TLIA1001A Secure Cargo

Learner Guide

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TLIA1001A SECURE CARGO

Contents

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Why do you need loading regulations?

The loading regulations are the laws, rules and codes that tell you how to make sure that your load is safe.

The regulations are carefully developed to make sure that loaded vehicles can be driven safely.

It is difficult to drive safely or to keep a load on the vehicle if:

- The load is too heavy for the vehicle
- The vehicle is not suited to the load
- The load is stacked too high
- The load moves around when you brake or corner

The regulations and codes covering loading and unloading of transport vehicles are designed firstly with your safety in mind. The regulations cover:

- Dimension and weight regulations
- Loading safety requirements
- Special requirements for loads exceeding normal limits

If your load is safely stacked and tied down, it will not move, fall or spill.

If your load is safe:

- You are safe from injury
- The public is safe from injury
- The load is safe from damage
- The load cannot damage buildings or equipment
- The load will arrive safely at its destination.

Common sense tells you that when you are stacking a load, the heaviest items should go at the bottom.

The regulations tell you the weight limits and give you more detail about the safest way to load vehicles so that no-one is injured and the load arrives in good condition.

Who makes the regulations?

Regulations and guidelines are updated and amended from time to time. Check to make sure you have the most up-to-date and correct information by phoning the agencies listed.

Commonwealth regulations

Commonwealth regulations are made by The Department of Infrastructure and Regional Development.

The Commonwealth regulations and state regulations may be slightly different. In some states the mass or weight allowed may be less than the national regulations. You should always check the regulations for any states you are driving through to make sure that you do not exceed limits.

National guidelines

The National Heavy Vehicle Regulator (NHVR) (formerly known as the National Road Transport Commission) is responsible for establishing guidelines for all aspects of road transport. These guidelines will be the same nationally and agreement will have to be reached between the state authorities where there are differences. Eventually the regulations will be the same nationally. This should stop any confusion caused by having different regulations in each state.

New guidelines came into effect 01 January 2014. Copies of the NHVR guidelines and regulations are available from the NHVR as follows:

National Heavy Vehicle Regulator
PO Box 492
Fortitude Valley QLD 4006
Telephone: 1300 696 487
www.nhvr.gov.au

State regulations

Regulations are made and/ or enforced in each state by the State Government Department or Authority responsible for Road Transport. Government Departments are occasionally re-organised and re-named and you may need to check with a work colleague to find the correct authority for your state. In Victoria, the regulator is VicRoads.

Which documents do you need to know about?

National guidelines

The National guidelines for loading, securing and tying down loads are set out in ***The Load Restraint Guide*** (2004). The Load Restraint Guide contains invaluable information and is highly recommended to have as a reference in your truck.

Regulations that affect the road transport industry are developed by the National Transport Commission (NTC). You should familiarise yourself with the following regulations as they direct how you must operate your vehicle.

- **Road Transport Reform (Mass and Loading) Regulations (1994)**
- **Road Transport Reform (Restricted Access Vehicles) Regulations (1995)**
- **The Australian Code for the Transport of Dangerous Goods by Road and Rail (7th Edition)**
- **Users Guide to the Australian Dangerous Goods Code (2011)**
- **Dangerous Goods (Storage & Handling) Regulations 2012**

The Load Restraint Guide and the Regulations listed above can be viewed, purchased or downloaded from the National Transport Commission website at www.ntc.gov.au

State regulations

State regulations may differ. You need to contact the relevant authority in your state to get a copy of the current state regulations. In Victoria, the regulator for road transport issues is VicRoads. The Dangerous Goods (Storage & Handling) Regulation is regulated by WorkSafe Victoria.

Advisory manuals and leaflets

Various industry bodies have produced publications that provide information on professional conduct, safety, load securing, mass limits, permits and approved truck routes. These publications are usually available free of charge.

- **Transport & Logistics Industry Skills Council**
  www.tlisc.org.au
  Australian Truck Drivers Manual (1990)
  Professional Skills for Driving Trucks (2009)

- **WorkSafe Victoria**
  www.worksafe.vic.gov.au
  Safety guides for loading/unloading/storing dangerous goods, logs, pipes and other materials

- **VicRoads**
  www.roads.vic.gov.au
  Booklets on load securing, mass limits, permits, approved truck routes.

