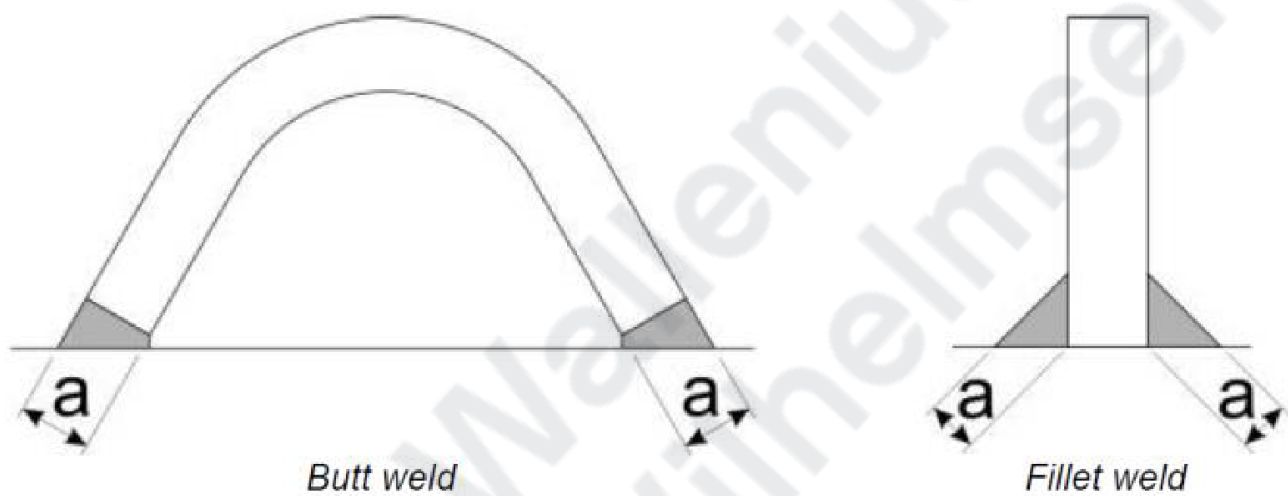
Lashings should be fixed to securing points on the vessel's deck and other structure with adequate

strength.

The strength of the fittings can be found in the vessel's cargo securing manual.

If existing securing points are of limited strength it might be required to weld temporary fittings to the vessel's deck for the intended voyage. It is important that such fittings are located at the vessel's basic structure and that welds are carried out by certified persons and with adequate weld dimensions. Any welding should be carried out in accordance with accepted hot-work procedures.

Before commencement of any welding, Master/CO should be consulted to verify welding can take place on the actual deck and that no bunker tanks are located below. If required the local port authority should also be informed.



The approximate Maximum Securing Load, MSL, in ton of a welded joint can be calculated by the following rule of thumb:

$MSL = a \times L \times 0,006$ (ton), where

a = Thickness of the weld in mm, see figure above

L = Total length of the welds in mm

NOTE! IN THE FIGURES ABOVE THERE ARE TWO WELDS ON EACH FITTING, ONE PER SIDE





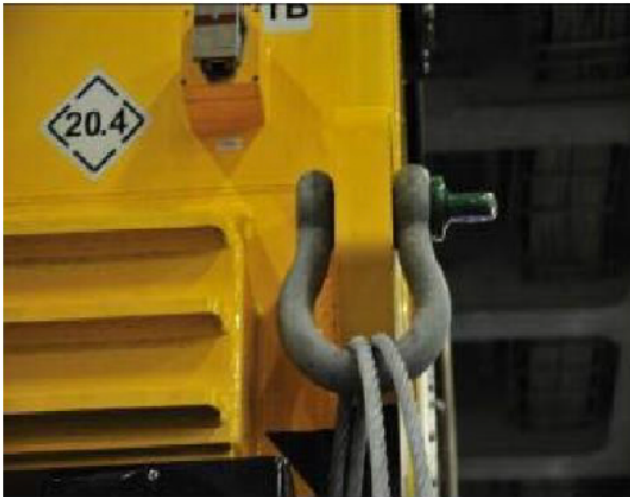
In the photo above, proper positions for temporary lashing fittings on the vessel's deck are identified and marked. It is of great importance to get them above stiffeners on the underside of the deck plate.

The D-ring in the photo to the right has a weld with an a-measure of 12 mm and a weld length of 2 x 120 mm.

According to the rule of thumb the strength is about 17 ton. According to the datasheet for the D-ring the MSL is 16 ton according to DNV GL and 18 ton according to Lloyd's Register (LR).

Attachment of portable securing devices to the cargo

If lashings are to be attached to securing points on the cargo, these securing points should be of adequate strength and clearly marked or otherwise advised as suitable for lashing. It should be kept in mind that securing points designed for road or rail transport may not be suitable for securing the items onboard the vessels. Some lashing fittings on heavy project cargoes are shown.



Heavy shackles fixed to holes on the cargo



Chain hooks fixed to the base structure of the cargo items



Chain hooks fixed to lashing fittings on the cargo item



Heavy combined lifting and lashing fitting on locomotive

One way of attaching lashings to cargo items without securing points is to pass the lashing around the item, or a rigid part thereof, and secure both ends of the lashing to the same side of the unit.

Composition and application of portable securing devices

Securing devices should be assembled so that each component is of equal strength.

Connecting elements and tightening devices should be used in the correct way. Consideration should be given to any reduction of the strength of the lashings during the voyage through fatigue or mechanical deterioration and should be compensated by using stronger securing material.

Particular attention should be paid to the correct use of wire, grips, and clips. The saddle portion of the clip should be applied to the live load segment and the U-bolt to the dead or shortened end segment.

Securing devices should be arranged in such a way that each device takes its share of load according to its strength.

For heavy project cargoes onboard OPERATORS' operated vessels heavy duty lashing equipment is used in addition to normal chain lashings with MSL 7,5 ton.



The heavy-duty equipment has a MSL 20 ton and consists of the following parts:

High tensile galvanized shackles (MSL for shackles is based on lifting criteria with a safety margin of 6 times. For lashing it is only 2 times. Often the MSL are mistaken as too weak and invite questioning if safe or not. It is the shackles BL that is of interest and for lashing the MSL is half the BL. The heavy-duty shackles are normally marked with a MSL of 8.8mt but have a BL of 51mt. I.e. MSL for lashing 25.5mt)

18mm ~ 22 mm chains with MSL 32-ton, length of 0.5m 1.0m, 1.5m and 2.0m.

20 mm wire slings

Turnbuckle 1." x 18

NOTE! THAT THE ITEM WITH SMALLEST MSL IN THE LASHING ARRANGEMENT DETERMINES THE STRENGTH FOR THE COMPLETE LASHING AND SHOULD BE USED IN THE CALCULATIONS. THIS COULD BE THE DECK FITTING, ELE-PHANT FOOT WITH MSL 19 TONS, ETC.

Please note that MSL 20 ton for the heavy-duty lashing equipment may not be used in the design of the lashing system unless the lashing fittings on the vessel's deck and on the cargo has a MSL of at least 20 ton.

If temporary securing equipment not described in the vessel's cargo securing manual is used for the project cargo, the equipment should be described in a lashing plan for the cargo and certificates for

the used equipment should be included in the plan.

Maintenance of securing arrangements

The integrity of the securing arrangements should be maintained throughout the voyage.

Particular attention should be paid to the need for tight lashings, grips, and clips and to prevent weakening through chafing. Timber cradles, beddings and shoring should be checked.

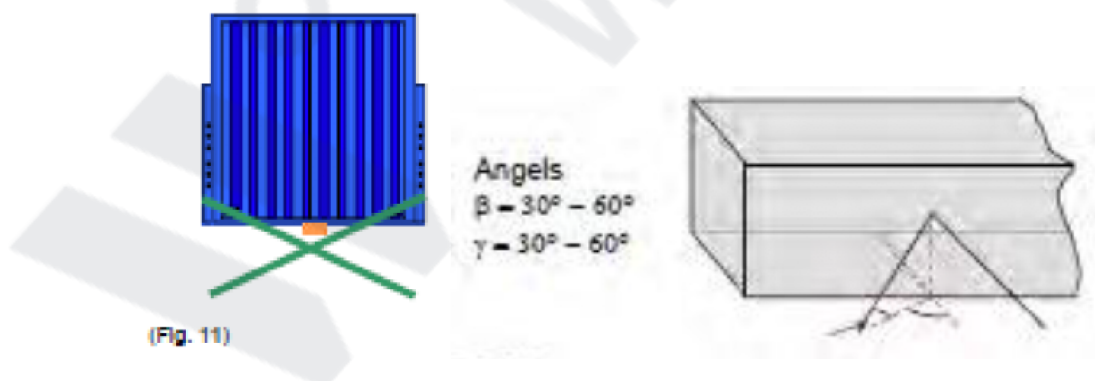
Cargo securing calculation

The securing arrangements for heavy project cargoes should be verified by an appropriate calculation in accordance with the principles described in Cargo Securing Manual. It is recommended to document the securing arrangement in a lashing plan containing the following information:

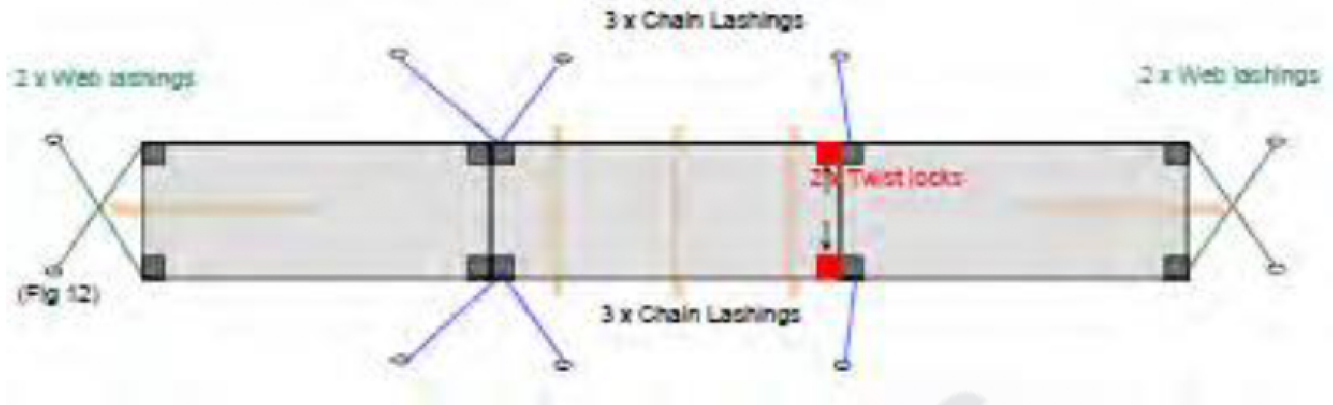
- Position, dimensions and MSL for suitable lashing fittings on the cargo
- MSL of lashing fittings on deck in the area of the planned stowage position onboard
- Number and MSL of lashings to be used
- Sketch showing the lashing arrangements with allowed vertical and horizontal lashing angles for the different lashings
- Information on safety factor for the proposed arrangement

Securing of mega containers on weather deck

120 ft containers (max load 24 mt)

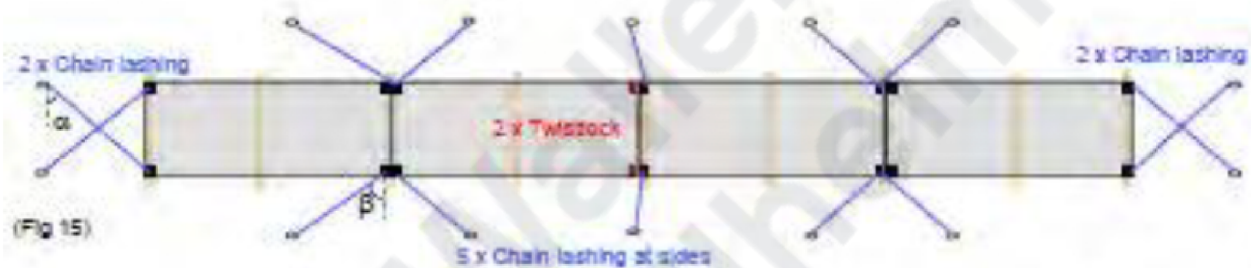


The short side of the 120ft mega container shall be secured with web lashings as shown in Figure 11 to allow the container to twist on the dunnage.

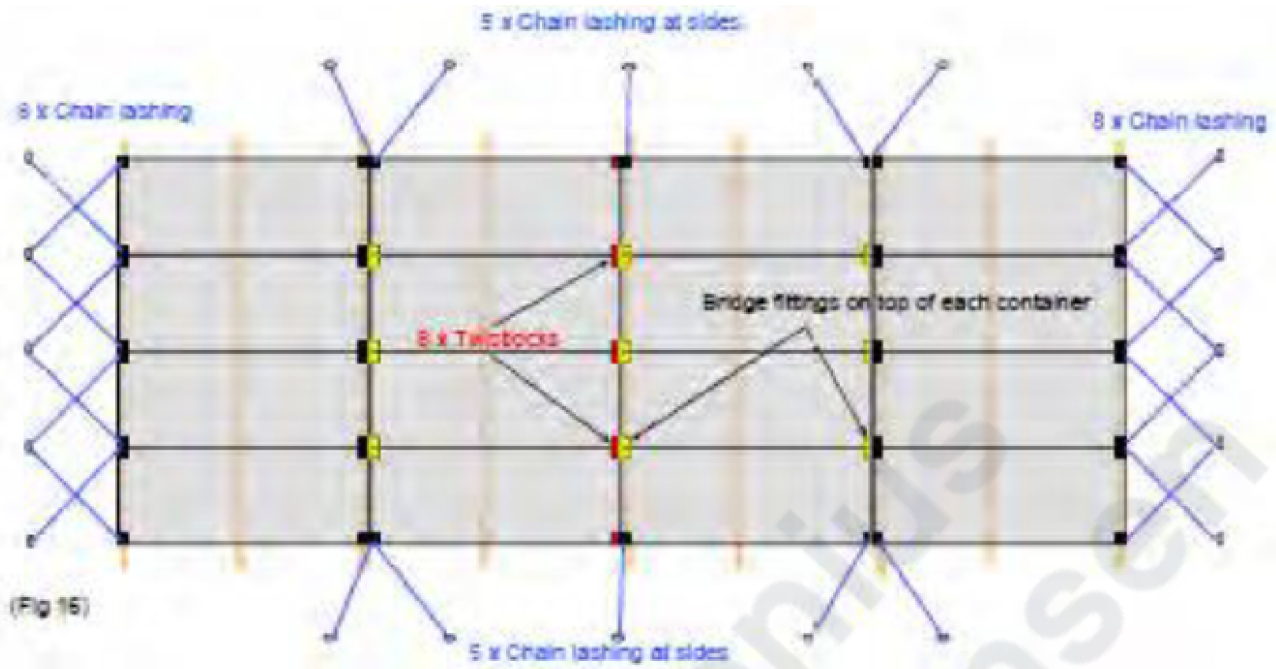


Wooden beams of sound condition must be placed on top of the web frames on the weather deck. The beams must be placed at each end of the mega container in a longitudinally direction (fig. 11 and 12).

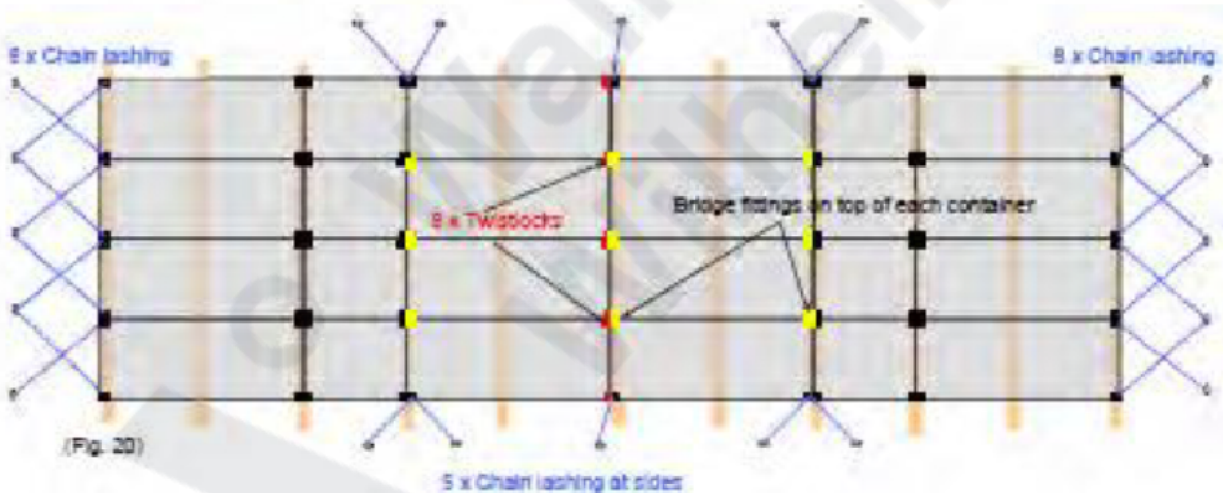
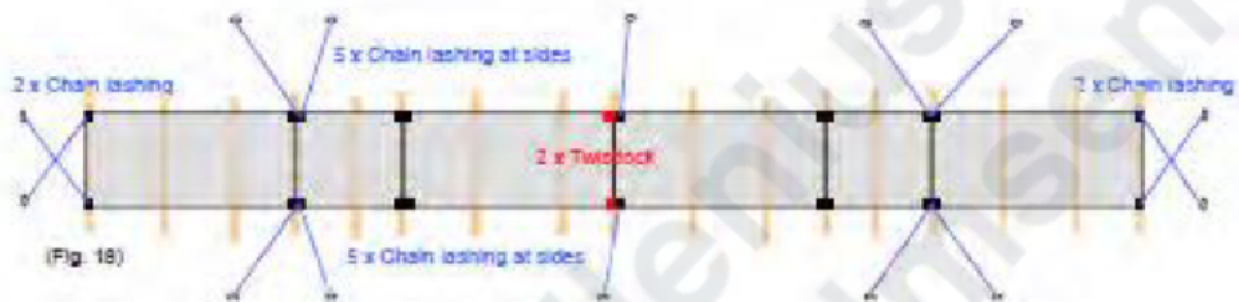
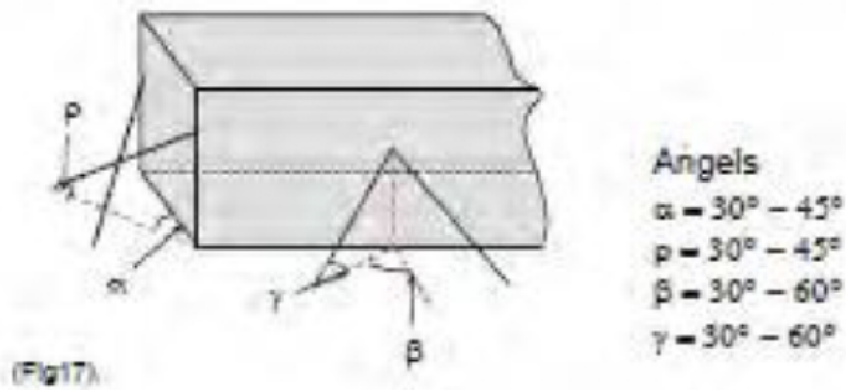
140 ft containers (max load 43 mt)



Wooden beams of sound condition must be placed on top of the web frames on the weather deck in a transverse direction.

