

driving tip

If the trailer brakes don't release when you charge the trailer braking system, the air lines may be crossed.

7. Prepare to pull away

Re-enter cab.

Charge the trailer braking system.

Raise trailer air suspension if it has been lowered.

Pressurize the air or hydraulic (no slack) ram (if equipped).

Air brake leakage

• check for air leakage in the air brake system

8. Pull away

Release parking brakes.

Slowly pull away.

At slow speed, apply the trailer hand valve to check trailer service brake operation and that trailer connection is secure.

Trailer connection

• pintle eye should be securely held in pintle hook

Uncoupling pintle hitch units

Use these steps to uncouple a truck and trailer joined with a pintle hitch:



driving tip

Place a block of wood or other marker beside one of your truck tires that's visible in your mirrors to help show how close your truck is to the trailer when you return later to re-couple.

1. Position the truck and trailer

Move forward/backward so that the truck is directly in line with the trailer (not at an angle).

Check your position using the exterior mirrors.

Truck and trailer position

• if you're lined up, you should be able to see both sides of the trailer in the exterior mirrors • ensure the road or ground surface is level and will support the trailer

driving tip

Fasten disconnected air lines and other lines to dead-end (dummy) connectors to prevent dirt and debris from entering the lines and to prevent the lines, from chafing against other components or bouncing off the vehicle.

2. Uncouple the pintle hitch

Set the truck and trailer brakes.

Release pressure from the air or hydraulic (no slack) ram (if equipped).

Exit the cab.

Block trailer wheels.

Disconnect the air lines, electrical cable, and hydraulic lines (if equipped) between the truck and trailer.

Disconnect the safety cables or chains and/or safety pin.

Release the pintle hook safety latch.

Lower the drawbar landing leg (if equipped).

Raise the drawbar so that pintle eye clears the pintle hook.

 Trailer uncoupling

- make sure the trailer is level
- block trailer wheels
- support the trailer drawbar after uncoupling if needed
- secure the air lines, electrical cable and hydraulic lines after disconnecting them

3. Pull away from trailer

Re-enter cab.

Release truck parking brakes.

Move the truck ahead slowly so that it's completely clear of the trailer.

 Trailer security

- check in the mirrors to ensure that the pintle connection is disconnected and that the trailer is secure

Loading

The way your load is arranged will be affected by your type of vehicle and by the weight, height, width, length and nature of your cargo. You need to learn the types of loads different vehicles can carry and what to do when a load is oversized. You'll likely load and secure different kinds of cargo during your career as a commercial driver.

Loading cargo



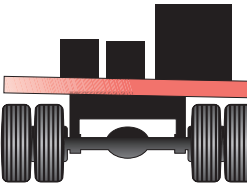
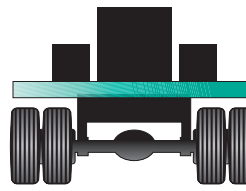
Securing a load and ensuring that it doesn't move during transport can be difficult. You may transport a wide variety of cargo types at different times, including livestock, explosives and intermodal cargo containers. Loading and securing your cargo incorrectly could cause death, injury or property damage. You may also face fines and penalties.

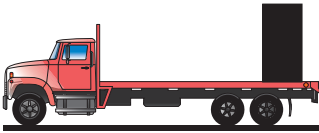





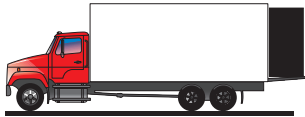
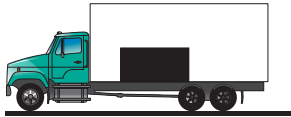
Arranging and distributing loads

The way you distribute your cargo's weight will affect the handling characteristics of your vehicle. It also affects the life of your vehicle's tires, frame, springs, axles and bearings.

A poorly distributed load can overload an axle or set of tires, put unnecessary stress on your vehicle's frame and cause permanent damage and steering misalignment.

These illustrations show correct (right side) and incorrect (left side) ways to load your vehicle.

