

## Guideline 3 – Restraining gas cylinder pallets & packs for transport

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General Principles .....	2
Before and during loading .....	3
Before and during transport .....	3
Specifications for Chains, Webbing and Plywood .....	3
Using side gates .....	3
Restraining pallets or packs on timber decks or on plywood covered steel decks.....	4
Restraining Pallets or Packs on Steel Decks .....	9
Other loads .....	11
Contacts .....	13

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ANZIGA aims to:

- Consult with government authorities and organisations that make policy or prepare regulations and standards which govern the production, transportation, storage, handling and use of gases.
- Collaborate with other industry and trade organisations on safety and technical matters, including public programs that relate to the gases industry.
- Produce information that promotes the safe storage, handling and use of gases.

The members of ANZIGA produce and distribute gases for the health and medical industries, manufacturing, food, scientific and hospitality industries.

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## General Principles

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The recommended method to transport gas cylinders is by a professional gas transport company.

This guideline refers to the securing of gas cylinders for transport on non-dedicated vehicles such as semi trailers and rigid trucks.

This guideline represents the industrial gas industries recommended best practice intended to assist you in the safe transport of gas cylinders in accordance with relevant state and territory legislation.

For further guidance information and more detailed guidance on load restraint, refer to the *Load Restraint Guide* published by NTC.

**It is recommended that pallets and packs be placed on timber decks or on plywood placed on steel decks, to provide adequate friction under the load and prevent slippery metal to metal contact.**

### Before and during loading

- Check valves to make sure that they are properly closed

### Before and during transport

- When transporting gases, do not smoke or use a mobile phone
- Plan to use the safest route to your destination
- Check and adjust load restraint security as required during transport
- Unload as soon as you reach your destination

### Specifications for Chains, Webbing and Plywood

The following specifications for chains and webbing apply throughout this guide:

- 50 mm webbing, lashing capacity of 2000 or 2500kg;
- 8mm transport chain with minimum lashing capacity of 3800kg
- 3mm uncoated plywood as a minimum.

### Using side gates

Side gates may be used as a secondary form of restraint, not as the primary load restraint method.

## Restraining pallets or packs on timber decks or on plywood covered steel decks

### One pallet

Load a single pallet along the centreline of the deck, against a headboard or front load rack, with the open side of the pallet facing rearward.

Tie the pallet down to the tie rails using pallet horizontal bars—use one webbing strap on each side, looped as shown on diagram.

Front load racks must be braced with chain.