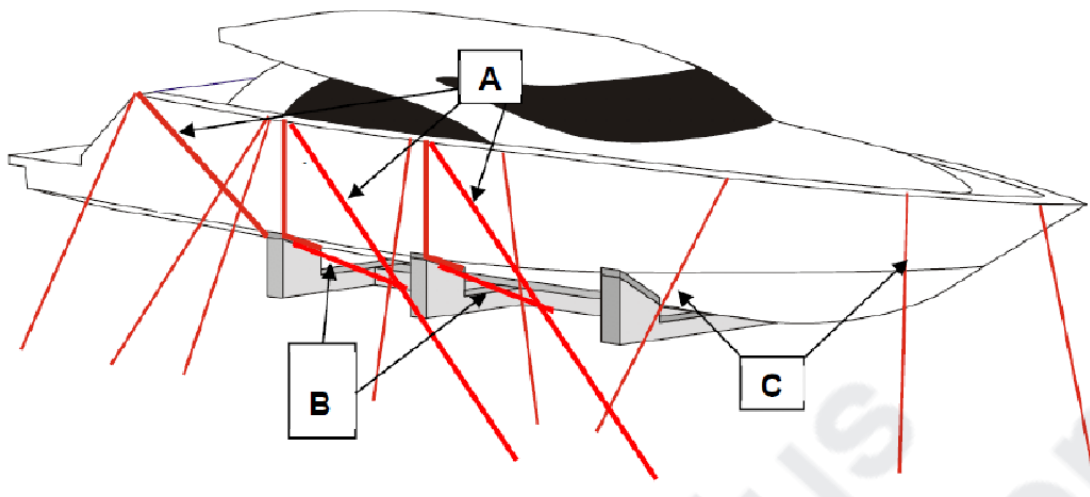


160 ft containers (max load 48 mt)

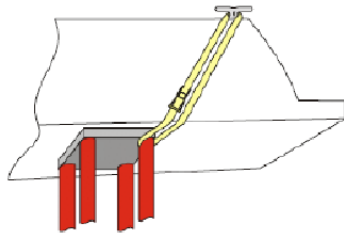


Securing on weather deck

Securing of yachts on weather deck



(Fig 8)



(Fig 9)

Number of lashings to be used				
Wight [tonnes]	Total lashings	A	B	C
24	20	6	8	6
30	24	8	8	10
42	34	10	12	12
50	40	12	14	16

(Table 3)

The cradle must be put on a bolster and be secured by blocking with welded angle iron or chain lashing in all directions. The bolster must be secured to the weather deck by twist locks or be welded. If the lashing is applied in a loop as shown in Fig.9, half the number of lashings are needed.

Lashings "A" shall be applied to prevent the yacht from sliding backwards in the cradle.

Lashings "B" shall be applied as vertical as possible and lead to the cradle under the yacht.

Sufficient protection must be attached between the yacht and the lashing.

Lashings must be placed symmetrically starboard and port.

Web lashings with a minimum MSL of 2,5 MT should be used for securing of the yachts.

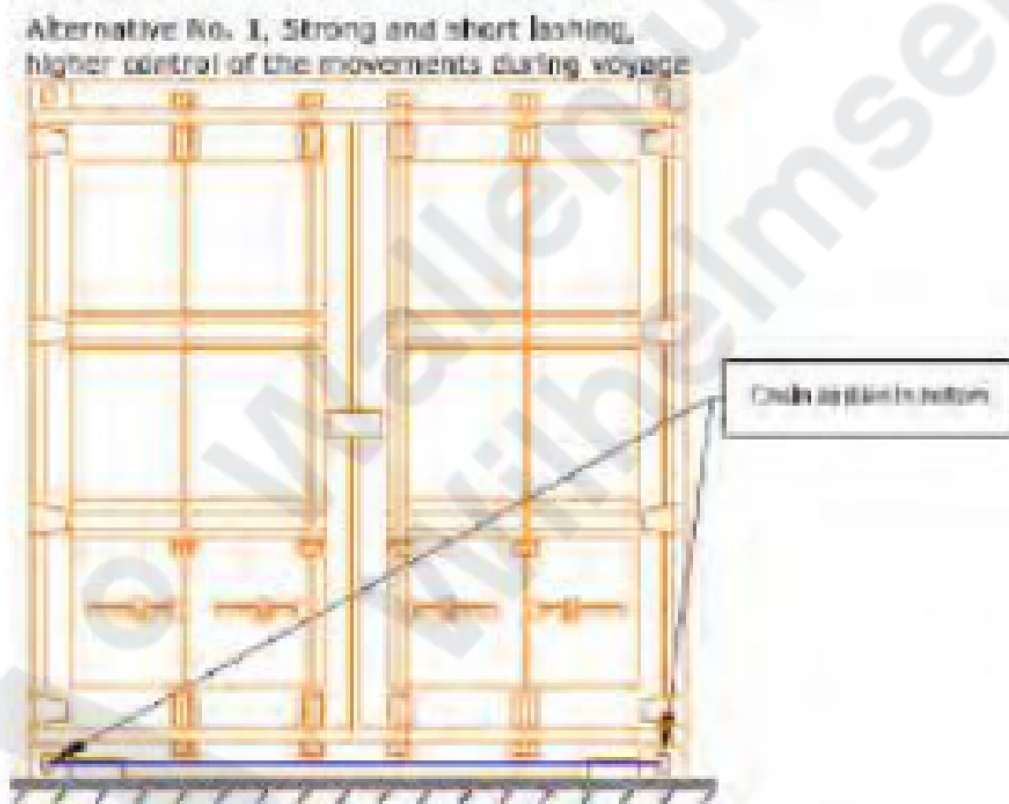
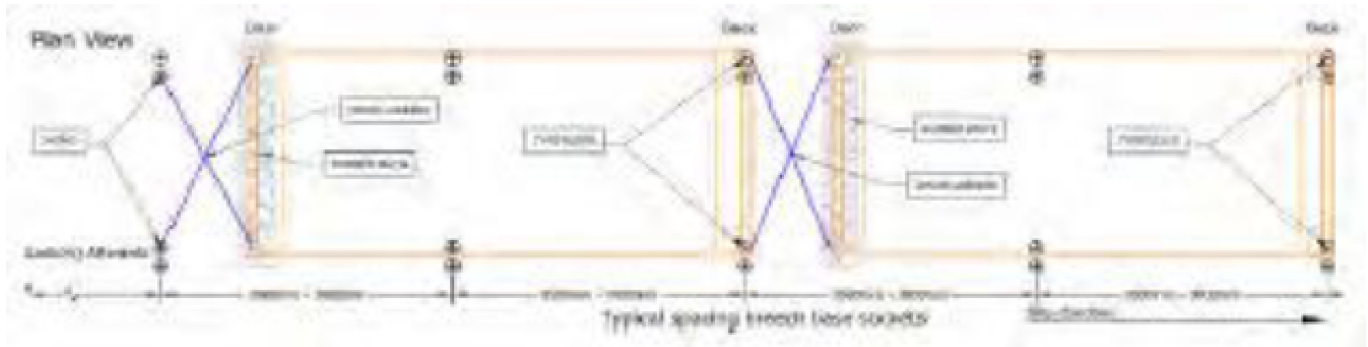
Securing of iso containers on weather deck

Number of containers possible to load and stowage pattern are subject to cargo securing manual (CSM) of each vessel.

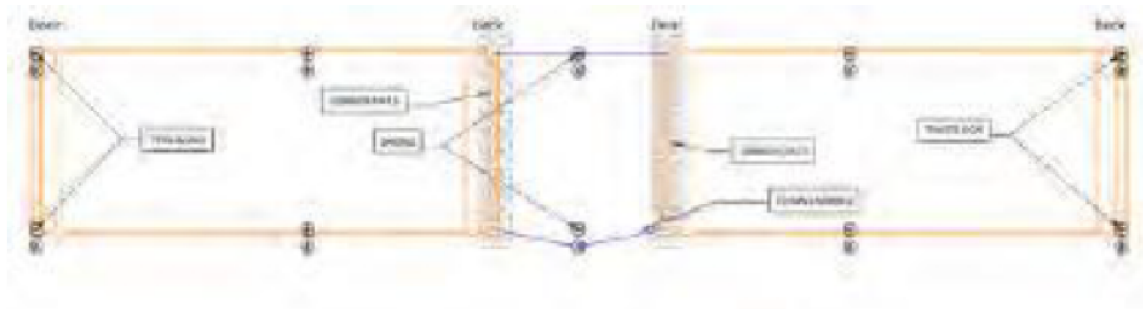
As a general rule for securing, a combination of twistlocks and chains shall be used.

There are 3 potential securing methods, depending on deck configuration:

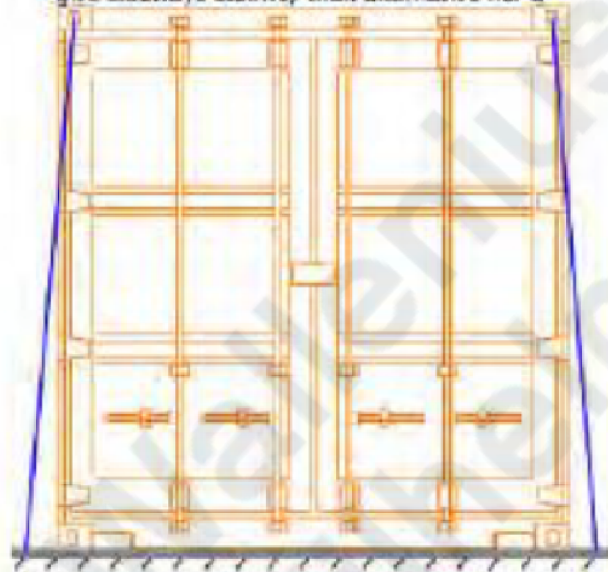
1. Twistlocks and chains to bottom corners



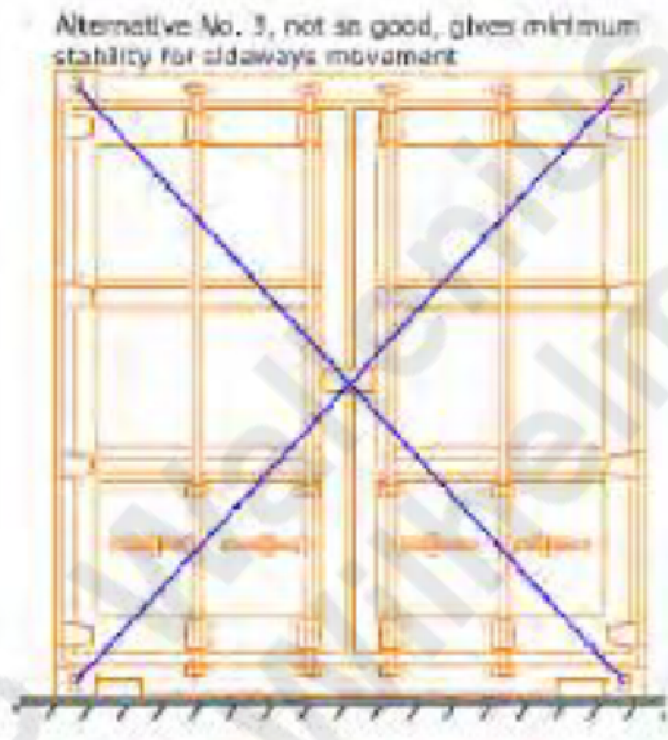
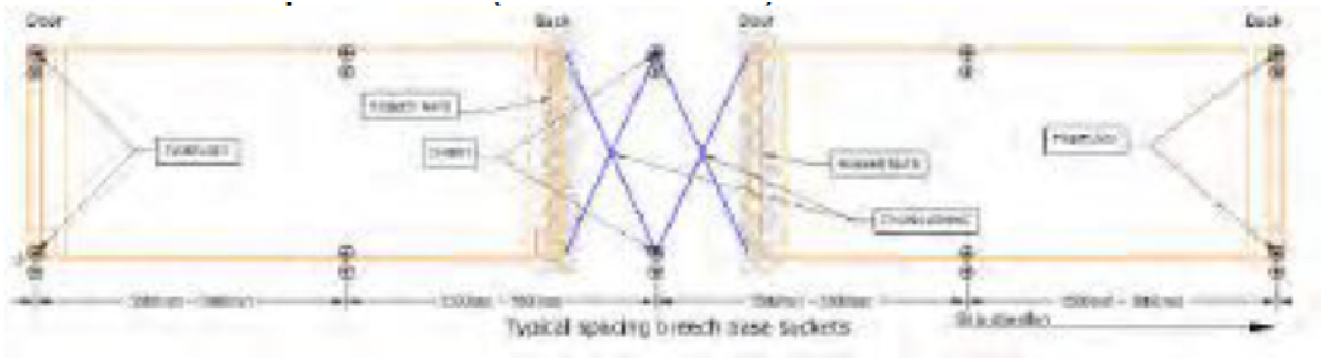
2. Twistlocks and chains to top corner (top down)



Alternative No. 2, losing some more space, but give sideways stability than alternative no. 3



3. Twistlocks and chains to top corner (cross down)



Weather dependent lashing (only applicable to some specific vessels)

A weather dependent lashing approval allows for a vessel master to carry a certain amount of cargo unsecured.

The approval is limited to predefined trade areas and weather conditions with maximum wave heights.

(NOTE: THE FINAL DECISION TO ALLOW THE LOADING OF UNITS ACCORDING TO THE WEATHER DEPENDENT LASHING METHOD IS TAKEN BY THE VESSEL MASTER)

The following factors must be fulfilled in order to carry unsecured cargo:

- The vessel must be approved by Flag and/or Class authorities for the intended operation.
- The vessel Master must have given approval of the intended operation based on criteria outlined in the flag and/or Class approval as well as the "Weather Dependent Lashing addendum" to the vessel's cargo securing manual issued by the vessel owner



During sea voyage

Cargo checks during sea voyage

The Master shall arrange cargo checks after departure and during voyage. Records of checks to be in the deck logbook:

As soon as possible after leaving each loading port.

First three days: a daily check of all cargo loaded (lashing/securing, leakage, damages)

Thereafter, checks should be conducted every third day at a minimum.

In rough weather, checks should be conducted every day or more frequently as required by the weather and/or cargo, however, ensure crew safety entering the cargo holds and throughout the inspection (i.e., additional personnel / reporting requirements etc.).

During fire rounds special attention to be given to 2nd hand units.

It is of outmost importance that extra focus is put on athwartships stowed units during all cargo checks.

Any abnormalities found during the cargo lashing inspection or damage observation is to be reported back to POL and to: GlobalCargoQuality@walwil.com

Observe

Any in-correct or missing lashings on cargo, found during the inspections, are to be rectified appropriately to ensure sea worthiness conditions.

Cargo hold checkpoints

During these inspections, only the designated passageways and the space between bumpers should be used (never walk between the vehicles).

The inspections (and their findings) should be entered in the vessel's logbook.

Non-conformities are to be reported back to the OPERATORS representative / Port & Cargo Operations.

Items to be focused on during inspections:

Missing lashing on units, or too few lashings.

Loose lashing.

Incorrect lashing.

Lashing touching the ship's structures.

Missing rubber wedges to be fitted for units which require having these fitted, i.e. fixed ramps, athwartships stowage etc.

Oil leakage from other cargo such as gearboxes etc.

Gastight door, watertight door, passage door and other access hatch cover and movable ramp for fire compartment must be closed at all times.

Inflammable gas must be exhausted from the car deck by ventilating for gas free every day if weather permits.

Moisture and bilge should be cleared from the car deck.

Vessel pipes, structures and wire ropes need to be checked for oil and grease leakage.

Pipes and valves should be inspected for ballast water leakage.

Unusual smells or noises need to be investigated.

Vehicles leaking oil or fuel

If any unit is leaking oil, an attempt to stop the leakage must be carried out, and if successful, it must be ascertained that there is sufficient oil in the engine to safely operate the vehicle.