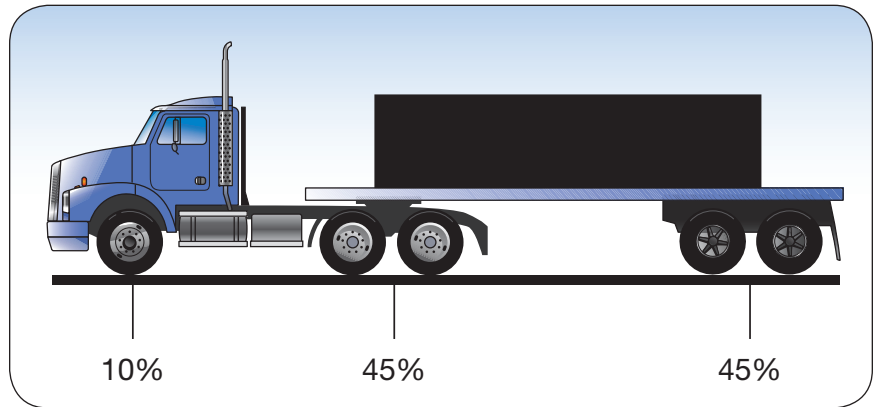
Wrong	Right
 <p data-bbox="576 840 950 1113">Don't place a very concentrated heavy load against the cab. This type of loading may permanently bend the frame. It'll also overload the front tires, which may make steering difficult and could cause a worn tire to blow out. This type of loading may also make your load dangerously top heavy.</p>	 <p data-bbox="990 840 1396 1113">Place a very concentrated heavy load near the rear, on its long side if possible. Most of the load should be partially over or just ahead of the rear axles to get proper tire loading. Make sure the load is securely blocked to prevent it from sliding forward. (More about this later in the chapter.)</p>
 <p data-bbox="576 1354 950 1617">Don't place a very heavy load on one side. This overloads the spring and the tires on the cargo side. The brakes may lock the wheels of the under-loaded side and could cause the tires to skid on wet surfaces. Loading in this unbalanced way may also cause flat spots on the tires.</p>	 <p data-bbox="990 1354 1364 1533">Load your vehicle so that an equal amount of weight is placed on all rear tires. This will eliminate twisting and stress on the frame. It also prevents overloading the axle housing and wheel bearing.</p>

Wrong	Right
 <p>Never load your vehicle this way. It may cause the frame to bend, will overload the rear tires and takes enough weight off the front tires to make steering almost impossible.</p>	 <p>The correct place for the concentrated load is partially over or just ahead of the rear axles with the longest side on the floor. Make sure the load is securely blocked to prevent it from sliding forward. (More about this later in the chapter.)</p>
 <p>On a rough road, a vehicle loaded this way may pivot on its rear wheels, taking the front wheels entirely off the road.</p>	 <p>A tractor trailer combination is the correct vehicle to use for this type of service because a longer, heavy vehicle is needed to carry this long load. Always use the correct vehicle for the job. The risk of damage to the truck and tires, and even serious collisions, may be reduced.</p>
 <p>This shows a heavy load with too much weight on the trailer's rear tires. The fifth wheel isn't supporting the load. The tractor's rear tires are likely to slip and wear away rubber. This vehicle will also be difficult to stop because the braking distribution will be uneven.</p>	 <p>The load should be centred to properly distribute its weight over the tires. The average semi-trailer type truck has a central weight distribution point at approximately the middle of the trailer. Make sure the load is securely blocked to prevent it from sliding forward. (More about this later in the chapter.)</p>
 <p>Never load items on the tailgate. It puts a severe strain on the equipment and can cause serious collisions.</p>	 <p>This load should be placed partially over or just ahead of the rear axles with its longest side on the floor. Make sure the load is securely blocked to prevent it from sliding forward. (More about this later in the chapter.)</p>

For safety reasons, always ensure you load your vehicle correctly.