Company documents and policies

If you are carrying fragile, dangerous or unusual loads there may be company policies about handling, loading and tying down that you should be aware of.

There will be general information for most of the goods transported in the form of:

- Manufacturers advice
  - Leaflets, manuals and brochures produced by the manufacturer giving specifications of the product relevant to loading

- Your organisation's quality procedures
  - Manual covering company policy and procedures for providing quality service

- Your organisation's safety policy and procedures
  - Company policy and procedures covering occupational health and safety and safe work practices when loading and unloading.

What are the regulations for loading a vehicle?

The mass and loading regulations apply to vehicles or combinations weighing over 4.5 tonnes. The regulations apply on all roads, footpaths, nature strips and car parking areas.

You need to know the regulations because you can be fined if your load does not comply with the regulations. If the vehicle is overloaded or the load is not secured properly the driver and the owner are guilty of an offence.

Penalties for single offences may be as high as:

- $3,000 for an individual driver or owner
- $15,000 for a body corporate

You need to know the GCM or GVM of any vehicle you are loading or driving.

GCM - (Gross Combination Mass)

- The sum of the maximum loaded mass of the vehicle and of any trailers or vehicles that can be legally towed at any one time, as specified by the manufacturer. The GCM is usually marked on a plate on the trailer.

GVM - (Gross Vehicle Mass)

- The maximum loaded mass of the vehicle - as specified by the manufacturer or the vehicle registration authority. The general rules for loading a vehicle are:

- You must have a suitable vehicle for the load you are going to carry.
- The mass or weight of a vehicle plus load must not exceed the GCM.
- The mass or weight of the vehicle plus any load must not exceed the GVM.
- The mass or weight on a tyre must not exceed the load capacity specified by the manufacturer.
- The mass or weight on an axle group or single axle must not exceed the limits - for details on axle limits and axle spacing. Refer to the Road Transport Reform (Mass and Loading) Regulations.
- The total mass or weight of a vehicle (excluding road trains and B-doubles) must not exceed 42.5 tonnes.
- The load should not stick out more than 1.2 metres from the front, 150 mm from the sides of a vehicle.
- A warning should be attached to any load projecting more than 1.2 metres from the rear of the vehicle.

- There should be no projections from the vehicle that can cause:

  - Danger to a person
  - Damage to property
  - A Breach of the Road Transport Reform (Restricted Access Vehicles) Regulation

Regulations

- The load should be placed on the vehicle so that:
  - The vehicle is stable
  - The load will not fall or be dislodged from the vehicle
  - The load is restrained appropriately
  - The vehicle steering performance is good
  - The vehicle braking performance is good

It is a lot to remember, and the regulations are much more detailed. To break this down here is a checklist you can photocopy and use to help you. Remember that the regulation or specification may be different for different vehicles and loads:

Check	Regulation or Specification	Checked
GVM		
GCM		
Axles or Axle Groups		
Tyres		
Projections		
Load Restraint		
Vehicle Performance		

Who is responsible for following the regulations?

The regulations tell you what should be done, but who should do them?

The responsibility is shared between:

- The driver
- The person in charge of loading the truck
- The vehicle owner
- The freight consigner

Some operations are the responsibility of one person. Sometimes the responsibility is shared.

These responsibilities are to:

- Ensure the correct vehicle is chosen for the type of load.
- Ensure the vehicle, including the trailer; in-built locking systems etc. are in good working order.
- Provide information on the weight of the load.
- Provide information on the centre of mass of each item in the load.
- Place each item safely on the vehicle.

What are the regulations for unusual loads?

There are special regulations covering:

- Loads exceeding normal limits
- Dangerous goods
- Live loads
- Bulk liquids
- Wet concrete
- Passengers

The authorities listed at the beginning of this section are responsible for the relevant state regulations covering these specialised loads. For dangerous goods the following publications are useful:

- The Australian Dangerous Goods Code , and the
- Users Guide To The Australian Dangerous Goods Code

Both of these publications are available from the National Transport Commission via www.ntc.gov.au

The International Maritime Dangerous Goods Code (IMDG) also applies within Australia. This code is available online via

What are dangerous goods?

