Load Restraint

DESCRIPTION OF TASK:	
Load restraint requirements and methods of restraint	
RESPONSIBILITIES RELATING TO THIS SAFE WORK INSTRUCTION (SWI):	
The application of this Safe Work Instruction is only permitted once the reader has been instructed in the content of this SWI.	
Site Manager	▪ Ensure the consistent application of this SWI onsite. ▪ Investigate all breaches of this SWI and instigate appropriate corrective action to prevent any reoccurrence.
Operations manager/ Area Supervisor	▪ Implement employee training and instruction to ensure all relevant parties are competent in the application of this SWI. ▪ Provide ongoing infield supervision of operations to ensure that all aspects of this SWI are complied with.
Vehicle Loaders and Drivers	▪ To apply the '**How To Do The Task Safely'** actions as described in this SWI during the loading of vehicles and restraining loads
MANDATORY PERSONAL PROTECTIVE EQUIPMENT:	

REFERENCES:	
Document Number	**Document Name**

SWI - Load Restraint

Standard Operating Procedure

SWI	SWI Load Restraint V.1
CBA	CBA Load Restraint V.1
Code of Practice	Load Restraint Guide 2018

SWI - Load Restraint

Standard Operating Procedure

DEFINITIONS:	
	**WARNING** **Warning highlight and operationg or maintenance procedure pactice, condition, statement ect. Which if not strictly observed could result in injury to personnel or loss of life.**
	**CAUTION** **Cautions highlight an operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in damage to, or destruction of, equipment, loss of mission effectiveness, or long-term health hazards to personnel.**
	Note *Notes highlight an essential operating or maintenance procedure, condition, or statement.*

SAFE WORKING INSTRUCTION:		
Steps	**Hazards/Risks**	**How To Do The Task Safely**
• **Loading freight onto a vehicle**	▪ **Overloading** ▪ **Unstable loads** ▪ **Freight falling off the vehicle** ▪ **Incorrectly loaded with lighter items on the bottom and heavy items on top**	**Loaders are to be aware of the type of freight to be loaded onto the vehicle and the weights of each item.** • Loading of the heavier items to the bottom of the load and lighter items stacked on top of these. • All palletized items should be shrink wrapped to prevent movement and damage. • The weight of the freight should not exceed the capacity of the vehicle it is being loaded onto. • Freight must be distributed across the vehicle load area to ensure the axel weights are not exceeded. • The CoR (Chain of Responsibility) has obligations for loader and penalties apply if the load is found to be in breach or poor/lack of load restraint is used to contain the load.

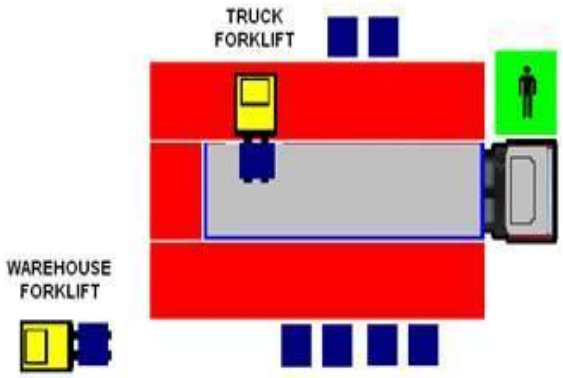
SWI - Load Restraint

Standard Operating Procedure

SAFE WORKING INSTRUCTION:		
Steps	**Hazards/Risks**	**How To Do The Task Safely**
		• Poorly loaded freight will become unstable during transportation • Note; Load Restraint Curtains