If the leakage cannot be stopped, the car must be clearly marked accordingly to prevent it from being driven before a sufficient amount of oil is replaced.

When discharging such units, OPERATORS representative/Chief Officer must be advised, and handling/stowage performed as per instructed.

Oil leaks on deck floors with holes should be cleaned without delay to prevent further contamination of other vehicles stowed on the deck below. Covering vehicles with plastic sheets if necessary will help avoid contamination due to oil leakages from the deck above.

The oil leakage (e.g., fuel oil, engine oil, transmission oil, brake oil or grease) should be identified & reported to OPERATORS rep.

If foreign residue (e.g., rust, grain or material from previous cargo) is found on a car roof or side, no attempt should be made to remove the residue or clean the affected surface.

Cargo hold ventilation during sea voyage

The vessel's Master is responsible to ensure that the vessel is ready for the intended cargo operation and that decks and driveways are adequately lit and ventilated in accordance with SOLAS requirements. (Whenever possible, the cargo hold ventilation should be started 30 minutes before the start of the cargo operation to establish a noticeable airflow through the cargo holds).

Bunker tanks adjoining cargo spaces should be heated only when required, ensuring that the temperature does not rise above normal operational levels.

Cargo Ventilation and Precautions to Minimize Sweat.

"Moisture damage" is the source of a significant number of cargo claims, often involving bagged or bulk agricultural products. Claimants typically allege that failure by the ship to ventilate correctly resulted in the development of condensation ("sweat"), causing the cargo to deteriorate.

However, it is also important to recognize that some commodities may have inherent moisture levels

which exceed acceptable limits at the time of loading, making them biologically unstable. Such details may not be known to the ship, and prudent ventilation measures may be insufficient to prevent deterioration of the cargo on passage. Nevertheless, claimants may still maintain that the ship was at fault.

To defend cargo deterioration claims it is necessary for the vessel to produce records showing that customary ventilation routines were followed. Should the necessary evidence be missing or incomplete, it is often difficult for the Club to refuse such assertions.

Ventilation records

Ventilation records are crucial. In the event of moisture damage, evidence showing that the vessel ventilated correctly may be instrumental in defending any ensuing claims.

If the Dew point Rule has been followed, wet and dry bulb temperatures and dew points should be logged once per watch, bearing in mind that these may change considerably over a short period. For the same reason, the sea temperature should also be noted. This information should be recorded for each hold together with the times of commencing, ceasing, or resuming ventilation, and the reasons for doing so.

If the Three Degree Rule has been followed, a record should be kept of the ambient air temperature and the sea temperature once per watch together the average temperature of the cargo at the time of loading. Once again, ventilation details should be documented for each hold.

All vessels carrying rubber are required to submit their temperature and ventilation log records on every three weeks basis to OPERATORS rep. as per instruction.

Cargo separation

Cargo separation should be verified by OPERATORS representative, and separation tape to be used when necessary.

If vessels crew found that separation is not done after correct port of discharge, they shall rectify the separation accordantly to the COD (Change of destination).

Cargo deck maintenance

See [Vessel work and maintenance during cargo operation and at sea](#) under Safety requirements.

Protection against theft

Lock all accessible doors & hatch covers except minimum passageway prior to arrival in port or canal transits, however, ensure that escape routes are accessible.



Prevention and damage handling

Speed limits and safety distances

Speed limit.

The **Maximum** speed onboard vessels is 30 km/h (Approx. 20mph). The terminals should comply with their own speed regulation.

Safe speed should be determined by vessel crew, superintendent and stevedore foreman together based on a variety of local factors including weather, stevedore skill level, cargo type and car deck conditions.

Driving speed should be reduced in special circumstances to ensure safe handling.

- Limited visibility

- Wet car deck areas

- Upper and lower end of inner slope way

- Narrow spaces

- Areas of reduced height clearance

Driving at a safe speed is mandatory.

NB: SAFE SPEED MIGHT SOMETIMES BE ONLY 2-3KM/H AT CRITICAL SPOTS

Safety distance:

Maintain the safety distance (Min. 10m) between cargo vehicles on board and at the terminal.

Control of driveway/traffic route

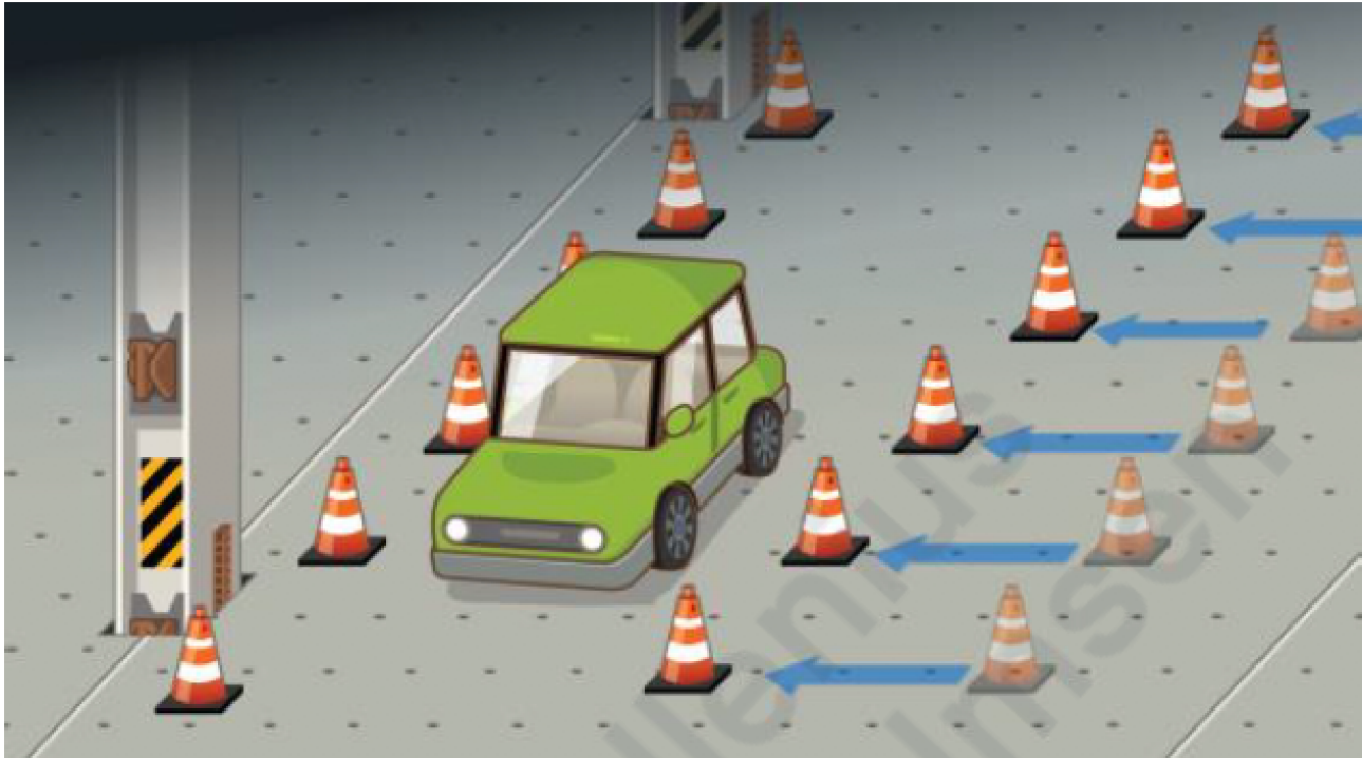
During cargo operation, stevedore foreman should prepare safe driving route with safety equipment (traffic cones, caution tapes & safety signs) in the car decks and terminal.

Signalmen should be positioned, if needed, to prevent possible cargo accident/ damage and for smooth cargo operation.

Safe driving route should be provided in car decks using traffic cones on both sides by stevedore with help of vessel crew

Ramps should not be used for pedestrian access unless there is suitable separation for vehicle and pedestrians.

Speeding in the car deck; If the driving route is made as following picture, driving speed will be reduced.



Cargo separation

Generally, the cargo separation should be double-checked by shore staff and the vessel crew to ensure it complies with the stowage plan in each compartment and avoids shortland/over-land in discharging ports.

The condition of cargo separation should be checked again during the laden voyage by the vessel crew.

The chief officer and stevedore foreman should confirm that all cargo has been discharged as planned before closing the ramps.

When separation tape is used, always ensure that the tape is not touching painted surfaces of the cargo. Separation tape is to be secured to lashings or ships structure.

Change of destination (cod)

Change of destination shall be per OPERATORS instruction and minimum risk of cargo damages to cargo or other surrounding cargo.

It is the master's ultimate responsibility to ensure correct cargo is discharged in correct POD, hence during receipt of COD, same needs to be verified with new POD.

Best practices for damage prevention

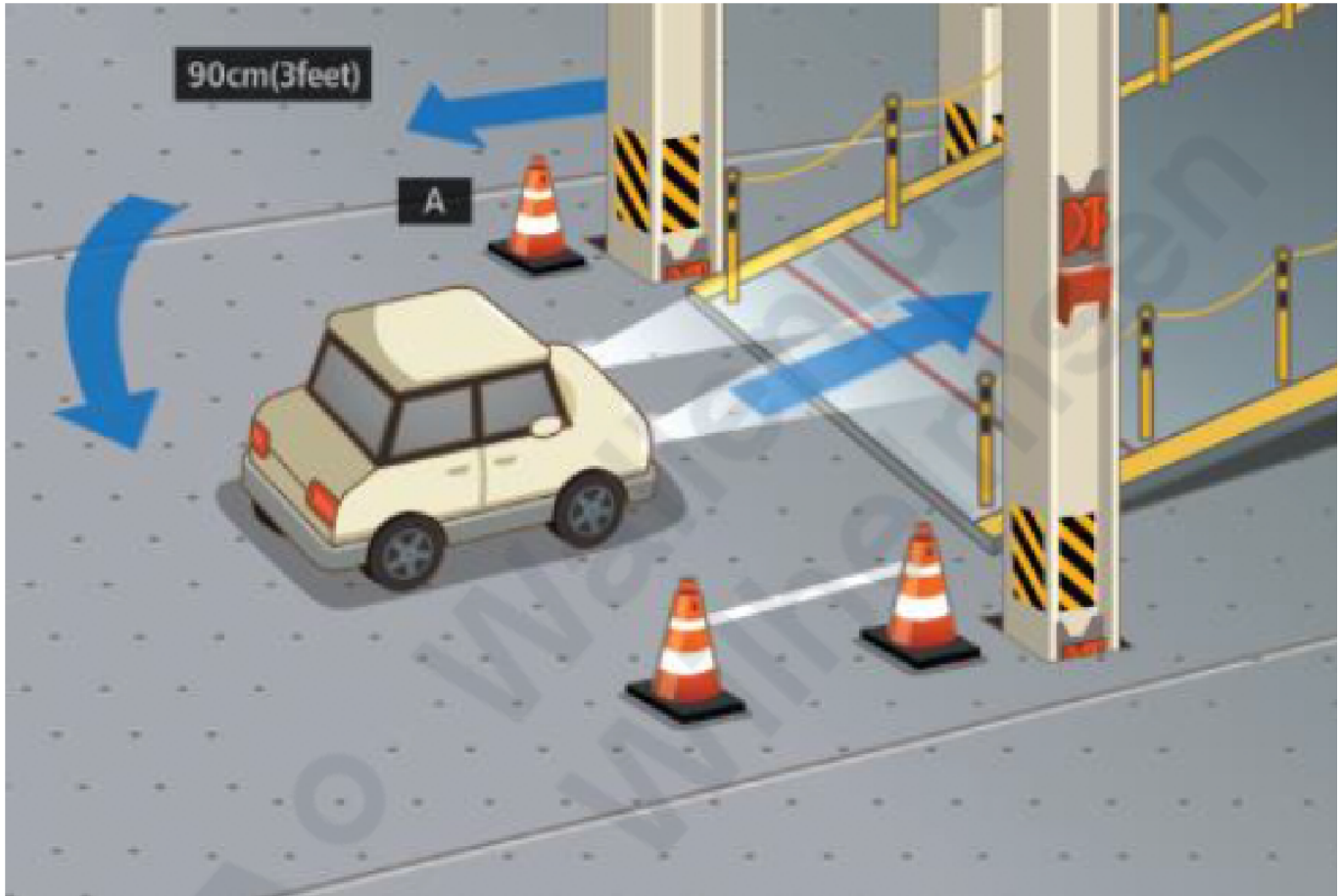
The following illustrates different situations of cargo damage.

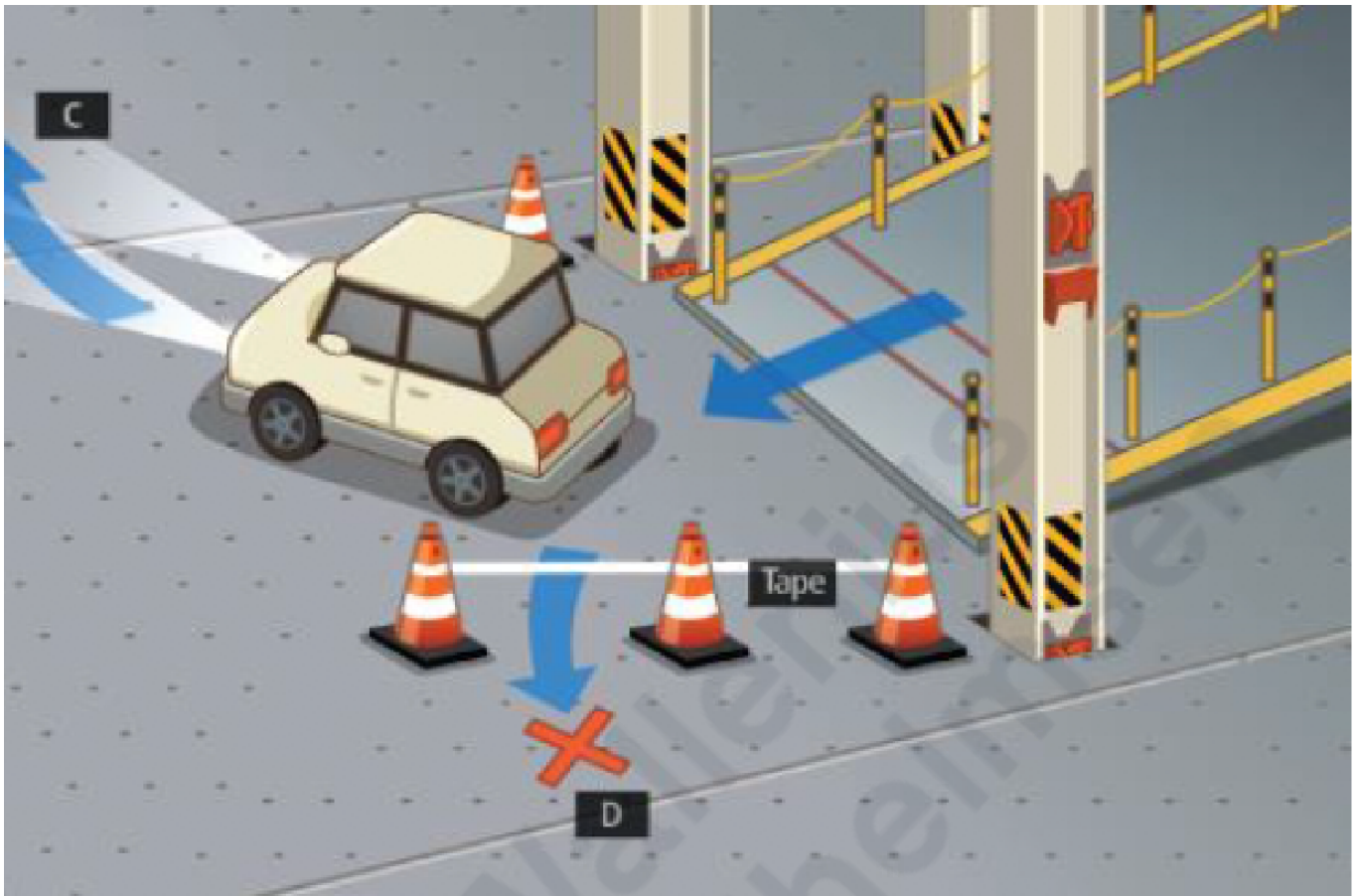
Appropriate countermeasures should be taken to prevent cargo damage.

Damage on the entrance of slope way

Safety cones should be placed on the entrance of the slope way as below.

If the driving way is changed from D to C, traffic cones and tape should be positioned as below.