The Australian Dangerous Goods Code (ADG) and the International Maritime Dangerous Goods Code (IMDG) are both relevant to the transport industry within Australia. The ADG specifies the principles of transportation of dangerous goods within Australia. The IMDG code, although directed primarily at mariners (shipping), provides information relevant to a range of industries and services including manufacturers; packers, shippers; feeder services such as road and rail, and port authorities.

Both Codes refer to the use of international cargo marks and symbols. Internationally recognised marks and symbols on packaging allow anyone handling the cargo to easily identify and understand important information about the cargo. This is particularly important when cargo may be shipped between countries that do not have a common language.

You must complete an approved dangerous goods course and gain a licence to drive a vehicle transporting dangerous goods before you can transport dangerous good in Australia.

Dangerous goods are substances and articles with explosive, flammable, toxic infectious or corrosive properties.

Dangerous goods are classified according to these properties into nine internationally recognised classes, with some classes further divided into divisions.

Empty, unclean containers that have held dangerous goods must also be treated as dangerous goods.

There are strict legal requirements for transporting dangerous goods safely. You must comply with these requirements and will probably need a dangerous goods endorsement on your driver licence. You'll also need to complete approved handler training if, for instance, your vehicle is a road tanker designed to carry dangerous goods in large quantities.

What are my legal responsibilities when carrying dangerous goods?

Legal responsibilities differ between driving and loading/unloading vehicles carrying dangerous goods. As a driver, you still bear a big responsibility if the consignment you are carrying is found to contravene dangerous goods regulations. You are also legally bound to refuse to transport dangerous goods if you believe the consignment does not meet legal requirements.

What do I need to know before driving a vehicle carrying dangerous goods?

Before driving a vehicle loaded with dangerous goods you must ensure:

- You have a current Dangerous Goods Licence to transport dangerous goods
- The load is secure
- The vehicle is properly placarded. (Make sure these placards are removed once you've delivered the dangerous goods.)
- The documents accompanying the dangerous goods including the emergency response information are in a holder on the driver's door.

What do I need to do while driving a vehicle carrying dangerous goods?

While driving a vehicle transporting dangerous goods always:

- Make the documents accompanying the dangerous goods available to an enforcement officer or emergency services personnel.
- Hand the dangerous goods documents to the next person responsible for transporting or handling the goods.
- Update other dangerous goods documents such as the schedule of quantities or load plan according to delivery or pick up.
- Comply with parking restrictions, and avoid all roads where vehicles carrying dangerous goods are banned.
- Stop before entering railway crossings.
- Stop the transport of the dangerous goods if its packaging is leaking.

Why do I need to segregate dangerous goods?

Some classes or divisions of dangerous goods are incompatible with others and must not be transported together or with food. Other types of dangerous goods may only be transported together if they are separated or segregated according to legal requirements. Segregation requirements are explained in detail during training for Dangerous Goods Licences to drive a vehicle transporting dangerous goods.

What packaging and identification is required for dangerous goods?

The packaging used for dangerous goods must not contaminate or react with the goods and must be strong enough to hold the goods without leaking.

The packaging must also be marked and labelled to identify the hazard presented by the goods.

What dangerous goods documents do I need to carry?

Dangerous goods in transit must be accompanied by a Dangerous Goods Declaration. Usually other documents are also required. These include Safety Data Sheets (SDS), previously known as Material Safety Data Sheets (MSDS).

Workplaces will have their own policies and procedures relating to dangerous goods documentation and these will vary between workplaces. The Code specifies the information required to appear on all Dangerous Goods Declarations. Declarations include information relating to the type of dangerous goods, specific safety characteristics, the quantity being transported (either in kilograms or litres), marine pollutant severity and safe handling requirements.

What placards must be displayed when carrying dangerous goods?