The best way to distribute the weight of your cargo depends on the nature of the load and your vehicle configuration. Spread a concentrated heavy load evenly over as many axles as possible. Some trucks, like five-ton freight trucks, are designed to have approximately 90 per cent of the weight of their cargo on their rear axle(s) and 10 per cent on the steering axle. Others, like cement mixers and dump trucks, are designed to have approximately 70 per cent of the weight of their cargo on their rear axles, and 30 per cent on the steering axle(s).

Place the cargo midway between the rear axle unit and the drive axle unit when loading a trailer. This distributes the weight equally between the rear axle unit and the drive axle unit.



A tridem drive truck or truck tractor is required to have a combined steering axle weight, when loaded, of at least 25 per cent of the tridem axle weight — 40 per cent in the case of twin steering axles.

Trailers are designed to handle loads that are distributed evenly. They should have approximately 45 per cent of the weight of their cargo on the trailer axle unit, 45 per cent on the drive axle unit and 10 per cent of the weight on the steering axle.

fast fact

You can find the North American Standard on cargo securement on the Commercial Vehicle Safety Enforcement website at www.cmata.ca/english.

Securing cargo

Yukon has adopted the North American Standard on cargo securement. The Standard specifies requirements that apply to all types of cargo and includes specific requirements for certain commodities. Unless it's specified otherwise in the Standard, the general and specific requirements both apply.

The Standard applies to all vehicles carrying cargo on highways, regardless of the vehicle's gross vehicle weight.

You'll need to know the securement requirements for the types of cargo you're carrying. You can get copies of the standard at www.cmata.ca.

General cargo securement requirements

The cargo securement system must be appropriate for the cargo's size, shape, strength and characteristics.

The securement system may include these components:

- vehicle structure
- blocking and bracing equipment
- securing devices, like tiedowns.

The securement system must be able to withstand these forces:

- 0.8g deceleration in a forward direction
- 0.5g deceleration in a rearward direction
- 0.5g acceleration in either sideways direction, and
- downward force equal to at least 20 per cent of the weight of the cargo.

The load on each component of the securement system must not exceed the working load limit of the component.

Cargo securement system components must be in good working order — not damaged, cracked, cut or weakened — and fit for the purpose for which they're used.

General requirements for tiedowns

Tiedowns must be designed, constructed and maintained so that a driver can tighten them (except for steel strapping). Tiedowns must be taut and not slip, loosen, unfasten, open or release while a vehicle's in operation.

Use edge protectors where a tiedown could be cut or scraped where it contacts cargo. Tiedowns should be located inboard of rub rails if possible.

One long chain could be used as two tiedowns, if each tiedown has an independent tensioning device so that failing doesn't cause the other to fail.

Tiedowns must not be used for cargo securement if:

- the chain has cracked welds or links
- the chain has bent, twisted, stretched or collapsed links
- chain links are weakened by gouges, nicks or pits
- the chain is incorrectly repaired
- chain links are obviously worn or showing other evidence of loss of strength
- there are knots in any portion of chain, wire rope or webbing
- there are spread or disturbed grab hooks
- nylon webbing has cuts, nicks or splits
- wire cable has missing strands or wraps
- an anchor point is weakened or shows loss of strength due to cracks, breaks or distortion.

fast fact

Consider the length of the cargo first and its weight when deciding how many tiedowns to use.

Number of tiedowns

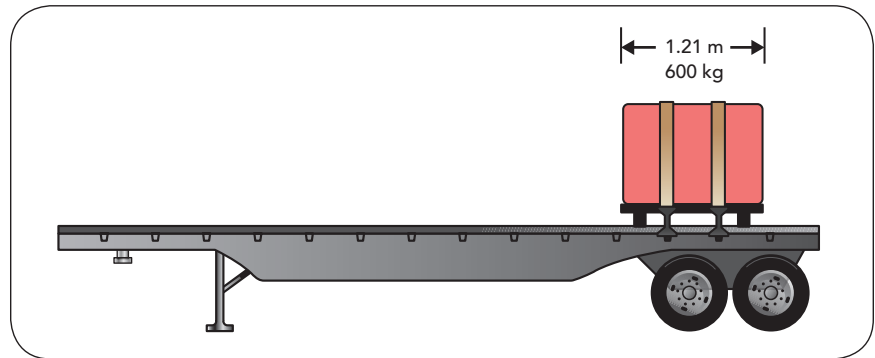
The following table shows the minimum number of tiedowns required if an article of cargo on or in a vehicle isn't prevented from moving forward by a front end structure, a tiedown, other cargo or a device like a drop on a step deck trailer.