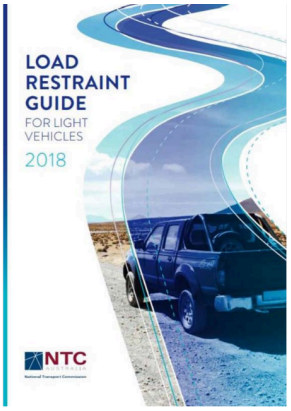
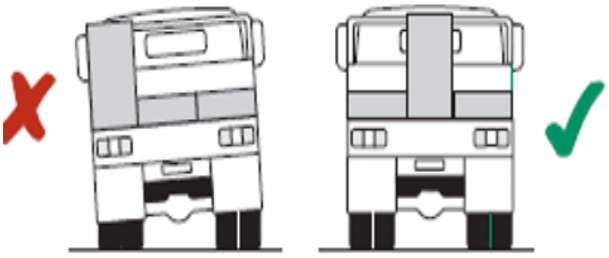
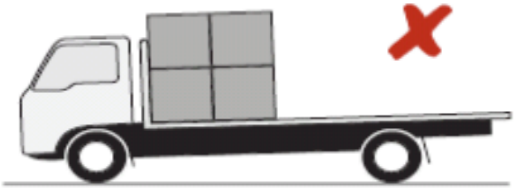
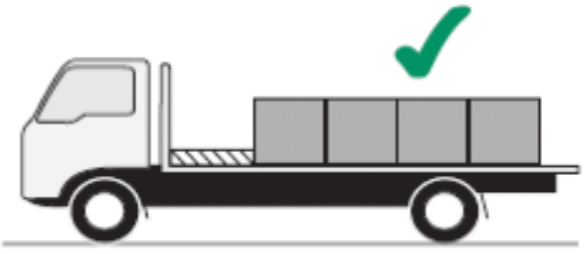
SWI - Load Restraint

Standard Operating Procedure

<table>
<tr><th>Steps</th><th>Hazards/Risks</th><th>How To Do The Task Safely</th></tr>
<tr><td>• Securing the Load</td><td>• Check the area is clear of obstacles
• Check form equipment and forklifts in the immediate area
• Falls from Vehicle
• Hit by falling objects / load</td><td rowspan="2">Check area for personal and equipment working in the area to ensure your safety
• Check you have sufficent restraints to secure the load
• Check the condition of the retraints
• Ensure you have the required angels and any other dunnage that may be needed.
• Ensure you have the correct restraint for the load being transported</td></tr>
<tr><td colspan="2">Danger Zone when Loading
 
</td></tr>
<tr><td>• Know the correct method of restraint and the correct positioning of the restraints</td><td>▪ Load shifting during transportation
▪ Damaged freight
▪ Freight falling from vehicle and the possibility of damage to infastrucure or personal injury</td><td>Vehicle operator MUST be familiar with the LRG as this manual is the basis for the National Heavy Vehicle Regulators (NHVR) load restraint requirements.
It is used by state authorities for the purpose of issuing Breaches relating to Load restraint.</td></tr>
</table>

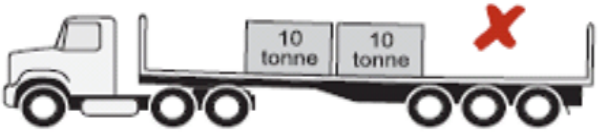
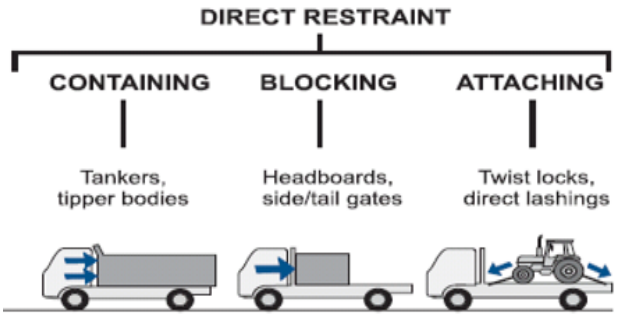
SWI - Load Restraint

