

## A Comprehensive Guide to Ratchet Straps

[Ratchet straps](#), known to many as tie down straps, are a transportation essential – they are used to secure your cargo in or onto your enclosed trailer or flatbed.

### Ratchet Strap Construction

To understand how this equipment works, you first have to look at [what ratchet straps are made of](#). The most commonly-offered material is polyester, although other fabrics like nylon are available. Polyester has the strength and low stretchiness necessary to ensure the safety of your haul for the entirety of your trip. Other benefits of polyester include resistance to UV rays, mildew, mold, and many common chemicals.

### Tie Down Styles

Because there are so many possible applications, ratchet straps are available in a diverse selection of styles. When choosing the right one for you, there are several factors to consider.

#### *Width*

The first is the strap width. This has a huge impact on the [working load limit \(WLL\) of a ratchet strap](#). This rating is incredibly important – it lets you know exactly how much weight that piece of rigging is capable of securing. Using a ratchet tie down strap with an inadequate WLL can lead to damaged cargo, increased risk of personnel injury, and other safety hazards.

WLL is calculated by dividing the break strength (BS) – the point at which the strap will fail – by three, and is dependent on the lowest-rated strap component. For example, if the strap is rated for 3,000 lbs. but the end fitting is only rated to 2,500 lbs., the WLL will be 2,500 lbs.

You'll find information like working load limit and break strength included on a tag that comes attached to the ratchet strap.

Strap widths are generally available between 1" and 4":

- 1" straps are generally used for light-duty applications, with a WLL of up to around 1,000 lbs.
- 2" straps are the most commonly-used option because they are available with E- and L-track compatible hardware. Their WLL can be up to 3,333 lbs.
- 3" and 4" straps are the optimal choice for heavy-duty tie down applications. The 3" strap has a WLL of around 5,400 lbs., while the 4" strap is 5,400 lbs. and above!

#### *End Hardware*

Another factor involves the end hardware. As mentioned above, some end fittings work with E-track and L-track. Other options include wire hooks, chain ends, and more – all with slightly different application suitability.

The end hardware you choose will generally be informed by the type of attachment points you have (or plan to have) in your trailer, as well as your available space. For example, you might choose a wire hook if your attachment point is in a narrow, harder-to-reach space.

If you have E-track or L-track already installed on your flatbed, choosing hardware specifically designed for those systems will streamline your securement process.

### *Assembly Type*

The last factor we will cover is assembly type - choose from full or endless. The full assembly consists of two sections, one with an end fitting and a ratchet, and the other with an end fitting and a fixture-less end. These two straps are then threaded together to create your tie down. A full assembly is the standard pick for most applications, as it allows for more versatility in your setup.

The endless assembly is frequently used to bundle items together, as it consists of just one strap with a ratchet and a fixture-less end. You simply feed the fixture-less end through the mandrel to create a solid loop, then ratchet it to secure.

### [How to Use Ratchet Straps](#)

The first question to ask yourself is "[How many ratchet straps do I need?](#)" This is actually fairly simple to answer - just consult the cargo securement rules put together by the [Federal Motor Carrier Safety Administration \(FMCSA\)](#). They address both the minimum working load limit and the minimum number of tie downs you will need.

As of 2021, the minimum number of tie downs required by the FMCSA correlates to the length and weight of your cargo:

- For articles less than or equal to 5 feet in length and 1,100 pounds in weight, you need one tie down.
- If the article's weight exceeds 1,100 pounds and it is less than or equal to 5 feet, two tie downs are required.
- Two tie downs are also required if the length is greater than 5 feet but less than 10, regardless of weight.
- If an article is greater than or equal to 10 feet in length and is "blocked, braced or immobilized to prevent movement in the forward direction by a headerboard, bulkhead, other articles that are adequately secured, or other appropriate means," secure it with one tie down every ten feet (or fraction thereof). *Source: [FMCSA](#)*
- If the article is greater than or equal to 10 feet in length and is not blocked to prevent forward movement, then it requires two tie downs for the first 10 feet of length, then one additional tie down for every additional 10 feet (or fraction thereof).

Now that you know how many ratchet straps you need, make sure they also meet the [FMCSA's WLL rules](#):

"The aggregate working load limit of any securement system used to secure an article or group of articles against movement must be at least one-half the weight of the article or group of articles."

To calculate the aggregate WLL, use the following criteria to identify what WLL value to use for each tie down, then add them all together:

- If a tie down uses a vehicle anchor point and an attachment point on an article, use a value equal to one half of the WLL.
- If a tie down uses a vehicle anchor point and goes through, around, or over article(s) to another vehicle anchor point, use a value equal to the WLL.

US Cargo Control recommends reading through the [entire set of cargo securement rules](#) so that you know exactly how they apply to you.

### Securing Your Cargo

It's time to secure your cargo. [How ratchet straps work](#) when it comes to safely fastening your load can be broken down into several methods:

1. Attached to the cargo – The tie down is first attached to the vehicle. The second attachment point is on the cargo.
2. Passed through the cargo –The tie downs are attached to the vehicle, passed through or around the cargo, and then attached again to the vehicle.
3. Passed over the cargo – The tie downs are attached to the vehicle, passed over the cargo, then attached to the vehicle again.

The method you use will depend on your setup and your cargo – you need to ensure that it is sufficient to hold your load in place.

### [How to Thread a Ratchet Strap](#)

The steps for threading a ratchet strap are similar regardless of whether you are [threading an endless ratchet strap](#) or a full ratchet strap assembly. The main difference is in the pre-threading process: you may find it more difficult to set up a full assembly before you start, while you would want the endless ratchet strap to be in position before you begin.