As a rough guide, use two tiedowns for the first 3.04 m of a load and one tiedown for every 3.04 m after that. Machinery or fabricated structural items that need special securement because of their size, design, shape or weight are exempted from these requirements.

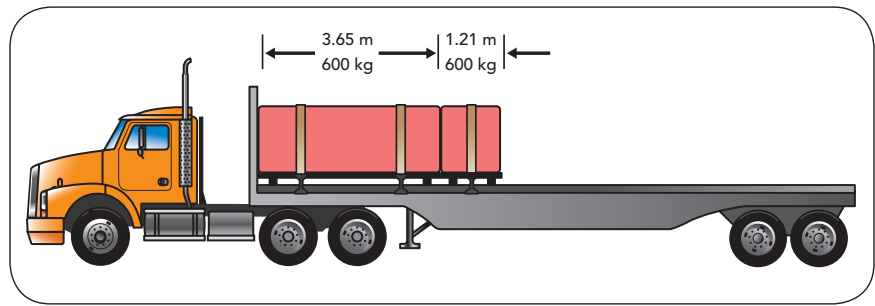
Article description	Minimum number of tiedowns
1.52 m or shorter and 500 kg or lighter	1
1.52 m or shorter and over 500 kg	2
More than 1.52 m but 3.04 m or less	2
Longer than 3.04 m	2 + 1 tiedown for every additional 3.04 m or part of that thereof

When cargo is prevented from moving forward, the minimum number of tiedowns required is one tiedown for every 3.04 m of length.

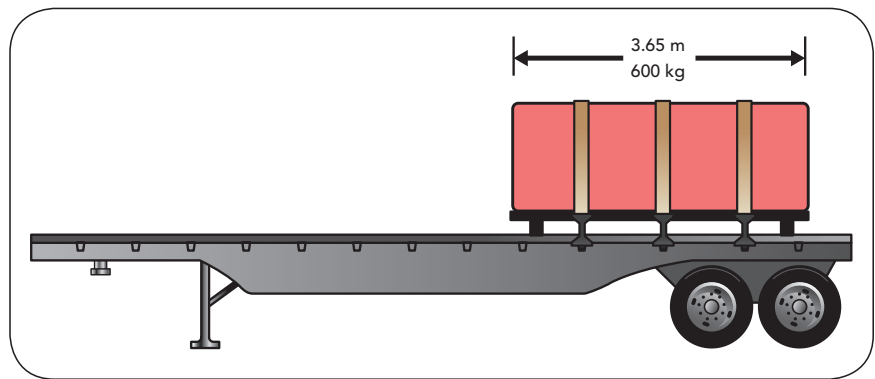
This article is 1.21 m long and weighs 600 kg. The article isn't prevented from moving forward. Use two tiedowns equally spaced.



Here, two articles are arranged on a flat deck. Since the first article is butted against a bulkhead, use only two tiedowns. Since the second article is butted against the first article, use only one tiedown.



This article is 3.65 m long and weighs 600 kg. Since the article isn't prevented from moving forward, use three tiedowns equally spaced.



Strength of tiedowns

The working load limit of tiedowns used to secure cargo must be at least 50 per cent of the cargo weight. The Standard provides the working load limit default of the tiedown.

The diagrams on the previous page show articles 3.65 m in length weighing 600 kg. In these examples, the aggregate working load limit of the tiedowns must be no less than 300 kg (50 per cent of 600 kg). For an article 3.65 m long that's not prevented from moving forward, use three tiedowns. So each tiedown must have a working load limit of not less than 100 kg ($300 \text{ kg} \div 3$).