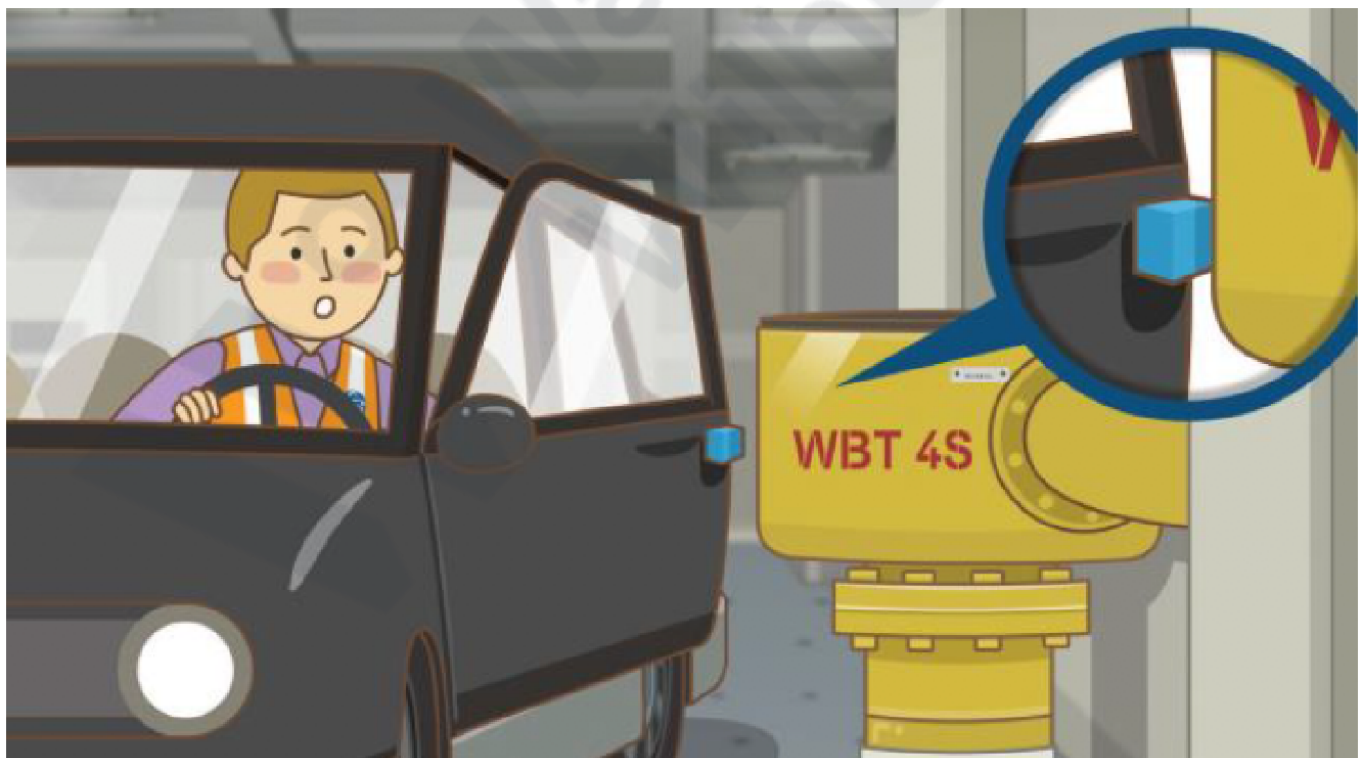


Door damage

- Foam rubber pieces are very useful to prevent door damage.
- All doors should not make contact with any obstacles whenever opening the door.



- Adjustable foam rubber which is attached on door should be shifted on touching points between unit and structure.



- If the protector is not attached, put hand on the edge of door when opening the door.



Removal of wedges in internal ramp

Rubber wedges should be kept in the initial position until the vehicles climb up the internal ramp completely.

If careless unlashers take out the wedge from the vehicles, vessel crew should reposition it. The internal ramp is one of the most critical points for an accident during the discharging operation.



Unlashing

Unlashing operations must be thoroughly supervised at all times.

Only units to be discharged or shifted must be unlashed.

The lashing material should be unlashed from the vehicles and dropped straight down on to the deck, then be removed before vehicles moves out of stow. On flush decks, lashings should be swept to the designated areas with a "protected" broom, if possible.

Extra care should be taken to make sure that no hidden securing devices are forgotten before moving unit.

Removal of the lashings should be in a sequence that enables those units in the front of the next lane of units to be taken away and placed in designated areas.

Carrying lashings between units in stow should be avoided.

Care should be taken to ensure that each unit is adequately unsecured and that no wedges are left under the wheels before a driver is allowed to enter the vehicle.

During breakout

At the end of each compartment, drivers often fail to break out vehicles properly. They hit an adjacent unit with the rear corner of their vehicle because the turn is too sharp.

To prevent this type of cargo damage, a signalman should stand in front of the row next to the moving vehicle in order to guide the driver.

When moving a long-body vehicle, two signalmen are required: one in front of and behind the moving unit.



Underneath bumper/spoiler damage

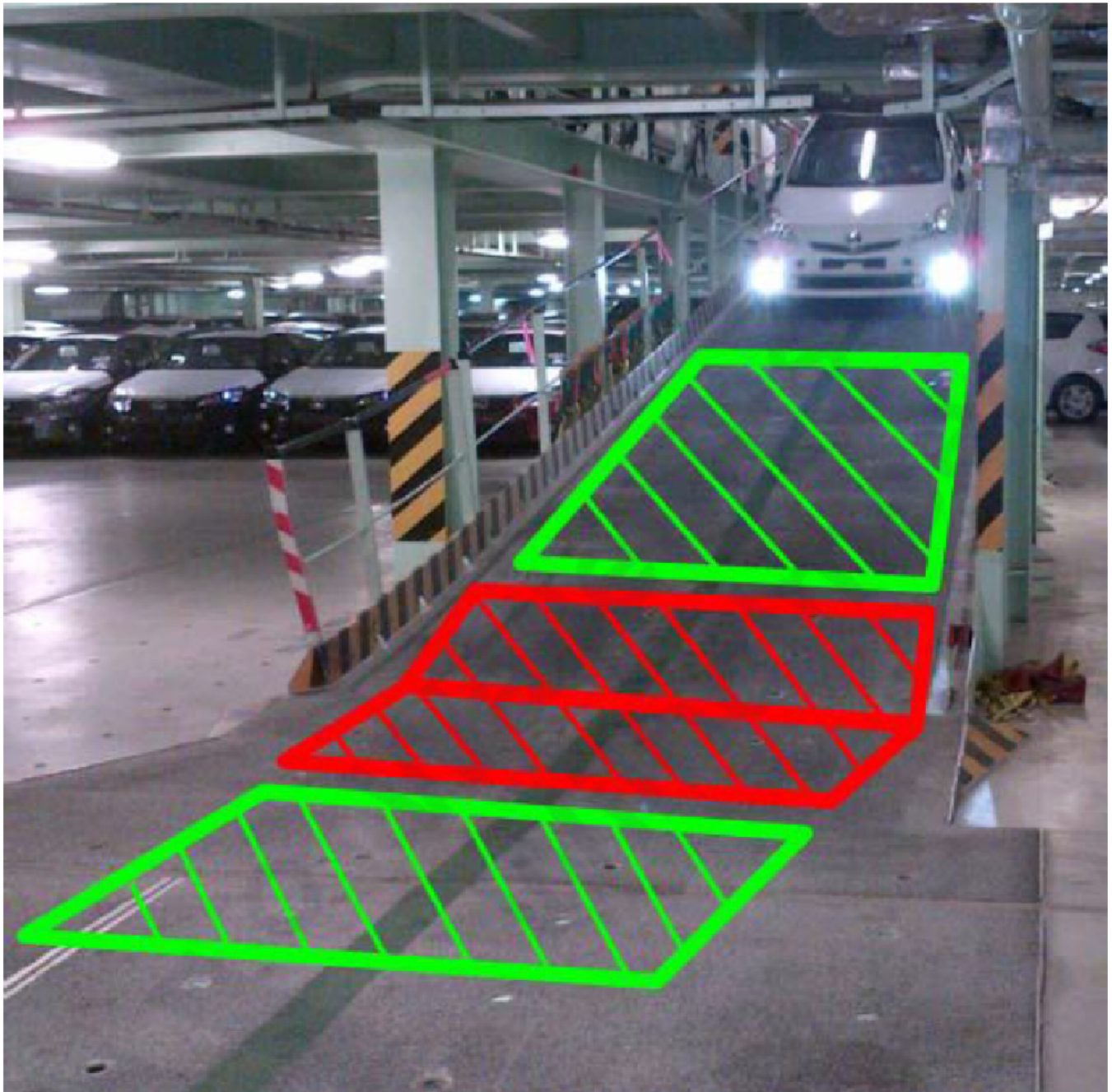
Recent passenger cars have low ground clearance and larger air-dam under the front bumper. If the vehicle proceeds to end of ramp or knuckle part of slope way with excess speed, air-dam may touch the underneath of vehicle.

For some OEMs, specific ramp approach angles might be required.

To prevent front under carriage damage, rubber mats and/or proper materials (e.g., wooden & steel plate) should be laid on the entrance or exit of ramps if needed.



Example of rubber mats on internal ramp



*** Green area = Brake area * Red area = Non brake area**

Damage by chain lashing (H&H and BB)

Padding materials such as waste (wiping) rags, felt pads, rubber mats or similar materials must be placed between the cargo and the chains.

Damage reporting instructions

IDR purpose and scope

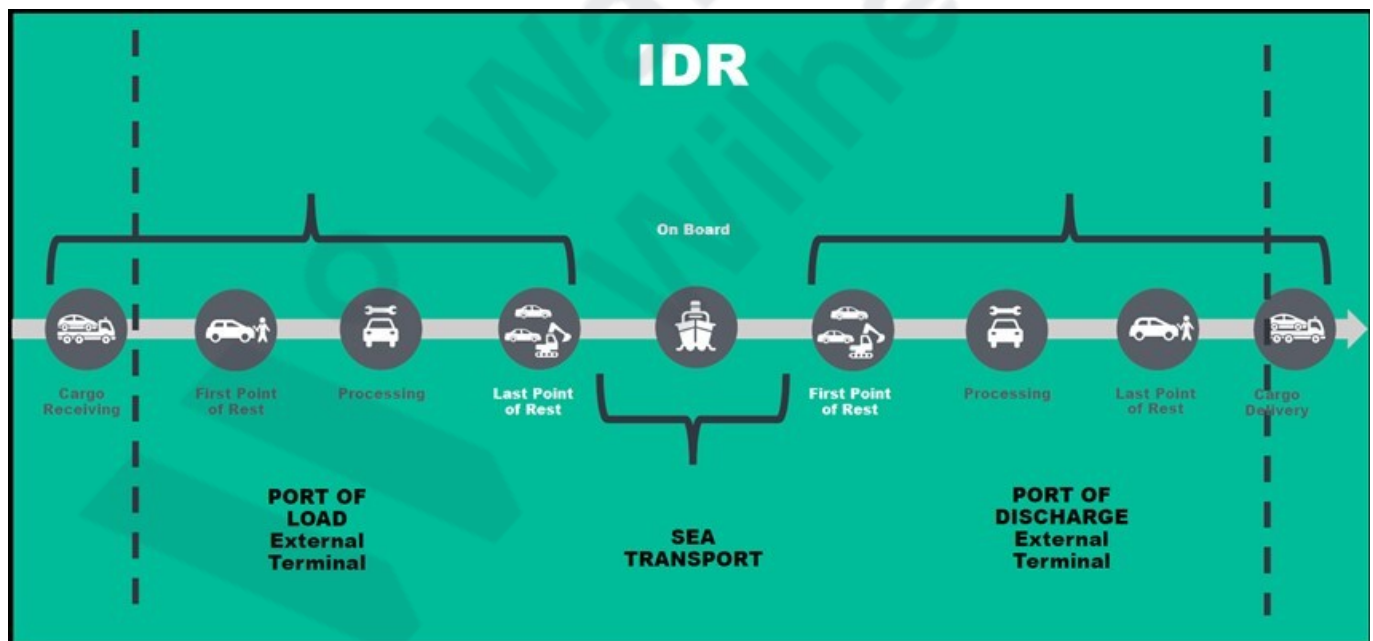
The Incident and Damage Report (IDR) is the Wallenius Wilhelmsen tool for the reporting of incidents and damages to cargo, vessel structures, and equipment. It is an important source of information for the settling of claims and when working with continuous improvements.

Personal injury or alarm function process reports are not to be reported with IDR as there are specific procedures.

Note that if an Incident and Damage Report has a Personal Injury connected, special document handling is needed, see [Personal Injury](#) in this Manual.

External terminal use of IDR

All Incidents and Damages to cargo, vessel, and equipment, occurring during cargo operations, terminal activity or at sea, shall be reported as per the IDR Instruction in this chapter. Observe that the IDR reporting is always to be used where external Terminals are used for our cargo.

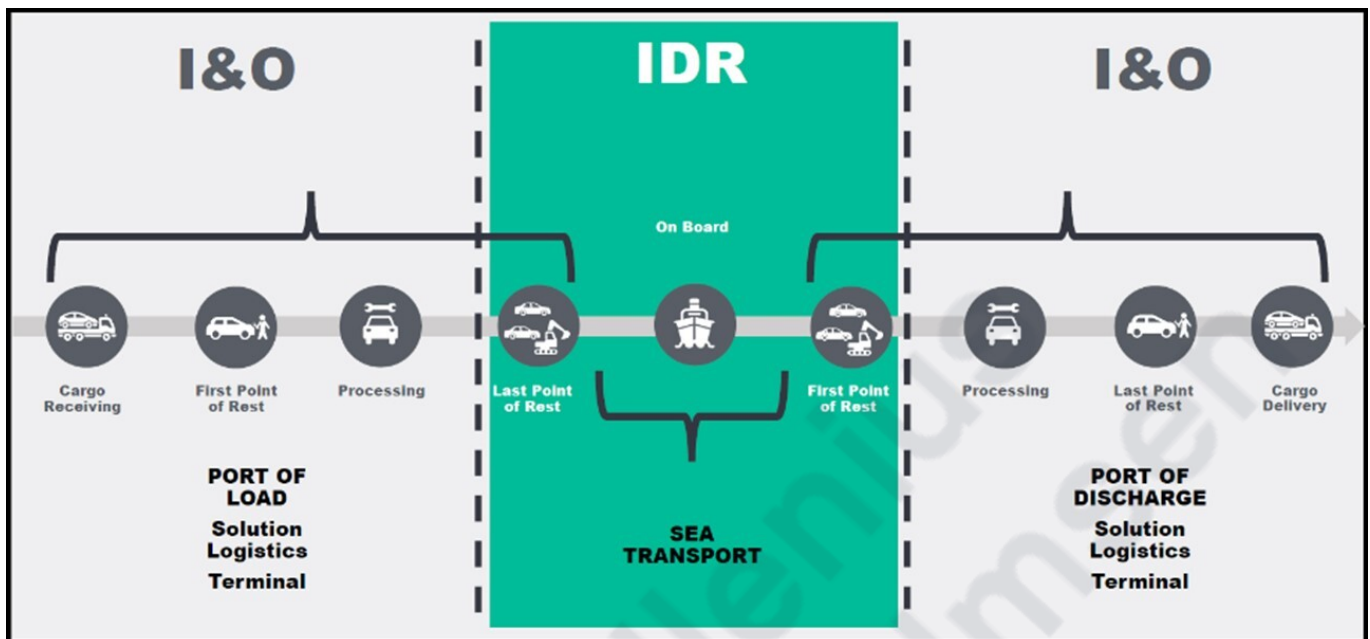


Internal terminal use of IDR

In ports where terminal activity is operated by Wallenius Wilhelmsen, Vessel Operation is defined LPR (Last Point of Rest) on the terminal prior to operation, until cargo has been discharged in FPD (Final Port of Destination) to FPR (First point of Rest) in the terminal. See illustration below.

The Way of Working process (WoW) includes The Issues & Opportunity Reporting (I&O), are used in

the Wallenius Wilhelmsen Inland Logistics organization. The I&O reporting is also a damage recording system that can be used in our own facilities and terminals, according to the illustration.



IDR creation

Any type of incident or damage must be reported within 12 hours using an IDR online form. In case of no internet connection at sea, contact to your voyage operator to address with the Quality Responsible in the loading region for reporting the damage.

Please note that damages to vessels structures and/or equipment has to be reported via IDR only when damages are caused by cargo or stevedores.

For statistical and claims handling purposes, every damage must be represented by one separate IDR. (For example, if an incident or damage includes two vehicles that have collided, two IDRs should be made.)

Exceptions:

Short shipped or short/over landed units should have all affected VIN numbers listed on one separate major IDR.

Theft of car keys or other loose objects. For example, if during a port call several car keys have been found missing, all affected VIN numbers should be listed on one separate major IDR.

Contamination of cargo. For example, if several units have been found contaminated by one source of leaking oil, rusty water or similar, all affected VIN numbers should be listed on one separate major IDR.

IDR creation - incident or damage occurred during port operations

The responsibility to document damages and incidents in the IDR format, is the Operators

representative in the port.

This is normally Quality department or Operation responsible or any other role that is representing Wallenius Wilhelmsen Group during a vessel operation.

Vessel is to inform Operator's representative of any incidents or damages occurring during port stay.

In ports where operator's representative does not have an IDR license to create and submit reports, following is to be done:

Send an e-mail to idr-request@walwil.com without any text in the mail.
The sender will receive a reply with a link to fill out the IDR report.
The IDR report is to be sent to the responsible area manager for submitting of the IDR.

IDR creation - damages and incidents occurring prior or after port

Any damages or incidents effecting cargo or equipment in terminals or during inland transportation is to be reported thru the IDR system.

As long as the Bill of Lading is owned by the Group, an IDR report is mandatory to create when any damages or incidents occur before or after any sea voyages, that includes both ocean- and transshipment sea voyages.

This is done as following:

Send an e-mail to idr-request@walwil.com without any text in the mail.
The sender will receive a reply with a link to fill out the IDR report.
The IDR report is to be sent to the responsible area manager for submitting of the IDR.

IDR creation - incident or damage occurring during sea voyage

This is valid for all vessels that are in charter with Wallenius Wilhelmsen Group.

The Master of the vessel is responsible to report any damages occurring during sea voyage including damages to vessel when it is related to the cargo operation.

This is done as following:

Send an e-mail to idr-request@walwil.com without any text in the mail.
The sender will receive a reply with a link to fill out the IDR report.
Approving the IDR report is to be chosen by the vessel as to the Port of Load that the unit is originating from.

See [Heavy Weather Damages](#) - for instruction when damages are related to heavy weather circumstances.

IDR classification

Damages classification

Cargo Damage: Any event in which cargo has been physically damaged. It could be major or minor. Theft / vandalism is considered an event to be reported as damage to cargo in the IDR form.