Standard Operating Procedure

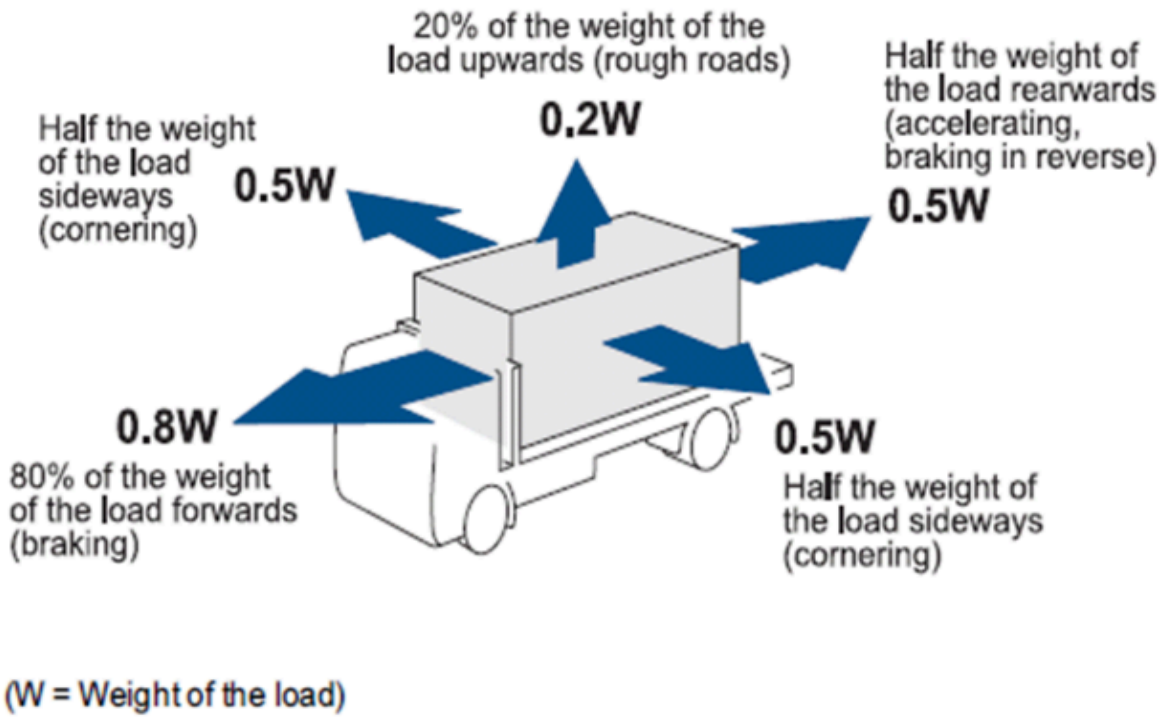
Steps	Hazards/Risks	How To Do The Task Safely
   		 **NTC Load restraint guide**
• **Types of Loads**	• **Load shifting during transportation** • **Damaged freight** • **Freight falling from vehicle and the possibility of damage to infastrucure or personal injury**	 INCORRECT POSITION Fig. B.5 CORRECT POSITION
 INCORRECT LOAD POSITION (overloads front axle)		

SWI - Load Restraint

Standard Operating Procedure

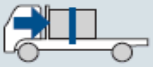
Steps	Hazards/Risks	How To Do The Task Safely
 10 INSUFFICIENT WEIGHT ON DRIVE AXLES		 11 EXCESSIVE TRAILER FLEXING
		

SWI - Load Restraint



SWI - Load Restraint

Standard Operating Procedure

MAXIMUM WEIGHT RESTRAINED BY ONE LASHING (with no load shift)				
FRONT OF LOAD BLOCKED?	**NO**		**YES**	
HOW MUCH FRICTION?	MEDIUM (Smooth Steel on Timber) μ = 0.4	HIGH (Rubber Load Mat) μ = 0.6	MEDIUM (Smooth Steel on Timber) μ = 0.4	HIGH (Rubber Load Mat) μ = 0.6
 Lashing angle 60° or more to horizontal				
ROPE - Single Hitch (50 kg average tension)	85 kg	255 kg	340 kg	425 kg
ROPE - Double Hitch (100 kg average tension)	170 kg	510 kg	680 kg	850 kg
WEBBING STRAP (300 kg average tension)	510 kg	1530 kg	2040 kg	2550 kg
CHAIN (750 kg average tension)	1275 kg	3825 kg	5100 kg	6375 kg

The side curtain could not restrain these pallets of cooking oil.

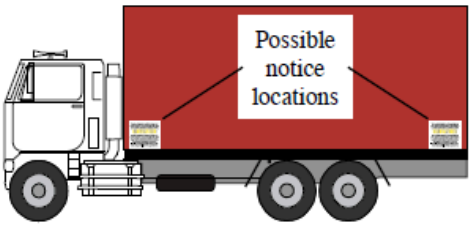
Curtains are NOT necessarily load restraints

Rated Curtains for Load Restraint:

For many loads and situations, Rated Curtains are a great solution. They usually save drivers time and manual labour, by eliminating gates along the side of the truck or trailer. However some drivers and loaders misunderstand their use and limitations. Rated Curtains are part of the overall load restraint solution, which usually include a rated headboard and tailboard too. In some cases, additional lashings may be required to restrain heavy items of freight, or to make up for large gaps in the load.

Are all Curtains Rated?

NO! This Guideline explains how to identify load restraint "Rated" Curtains and the correct ways to use them as part of your overall load restraint.