Generally, vehicles carrying dangerous goods must display placards whenever the dangerous goods load is equal to 1,000 kilograms or 1,000 litres. However, for some classes of dangerous goods, the requirements to display placards vary according to load content.

Placards for the classes and divisions of dangerous goods are the same as those shown above.

What are International cargo symbols?

Cargo marks and symbols are usually marked in large black print and should be visible on the vertical faces of the load.

Below are common symbols used within Australia to identify load characteristics that need to be considered during transportation:

Symbol	Description
	Top/this way up
	Keep dry
	Centre of mass
	Clamp here
	Fragile
	Temperature limitations

	Do not use forklift truck here
	Sling here
	Stacking limitation
	Do not use hooks
	Do not use trolley

How do you load a vehicle?

Loading a vehicle involves:

- Selecting the correct vehicle for the load
- Preparing the load for placing on to or in the vehicle
- Arranging the load on the vehicle safely.

Preparation and planning lead to improved, safe operating performance.

How do you choose the right vehicle for the job?

The vehicle must have:

- A suitable design for the load
- Enough load space/area on the platform
- Enough load capacity (can carry the weight)

For example a load with a high centre of mass should be carried on a:

Drop frame trailer or a Low loader

A long load should be carried on a vehicle with a body long enough to prevent any overhang. If a short overhang cannot be avoided a ***red flag*** should be attached to the end of the load.

What is the height limit for the load?

The height of the load must not be greater than:

- The limits set down in the Road Transport Reform (Restricted Access Vehicles) Regulations
- Bridges or overhead wires likely to be met on the journey.

What is the weight limit for the load?

The weight of the load must not be greater than:

- The vehicle manufacturer's:

  - Rated axle load capacity
  - Rated Gross Vehicle Mass (GVM)
  - Rated Gross Combination Mass (GCM), if applicable

- The requirements of the Road Transport Reform (Mass and Loading) Regulations.

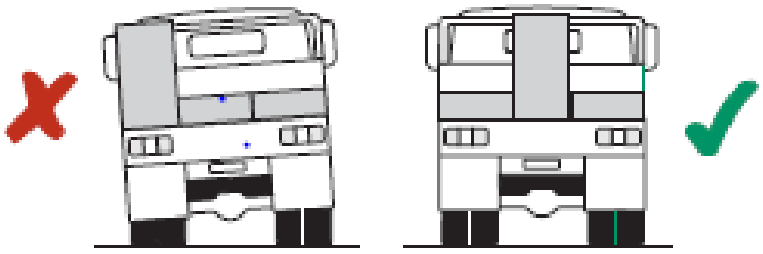
How do you place the load safely?

You need to reduce the risk of overturning on corners. To do this you need to arrange the load carefully.

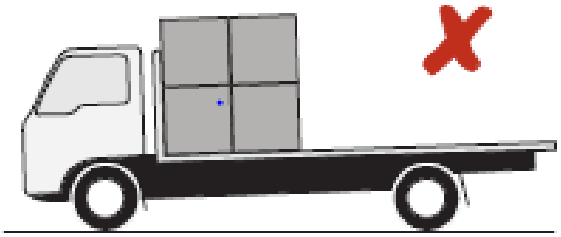
The centre of mass is the centre of gravity or centre of balance of a load, or of individual items in a load.

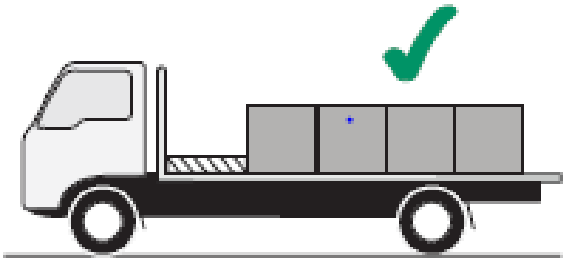
The load should be put on the platform so that the centre of mass is as near as possible to the centreline.

Load the heaviest objects first and place them along the centreline of the platform.



A load should be positioned so that it is flush with the headboard where possible. If the load is heavy the even distribution of weight is more important. Use dunnage or blocks to keep the load in position





The weight should be placed as low down as possible. It is best to place heavy items next to each other along the centre line and at the base of the load.