If the only available tiedowns have a working load limit of 50 kg, use six tiedowns.

But, if tiedowns rated at a working load limit of 200 kg were available, use three tiedowns, since the Standard gives a minimum number required as well as the minimum strength.

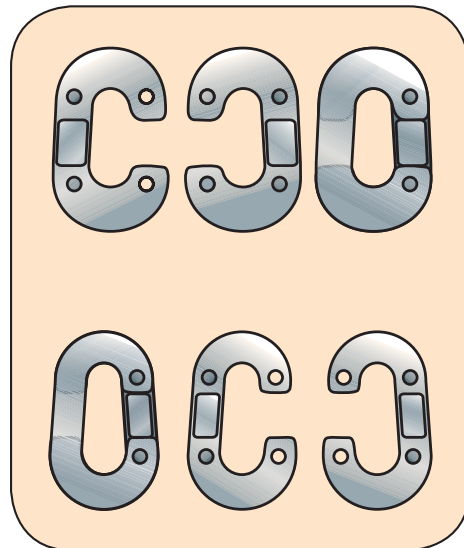
Determining working load limit

You can find the working load limit marked on the component by the manufacturer. (The Standard prohibits the use of unmarked tiedowns as of January 1, 2010.)

Standard 10 provides the default working load limits for chain, synthetic webbing, wire rope (6 x 37, fiber core), manila rope, synthetic fiber rope and steel strapping, as well as numerous manufacturing standards.

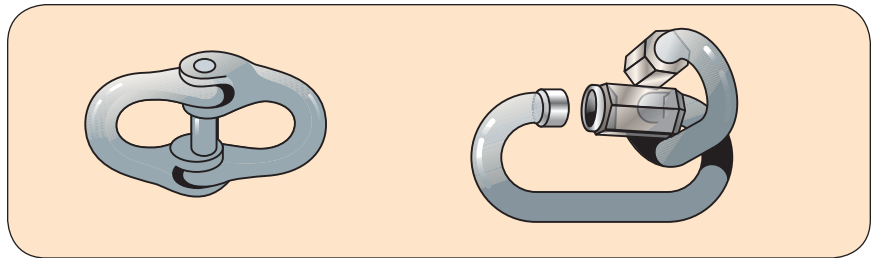
Chain connector links

The chain connector link you use when securing your load must be compatible with the grade of chain you're using. It's a cliché, but it's true that a chain's only as good as its weakest link. That weakest link could be a connector, an eyelet, or any other part of the chain assembly.

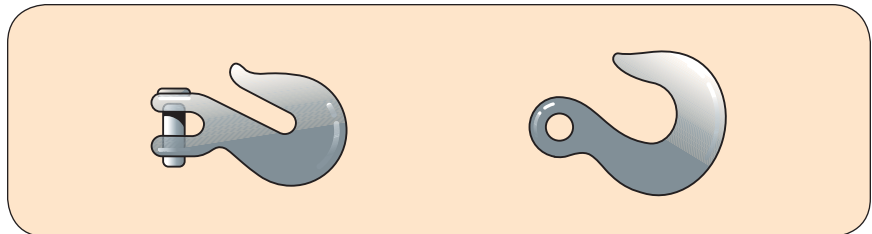


Pear-shaped missing links and double clevis links.

An alloy connecting link (left) and quick connector (right). Quick connectors are not suitable for any heavy duty operation.



A chain hook on the left and a slip hook on the right.



fast fact

If a winch-type tightening device is used to secure a wire rope, it should be specifically designed for use with wire cable. If a winch designed for webbing is used, protect the wire rope by anchoring it securely to the drum.

Standard load binders are used to tighten (bind) the chain, webbing and other strapping used to secure the load so it won't shift.