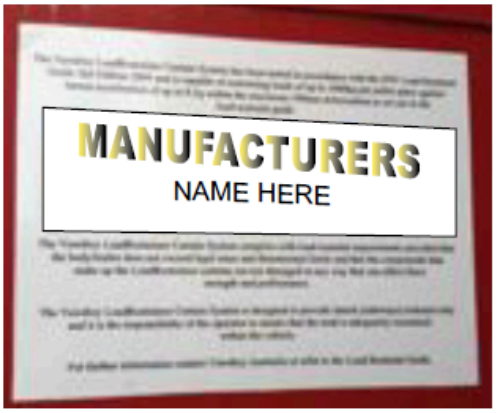


How to tell if a Curtain is Rated?

Either:

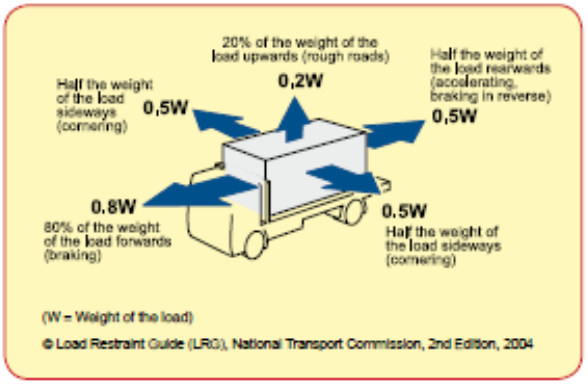
- The curtain has a certificate attached explaining the curtain rating.
- Or the driver must carry and produce a certificate when required by road authorities and any party in the chain of responsibility.

Note: The rating may be invalid if any part of the curtain system is damaged. Check regularly for damage.



The Law:

Australian road transport law requires that loads are properly restrained for transport. The diagram to the right shows expected forces. These forces result from cornering, stopping, accelerating, and emergency situations.



Load Rated Curtains ONLY restrain sideways. If the load is also restrained from moving forwards and backwards, then the load may be considered contained. For fully contained loads, which cannot move horizontally, limited vertical movement is permissible under the upwards force.

Severe penalties apply, not only for drivers, but also those who instruct or are responsible for the driver's or loader's actions.

Understanding the Rating of Curtains

Ratings are stated as either:

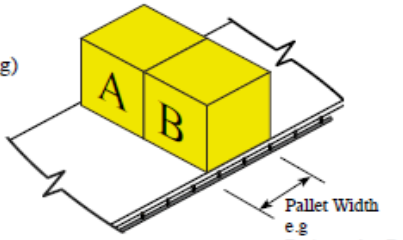
- Allowable weight per pallet width
  (So mass of pallet A + pallet B must be less than Rating)

OR

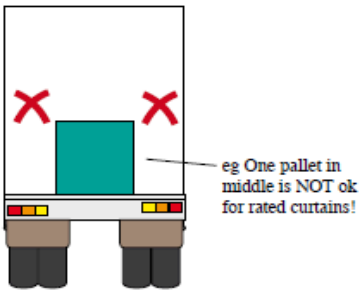
- Allowable weight per pallet space
  (So mass of pallet A or B must be less than Rating)

OR

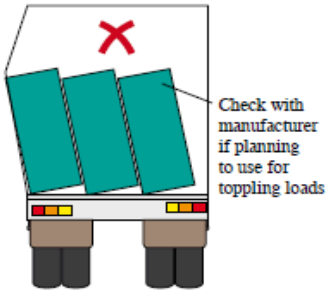
- Total payload of evenly distributed pallets over entire deck space.



When are rated curtains not suitable?