You need to prevent fragile items from being crushed, for example during heavy braking. If the load has some heavy items and some fragile items, the heavy items should be placed near the headboard and the fragile ones loaded behind them.

You need to have enough weight on steer axles. This helps to prevent the trailer from swaying or vibrating. To do this you need to arrange the bulk of the weight in front of the rear wheels.

Put another way, the centre of mass of the load should be in front of the centre of the rear axle group of the truck or trailer.

For safe steering performance the ground weight of the steer axle of a truck or prime mover should be at least a fifth or 20% of the total ground weight of the truck over all its axles.

What other things do you need to know when loading your truck?

Always check the manufacturer's specifications. There may also be information on the packaging, or leaflets or brochures provided with the goods.

- Load re-distribution. If you are delivering to more than one site you need to either:
  - Load goods so that the partial unload can be done without affecting the mass limits or restraint requirements, or
  - Re-arrange the load after each delivery to ensure that you continue to comply with all the regulations.

How do you lift a load?

Depending on the type of load and the vehicle used you may have to lift the load:

- Manually
- Using ropes, slings and chains
- Using specialised machinery

An important note:

Chains and ropes that are used for restraining loads are not suitable or strong enough for lifting loads. Check the ropes and chains you are using.

Manual lifting

Incorrect lifting can cause back injury. Protect your back by learning to lift the correct way.

Always:

- Check the weight of the load before you lift it
- Place your feet next to the load
- Get a secure grip on the load
- Keep your back straight
- Use the muscles in your legs to lift

Lifting using ropes, slings and chains

Whenever you are using ropes slings or chains to lift a load you need to know the SAFE WORKING LOAD, (SWL), of each piece of equipment. For new pieces of equipment, under normal conditions, the SWL will be the WORKING LOAD LIMIT, (WLL), as specified by the manufacturer. The WWL should be displayed on any rope, sling or chain you are using for lifting. It is your responsibility to check the SWL of your equipment, which can vary from the WLL because of:

- Wear
- Damage
- Knots
  - Reduces the strength of a lifting rope by 50%
- Angles
  - It is illegal to sling a load with an angle over 120 degrees
- Hitches
  - Can reduce the lifting strength by 20 to 50%

Equipment for lifting has a safety factor:

Slings used to support people 10
Fibre slings (webbing and round types) 8
Fibre rope slings 6
Wire rope slings.....5
Alloy chain slings.....4

The WLL is equal to the breaking load divided by the safety factor.

Types of sling

You need to choose the right type of sling for your load. Chain is very strong and durable, but can damage a soft load, natural fibre rope slings fray easily and should not be used on loads with sharp edges.

These are the properties of various types of lifting slings:

- Natural fibre rope slings

  - Easily damaged by cuts, chemicals, damp, heat and sunlight
  - Need packing to protect against sharp edges
  - Dry out ropes naturally

- Synthetic fibre rope slings

  - Can stretch 40% before breaking-the snap and recoil can cause serious injury.
  - Can be damaged by cuts, chemicals, heat and sunlight

- Synthetic fibre webbing slings

  - These include double eye slings, endless slings and slings fitted with metal end pieces
  - The outer sleeve should be made of the same material as the inner fibre so that internal damage and wear is not obscured
  - Can be damaged by cuts, chemicals, heat and sunlight

- Flexible steel wire rope slings

  - Strong light and durable
  - Need to use gloves
  - Can be damaged by stretch, water (rust), and chemicals
  - Wire rope clips or bulldog clips must never be used to make lifting slings

- Chain

  - Long lasting, not damaged by sharp corners, heat, water, most chemicals
  - Expensive and heavy, can mark loads - needs to be used with padding
  - If SWL is hard to see, you can calculate it using the formula: diameter x diameter x 10 = SWL kg
  - If you are sure that the chain is alloy chain grade T or 8, SWL Kg = diameter x diameter x 30
  - You can shorten chain using a grab hook or a clutch hook

Safety of slings

You are responsible for the equipment you use.