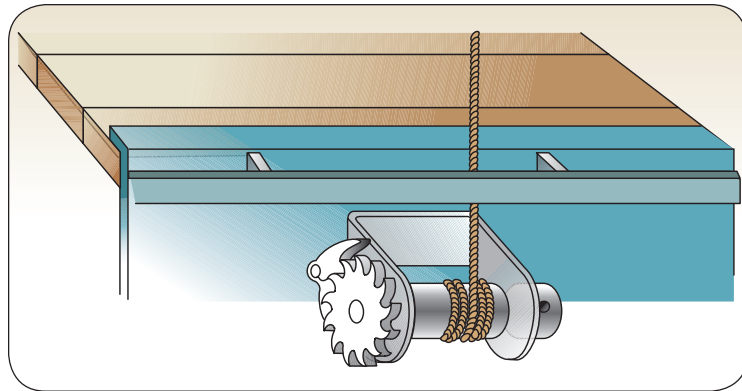
When you use load binders, you must:

- Make sure your tiedown assemblies are strong enough. Always assume your tiedown assemblies, including the clevis hooks and load binders, are the lowest grade for their size unless they have a clear marking or a permanently attached tag that states something different.
- Protect all tiedown assemblies from abrasion.
- Don't use any tiedown assembly that's worn beyond a wear limitation embossed by the manufacturer or is unsafe.
- Lock every load binder handle in place to prevent the handle from unlocking. Use rope, wire, chain or a locking mechanism. Using the free end of the chain is adequate.
- Ensure you can tighten all tiedowns unless steel, fiber or synthetic strapping is used. In these cases ensure the strapping is taut.

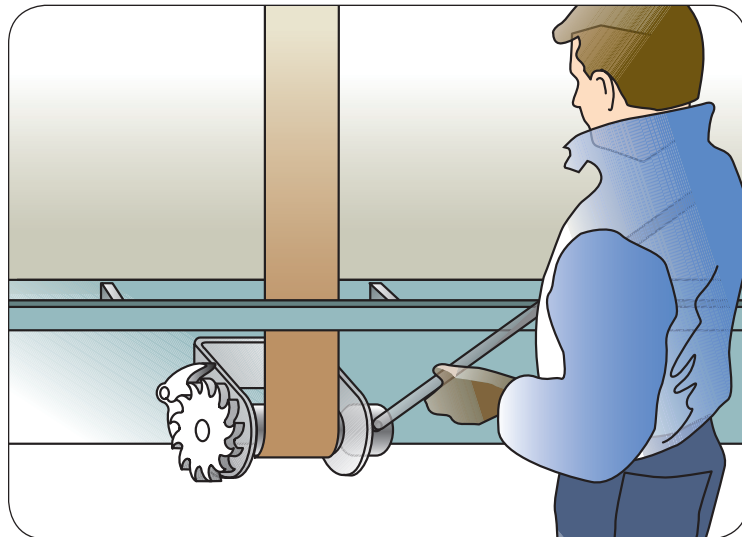
The information on securement systems and working load limits is detailed in Standard 10. Other requirements:

- A friction mat which isn't marked by the manufacturer with a working load limit is assumed to provide resistance to horizontal movement equal to 50 per cent of the weight of the cargo resting on the mat.

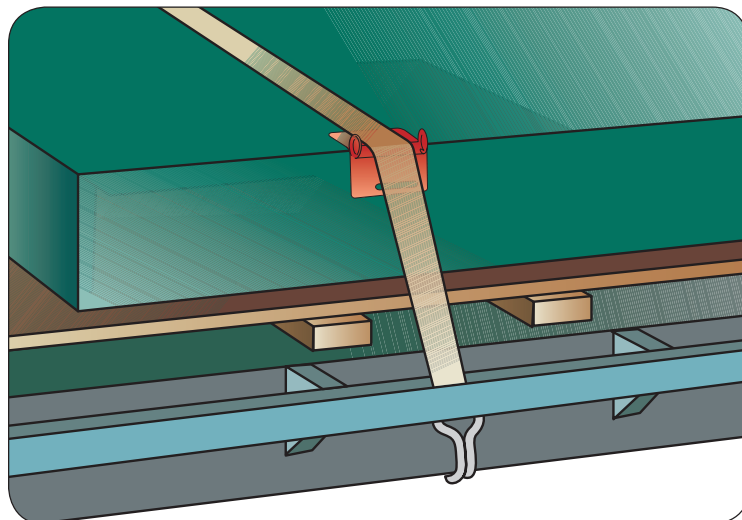
A winch.