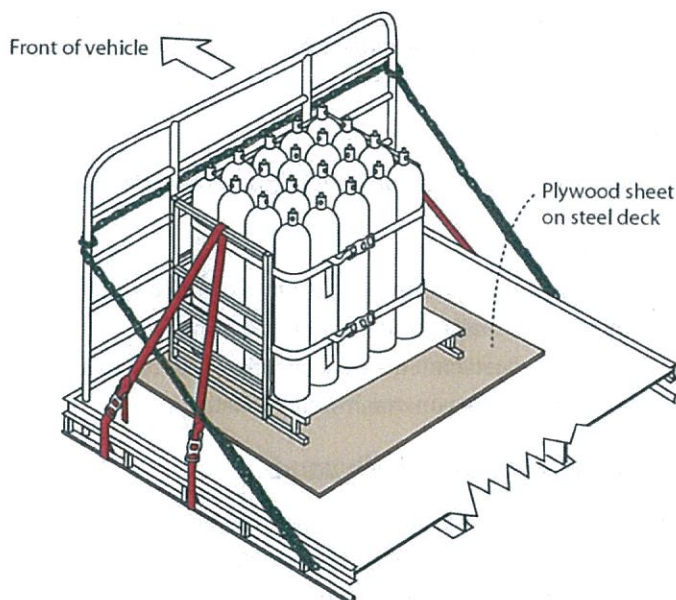


Diagram 3.1

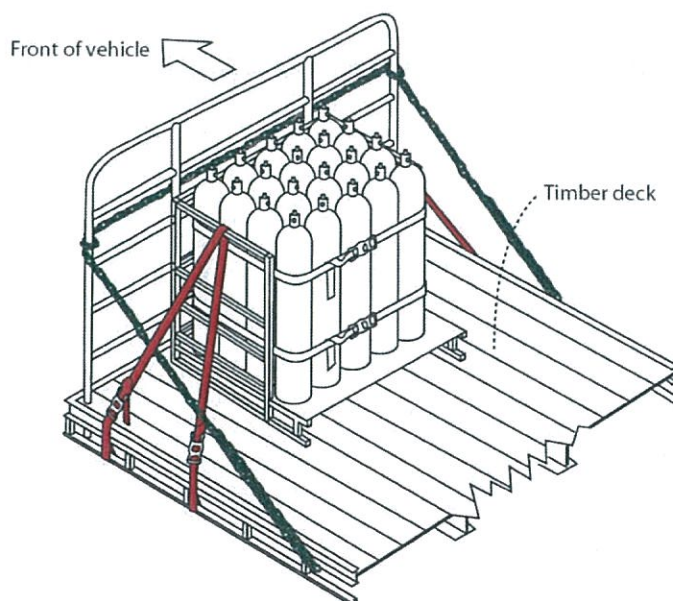


Diagram 3.2



### Two or more pallets

Pallets and large packs can be restrained in pairs across the deck, butted against each other. Always position these pallets with their open sides facing inwards.

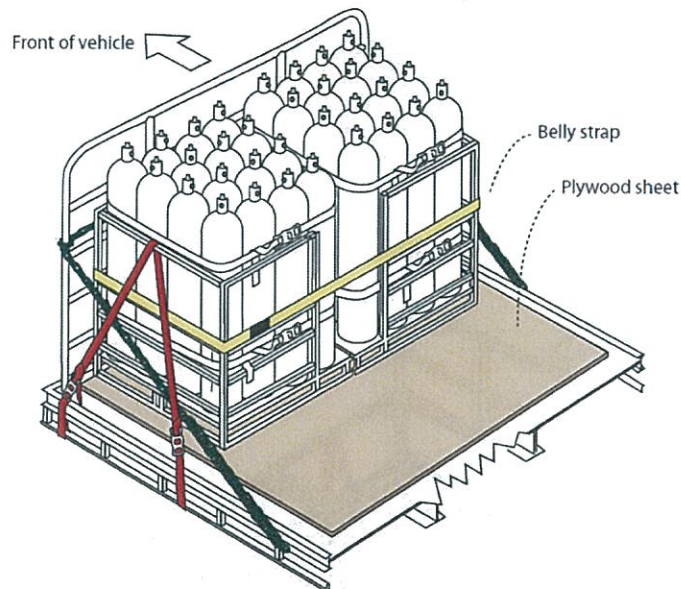
To prevent side-by-side pallets from tipping outwards, loop a belly strap around them.

One belly strap can be used for either two or four pallets.

Restrain multiple cylinder pallets against a headboard. The restraint must include tie downs (shown in red).

Headboard must be diagonally braced (shown in green) to prevent forward motion during braking, as identified in NTC's *Load Restraint Guide*.

Multiple pallets against a headboard should always be belly strapped.



**Diagram 3.3**

When loaded back from the headboard or load rack, attach bracing chains directly to the front pallets and loop them around the front outside uprights directly above the second highest cross-member. Angle them down to the tie-rail, as shown below.