Before using any lifting equipment:

- Check that the slings are marked with a readable WLL or SWL tag
- Do not use hand spliced, untested slings
- Do not use bulldog grips
- If a sling has been damaged, remove it from the working area
  - Check with the manufacturer to see if it can be repaired
  - If it cannot be used, cut it up and discard it
- Inspect slings before every use
  - Conduct a thorough inspection every 3 months
  - Check with a full safe working load
- Keep a sling register, record:
  - Inspections
  - Repairs
  - Other relevant information such as prolonged exposure to heat, dampness.

Lifting using specialised machinery

Other methods of lifting loads include:

- Forklift machinery
- Cranes
- Hydraulic tailgates
- Conveyors

Operation of this type of equipment may require a separate license or certificate of competency.

How do you load unusual cargo?

This section gives some general points on loading unusual cargo. The Load Restraint Guide will give detailed regulations about each type of cargo. If you are moving unusual cargo you need to study the regulations and carefully follow the guidelines.

You need to take care in preparing goods to be placed on the vehicle. Wherever possible, goods should be packed into cases or on pallets or in secure bundles. This makes loading and securing on the vehicle easier and safer. Most types of cargo need to be secured, protected or restrained in some way.

Containers

When placing a load in a container these general rules apply:

- Heavy goods should be spread evenly over the floor area
- Light goods should be placed on top of heavy goods
- If the container is not full, the load must be secured within the container to prevent any movement during transportation.

Most containers are built to ISO standards and have corner castings for lifting and for attaching to twist-locks on specialised container carriers. Remember that an empty container rides higher than a full one.

Cargo on pallets

Pallets should be checked regularly to make sure that they are in good condition. The pallet needs to be strong enough to carry the load. You need to prepare pallets for loading by stacking and securing the goods so that no movement occurs on the pallet.

The pallets must then be stacked and secured on the vehicle so that they cannot move during transportation.

Construction equipment

Check the manufacturer's recommendations for loading the machine. There should be instructions for preventing movement of attachments such as buckets, jibs, booms, slewing superstructures and cabs.

All loose items should be removed from the machine and secured to the platform of the carrier.

The suspension unit of the machine should be locked. Relieve the pressure in the hydraulic system of the machine. You can do this by moving all control levers through all positions with the engine off and the machine stowed. Do this at least twice.

Cap any exhaust stacks on the machine to protect the turbo charger. Check the clearance of a low loader; with the machine stowed, there may be danger of grounding. Clearance should not be less than 1/20th of the distance between adjacent axles.

Timber

There are different regulations for loading:

- Log timber
- Processed timber products

Refer to the Load Restraint Guide if you handle this type of cargo in your workplace.

Log timber

Specialised, purpose built vehicles should be used to transport log timber. These include timber jinkers and skeletal trailers including pole trailers, skeletal semi-trailers and B-doubles.

These vehicles have special restraints fitted to ensure no movement of the logs in transportation. For example, the outer logs in a stack have to be restrained by a minimum of two stanchions.

- Place the logs end to end; this helps the load to build up evenly.
- The top outside logs should not be higher than the stanchion.
- The inner top logs may be half the log diameter above the stanchion height.
- Cradle short logs in the middle of longer logs.

Processed timber

Processed timber may be carried in loose or packaged form. Lashings are not needed on a vehicle with head, side and tailboards of suitable strength. The timber should be loaded and packed tightly to prevent movement.

Processed timber such as loose sheets of light plywood will always need to be secured as they can be moved by airflow.

Loose building materials

Some materials are carried loose, for example sand, rubbish or asphalt. These loads need to be prepared and placed to prevent shedding.

- The body, sides, tailgates and body to chassis attachments on the vehicle should be in good condition.
- If no tarpaulin is to be fitted, the load should always be 100 millimetres below any side of the vehicle.
- Doors to bulk bins must be closed.

Pipe loads

Where possible, pipes should be bundled and secured together prior to loading. Loose pipes greater than 2.5 metres in length should be loaded lengthwise.