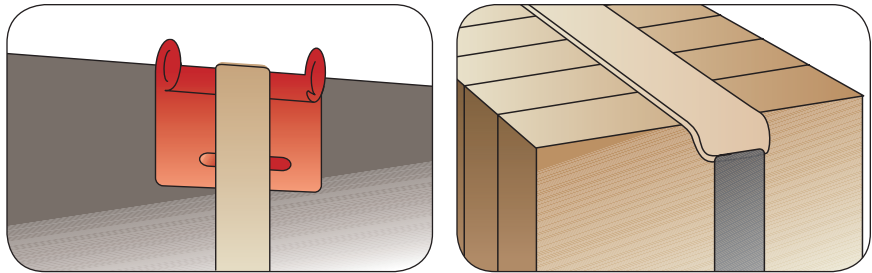
Nylon webbing with a winch.



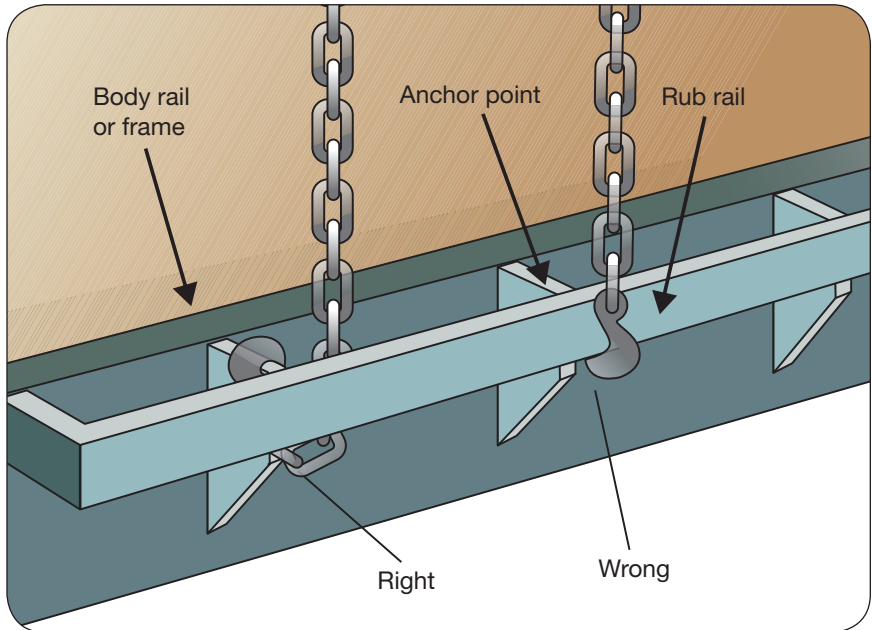
Webbing with a hook end.



Two types of webbing protectors.



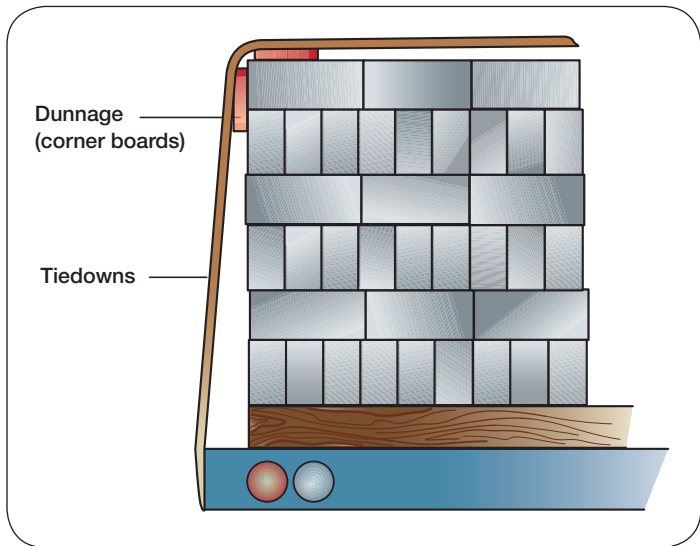
fast fact
Rub rails must not be used as anchor points.