Damage to Equipment: Any damage caused to equipment property.

Damage to Vessel: Any damage caused to vessel structure or other vital part of the vessel, including vessel owned equipment such as deck lifter only when caused by cargo or stevedores

Damage severity classification

Minor Damage classification

Basic criteria for a minor damage are where the total expected cost is less than USD 5000.

Major Damage classification

Basic criteria for a major damage are where the total expected cost exceeds USD 5000. It should be noted that in some cases even lesser damages should initiate the same level of reporting.

Vehicles and High and Heavy units:

- If a vehicle is damaged in any way that makes it hard to decide severity, must be classified as a Major damage.
- Repetitive observed damages, on at least 3 units, should be considered a major classification.

Break Bulk

- Unit(s) expected total loss.
- Unit(s) tipped over or dropped.
- All structural damage to unit(s) and/or package to be treated as Major until properly inspected.

Rubber

- Identified wetting or melting. Reconditioning of more than 40 crates/pallets required.

Paper Rolls, Boards, Etc.

- More than 10 rolls expected total loss.

Units of plywood wafer boards, gypsum board or pulp

- More than 10 units expected total loss per load/discharge port.
- More than 40 units requiring reconditioning per load/discharge port.

Containers

- Container expected total loss or container dropped.
- Container damage to the extent that the content requires repackaging.
- Container leaking with damage to content.

Other types of damages

Damages "found in stow" during sea voyage

Damages found in stow during voyage checks, and where no responsible party can be determined, should be considered the responsibility of the Port of Load, unless it is obvious that the damage did not occur during the loading operation. The IDR reporting field "Port of Damage" should be set to Port of Load and the reporting field "Damage occurred" to "Found in stow".

Ownership and responsibility for investigating damages found in stow and following up, falls on the quality function in the region where the port of load/damage is located.

NOTE: Damages claimed to be "found in stow" should be accompanied by photos of the damage once units are still onboard and in the stow or just broken out from stow. If reported after discharge, a damage cannot be considered "Found in stow" unless it is obvious that this is the case. Communication between quality functions in different regions should take place if in doubt.

See [Damages "Found-In-Stow" By Stevedoring Before Discharge](#) for additional instructions on Found-in-Stow damages

Damages "found-in-stow" by stevedoring before discharge

This is to be recorded and pictures taken before cargo has been discharged, preferably still in stow position.

Vessel command can, if agreeing to, counter sign on damage Found-in-stow during pre-discharge inspection, performed by stevedores. This should however be made on documentation provided by the stevedores. Operators' representative is responsible to upload an IDR and hold POL as lead for the damage investigation and possible notice letter handling.

NOTE: Damages claimed to be "found in stow" should be accompanied by photos of the damage once units are still onboard and in the stow or just broken out from stow. If reported after discharge, a damage cannot be considered "Found in stow" unless it is obvious that this is the case. Communication between quality functions in different regions should take place if in doubt.

Heavy weather damages

When any damages occur, due to weather condition, following to be reported by vessel:

- Statement of facts. Same report that is sent to vessel management.
- Log extract on weather conditions from the day of incident.
- General information report summing the damages, including deck, hold and a description of the damages together with photos and cargo-IDs, if possible, this can be done by:
 - Using the IDR web tool or,
 - Described in an e-mail (GlobalCargoQuality@walwil.com)
 - Possible route cause information on why the incident happened.

Region/s with cargo impacted is responsible to follow up on heavy weather damage reports and distribute accordingly, together with Operational Excellence Quality as support in case of need.

Incident classification

Classification of an incident is when any segment (cargo, equipment, or vessel) or other relevant topic is not damaged, but a report is necessary to capture the event.

Any incident or event that may affect cargo or cargo operations such as:

- Flat tire
- Flat Battery
- Overlanded
- Overshipped
- Short landed
- Shortshipped
- Non-Starter Units
- Post Operation Report related incident
- Dangerous Goods (IMDG) Related
- Other (specify in comment)

Personal injury

The IDR reporting does not allow personal injury reporting procedure.

Port Operations Instructions:

This process is handled in the Way of Working system, under Issues and Opportunities.

All responsible Wallenius Wilhelmsen Group employee's is to use this process to document Personal Injuries and loss of life.

For operators' representatives, agents and suppliers reporting a case of personal injury, or loss of life, to any personal involved in the cargo handling operation should immediately or as soon as possible, send a message on the e-mail or telephone to the responsible Operators contact in the area.

If there is an IDR connected (any cargo, equipment, or vessel structure) to a personal injury or loss of life:

- The IDR identification number must be reported in the WoW case log for personal Injury.
- The tick box in the IDR "Personal Injury related" is to be ticked.

Vessels Instructions:

- Vessel is to report Personal Injury in their management system only.

On-notice letter & customer notice letter

To hold liable party responsible for an incident or damage

An "on-notice" letter must always be issued to the liable party without delay after an incident or damage occurred. Quality function in the region where an incident or damage has occurred/or assumed occurred are responsible for the communication process to suppliers.

The Group Claims function will have a copy auto-generated of the On-Notice-letter that has been sent.

Customer notice letter (CNL)

A customer notice letter must always be issued to the customer without delay, or according to contract, after a damage has occurred or been discovered.

The quality function in the region where a damage occurred or was discovered is responsible for notifying the local Sales, Business Operations (CCC-Team). The responsibility for notifying the customer falls on the local Sales, Business operations (CCC-Team) in the region where an incident or damage has occurred or been discovered. (It is the responsibility of the Commercial team to ensure that sufficient tracking of customer notice letters is maintained.)

Pictures should never be shared to the customer, unless Regional Cargo Quality or Claims has approved the pictures.

Description of the damage or incident is only to reveal what has been damaged or incident type. (short shipped, overlanded, etc.)

In case there is an incident at sea, and Wallenius Wilhelmsen Cargo Quality has been informed by the vessel Master, it is the responsibility of Wallenius Wilhelmsen Cargo Quality to notify the quality function in the region for both the Port of Load and the Port of Discharge.

Corrective Action / Preventive Action plan (CAPA)

In order to find the root cause of an incident or damage, and to work with preventive improvements, the CAPA report is available in the Form.com environment, as an stand alone format or from the Incident and Damage Report form.

When Operators start a new Incident and Damage Report and there is a need to follow up, the CAPA

format is to be used to document the case, describing action taken and follow up controls.

The preferred method to initiate the CAPA is from the IDR form, with the CAPA feature recently incorporated to IDR format at the end of the report, available for form.com users with login credentials.

CAPA is to be initiated no later than 5 working days after notification has been made.

It is the responsibility of the Quality functions in the region where a damage or incident has occurred to ensure proper follow up by use of the CAPA.

Cargo damage or incidents caused by vessels is to be jointly handled between WW Marine Operations and OCEAN Quality.

IDR maintenance

Database

All IDR 's are visualized in a Dashboard, available for WalWil Group employees.

The dashboard loads data from the following source:

- Old IDR form (ID: 1163070) in form.com
- New IDR form (ID: 41596844) in form.com
- Issues & Opportunities register part of the SharePoint Way of Working site.

These old damages are stored in the following locations:

- Incident And Damage Report - All Documents (sharepoint.com)
- Incident And Damage Report Archived - All Documents (sharepoint.com)

Integration between form.com and sharepoint

Form.com and SharePoint are integrated so all items reported in the IDR form (ID: 41596844) are copied automatically into the Issues & Opportunities register that is part of the Way of Working site.

Changes to an existing idr report

When changing data in an already uploaded IDR report, such as "Port of Damage" or "Cause of incident" etc., it is very important that all relevant information about the changes is stated in the comments field to ensure traceability. Changes can only be done if you are the author of the report or by contacting system admin.

Contact information

Cargo Quality 2WOperationalQuality@walwil.com

Claims claims@walwil.com

Appendix

Portable securing devices

Inventory of portable securing devices

Vessel lashing standard (WW Ocean)

A standard set up for portable lashing equipment has been established for all vessels based on their capacity, configuration, and trade. This equipment should mainly be used on board and used to unitise cargo ashore.

Lashing equipment considered as standard equipment or re-usable equipment is purchased by or after authorization from the BB & Global equipment. All supply of Standard equipment from/to vessels (including equipment used for unitizing) and appointed suppliers as well as all disposals shall be reported in the Lashing Equipment inventory System by the Local office.

All vessels shall conduct regular inventory controls and report the results to BB & Global equipment in order to ensure a cost-effective supply and sufficient quantities of equipment on board. As a general rule RoRo's shall conduct a control 3 times per year and the PCTCs/PCCs 4 times per year. The BB & Global equipment will supply vessels with inventory lists. During these inventories as well as during the work with the lashing material, all damaged and worn-out lashing material to be taken aside and reported as scrap.

Vessel is responsible for careful storage, safe handling and to prevent lashing equipment from damage and theft.

Planned Supply required from the vessels should be sent well in advance (latest 3-2 week's prior ETA North Europe) to BB & Global equipment.

Emergency delivery ("Emergency" means a particular piece of cargo will be left behind or is required to perform a safe and quality minded cargo operation). The Master/Chief Officer shall sign the delivery receipt for equipment.

Dunnage material that can be re-used shall be collected and re-used until damaged and considered useless.

The recycling of damaged/useless dunnage should be handled according to the vessels garbage management per Owners Environmental policy.

Vessel lashing standard (EK)

Item	Spec. (B/L)	Q'ty	
		6000 PCTC	7200 LCTC
Small Lashing Band	2t	29,000	35,000
Large Lashing Band	5t	4,000	4,000
	10t	200	200
Chain with Tension Lever	15t	1,800	2,300
Small Round Sling	2t	5,000	6,000
Large Round Sling	15t	1,000	1,500
Rubber Wedge	For car	600	600
	For truck	100	100
Rubber mat for dunnage	For dunnage	800	800
Rubber mat for ramp	For ramp operation	250	250

To prevent vessel operation delay caused by wrong quantity of lashing materials, vessel should report actual &

correct quantity of lashing materials on time.

- The lashing inventory of all EUKOR owned & chartered vessels should be reported to Cargo Quality team through Eclips or e-mail.
- One week before arrival at the first Korean port / when passing Suez Canal (NB).

Inspection and maintenance schemes for portable cargo securing devices

This section describes the inspection and maintenance schemes for the portable cargo securing devices on board the ship. Regular inspections and maintenance are carried out under the responsibility of the Master. At a minimum, portable cargo securing device inspections should include:

Routine visual examinations of components being utilized.

All portable securing devices are to be thoroughly examined after use and prior to their being reused. Damaged devices should be kept isolated from equipment which has been inspected and is ready for use.

Examination every 6 months and lubrication as needed.

The quality of lashing materials must be inspected for wear and tear.

Defective materials should be discarded and replaced.



Actions to inspect the ship's portable cargo securing devices

Entries are to be made in a record book that can be found on the last pages in this chapter. If computer-based maintenance systems exist on board, the maintenance record of the portable securing devices can be kept there.

Each device should be checked for damage and wear that might affect the ability of the device to adequately and safely perform its designated function or that could lead to physical injury of persons handling the devices.

Devices should also be examined prior to being used for a particular purpose to determine that they are suitable for that purpose, with regard to both strength and efficiency.

Web lashings and wire rope

Wire rope to be used for lashing purposes should be examined for permanent kinks, flattening, corrosion, drying out of the fiber core and protrusion of the fiber core. Any wire found with these

defects should be rejected.

Web lashings found to be damaged should be treated as garbage and handled according to vessel's garbage management per the owner's environmental policy or per local garbage disposal regulations for material condemned as useless in port.

The solid hook of Rollash type, "Rollash (Orange Web) BL 5 MT", should be collected and brought ashore in appropriate port and sent to Gothenburg for reuse of WW Ocean.

Inter-layer stackers, twist-locks, turn-buckles, lashing rods, deck connections, etc.

These items are all subject to deterioration or physical damage of one kind or another and should always be inspected before use. Operational structural failure of twist-lock inter-layer stackers may be a result of rough handling at discharge ports (e.g., stevedores throwing down the twist-locks from high level). Such rough handling could also cause defects in other components that could fail under operational stress. The utilization of suitable bags and boxes to collect components before lowering them to deck level helps to prevent such misuse.

Inspections and maintenance reports are to be entered into the "Log for Inspection Maintenance" shown on the last page of this chapter.

Lashing equipment scrapping guidelines

Web lashings (Car lashing, Rollash, Web slings, Span sets etc.) to be scrapped if the following damages are visible:

- Edge, frictions and cutting damages on webbing
- Cut damages on the surface of more than 10% of the width,
- If chemicals or high heat have created damages.
- The seams show damages, or the thread is cut on several places.
- If there is a knot on the webbing which cannot be untied.
- The webbing is very dirty (cannot determine the color of the web) and generally torn (fibers all over the surface being napped).
- Widespread friction damages.
- Not readable or missing label/stamping with stated BL alternatively MSL

Damages on ratchet or winch such as:

- Nuts which have started to loosen or have loosened.
- Handles which are loose at the point of attachment.
- Ratchets and handles which have been run over.
- Damages on catch or cog wheel.
- Locking springs which are missing.
- Damages by corrosion where the locking function is stiff or out of order.

Lashing Chains and levers with damages of the following nature to be scrapped:

Wear on the chain eyes exceeding 10% of the original material.

Permanent elongation of chain links.

Permanent increase of the opening of the hooks.

Chains with marks or impressions on the material deeper than 10% of the diameter.

Deformed eyes or links.

Chains with have massive corrosion (clear reduction of thickness in material caused by corrosion).

See also following pictures for guidance:





Cargo quality audits

WW Ocean and EUKOR will perform all quality audits through form.com current format.

Cargo quality improvement through check & feedback of cargo handling performance by the quality responsible on-site during cargo operation.

Audit procedure:

Cargo Quality team is responsible for planning and executing the audits.

Audits should be performed by the quality responsible on site during the cargo operation.

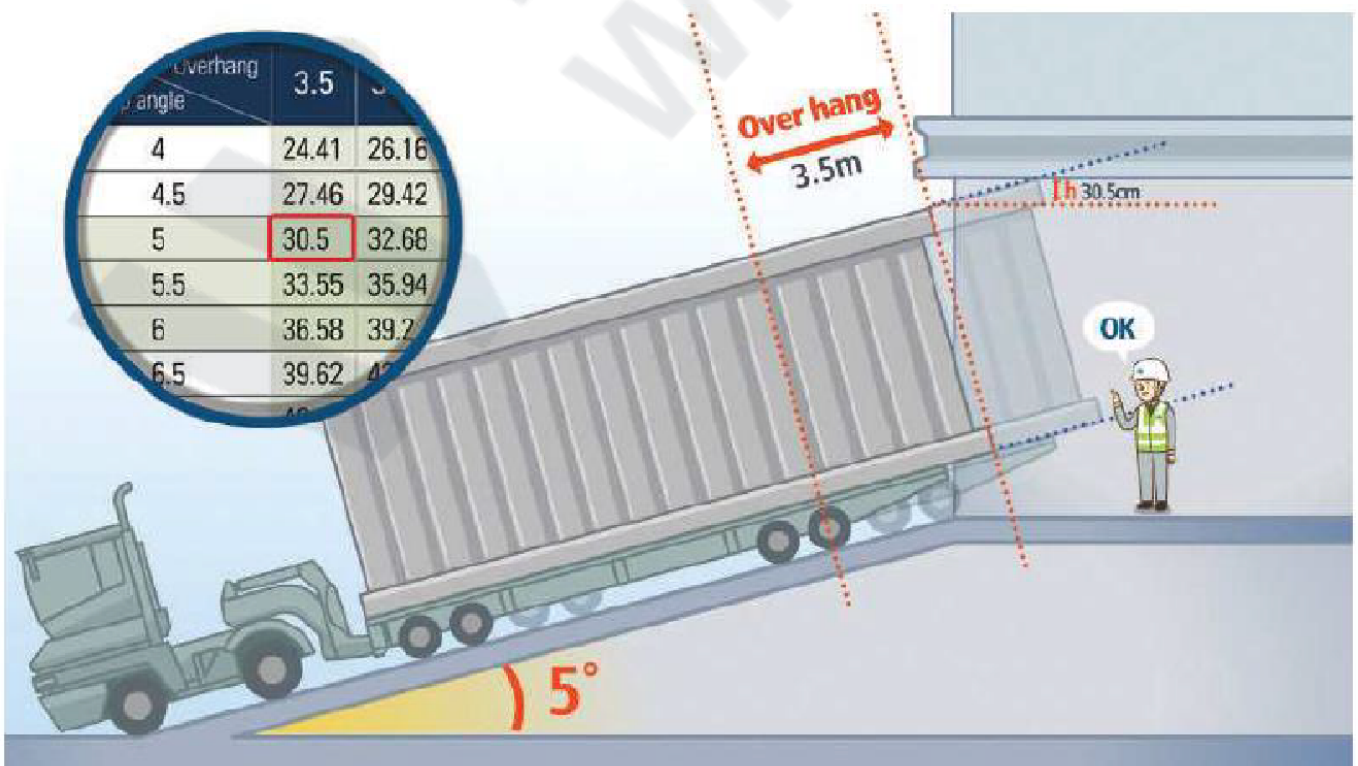
The rectification for all observed deficiencies and areas requiring improvement with regard to the vessel and stevedore performance should be reported to Cargo Quality team.

Cargo height increased by ramp angle and overhang

Cargo height increases according to the ramp angle and the length of overhang. The table below shows cargo height increase based on changes of the ramp angle and overhang. The table data should be considered before loading and extra caution should be exercised to prevent possible damage to the roof.

Overhang: The distance between the outermost front or rear point of a vehicle and the wheel centers of the respective axle.