Metal or plastic pipe is loaded lengthwise with hardwood layers between each layer of pipe. The ends of the front load of pipe should be flush with the headboard.

Concrete pipe should be loaded across the vehicle, if possible given the length and weight allowances.

Live loads

A live load cannot be completely secured and can move about within the load space. For example:

- Bulk liquids
- Livestock
- Hanging meat
- Wet concrete

The stability of the vehicle can be improved by restricting movement as much as is possible.

For bulk liquids:

- Put baffles in the tank
- Put the liquid in several smaller tanks
- Make sure tanks are empty or full.

Livestock should be loaded in purpose built crates allowing very little movement. This reduces the risk of injury to the animal and increases the stability of the vehicle.

Dangerous goods

The person in charge of loading or unloading dangerous goods must:

- Not load leaking or damaged packages
- Ensure that goods are stowed according to the regulations in section 7 of the Australian Dangerous Goods Code (ADG Code)
- Ensure that incompatible goods are not on the same vehicle, unless segregated by an approved device (refer to ADG Code, section 7.2.3)
- Ensure that the driver has a copy of the shipping document conforming to the requirements in the ADG Code, section 4.
- Ensure that the vehicle is marked clearly and correctly if required – see ADG code section 3
- Follow safety precautions for entering enclosed spaces, particularly where there may be harmful dust or vapour

What are the general rules?

Loads must be restrained to stop movement during transportation.

- The load must not become dislodged from the vehicle.
- The load should not move about on the vehicle.

The restraints that you use must be in good condition.

Restraint regulations

In order to meet the performance criteria laid out in the Load Restraint Guide, your restraints need to provide each of the following separately:

- Restraining forces equal to 80% of the weight of the load to prevent the load shifting forwards (e.g. during forward braking)
- Restraining forces equal to 50% of the weight of the load to prevent the load shifting rearwards (e.g. during braking in reverse)
- Restraining forces equal to 50% of the weight of the load to prevent the load shifting sideways (e.g. during cornering)
- Restraining forces equal to 20% in addition to the weight of the load to prevent the load moving vertical relative to the vehicle.

In the case of an extremely slippery load, where there is no friction, for example steel on steel, direct lashings need to be used. In this case the strength of restraints should be:

- In the forward direction = twice the weight of the load
- Sideways = the weight of the load
- Rearwards = the weight of the load

What are the different types of restraining equipment?

The following types of equipment are recommended for restraining loads on vehicles:

- Rope
  - The most suitable rope is synthetic rope, polyethylene, made from staple fibre (silver)
  - Beware of the many types of rope available that are unsafe and unsuitable for restraining loads.
  - Sisal and manila ropes cannot be used for securing loads on vehicles.

- Lashing tensioners and connectors
  - Webbing, chain and wire rope lashing assemblies all require good quality, undamaged connectors and tensioners
  - Powered winches are useful as they automatically self-tension during transit.

- Webbing assemblies
  - Should be compiled of load rated material with attached or portable ratchet winches.

- Chain assemblies
  - High tensile chain or transport chain, yield strength 650 to 700 MPa is suitable for lashings, but not for lifting loads.
  - Select chain tensioners that do not ‘kickback’, for extra operator safety.

- Wire rope and attachments
  - Steel wire rope, with end fittings and tensioning winches, is good for loads that may settle in transit, the lashing is more elastic and can be tightened easily.

- Strapping
  - Steel strapping is good for lashing heavy slippery loads on to container flats.

- Clamps and latches
  - Should have positive locking action.

- Timber
  - Can be used for dunnage, chocks, and cradles
  - Should be the right shape and type for the job
  - Should be free of knots and splits
  - Rounded edges will prevent wear on lashings.

- Inter-layer packaging
  - Increases the friction between layers of the load, for example anti-slip mats.

- Separators
  - Air bags, sometimes called pneumatic load control systems
  - Take care to follow the manufacturer's specifications and instructions carefully
  - Rubber tyres.

What are the safety requirements?

The restraints that you use have to be strong enough to restrain the load. The measurement of the strength of the restraint is provided by a set of standards.