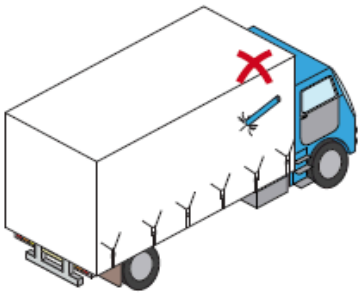


Gaps must not exceed a total of 100 mm



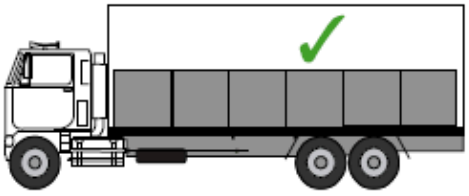
Toppling loads

Heavy individual item with sharp edges

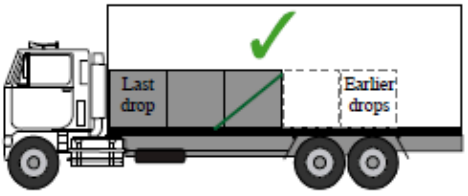


Heavy "SPEAR" type loads like steel bars or pipes which could pierce the curtain

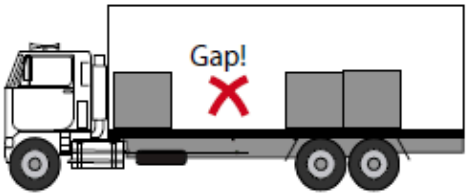
Good Loads, Mistakes & Solutions



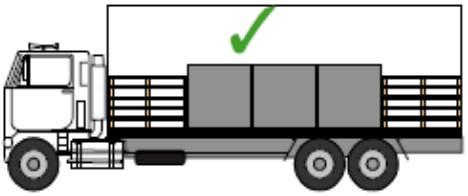
Whole load as single drop



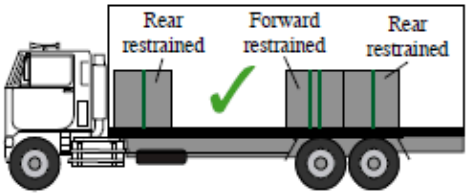
Multi drop, rear restrained for 0.5 g of load



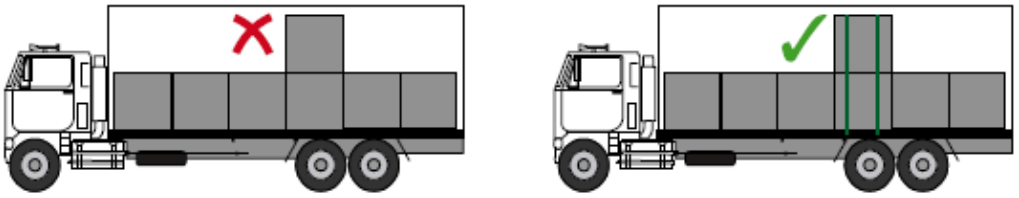
Curtains only restrain sideways.
Rear and forward also need restraint



Load blocked front and rear with pallets
Total gaps must be less than:
200 mm forwards;
100 mm sideways.



Extra lashings against forward & rearward forces

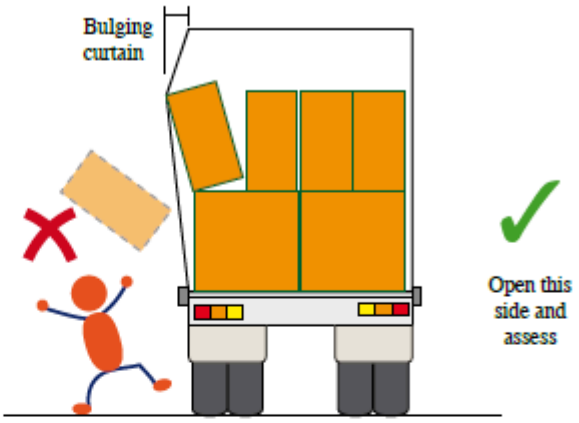


Upper pallet will require load restraint to stop forward and rearward movement

Opening & Closing Curtains

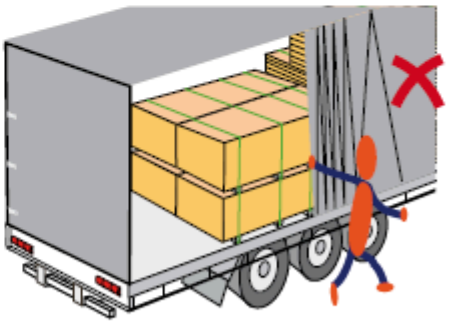
If bulging curtain on one side, open the other side and assess the risk

Note: A badly bulging curtain may also make you liable for a fine for an over width load.



Good:

- Grip with two hands and bent elbows facing towards side of vehicle.
- Pull curtain in smooth action.
- Release grip, move further up the trailer, adjust stance and repeat action.



Bad:

- One arm pulling across your body.
- Walking quickly with curtain.
- Shoulder or elbow ligament injury and/or torn muscles in your side if it jams or snags.