- Overhang(m) / Ramp angle (°) / height(cm)



Overhang Ramp angle	2	2.25	2.5	2.75	3	3.25	3.5	3.75	4	4.25	4.5	4.75	5
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.5	1.75	1.96	2.18	2.4	2.62	2.84	3.05	3.27	3.49	3.71	3.93	4.15	4.36
1	3.49	3.93	4.36	4.8	5.24	5.67	6.11	6.54	6.98	7.42	7.85	8.29	8.73
1.5	5.24	5.89	6.54	7.2	7.85	8.51	9.16	9.82	10.47	11.13	11.78	12.43	13.09
2	6.98	7.85	8.72	9.6	10.47	11.34	12.21	13.09	13.96	14.83	15.7	16.58	17.45
2.5	8.72	9.81	10.9	12	13.09	14.18	15.27	16.36	17.45	18.54	19.63	20.72	21.81
3	10.47	11.78	13.08	14.39	15.7	17.01	18.32	19.63	20.93	22.24	23.55	24.86	26.17
3.5	12.21	13.74	15.26	16.79	18.31	19.84	21.37	22.89	24.42	25.95	27.47	29	30.52
4	13.95	15.7	17.44	19.18	20.93	22.67	24.41	26.16	27.9	29.65	31.39	33.13	34.88
4.5	15.69	17.65	19.61	21.58	23.54	25.5	27.46	29.42	31.38	33.35	35.31	37.27	39.23
5	17.43	19.61	21.79	23.97	26.15	28.33	30.5	32.68	34.86	37.04	39.22	41.4	43.58
5.5	19.17	21.57	23.96	26.36	28.75	31.15	33.55	35.94	38.34	40.73	43.13	45.53	47.92
6	20.91	23.52	26.13	28.75	31.36	33.97	36.58	39.2	41.81	44.42	47.04	49.65	52.26
6.5	22.64	25.47	28.3	31.13	33.96	36.79	39.62	42.45	45.28	48.11	50.94	53.77	56.6
7	24.37	27.42	30.47	33.51	36.56	39.61	42.65	45.7	48.75	51.79	54.84	57.89	60.93
7.5	26.11	29.37	32.63	35.89	39.16	42.42	45.68	48.95	52.21	55.47	58.74	62	65.26
8	27.83	31.31	34.79	38.27	41.75	45.23	48.71	52.19	55.67	59.15	62.63	66.11	69.59

Standard operating procedure for specialized cargo

Client

Project

Port of loading

Port of Discharge

Document edited and issued by

Revision list

Revision Date Edited by Checked by Comment

Cargo information.

Item no Commodity # of items Length Width Height Weight ea.

Equipment to be used.**Item Description SWL****Sequence of Activities****# Activity Equipment used Performed by Controlled by**

1
2

Appendix**# Document**

1
2

Method of statement

Client:

Task:

Port of Loading:

Port of Discharge:

Document edited and issued by:

Revision List

Revision Date Edited by Check by Comment**Table of Content**

- 1 Document Scope
- 2 Key personnel Contact
- 3 HSE
- 4 Cargo Information

- 5 Sequence of activities
- 6 Cargo Securing
- 7 Route
- 8 Weather
- 9 Emergency, Safety and Contingence plans
- 10 Appendix

Document Scope

This document is the technical guideline for the loading, ocean transport and related works of a ... to be shipped, on MV ... from ... to

This document shows certain responsibilities, procedures, and activities as part of this transportation.

The appendix of this document contains related documents such as, but not limited to, vessel information, stowage plan & securing calculation.

Key personnel Contact

Below personnel will be involved in the cargo operation and can answer any form of questions:

Name	Company	Phone	E-mail
-------------	----------------	--------------	---------------

HSE

OPERATORS has a major commitment towards health, safety, and environmental protection.

Further to the vessel internal ISM based safety measures, shipboard instructions and its resulting precautionary preparations and actions we would like to highlight a few major items that have to be followed and observed at all times:

Only involved and properly trained and qualified personnel shall be allowed in working areas on the ship.

Personal protection equipment must be worn in the working areas of the ship. Hi-visibility vest or jacket and safety shoes are the minimum.

A short meeting should be held before works begins in order to highlight the operational guidelines and to ensure safety of the operation

Lashing of the cargo must always be done to the satisfaction of the ships command, as the Master is responsible for the cargo and seaworthiness of the vessel.

Everyone regardless of rank or part of which party involved, has the right and duty to stop an operation at site when the individual notices a hazardous situation and shall advise the person in charge of what he/she observed.

Cargo, cargo carrier and securing equipment information**CARGO**

Client Name
Port of Loading
Port of Discharge
Port of Final destination
Length
Width
Height
Weight

CARGO CARRIER

Cargo Carrier
Equipment number
Last inspection date

CARGO SECURING EQUIPMENT

WW Ocean Lashing chain
WW Ocean Chain Lever
WW Ocean Heavy duty chain
WW Ocean Spanset
WW Ocean Rubber Mats

Sequence of activities

Activity Equipment Performed by Controlled by

1
2
3
4
5
6
7
8

Activity Equipment Performed by Controlled by9
10**Cargo securing**

Cargo securing calculations as far as carried out will be using Cargo securing manual and/ or the 'Marilash' calculation program. Both sources are based on the IMO 'Code of Safe practice for Cargo Stowage and Securing'. Vessel's cargo securing manual is based on the same code.

Cargo securing will be performed by the contracted stevedore company and supervised by WW Ocean superintendent and vessel duty officer.

All cargo will be stowed under deck with an allowed uniform load of 4.0t/m² (Dk 5).

Route

The Vessel sail from:

Table of contents

The ships command is always aware of the current local, regional, and wide area weather situation and forecast.

All voyages over 4 days are automatically provided with weather routing information from 3rd party ashore.

Based on this information the ships command will decide whether deviation of the route is found necessary.

Emergency, safety, and contingency plans

Emergency, safety, and contingency plans are part of the vessel quality and safety management system, fully incorporated, approved, and periodically audited and renewed according to ISM and ISPS regulations.

Present and expected ISPS security level in all ports and on the ship is level ... (1-3).

Appendix1
2
3
4
5
6

Operational process

The following process aim at helping all stake holders maintain a clear understanding of roles and responsibilities during cargo and port operations.

Travel cargo super intendent

In case there is a Travel Cargo Superintendent (TCSI) responsible for the operation, all the below point in Operational process is to be covered under the TCSI responsibility.

Pre-operations

Some information and/or requests might require notifying other departments within WW OCEAN such as Voyage Operators, Stowage Planners and Agents.

In order to share information, it is necessary that all participants have their own preparation for the meetings and having communication with Vessel Planners concerning the stow plan.

Pre-operations meeting with stevedore

Prior to any load and/or discharge operation, the WW Ocean representative is responsible for arranging a pre-operational meeting with sub-contractors. It should, as far as practically possible, take place at appropriate time to organize changes to planning before start of the cargo operation. Practically this could be the working day before operations, but at convenience of local organization.

An operations plan should be discussed and agreed upon at the meeting, and should include, but not be limited to, the following items:

- Stowage plan, cargo balances and cargo priorities
- Cargo to be loaded/discharged or shifted and any specific quality and/or safety issues for that.
- Cargo type. (low ground clearance, large overhang, free height clearance, heavy cargo, special equipment, etc.)
- Special lashing instructions
- Traffic routes
- Number of superintendents/foremen/gangs/drivers and lashers required.
- Sequence of loading and/or discharge.
- Tally and co-ordination with the terminal operator.
- Location/availability of mechanics if required during the cargo operation
- Security concerns and any related issues.
- Cargo carrier & lashing equipment distribution.
- Signalmen for Break Bulk handling and traffic control to be used.

Battery cable disconnection procedure

When the unit is in final stow position, the driver is to pull the hood or trunk release before leaving the unit.

Carefully open the hood and check the position of battery (Stevedore). If a unit does not have the battery located under the hood, there might be an instruction from the shipper where to locate the battery.

If battery is not located under the hood, locate the battery accordingly for disconnection.

Disconnect battery minus pole (-) cable and put a insulated cover on the battery terminal (Technician)

The hood or trunk, depending where the battery is located, should preferably be closed unless there is a risk for locking

Trunks is to be closed if any spare parts or other allowed items is visible.

Put a placard on the windshield for indicating disconnection of battery and location of the battery in case it is not under the hood. (Stevedore or Technician)

Disconnection operation should be carried out in presence with vessel or shoreside recourse with fire extinguishers

If a battery is placed in other area on the unit than under the hood, appropriate information to POD is to be displayed on the unit.

Exception:

- Any motor vehicle with function to switch off the main battery is exempted from the manual disconnection.
- When a used unit needs power for safety reasons. (AFV vehicles)

Battery cable connection procedure

Discharging Port (Connection operation)

Confirm and outline onboard location and volume of Used units with disconnected battery

Open the hood and find the position of battery (Stevedore) Careful handling is needed in case overhead deposits risk for damage to open hood.

Lift the battery pole protection and collect in appropriate bag/box

Reconnect the battery cable to the battery (Technician)

If battery is located underneath or behind panels or seats, reinstall/reset all panels or seats to original configuration/location (Technician or Stevedore)

Close the hood (Technician or Stevedore)

Remove any signs/labels that the unit has a disconnected battery

Connection operation should be carried out in presence of deck crew and fire extinguisher

Letter of indemnity for carriage of motorhome (LOI)

[Letter of Indemnity for Carriage of Motorhomes.docx](#)

Date:
11/11/2025Vessel name:
Click or tap here to enter text.Voyage number:
Click or tap here to enter text.Insert Ports as per Bill of Lading
Load Port
Click or tap here to enter text.Discharge Port:
Click or tap here to enter text.Detailed description of cargo
Click or tap here to enter text.**Letter of Indemnity for Carriage of Motorhomes**To:
Wallenius Wilhelmsen

Dear Sirs,

The above cargo of motorhomes is intended to be loaded on board the Wallenius Wilhelmsen vessel from the port of [Insert POL] to be carried to the port of [Insert POD]. These motorhomes contain only clean personal effects, clothing, and shoes, which we, [Insert name of the shipper], acknowledge are entirely at our own risk. We undertake note that neither we nor our insurers shall bring any claims against you for any damage or loss of the personal effects carried on or inside the cargo.

In consideration of your compliance with the above request, we also hereby agree as follows:

1. To indemnify you, your servants, and agents, and to hold all of you harmless in respect of any liability, loss, damage, or expense of whatsoever nature which you may sustain by reason of complying with our request.
2. In the event of any proceedings being commenced against you or any of your servants or agents in connection with complying with our request as aforesaid, to provide you or them on demand with sufficient funds to defend the same.
3. If, in connection with your complying with our request as aforesaid, the ship, or any other ship or property in the same or associated ownership, management or control, should be arrested or detained or should the arrest or detention thereof be threatened, or should there be any interference in the use of trading of the vessel (whether by virtue of a caveat being entered on the ship's registry or otherwise howsoever), to provide on demand such bail or other security as may be required to prevent such arrest or detention or to secure the release of such ship or property or to remove such interference and to indemnify you in respect of any liability, loss, damage or expense caused by such arrest or detention or threatened arrest or detention or such interference, whether or not such arrest or detention or threatened arrest or detention or such interference may be justified.
4. The liability of each and every person under this indemnity shall be joint and several and shall not be conditional upon your proceeding first against any person, whether or not such person is party to or liable under this indemnity.
5. This indemnity shall be governed by and construed in accordance with English law, and each and every person liable under this indemnity shall at your request submit to the jurisdiction of the High Court of Justice of England.

Yours faithfully,

For and on behalf of
[Insert name of Requestor]
The Requestor

Stowage and securing of cars - MariTerm AB

[Securing of cars proof doc - 2026-01-19.docx](#)

Cargo Handling Instructions

- Stowage and securing of cars



2026-01-19

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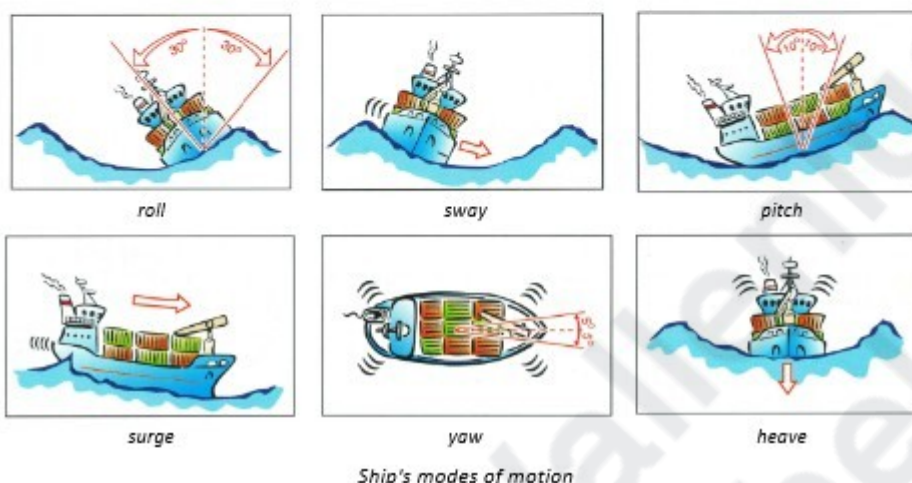
TABLE OF CONTENTS

TABLE OF CONTENTS	2
1 EVALUATION OF FORCES ACTING ON CARGO UNITS	3
1.1 MAXIMUM ALLOWED ACCELERATIONS	3
1.2 APPROXIMATE COEFFICIENTS OF FRICTION	4
1.3 SAFETY FACTORS	5
1.3.1 <i>Safety factors for calculations</i>	5
1.3.2 <i>Safety factors for securing devices</i>	5
1.4 LASHING ANGLES	6
1.5 STATEMENT ON MIXED LASHINGS	7
1.6 APPLICATION OF CHOCKS	8
2 CARGO SECURING ARRANGEMENTS FOR DIFFERENT CARGO TYPES	9
2.1 CARS AND LIGHT ROLLING UNITS, 0 – 3.5 TON	9
2.1.1 <i>Longitudinally stowed cars</i>	10
2.1.2 <i>Cars stowed in ramps</i>	11
2.1.3 <i>Athwartships stowed cars</i>	12
3 APPENDIX – CALCULATION EXAMPLES	14
3.1 FORMULAS	14
3.2 EXAMPLE CALCULATION – CARS/HSV, LONGITUDINAL STOWED – WEIGHT 3.5 TON	16
3.3 EXAMPLE CALCULATION – CARS/HSV, ATWARTSHIPS STOWED – WEIGHT 3.5 TON	17

1 Evaluation of forces acting on cargo units

Cargo shifting on board a ship is normally due to ship motions at sea in bad weather, and thus it is necessary to secure the cargo in one way or the other. In what manner the cargo is to be secured depends on the route and the type of cargo to be shipped.

A ship at sea has six modes of motion: three rotational and three linear motions. The designations of these are pitch, roll, yaw, sway, surge and heave, see figures below.



1.1 Maximum allowed accelerations

The dimensioning accelerations in different positions on board have been calculated according to Annex 13 of the Code of Safe Practice for Cargo Stowage and Securing, which are presented in the diagrams below. The acceleration data is valid for loading conditions with GM values up to 3.00 m.

The figures given for transverse accelerations include components of gravity, roll, pitch and heave parallel to the deck. The vertical acceleration is the dynamic acceleration. The total vertical acceleration including gravity is thus $9.81 \pm a_v$, where a_v is taken from the figure below.

The below accelerations are the maximum on the different decks onboard WWO operated vessels. Actual accelerations on board individual vessels can be found in chapter 3 in the vessel's Cargo Securing Manual (CSM).

To avoid excessive longitudinal accelerations the speed will have to be reduced in extreme heavy head seas.

Accelerations for unrestricted voyages:

	Transverse accelerations a_t [m/s ²]												Longitudinal accelerations a_l [m/s ²]
	Hold 4			Hold 3			Hold 2			Hold 1			Holds
On deck, high	6.65	6.38		6.20	6.11	6.02	6.02	6.11	6.20	6.38	6.65	7.00	3.00
On deck, low	5.87	5.70		5.52	5.35	5.35	5.35	5.35	5.52	5.70	5.87	6.13	2.30
Tween-deck	5.26	5.01		4.75	4.67	4.58	4.58	4.67	4.75	5.01	5.26	5.60	1.60
Lower hold				4.40	4.24	4.15	4.15	4.24	4.40	4.57	4.90		1.20
	Hold 4			Hold 3			Hold 2			Hold 1			Holds
	Vertical accelerations a_v [m/s ²]												
	7.30	6.04	4.93	3.97	3.42	3.42	3.97	4.93	6.04	7.30	8.70		

Accelerations in m/s^2 on different decks and stowage positions.

Deck levels and ramp positions on PCTC vessels

As per the CSS Code, deck levels are classified as *Lower Hold*, *Tween-deck*, *On Deck, Low*, and *On Deck, High*. On large PCTC vessels, this typically corresponds to:

- On Deck, High: Decks 10–12
- On Deck, Low: Decks 7–9
- Tween-deck: Decks 4–6 (incl. Main Deck)
- Lower Hold: Decks 1–3

On larger vessels, additional decks may exist, and the numbering may vary. For deck layouts on specific vessels, refer to chapter 3 of the vessel's Cargo Securing Manual (CSM).

Ramp positions vary between vessels. Most vessels are equipped with internal ramps inclined at less than 10 degrees, which is the basis for the calculations for cars. For high and heavy units, calculations are based on a maximum ramp inclination of 8 degrees.