- Equipment that conforms to the standards will be marked, for example:

  - Conforms to standard AS2321 1979 Short link chain for lifting purposes.
  - The relevant standards are listed in the Load Restraint Guide, Appendices, and Section G2.

As the standards are updated from time to time, you will need to have a current copy of the Load Restraint Guide and current copies of the standards.

When you are buying equipment, you need to know what the current standard is, so that you do not buy or use equipment that conforms to current standards.

How do you select and use the equipment?

Once you have identified the different types of equipment and the safety standards for each, you need to know how to use them. Always check your equipment for any signs of wear and tear. If you have any doubt about the condition of rope, chain, wire, strapping, webbing or attachments - **do not use the equipment**.

Which equipment do you use for different types of load?

- Light loads
  - Rope
  - Tarpaulin.

- Heavy individual objects
  - Chains
  - Webbing
  - Steel strapping - especially for very heavy objects, as this can be pre-tensioned
  - Wire rope.

- Crushable loads, or loads that settle in transit
  - Ropes
  - Webbing.

- Timber logs
  - Chain and webbing, combined.

- Sharp or abrasive loads
  - Chain
  - Steel strapping.

How do you use the equipment?

- Lashings
  - Protect from wear and tear by using packing material or sleeves where they touch other lashings or the load
  - Attach lashings to the vehicle at the tie rail support joint
  - Position winches on alternate sides of the vehicle along the load
  - Use separate tie down lashings
  - Knot ropes correctly using the round turn and two half hitches or the clove hitch and half hitch.

- Webbing
  - Protect from sharp edges, chemicals and heat
  - Wind strapping evenly on winches

- Chains and tensioners
  - Check for knots, twists and unusual joins as well as wear and tear on links
  - Use the correct tensioning equipment for the type of chain.

- Wire rope and winches
  - Protect against sharp edges
  - Make sure the rope is not bent near a clamp or splice.

How do you do a safety check?

You need to check that:

- Projection from the front, sides and rear of the vehicle are within the limits
- The mass of the total vehicle and over each individual axles or axle groups is within the limits
- The amount of restraint meets the performance standards
- The vehicle steering and braking performance is good.

What are the general rules for unloading a vehicle?

Safety is the prime concern when you are unloading a vehicle. Although you can take great care to ensure that a load has not shifted during transportation, you can never be absolutely sure that the load is as secure as when you set off.

You must stop and check the load at regular intervals during your trip. If you observe any load movement you will need to stop and unload/reload the freight.

When you are unloading a vehicle you need to:

- Find a suitable unloading area
- Observe the safety precautions for unloading.

Find a suitable unloading area

When you arrive at your destination, you will most likely be directed to a safe unloading area or unloading dock.

If you have to unload on a public road you need to:

- Be aware of your own personal safety
- Find a level site where possible
- If you have to park on a slope
  - Chock all the wheels on one axle
  - Turn the steering wheel to full lock
- Switch on the parking lights
- Barricade off the unloading area.

Safety precautions while unloading

- Walk around the vehicle checking the load and the restraints for any sign of movement or damage.
- Clear the area of personnel.
- Release the tension on winches and tensioners slowly, watching for any movement of the freight.
- Remove restraints or open doors slowly, watching for any movement of the freight.
- Unload from the right side of the vehicle first. Road camber tends to make freight shift slightly to the left.
- Make sure that all dock levellers, bridge plates, vehicle tail lifts are in good working order, keep your hands clear of machinery.
- If you are only taking off part of the load re-arrange your load to comply with regulations.
- Clean the platform, pack away all equipment such as trolleys, slings, etc.

Checking your load

You should check your load to make sure that any slight movement is checked by re-arranging or re-tensioning the restraints. Your load will exert force against the restraints every time you change the conditions. If you are stationary and move off, the load will pull backwards. If you are moving forwards and then brake heavily, the load will push forwards, trying to continue moving.

If you corner sharply, the load will pull in the direction you were originally travelling.

You need to check your load:

- Before moving off
- After 25 kilometres
- When you do tyre checks
- Every time you add or remove a load
- After emergency braking
- After driving over bumps
- After a sharp turn.