Why loads fall from vehicles:

Everyday driving manoeuvres can involve heavy braking or cornering forces. Without sufficient restraint to counteract these forces, loads can fall from vehicles or shift causing loss of steering control.

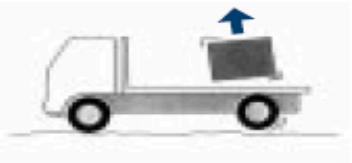

Braking

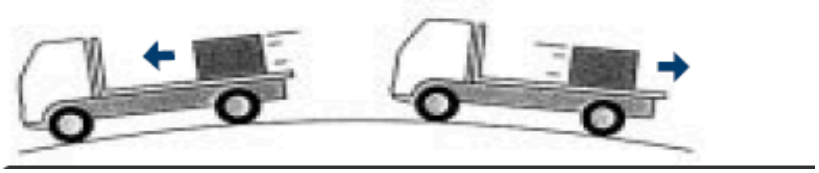

Cornering


Braking in reverse


Camber


Air flow


Rough roads



Load placement and restraint requirements?

The National Road Transport Reform (Mass and Loading) Regulations 1995 require that:

- A load on a vehicle must not be placed in a way that makes the vehicle unstable or unsafe.
- A load on a vehicle must be secured so that it is unlikely to fall or be dislodged from the vehicle.

• An appropriate method must be used to restrain the load on a vehicle.

Comparable requirements apply in all States and Territories and you are advised to check the relevant legislation.

Protecting Lashings and Loads

Corner protectors, sleeves or other packing material should be used where lashings and loads contact each other (see Figure C.35).
Webbing straps and ropes can be easily cut on sharp edges.
Sharp edges and rough surfaces prevent the lashing tension from equalising on both sides of the load. Smooth rounded corner protectors enable high tension on both sides of the load thereby increasing load restraint.

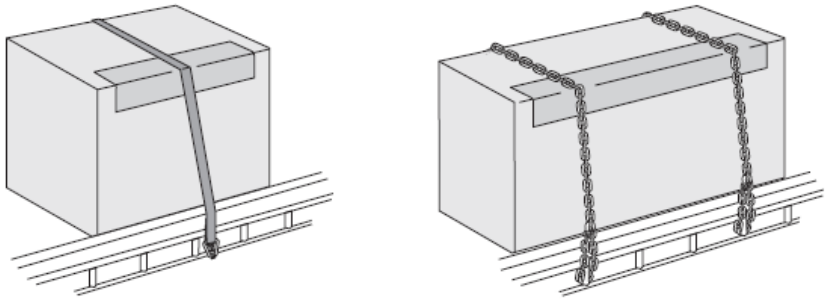


Fig. C.35 LASHING AND LOAD PROTECTION

The gates should never be placed over the straps.
This causes damage to the straps and weakening the webbing in the strap, limiting / reducing the restraint capacity.
Travel causes the gates to bounce out rendering them useless and unable to contain load.

Best Practice – use new curved angles to protect paper reels

Shipping containers

All ISO and most other shipping containers and flat platforms are equipped with corner castings designed to interlock with mating ‘twist locks’ (see Figure E.25), either for lifting or restraining them for transport.

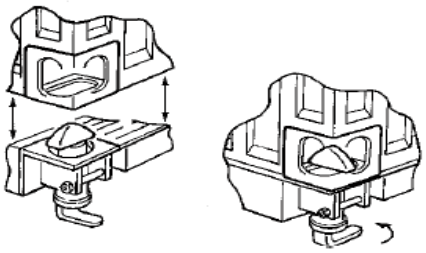


Fig. E.25 TWIST LOCK

SWI - Load Restraint

Standard Operating Procedure

All shipping containers should be restrained by four twist locks although tie-down methods can be used in some cases.
Tie rails and lashing equipment on general freight vehicles are not strong enough to directly restrain fully laden freight containers.

Where twist locks are not fitted, empty containers can be restrained by either crossed chains (see Figure E.26) or tie-down (see Figure E.27).
They must be placed either on a timber deck, on timber dunnage, on rubber pads, or friction matting, but not directly onto a metal loading deck or coaming rails.

A load mat or rubber pad capable of withstanding the high pressure under the corner casting of an empty container without breaking up must be used.
For restraining empty containers up to 2.7 tonnes, transport chains should be at least 8 mm diameter and tensioned with turnbuckles or dogs to at least 1000 kg.