1. Open the handle
2. Insert the loose end of the of the strap into the mandrel
3. Double it back over and pull the strap through the slot in the mandrel
4. Pull strap to remove excess slack
5. Crank the ratchet to desired tension
6. Make sure the strap stays in line with the other strap to avoid tangling/locking
7. Lock handle down after tightening

### [How to Loosen a Ratchet Strap](#)

Loosening a ratchet strap should be the same for both assembly types.

1. Pull trigger back towards the handle
2. Open ratchet all the way, which should release the webbing
3. Pull webbing out of mandrel
4. Pull the trigger to unlock
5. Close ratchet back down

Prefer to watch how this is done instead of read about it? Check out our [video on threading and releasing ratchet straps!](#)

### Ratchet Strap Protection & Storage

Make sure you are getting the most out of your tie downs by doing your due diligence when it comes to [ratchet strap protection](#), inspection, and storage.

## Protecting Your Cargo and Your Equipment

Reduce the amount of damage your straps suffer during each trip by adding some protective accessories to your setup. These will not only help prevent abrasions, UV damage, general wear and tear, and more, but they can also protect your cargo!

### *Corner Protectors*

[Corner protectors](#) can be made from plastic, rubber, felt, etc. As the name implies, they protect the corners of your load by redistributing the pressure of the straps across a wider area – you simply place them between the cargo and the ratchet strap before tightening!

This also protects the tie down, acting as a shield against any sharp or coarse material.

The type of corner protector you would need depends on your cargo and equipment. Plastic vee boards are great for a number of materials, including brick, drywall, plywood, and more. For larger, heavy cargo, steel corner protectors are usually the best choice, while felt protectors have the extra padding needed to protect more fragile materials.

### *Heavy Duty Ratchet Strap Sleeves*

Wear pads are one of the best investments you can make for your strap. Compatible with all sizes of webbing, these pads offer abrasion- and cut-resistance to keep your ratchet strap in good condition. They're designed to be moved along the strap, so it's easy to make sure they are offering support where it's needed most.

## Thorough Inspections and Safe Storage

Taking the time to properly inspect, clean, and store your ratchet straps offers a number of advantages: it gives you the opportunity to avert potential safety issues by identifying damage; following the recommended storage procedures can increase the lifespan of the strap; and, when stored correctly, ratchet straps take up less space.

### *Tie Down Strap Inspection*

These inspections should take place regularly – in fact, [The Web Sling and Tie Down Association \(WSTDA\)](#) suggests an initial inspection before you first use the strap, then before each subsequent use.

Keeping an inspection record is a good way to keep track of how often your ratchet straps are checked, and keeping notes can provide a helpful reference for future inspections.

When [inspecting your ratchet strap](#), make sure to look for both the obvious and the more-subtle signs of wear and tear:

- Holes, tears, and knots
- Embedded particles in the webbing
- Stitching that is broken or beginning to unravel
- Weld splatter – areas that are melted or charred
- UV ray damage – areas that are bleached or feel stiff
- Chemical damage – areas that are burnt
- Unusual wear patterns where the webbing makes contact with the fitting
- Fitting damage – cracks, pits, or corrosion

You will also need to check the strap tag. WLL information must still be visible for inspections.

If you notice any of the listed evidence of wear and tear, chances are the strap will need to be retired. If you aren't sure, check the [WSTDA Recommended Standard Specification for Synthetic Web Tie Downs](#). This agency has long been considered a trusted resource for all things tie-down.

#### *Ratchet Tie Down Strap Cleaning*

Removing debris from your strap is an easy way to maintain its condition.

First, hose your straps down. If the hose isn't enough to get them clean, mix a mild detergent with warm water. You will want to avoid detergents that could potentially harm your strap, so do not use any that are bleach-based or that include acids.

Second, use a scrub brush to clean the straps.

Finally, let the straps air drying before storage. Although polyester is naturally resistant to mold and mildew, this step is an added precaution.

#### *How to Store Ratchet Straps*

There are many ways to store ratchet straps, but a general rule of thumb is to keep them in a dry place away from the sun.

Depending on the number of straps you are storing, use a [strap winder](#) and store them in a plastic bag, hang them on a wall using a cinch strap, or secure them using a bungee cord.

### Truck Strap Applications

Tie-down application opportunities are both flexible and versatile. Below, we cover just a few of the ways ratchet straps are incorporated into load securement.

#### E-Track Straps

E-track is a cargo tie-down system that uses a series of metal rails to create connection points for your ratchet straps.

Available in either a painted or galvanized finish, E-track is the perfect hauling solution for both enclosed trailers and flatbeds. The two track orientations (horizontal and vertical) provide an easily customizable setup, as you can place anchor points exactly where you need them.

[E-track ratchet straps](#) have compatible end hardware, offering a more secure attachment. Thanks to the sturdy ratchet design that allows for superior tension, these straps can hold large loads in place.

See how easy it is to [attach your ratchet strap to an E-track!](#)

#### L-Track Straps

Other ratchet straps are designed to work with logistic track. Similar to E-track, L-track tends to be used in situations with more limited space.

[L-track compatible ratchet straps](#) tend to have double stud end hardware for added strength.

#### Motorcycle Tie Down Straps

Transport your motorcycle safely and stylishly using [ratchet straps](#) that are color-coded to match your vehicle, trailer, or motorcycle brand.

You can create the attachment points using E-track, L-track, D-rings, and more. Watch a video that specifically covers an [L-track / ratchet strap motorcycle tie-down system](#).

#### ATV Tie Down Straps

[Secure your ATV using ratchet straps](#) with four tie-down points to prevent movement. You will need two in the front and two in the back for proper securement. Like a motorcycle tie-down, the attachment points can be created using a wide range of hardware.

#### Questions? Ready to Buy?

Contact the product experts at US Cargo Control to learn more about what ratchet strap will work best for you or to place an order.