1.2 Approximate coefficients of friction

One important parameter influencing the cargo securing system is the friction between the cargo unit and the ship's deck. According to Annex 13, section 7.2 and Appendix 4 of the document MSC.1/Circ.1623 Amendments to the Code of Safe Practice for Cargo Stowage and Securing (CSS Code), the following coefficient of friction (μ) may be used for cars and other self-propelled vehicles on air rubber tyres:

- Steel–air rubber tyre, dry and clean: 0.45

The coefficient of friction is to be regarded as dynamic friction coefficients which shall be used for direct lashings used on board.

If rolling cargoes having non-braked, non-driving wheels there is no work of friction at these wheels in the vehicle's driving direction unless chocks are used. The reduction is proportional to the part of weight on unbraked wheels. For cars and light rolling units with weight up to 3.5 ton the weight distribution is estimated to 50% on the braked axle. The parking brake is mandatory to be engaged to make the calculations valid.

1.3 Safety factors

Safety factors are needed for uncertainties in both the calculations and in the strength of securing devices.

1.3.1 Safety factors for calculations

There are uncertainties in the calculations of required forces in securing arrangements due to the possibility of uneven distribution of forces among the securing devices. To cover these uncertainties a safety factor should be used. The factor is set to either 1.20 or 1.35.

The required maximum securing load MSL of the securings are to be calculated according to the following equations, based on the largest calculated force in the lashings, FL_{max} :

- For lashing arrangements with more than four lashings working together:

$$MSL \geq FL_{max} \cdot 1.35$$

- For lashing arrangements with maximum two lashings working in each direction:

$$MSL \geq FL_{max} \cdot 1.20$$

1.3.2 Safety factors for securing devices

The maximum securing load (MSL) of securing equipment in relation to its minimum break load (MBL) to be according to the figure below.

Material	MSL
Web Lashing	50 % of MBL

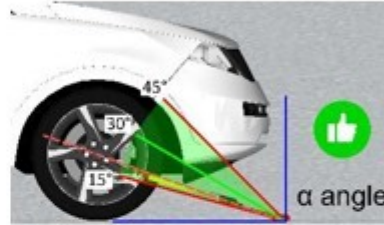
Maximum securing load, MSL, in relation to minimum break load, MBL

1.4 Lashing angles

In the examples in this document the lashings direction is defined by the angles α and β which are explained in the figure to the right.

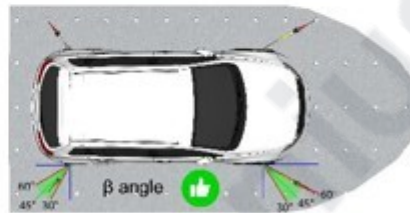
α = Vertical lashing angle

β = Longitudinal lashing angle between the lashing and the transverse axle of the cargo transport unit seen from above



The lashing angles are to be used for dimensioning lashing arrangements for the following four cases:

- Transverse sliding
- Longitudinal sliding
- Transverse tipping
- Longitudinal tipping (not an issue for cars)



The following angles should be used when securing cargo units:

- For cars with a weight up to 3.5 ton the α -angle should be between 15 - 45° and the β -angle between 30 - 60°.

When calculating lashing forces in cargo securing arrangements the maximum and minimum values for the α and the β angles should be applied as follows:

- α_{max} is to be used in sliding equations and α_{min} is to be used in tipping equations.
- β_{max} is to be used in combination with transverse accelerations and β_{min} is to be used in combination with longitudinal accelerations.

The lashing interval may be outside of the prescribed lashing interval if the Cargo Securing Manual for the ship is stating that this is allowed. Examples showing how the secured weight can be calculated are found in the Appendix – Calculation Examples.

1.5 *Statement on mixed lashings*

Mixed lashings, i.e., a combination of lashings attached to a vehicle's lashing eyes and lashings attached to the rims, should generally be avoided, as they may create an uneven distribution of forces between the lashings:

Different lashing lengths

Car lashings stretch when subjected to dynamic forces during transport. If lashings of unequal length are used, they will stretch by different amounts. This can cause vehicles to move inconsistently in both longitudinal and athwartships directions, increasing the risk of damage to the vehicle itself or to surrounding cargo.

Symmetry of the lashing arrangement

When securing vehicles, the lashing arrangement should always be as symmetrical as possible. Symmetry ensures a more balanced distribution of forces between lashings working in different directions. In all cases, the prescribed lashing angle interval must be respected.

Permitted use of mixed lashings

In some situations, mixed lashings may be acceptable, provided the work is carried out under sufficient supervision to ensure that the following conditions are met:

- The lashings attached to the vehicle's lashing eyes and those attached to the rims should, as far as practicable, be of equal length.
- The prescribed lashing angle interval must always be followed.

1.6 Application of chocks

When used for cars, the chocks shall always be positioned on the front axle in the driving direction of the vehicle.



Car with two chocks placed around one front wheel.



Car with four chocks placed around the front wheels.

1.6.1 Securing and chocking of cars

When chocking cars, the chocks shall always be placed at the unbraked axle. As outlined in the drivetrain overview in section 1.6.2 below, the most critical case is a rear-wheel drive (RWD) vehicle, where both the parking brake and the transmission lock act on the rear axle. This leaves the front axle unbraked, which is where the chocks must be positioned.

For dimensioning cargo securing arrangements, chocks are required for cars stowed athwartships. When correctly placed on the unbraked axle, the chocks ensure that friction is produced at both axles and they increase the efficiency of the lashings in the securing calculations, resulting in a higher securing value.

1.6.2 Explanation of different drive trains of cars

FWD (front-wheel drive):

- Driving wheels: Front
- Parking brake: Locks rear axle
- Gear / P: Holds front axle (since transmission locks the driven wheels)
- → Both axles secured when using brake + gear/P.

RWD (rear-wheel drive):

- Driving wheels: Rear
- Parking brake: Locks rear axle
- Gear / P: Holds rear axle (transmission locks driven wheels)
- → Rear axle double-secured, front axle free.

4WD / AWD (four-wheel drive):

- Driving wheels: Both axles (distribution varies by system)
- Parking brake: Locks rear axle
- Gear / P: Holds both axles (since transmission connects to front and rear)
- → Entire driveline secured.

2 Cargo securing arrangements for different cargo types

This chapter describes the correct application of portable cargo securing gear to the following types of units:

- Cars and light rolling units (0 – 3.5 ton) section: 2.1

2.1 Cars and light rolling units, 0 – 3.5 ton

All decks intended for transport of cars and lighter vehicles have fixed securing arrangements in the decks. The car should be put in a low gear and the parking brake activated. Normal stowing of cars is in fore and aft direction. However, to utilize all available space, it is sometimes necessary to stow some of the cars athwartships.



Car lashings, car chocks and car slings are the only equipment to be used for lashing of cars. If the car doesn't have designated lashing points, car slings may be used for attaching car lashings to the rims. Multiple car lashings should not be attached to a car sling.

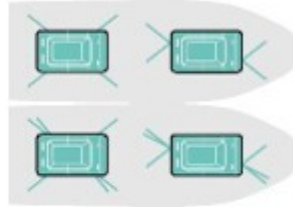
The tables below indicate the maximum weight for cars for longitudinally and athwartships stowed cars respectively as well as car stowed in ramps. The α -angle of the car lashings should be between 15 - 45 degrees and the β -angle between 30 - 60 degrees.

Note! If the angles are outside the permissible intervals the number of lashings must be increased.

Example calculations on securing arrangement for cars are given in the appendix of this document. It has been assumed that 50% of the weight rest on the braked axle. The dynamic coefficient of friction has been taken as 0.45 for air rubber tyres against the deck plating.

2.1.1 Longitudinally stowed cars

The table below indicates the maximum permissible weight for longitudinally stowed cars that have been secured with 4 lashings, 2 per end. If the limited weights in the table below are exceeded, extra car lashings must be applied in each end according to the instructions.



Typical deck levels*:					
Deck 10 and above	2.9 ton				2.6 ton
Deck 7-9					
Deck 4-6 (incl. main deck)					
Deck 1-3					
	Hold 4	Hold 3	Hold 2	Hold 1	Holds

*) On large PCTC vessels, the deck levels typically correspond to the divisions described above.
For the exact division of deck levels, please refer to the vessel's Cargo Securing Manual.

	Max weight 3.5 ton: 4 lashings, 2 per end
	Limited weight or extra securing: 1 extra car lashing should be applied in each end

In heavy head seas, the vessel's speed must be reduced to limit excessive longitudinal and vertical forces.

2.1.2 Cars stowed in ramps

The table below indicates the maximum permissible weight for cars loaded longitudinal in rampways that have been secured with 4 lashings, 2 per end, and at least 2 car chocks placed in downhill direction. If the limited weights in the table below are exceeded, extra car lashings must be applied according to the instructions.



Typical deck levels*:				
Deck 10 and above	2.1 ton	2.1 ton	2.1 ton	2.1 ton
Deck 7-9	2.8 ton	2.8 ton	2.8 ton	2.8 ton
Deck 4-6 (incl. main deck)				
Deck 1-3				
	Hold 4	Hold 3	Hold 2	Hold 1

*) On large PCTC vessels, the deck levels typically correspond to the divisions described above. For the exact division of deck levels, please refer to the vessel's Cargo Securing Manual.

	Max weight 3.5 ton: 4 lashings, 2 per end, and at least 2 car chocks placed in downhill direction
	Limited weight or extra securing: 1 extra car lashing should be applied upwards
	Limited weight or extra securing: 2 extra car lashings should be applied upwards and 1 extra car lashing should be applied downwards

In heavy head seas, the vessel's speed must be reduced to limit excessive longitudinal and vertical forces.

2.1.3 Athwartships stowed cars

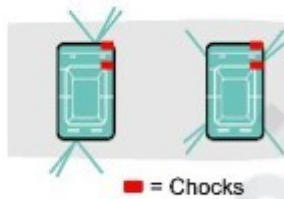
This section for athwartships stowed cars contains two sub-sections with lashing tables based on:

- Maximum secured weight when 6 lashings and at least 2 car chocks are used
- Number of lashings and chocks needed for securing of cars weighing up to 3.5 tons

2.1.3.1 Maximum secured weight when 6 lashings and at least 2 car chocks are used

The table below indicates the maximum permissible weight for athwartships stowed cars when 6 lashings, 3 per end, and at least 2 car chocks are used.

If the limited weights in the table below are exceeded, see section 2.1.3.2 for cars with higher weights.



Typical deck levels*:				
Deck 10 and above	2.0 ton	2.0 ton	2.0 ton	2.0 ton
Deck 7-9	2.5 ton	2.5 ton	2.5 ton	2.5 ton
Deck 4-6 (incl. main deck)				2.5 ton
Deck 1-3				
	Hold 4	Hold 3	Hold 2	Hold 1
				Holds

*) On large PCTC vessels, the deck levels typically correspond to the divisions described above. For the exact division of deck levels, please refer to the vessel's Cargo Securing Manual.

	Max weight 3.5 ton: 6 lashings, 3 per end, and at least 2 car chocks
	Limited weights: 6 lashings, 3 per end, and at least 2 car chocks

For athwartships stowed cars weighing maximum 1.5 ton, the following minimum requirements apply:

Deck 9 and below:

2 + 2 lashings and 2 wedges

Deck 10 and above:

3 + 3 lashings and 2 wedges

2.1.3.2 Number of lashings and chocks needed for securing of cars weighing up to 3.5 tons

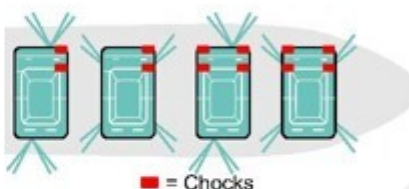
The table below indicates the maximum permissible weight for athwartships stowed cars.

The green colour – cars secured with 6 lashings, 3 per end, and at least 2 car chocks placed around one front wheel.

The yellow colour – cars secured with 8 lashings, 4 per end, and at least 2 car chocks placed around one front wheel.

The orange colour – cars secured with 8 lashings, 4 per end, and at least 4 car chocks placed around the front wheels.

The red colour – limited weight is possible for cars secured with 8 lashings, 4 per end, and at least 4 car chocks placed around the front wheels.



Typical deck levels*:				
Deck 10 and above				3.4 ton
Deck 7-9				
Deck 4-6 (incl. main deck)				
Deck 1-3				
	Hold 4	Hold 3	Hold 2	Hold 1
				Holds

*) On large PCTC vessels, the deck levels typically correspond to the divisions described above.
For the exact division of deck levels, please refer to the vessel's Cargo Securing Manual.

	Max weight 3.5 ton: 6 lashings, 3 per end, and at least 2 car chocks
	Max weight 3.5 ton: 8 lashings, 4 per end, and at least 2 car chocks
	Max weight 3.5 ton: 8 lashings, 4 per end, and at least 4 car chocks
	Limited weight: 8 lashings, 4 per end, and at least 4 car chocks

3 Appendix – Calculation Examples

This appendix contains guidance for performing calculations on the dimensioning of cargo securing arrangements for specific cargo units. The first part of this appendix contains formulas for performing the calculations. In the second part examples are given on how to use the formulas.

For explanation of the angles α and β , see section 1.4 Lashing angles.

3.1 Formulas

Below formulas for calculating the cargo weight in ton prevented from sliding and tipping is given for lashing arrangements.

Transverse sliding:

$$m = \frac{\sum_{i=1}^n \left[\frac{MSL_i}{SF} \cdot (\mu \cdot c_{FL} \cdot \sin \alpha_i + \cos \alpha_i \cdot \cos \beta_i) \right]}{\frac{a_i}{PF} - \mu \cdot c_m \cdot g_0}$$

Longitudinal sliding:

$$m = \frac{\sum_{i=1}^n \left[\frac{MSL_i}{SF} \cdot (\mu \cdot c_{FL} \cdot \sin \alpha_i + \cos \alpha_i \cdot \sin \beta_i) \right]}{\frac{a_i}{PF} - \mu \cdot c_m \cdot (g_0 - f_z \cdot a_v)}$$

Transverse tipping:

$$m = \frac{\sum_{i=1}^n \left[\frac{MSL_i}{SF} \cdot (p_i \cdot \sin \alpha_i + s_i \cdot \cos \alpha_i \cdot \cos \beta_i) \right]}{\frac{a_i}{PF} \cdot H_{CG} - g_0 \cdot B_{CG}}$$

Longitudinal tipping:

$$m = \frac{\sum_{i=1}^n \left[\frac{MSL_i}{SF} \cdot (p_i \cdot \sin \alpha_i + s_i \cdot \cos \alpha_i \cdot \sin \beta_i) \right]}{\frac{a_i}{PF} \cdot H_{CG} - (g_0 - f_z \cdot a_v) \cdot L_{CG}}$$

General parameters

		Unit
m	Mass of the load	ton (=1000 kg)
n	Number of lashing working together in each direction	-
i	Index for lashing ($i = 1, 2, 3, 4 \dots n$)	-
c_m	Part of mass resting on braked/wedged axle/support (in rolling direction) = 1 for vehicles where all axles are braked, as well as static cargo = 0.5 for cars & light rolling units braked on one axle = 0.2 for axles with two chocks = 0.4 for axles with four chocks = 0.3 for roll trailers = 0 if none of the axles are braked	-
c_{FL}	Factor to determine whether the lashing increases friction or not (in rolling direction) = 1 if the lashing/lashings increase the friction = 0 if the lashing/lashings do not increase the friction	-
PF	Performance factor of 1.15 for voyages less than 72 hours. For voyages more than 72 hours, the factor is set to 1. a_i and a_v are divided by this factor	-
f_z	Reduction factor for longitudinal sliding and tipping. f_z is taken as the average friction for the whole contact surface.	-

μ	0.0	0.1	0.2	0.3	0.4	0.6
f_z	0.20	0.50	0.70	0.80	0.85	0.90

Linear interpolation is used to obtain intermediate values not found in the table

Accelerations

		Unit
g_0	Gravitational acceleration (= 9.81 m/s ²)	m/s ²

a_l =	Longitudinal acceleration	m/s^2
a_t =	Transverse acceleration	m/s^2
a_v =	Vertical acceleration	m/s^2

Friction

μ =	Coefficient of friction	-
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Properties of the lashing device

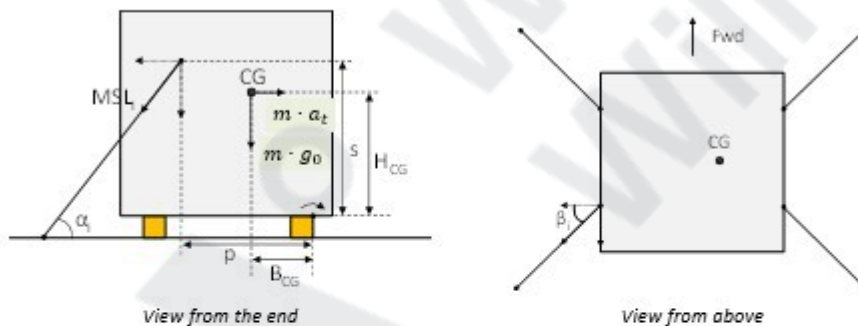
MSL =	Maximum Securing Load/Lashing capacity of a lashing device	kN (= 100 daN)
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Angles

α =	Vertical lashing angle	degrees
δ =	Longitudinal lashing angle between the lashing and the transverse axle of the cargo transport unit seen from above	degrees
SF =	Safety factor; 1.20 if 2 lashings are working in each direction, 1.35 if more than 4 lashings are used	-

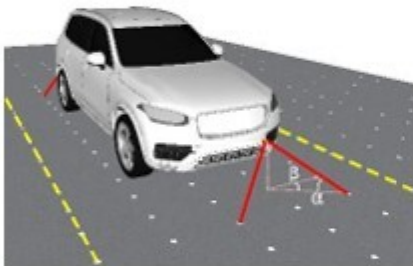
Distances (see figure below)

B_{CG} =	Transverse distance from the centre of gravity of the load to the tipping point (lever arm of standing moment)	m
L_{CG} =	Longitudinal distance from the centre of gravity of the load to the tipping point (lever arm of standing moment)	m
H_{CG} =	Vertical distance from the centre of gravity of the load to the tipping point (lever arm of tilting moment)	m
s =	Vertical distance from the tipping point to the point where the lashing device acts on the load	m
p =	Horizontal distance from the tipping point to the point where the lashing device acts on the load	m

Distances in tipping equations


3.2 Example calculation – Cars/HSV, longitudinal stowed – weight 3.5 ton

A car weighing 3.5 ton, braked on one axle, is stowed longitudinally on deck, high at hold 2. The unit is secured by four car lashings with MSL 1 ton according to the sketch below. The maximum mass of the car prevented from sliding in transverse and longitudinal direction is calculated by the advanced formulas.