definition
Dunnage is spacing blocks, boards and mats that separate cargo from itself and its restraints.

- Timber used on or within a vehicle as dunnage, chocks or cradles for blocking or bracing shall be strong enough that it will not be split or crushed by the cargo or the tiedowns.

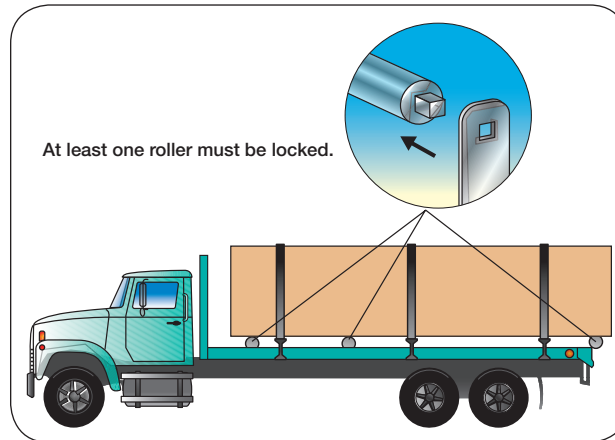
Dunnage in the form of corner boards is used with tiedowns to secure this load of bricks.



- Where the articles of cargo on or within a vehicle are placed beside each other and secured by tiedowns that pass over two or more articles, the articles shall be:
 - a) placed in direct contact with each other, or
 - b) prevented from moving towards each other while the vehicle is on a highway.
- Where any cargo or portion thereof may roll, it shall be restrained by chocks, wedges, a cradle or another securing device that prevents the cargo from rolling.

For bagged products such as cement, fertilizer or other products packaged in bags and then stacked on pallets for shipment, interlocking the bags on the pallets and wedging the pallets on the trailer isn't enough. Secure the bags by tiedowns and dunnage (corner boards).

If a load is supported on rollers, then lock at least one roller to prevent the load from shifting. The load must also have adequate tiedowns.



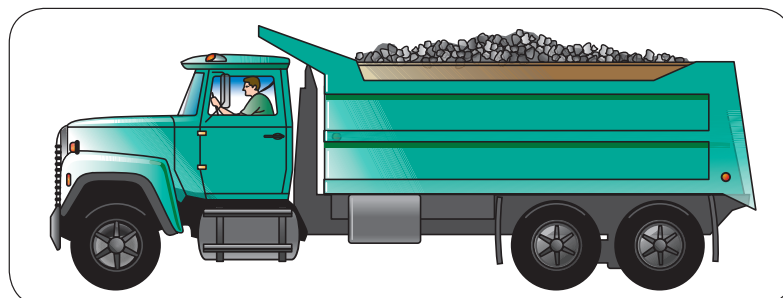
This load is supported on rollers and secured with tiedowns. Lock at least one roller.

Aggregate loads — An aggregate load is a collection of small articles. Sand, gravel, pieces of paper or wood chips are all types of aggregate loads. If these loads can't be contained with sideboards or tiedowns, you must use a cover or tarp so pieces don't escape from the vehicle.

You must use a cover or tarp to secure your load if:

- the load is made up of aggregate material, and
- the load is likely to bounce, blow or drop from the moving vehicle.

These two examples show the same kind of truck carrying different types of aggregate loads.



Since this dump truck is carrying ¾-inch crushed stone, use a cover or tarp.