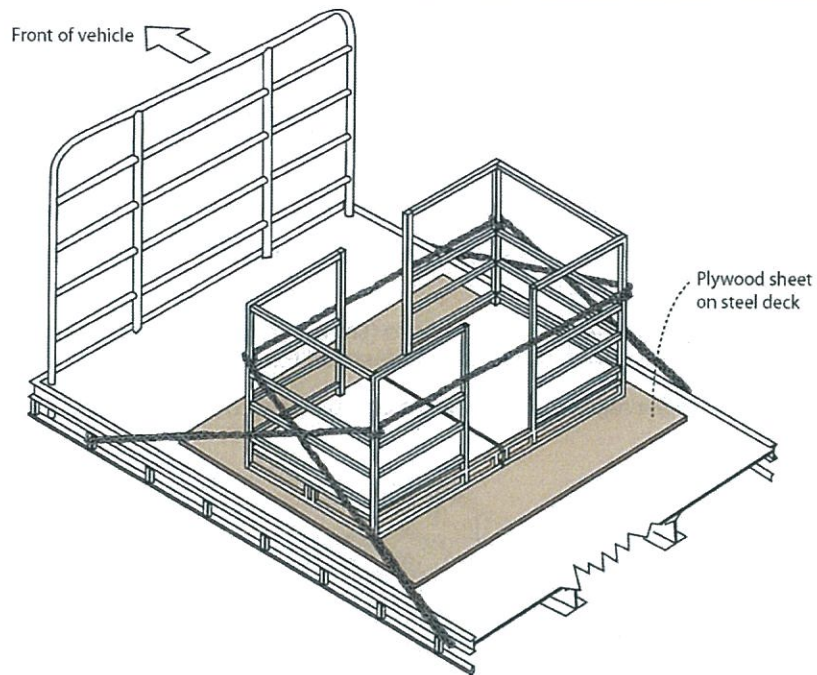


Diagram 3.4

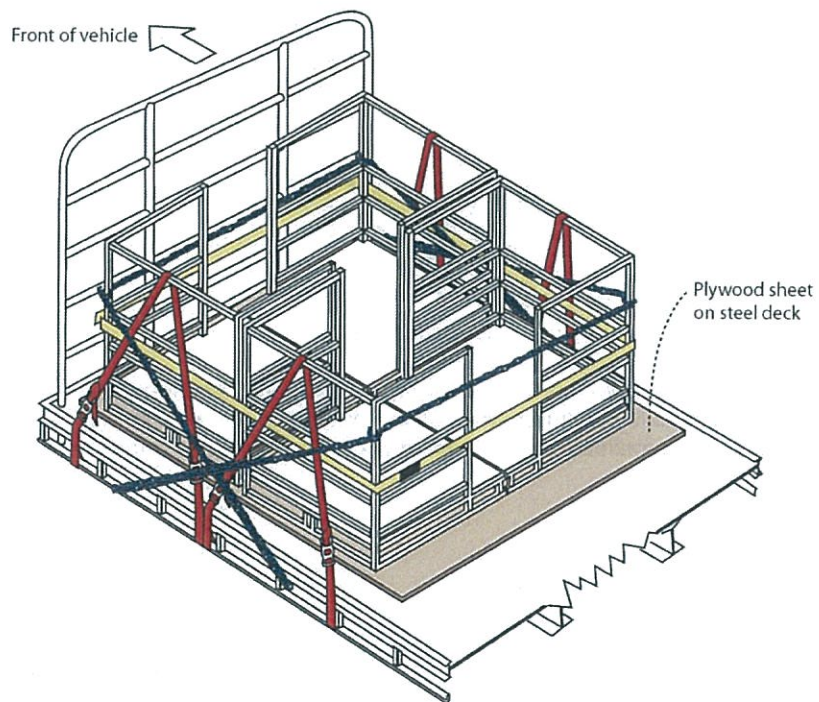


Diagram 3.5

**Note:**  
Diagram shown empty for clarity of load restraint.

## Single packs

Load single packs along the centreline of the deck.

Single cylinder packs should be restrained with 2 looped straps, with plywood between the pack and headboard as shown below.

Where the manifold pack does not have tie down anchorage points, vertical restraint should be provided as per Diagram 3.6.

The same restraints are required for steel decks and timber decks.