Number of lashings are 2 per end => SF = 1.20

Data:

$\mu = 0.45$
 $a_l = 6.20 \text{ m/s}^2$
 $a_l = 3.00 \text{ m/s}^2$
 $a_v = 4.93 \text{ m/s}^2$
 $g_0 = 9.81 \text{ m/s}^2$
 $f_x = 0.725$

Lashings:

$\alpha = 15 - 45^\circ$
 $\beta = 30 - 60^\circ$

MSL = 1 ton $\approx 10 \text{ kN}$

Transverse sliding:

50% of weight on braked
axle =>
 $c_m = 1$
 $c_{FL} = 1$

Longitudinal sliding:

50% of weight on braked
axle =>
 $c_m = 0.5$
 $c_{FL} = 0$

Transverse sliding

For transverse sliding the following equation for the secured mass m can be set up:

$$m = \frac{\sum_{i=1}^n \left[\frac{MSL_i}{SF} \cdot (\mu \cdot c_{FL} \cdot \sin \alpha_i + \cos \alpha_i \cdot \cos \beta_i) \right]}{\frac{a_l}{PF} - \mu \cdot c_m \cdot g_0}$$

With the values according to the figure above the equation will be:

$$m = \frac{2 \cdot \frac{10}{1.20} \cdot (0.45 \cdot 1 \cdot \sin 15^\circ + \cos 15^\circ \cdot \cos 60^\circ)}{\frac{6.20}{1} - 0.45 \cdot 1 \cdot 9.81} = 5.59 \text{ ton}$$

Longitudinal sliding

For longitudinal sliding the following equation is set up:

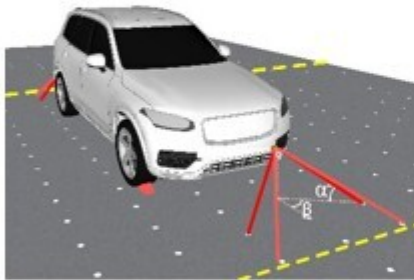
$$m = \frac{\sum_{i=1}^n \left[\frac{MSL_i}{SF} \cdot (\mu \cdot c_{FL} \cdot \sin \alpha_i + \cos \alpha_i \cdot \sin \beta_i) \right]}{\frac{a_l}{PF} - \mu \cdot c_m \cdot (g_0 - f_x \cdot a_v)}$$

Note that the lashings at the non-braked axle do not increase the work of friction and thus the factor $\mu \cdot c_{FL} \cdot \sin \alpha_i = \mu \cdot 0 \cdot \sin \alpha_i$ will not be included in the equation. With the values according to the figure above the equation will be:

$$m = \frac{2 \cdot \frac{10}{1.20} \cdot \cos 45^\circ \cdot \sin 30^\circ}{\frac{3.00}{1} - 0.45 \cdot 0.5 \cdot (9.81 - 0.725 \cdot 4.93)} = 3.69 \text{ ton}$$

3.3 Example calculation – Cars/HSV, athwartships stowed – weight 3.5 ton

A car weighing 3.5 ton, braked on one axle, is stowed athwartships on deck, high at hold 2. The unit is secured by eight car lashings with MSL 1 ton according to the sketch below as well as four car chocks. The maximum mass of the car prevented from sliding in **transverse and longitudinal direction** is calculated by the advanced formulas.



Number of lashings are 4 per end => SF = 1.35

Data:

$\mu = 0.45$
 $a_l = 6.20 \text{ m/s}^2$
 $a_t = 3.00 \text{ m/s}^2$
 $a_v = 4.93 \text{ m/s}^2$
 $g_0 = 9.81 \text{ m/s}^2$
 $f_x = 1$

Lashings:

$\alpha = 15 - 45^\circ$
 $\beta = 30 - 60^\circ$

MSL = 1 ton $\approx 10 \text{ kN}$

Longitudinal sliding:

50% of weight on braked axle =>
 $c_m = 1$
 $c_{FL} = 1$

Transverse sliding:

50% of weight on braked axle and four car chocks =>
 $c_m = 0.9$
 $c_{FL} = 0$

Transverse sliding

For transverse sliding the following equation for the secured mass m can be set up:

$$m = \frac{\sum_{i=1}^n \left[\frac{MSL_i}{SF} \cdot (\mu \cdot c_{FL} \cdot \sin \alpha_i + \cos \alpha_i \cdot \cos \beta_i) \right]}{\frac{a_t}{PF} - \mu \cdot c_m \cdot g_0}$$

Note that the lashings at the non-braked axle do not increase the work of friction and thus the factor $\mu \cdot c_{FL} \cdot \sin \alpha_i = \mu \cdot 0 \cdot \sin \alpha_i$ will not be included in the equation. With the values according to the figure above the equation will be:

$$m = \frac{4 \cdot \frac{10}{1.35} \cdot \cos 45^\circ \cdot \cos 60^\circ}{\frac{6.20}{1} - 0.45 \cdot 0.9 \cdot 9.81} = 4.70 \text{ ton}$$

Longitudinal sliding

For longitudinal sliding the following equation is set up:

$$m = \frac{\sum_{i=1}^n \left[\frac{MSL_i}{SF} \cdot (\mu \cdot c_{FL} \cdot \sin \alpha_i + \cos \alpha_i \cdot \sin \beta_i) \right]}{\frac{a_l}{PF} - \mu \cdot c_m \cdot (g_0 - f_x \cdot a_v)}$$

With the values according to the figure above the equation will be:

$$m = \frac{4 \cdot \frac{10}{1.35} \cdot (0.45 \cdot 1 \cdot \sin 15^\circ + \cos 15^\circ \cdot \sin 30^\circ)}{\frac{3.00}{1} - 0.45 \cdot 1 \cdot (9.81 - 1 \cdot 4.93)} = 22.1 \text{ ton}$$

List of abbreviations (glossary)

ADR	Automobile Damage Report
AFV	Alternative fuel vehicles
AFV Other	Any other source of power for propulsion. Details of drive system must be well described for Operator to assess the risks involved in the transportation of such units
AIDC	Automatic identification and data capture
BEV	Battery Electric Vehicle, where the only source of power for propulsion is a battery
BMSB	Brown Marmorated Stink Bug
CAPA	Corrective Action /Preventive Action
CGV	Compressed Gas Vehicle, where the source of power for propulsion is gas, such as hydrogen, natural gas (LNG), petroleum gas (LPG) and any Hybrid solutions with Li-battery.
HEV	Hybrid Electrical Vehicle. All none-plug-in Li-battery solution with ICE Engine.
ICE	Internal Combustion Engine
IDR	Incident and damage reporting
IMDG	International Maritime Dangerous Goods
ISPM	International Standards for Phytosanitary Measures
LCTC	Large car and Truck Carrier
LNG	Liquid natural Gas, where the source of power for propulsion is LNG
MPB	Multipurpose bogie
MSL	Maximum Securing Load
OEM	Original Equipment Manufacturer
PCTC	Pure Car and Truck Carrier
PHEV	Hybrid Electric Vehicle, where the source of power for propulsion is either through battery power or through an internal combustion engine (ICE)
PTSO	Port, Terminal and Stevedoring Operations
S/W	Shrink-wrapped
SDR	Stevedore Damage Report
SOC	State of charge
VIN	Vehicle Identification Number

Definitions and Concepts

Actual manifested volume

The actual manifested volume refers to the volume of cargo as documented after loading and departure. These volumes are retrospective and only confirmed after the discharge of the cargo. Corrections to the manifest may occur.

Main carrier

Main Carrier, is the trailer or self-propelled unit that is carrying the on-top cargo.

On-top cargo, is cargo loaded and secured on a Main Carrier.

Military cargo

All vehicles/equipment for military use including tanks, trucks, and fighters as well as those that have exterior features that resemble military cargo.

Motorhomes

Motorhome is a unit with a purpose-built accommodation area.

New and Used vehicles

NEW VEHICLES

A Vehicle that has never been owned and registered except by an OEM or their distribution partners.

Has not been driven more than 500 Kilometers*.

Is not more than 1 year old from production date.

Exceptions:

- OEM promotion/exhibition unit*.
- Vehicles used for test purposes has to be judge case by case to be allowed for shipment.
- OEM Overseas Delivery Programs*.

USED VEHICLES

- Any vehicle other than a new vehicle as defined above.

*)

Any unit that has been driven over 500 km but maximum 1500 km and any units fulfilling one of the above exceptions, requires the following below points to be adhered to, to ensure classification as New:

Unit powered as an Internal Combustion Engine (ICE):

- *Vehicles shown less than 1500 km are considered as a new unit.*

Unit powered as an Alternative Fueled Vehicle (AFV) requirements to be considered as a new unit:

- Requires an OBD (Onboard diagnostic report). For details see [here](#).
- Requires pictures showing the vehicle front and back and sides to view any impact damage and overall standard of the unit.

General customer instruction for shipping of used AFV (both cars, trucks and H&H)

Regional Cargo Quality always to be informed and be receiver of pictures and OBD report.

Regional Cargo Quality are responsible to verify and approve OBD report and pictures, if not delegated to the port responsible.

- Consensus on the exception would be that a BEV cannot be shipped if it has more than 1500 Km on the odometer. BEV has to be classified as New Unit to allow shipment.
- All other AFV categories (HEV, PHEV and CGV) are possible to ship as “used units” but need to be fulfilling the additional requirements in the AFV specifics. This can be found on the links below this box.
- OBD (Onboard Diagnostic report) is to connect a computer to the vehicles onboard computer and printing the diagnostic of the vehicle’s vital functions.
- [Additional requirement for HEV](#)
- [Additional requirement for PHEV](#)
- [Additional requirement for CGV](#)

Specialized cargo definitions

Specialized cargo: Cargo of unusual size and shape that requires special handling, attention and/o stowage.

Heavy Lift: Movement/stowage of cargo with weight over 140MT. Weight may be less if cargo composition is different from standard and special attention for some reason must be considered.

Samson: Heavy lift equipment, consisting of one platform and two bogies. Maneuvered by means of two tug-masters/ Prime movers. Up to 220T.

Jack-up trailer: for exceptionally heavy cargo. A jack up trailer can be towable or self-moveable, but common factor is that the wheels can be maneuvered, and trailer can be lowered/ hoisted by means of hydraulics.

Blocks and Beams: Used for stowage onboard when jack-up trailer used.

MPB (Multi-Purpose Bogie): Bogie with towing bar, used in pair. Rails, beams or flat platform is attached to the bogie.

MOS (Method of Statement): A document that details the way a work task or process is to be completed, including risk management. (See appendix)

SOP (Standard Operating Procedure): Established procedure to be followed in carrying out

a given operation or in a given situation. Can act as a standalone document or form a part of MOS. (See appendix)

State of Charge (SOC level checks)

***Random SOC level Checks:** Port of Load should arrange random control of adherence to our SOC limitations. This can be planned in many ways, to ensure that export cargo is audited on these instructions, either small amount on several shipments or a high % of the cargo volume of checks for one shipment. Evaluation on results for customer brands then leading to appropriate action (or no action) and information to shipper, if so is needed.

Rule of thumb method

The total of the MSL values of the securing devices on each side of a unit of cargo (port as well as starboard) should equal the weight of the unit.

Pictures of cargo

Unitised cargo combinations

Allowed combination

Not allowed combinations

Piggyback Cargo



Cargo handling instructions feedback

Click on link below or scan QR code from your mobile if you would like to submit feedback.

URL link:

[Click here to submit your feedback.](#)

QR Code:



Pocket Guide links

Below are the links to different sections in the Cargo Handling Instructions referred to in the Pocket Guide, providing additional information on your chosen topic.

* Responsibilities During Cargo Operation (p. 7)

Follow the link for a detailed list of responsibilities

URL: [Stevedore responsibilities - Cargo Handling Instructions](#)

* Alternative Fuel Vehicles - AFV (p. 12)

Always refer to Cargo Handling Instructions for detailed requirements on AFV's

URL: [Alternative fuel vehicles/units \(AFV\) - Cargo Handling Instructions](#)

* Dangerous Goods (p. 16)

Acceptable dangerous goods cargo varies by vessel/class. Follow the link for the list of fleet wide unacceptable cargo.

URL: [*Not Accepted IMDG - Cargo Handling Instructions*](#)

*** Self-propelled High & Heavy (p. 46)**

Follow the link for more instructions

URL: [*High and heavy \(H&H\) instructions - Cargo Handling Instructions*](#)

*** Weather Deck Cargo (p. 65)**

- Loading/discharging weather deck cargo

URL: [*Loading/discharging weather deck cargo - Cargo Handling Instructions*](#)

- Securing of Yachts on weather deck

URL: [*Securing of yachts on weather deck - Cargo Handling Instructions*](#)

Updates

- [Version 1.4 - January 19, 2026](#)
- [Version 1.31 - August 1, 2025](#)
- [Version 1.3 - May 8, 2025](#)
- [Version 1.2 - Oct 12, 2024](#)
- [Version 1.1 - May 31, 2024](#)
- [Version 1.0 - January 19, 2024](#)

Version 1.4 - January 19, 2026

- [Receiving of cargo](#)
- [Clean cargo instructions](#)
- [Clean cargo exceptions](#)
- [Mould](#)
- [Not Accepted IMDG](#)
- [Documentation to vessel and port offices](#)
- [Stowage distances](#)
- [Securing guideline Car, Vans, Small trucks](#)
- [Securing guideline RoRo Cargo](#)
- [Securing of vehicles](#)
- [Rim lashing](#)
- [Car, vans, small trucks up to 2,5 mt- longitudinal stowage](#)
- [Car, vans, small trucks between 2.5 mt & 3.5 mt - longitudinal stowage](#)
- [Car, vans, small trucks up to 2,5 mt - athwartships stowage](#)
- [Car, vans, small trucks between 2.5 mt & 3.5 mt - athwartships stowage](#)
- [Cars stowed on internal ramps](#)
- [Application of chocks](#)
- [Motorhomes - Items not allowed](#)
- [Allowed standard items for used motorhomes](#)
- [Instructions for ocean carriage of AFV](#)
- [General customer instruction for shipping of used AFV \(both cars, trucks and H&H\)](#)
- [Additional requirement for CGV](#)
- [The shipper/ OEM is required to categorize each AFV unit into one of the following categories](#)
- [Tally](#)
- [List of abbreviations \(glossary\)](#)
- [Letter of indemnity for carriage of motorhome \(LOI\)](#)
- [Stowage and securing of cars - MariTerm AB](#)

Version 1.31 - August 1, 2025

- [Rubber mats handling during cargo operation](#)
- [Battery cable disconnection procedure](#)

- [Snow, ice or water on cargo](#)

Version 1.3 - May 8, 2025

[Additional requirement for CGV/ LPG](#)

[Battery cable connection procedure](#)

[Battery cable disconnection procedure](#)

[External ramps](#)

[Factory new vehicles](#)

[In the event of damage to an AFV new or used](#)

[Loading/ discharging](#)

[Receiving of cargo](#)

[Receiving of used units](#)

[Refueling](#)

[Securing arrangements of unitised cargo](#)

[State of charge requirements \(SOC level\)](#)

[Stowage of CGV/ LPG \(Vehicle/ High and heavy\)](#)

[Unitised cargo combinations](#)

[Unitised cargo/ piggyback cargo](#)

[Used units](#)

[Vehicles fueled by CGV, LNG or LPG](#)

[Vehicle with installed Lithium Batteries](#)

Appendix:

[List of abbreviations \(glossary\)](#)

[Definitions and Concepts](#)

[Actual manifested volume](#)

[New and Used vehicles](#)

[State of charge \(SOC level checks\)](#)

[Main carrier](#)

Version 1.2 - Oct 12, 2024

[Safety Requirements](#)

[Personal Safety](#)

[Ramp meeting](#)

[Rubber mats handling during cargo operation](#)

[Snow, ice or water on cargo](#)

[Cargo checks during sea voyage](#)

[Visitors](#)

Version 1.1 - May 31, 2024

[Marking of cargo](#)

[Receiving of break bulk \(B/B\)](#)

[Not Accepted IMDG](#)

[Operation of Roll trailers exceeding 30-ton gross weight](#)

[Maneuvering of samson platform](#)

[Instructions for ocean carriage of AFV](#)

[General customer instruction for shipping of used AFV \(both cars, trucks and H&H\)](#)

[Stowage distances](#)

[Ramp meeting](#)

[External terminal use of IDR](#)

[Internal terminal use of IDR](#)

[Corrective Action / Preventive Action plan \(CAPA\)](#)

[Definitions](#)

Version 1.0 - January 19, 2024

[New and used vehicles](#)

[General customer instruction for shipping of used AFV \(both cars, trucks and H&H\)](#)

[Additional requirement for \[PHEV\]](#)

[Additional requirement for \[CGV/LPG\]](#)

[Additional requirement for \[HEV\]](#)

[Additional requirement for \[BEV\]](#)

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