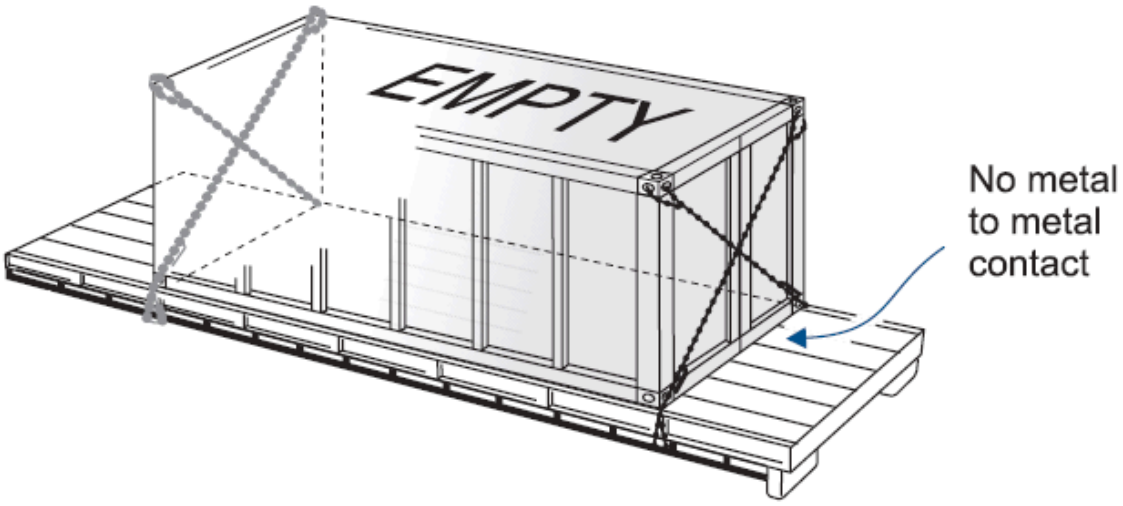


Fig. E.26 **EMPTY CONTAINER – CROSS CHAINED**

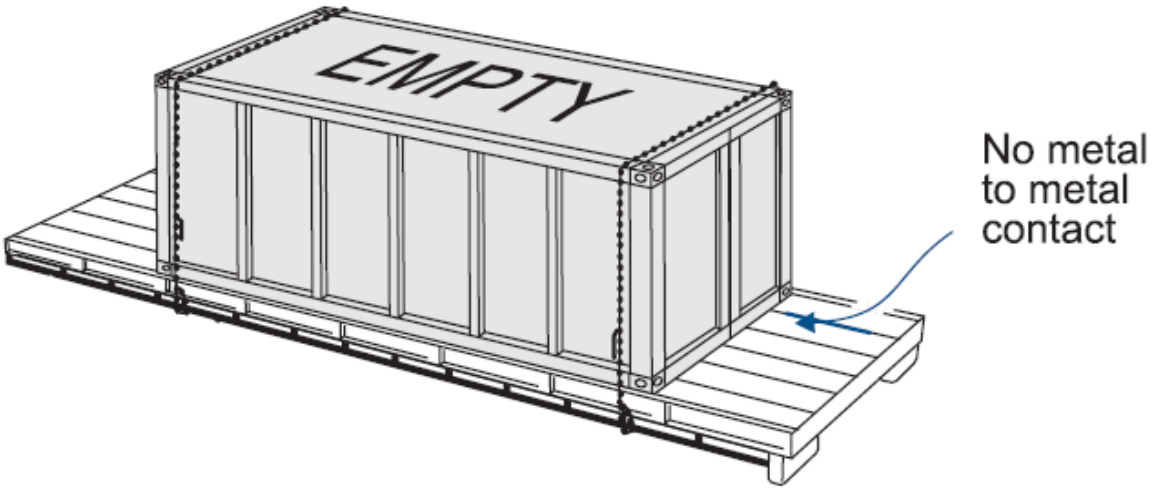
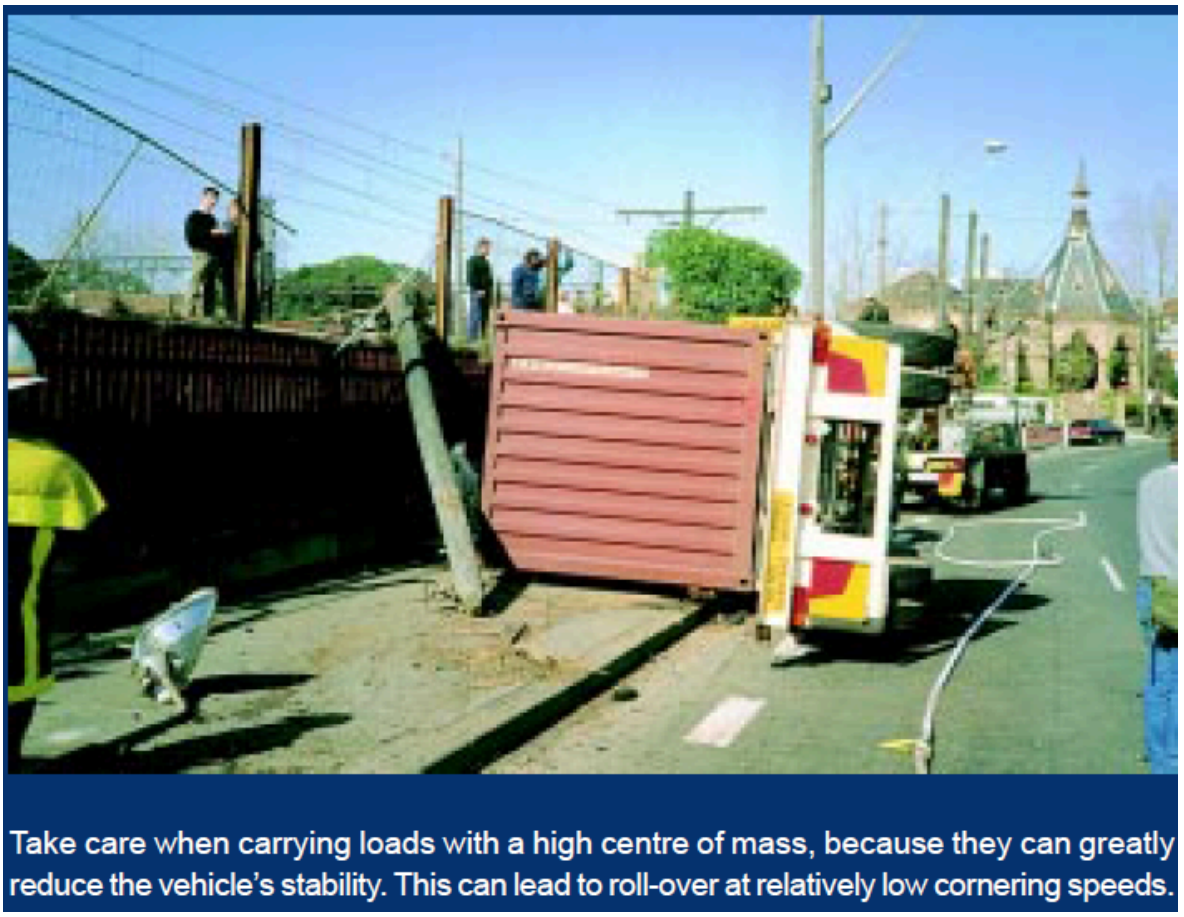


Fig. E.27 **EMPTY CONTAINER – CHAINED OVER TOP & 'DOGGED' BOTH SIDES**



Take care when carrying loads with a high centre of mass, because they can greatly reduce the vehicle's stability. This can lead to roll-over at relatively low cornering speeds.

DOs AND DON'Ts

DO make sure you have enough lashings and that they are in good condition and strong enough to secure your load.
DO make sure that tie-down lashings are as near to vertical as possible.
DO make sure that direct lashings attached to loads on wheels are not near vertical.
DO attach lashings at tie rail support points.
DO check and re-tighten the lashings or other restraining devices as required.
DO use lashing protectors on sharp edges.
DO make sure that loose bulk loads cannot fall or be blown off your vehicle.
DO use a vehicle that is built strong enough for the job.

SWI - Load Restraint

Standard Operating Procedure

DO ensure the freight you are loading does not overload the allowed mass of the combination you are using.
DO take extreme care when releasing a fixed lever dog and an elastic strap.

DON'T use faulty equipment.
DON'T attach chains between tie rail supporting points.
DON'T tie down loads onto greasy or dirty steel decks.
DON'T stand over and push down on a dog.