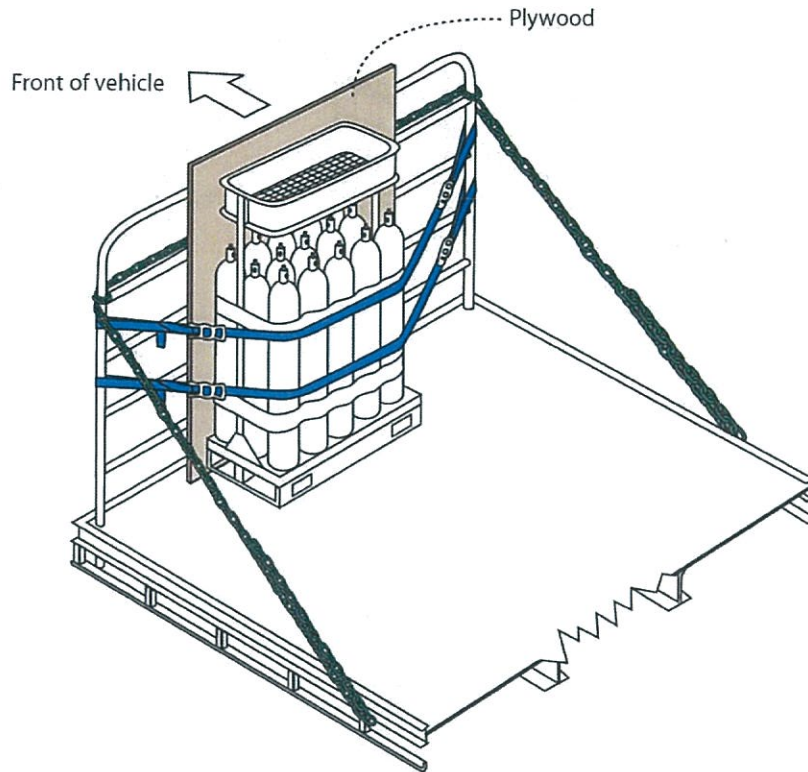


Diagram 3.6



### **Two or more packs**

Load packs across the deck, butted against each other.

Place plywood between the packs and the headboard or load rack to avoid metal-to-metal contact.

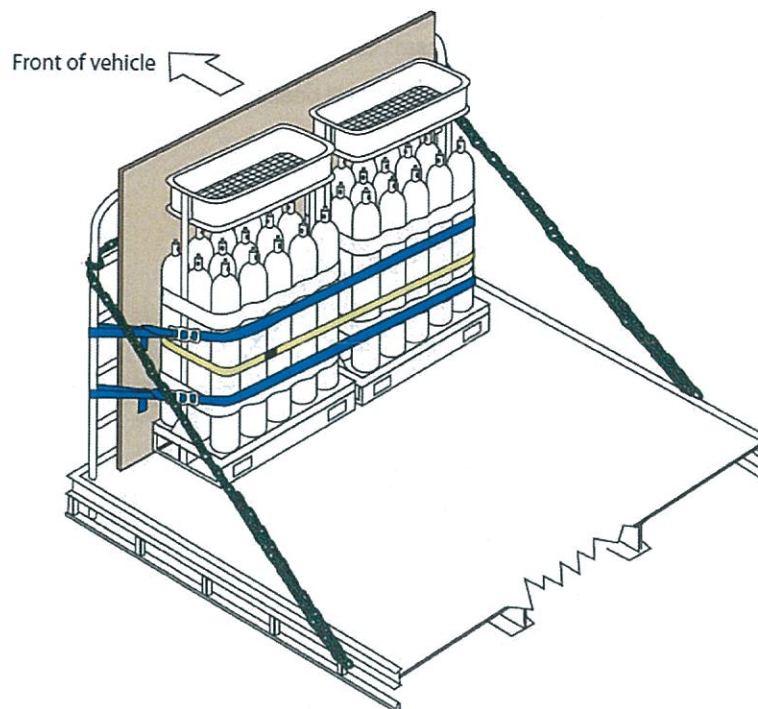


Diagram 3.7

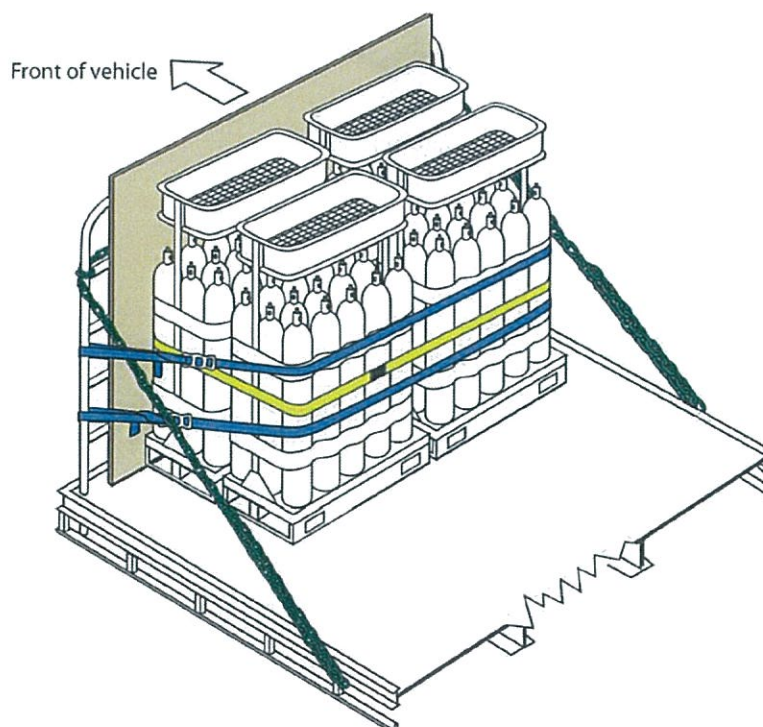


Diagram 3.8



## Restraining Pallets or Packs on Steel Decks

### *Lashing pallets or packs on steel decks*

**There is not sufficient friction between the steel pallet and metal deck for a practical tie-down system therefore additional restraints are required.**

If pallets are placed directly on a metal deck, one of the following applies:

- Rearward brace the rear two pallets back to the coaming rails on both sides with chain (one 8 mm looped chain is capable of restraining a section of load with a maximum of weight of 16.0 tonnes)

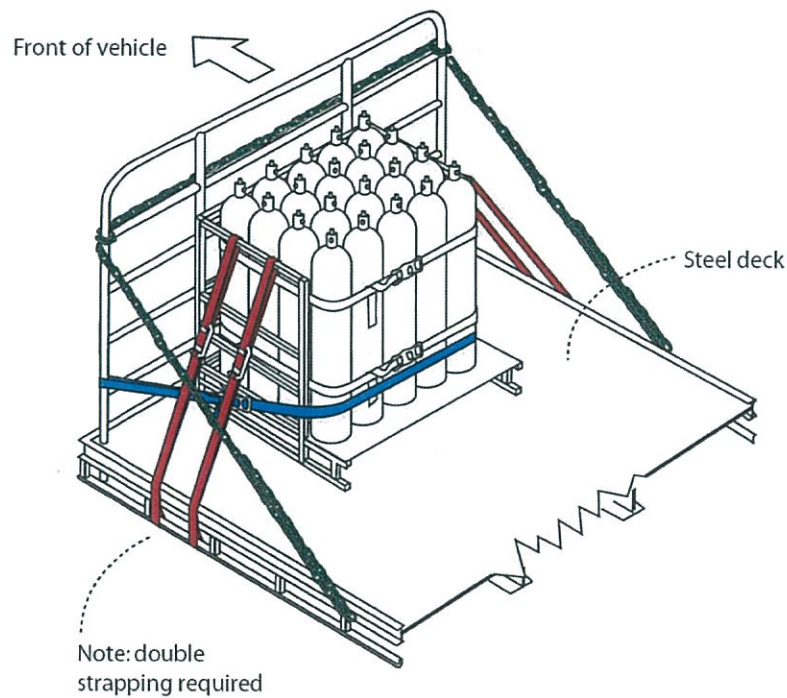


Diagram 3.9

- Use four doubled straps (two on each side) for each single pallet

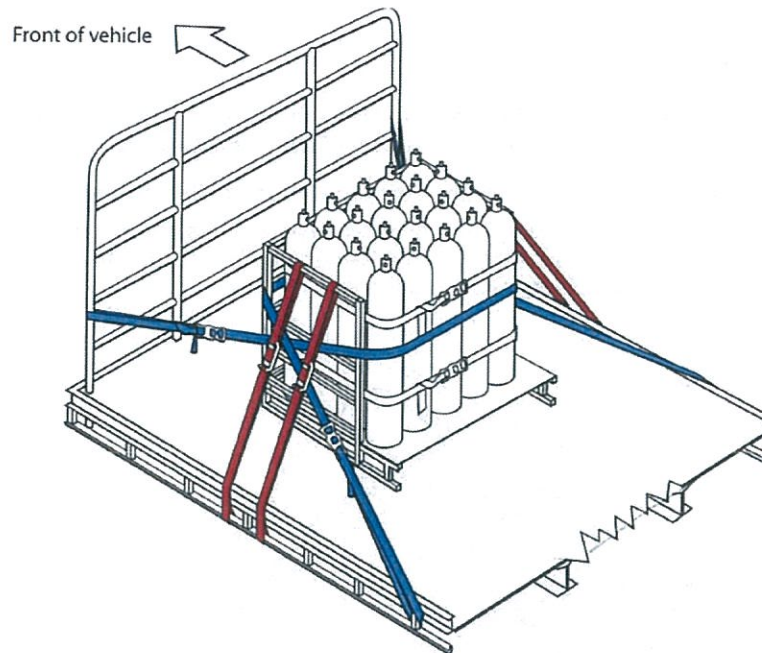


Diagram 3.10

**Note:** Load may need to be placed centrally to prevent overloading or for axle weight requirements.

## Other loads

### Dry ice boxes

Restrain dry ice boxes against the headboard with a sheet of plywood against load rack, and a webbing strap tie-over.

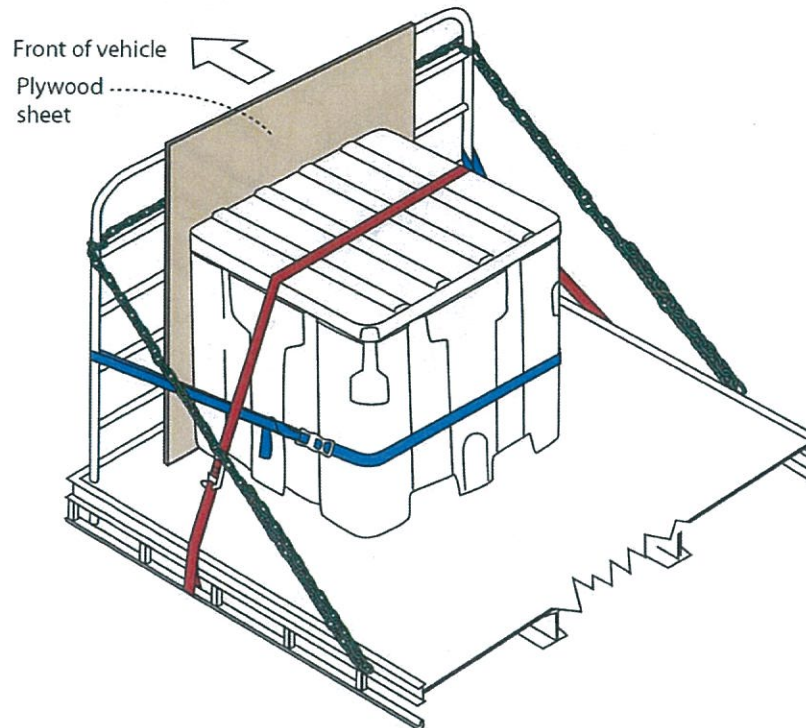


Diagram 3.11

**Note:**

For multiple dry ice boxes, use belly strapping.

### Mixed load modules

Restrain these loads as you would individually.

- Use a double rear brace (particularly for bundle modules)
- Belly strap the mixed loads if possible
- Use a friction pad between the load and the headboard
- Use a tie-over webbing strap if possible (e.g. if a dry ice box is one of the components of the mixed load)

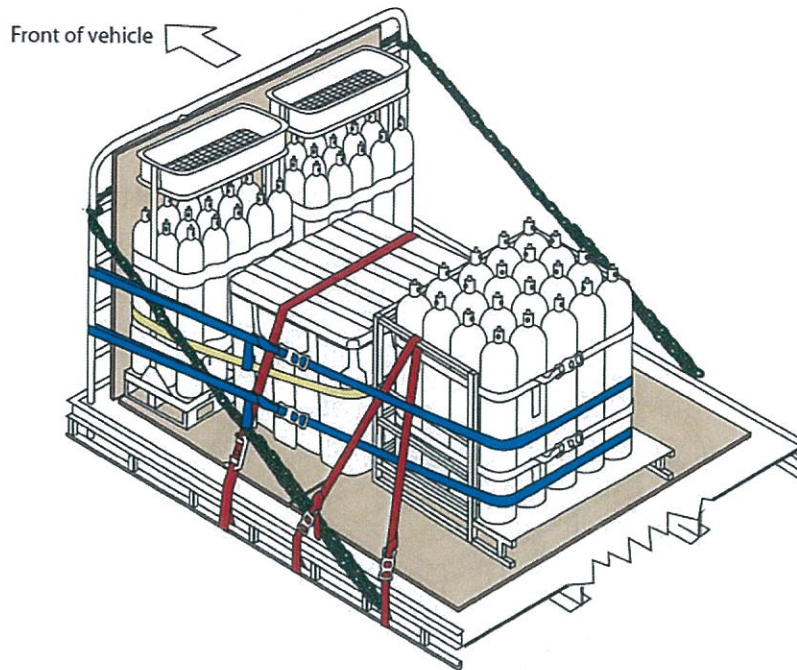


Diagram 3.12

***Restraining pallets and packs with a forward restraint***

To provide additional forward restraint and to prevent any unstable pallets tipping forwards, ensure that the front of the load (or the front of each section of load) is restrained in one of the following ways:

- Placed against a strong headboard
- Placed against a front load rack braced with chain
- Chained back to the tie-rails on each side



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## Contacts

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