

Cargo Securement Guidelines

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Cargo Securement Standards and Regulations Lift-All cargo securement assemblies are designed and manufactured for use in compliance with all common industry regulations and standards. These standards included U.S. Department of Transportation, the North American Standard Out-Of-Service Criteria, the Web Sling and Tie Down Association standards, and in part, the California Highway Patrol Regulations.

Primary Compliance Requirements Include:

Regulating Body	Standard/Regulation	Subject
US Department of Transportation	USDOT FMCSA 393.102, CHP, WSTDA	Nationwide regulations applicable to transportation
Various Local & State Governments	North America Standard Out-Of-Service Criteria (CVSA)	Covers Inspection Requirements and Capacity Reduction guidelines for unmarked tiedowns.
California Highway Patrol	California Administrative Code Title 13	Product Manufacturing and usage requirements applicable in the state of California. On or around 2002, Lift-All Company discontinued the practice of marking webbing in accordance with CHP guidelines.

Federal Motor Carrier Safety Administration (FMCSA)

The Federal Motor Carrier Safety Administration (FMCSA) was established as a separate administration within the U.S. Department of Transportation (US DOT) on January 1, 2000, pursuant to the Motor Carrier Safety Improvement Act of 1999. On September 27, 2002 FMCSA revised it's regulations concerning protection against shifting and falling cargo for commercial motor vehicles (CMV) engaged in interstate commerce. The new cargo securement standards are based on the North American Cargo Securement Standard model regulations. They reflect the results of a multi-year, comprehensive research program to evaluate current United States and Canadian cargo securement regulations; the motor carrier industry's best practices; and recommendations presented during a series of public meetings. The meetings involved United States and Canadian industry experts, Federal, State and Provincial enforcement officials, and other interested parties.

The new regulations require motor carriers to change the way they use cargo securement devices to prevent articles from shifting on or within, or falling from, CMV's. In some instances, the changes may require motor carriers to increase the number of tie downs used to secure certain types of cargo. However, the rule generally does not prohibit the use of tie downs or cargo securement devices currently in use. Therefore, motor carriers are not required to purchase new cargo securement equipment to comply with the rule. The intent of the new regulations is to reduce the number of crashes caused by cargo shifting on or within, or falling from, CMV's operating in interstate commerce, and to harmonize to the greatest extent practicable United States, Canadian and Mexican cargo securement regulations. The agencies and organizations participating in the program to develop the North American Cargo Securement Model Regulations established and Training and Education committee responsible for developing a training package for motor carriers and enforcement officials to ensure that the model regulations now being considered for adoption throughout North America are understood by all affected parties.

Federal Motor Carrier Safety Administration (FMCSA) (continued)

The training package covers all of the requirements in the model regulations, and to some extent, best practices for securing cargo. Some of the information presented in the training materials essentially recommends or suggests more conservative approaches to securing cargo than the FMCSA's regulations require. In those situations, motor carriers are encouraged to consider these industry best practices, but you are not required under 49 CFR Part 393 to comply with the recommendations or suggestions. You must, however, comply with all applicable Federal cargo securement regulations.

The Working Load Limit Values Assigned by Lift-All Company

Since 1992, Lift-All Company has been placing working load limit information on most *Load Hugger* cargo securement assemblies. Some confusion does exist due to the fact that many other manufacturers of these assemblies determine this working load limit differently. For example, some manufacturers actually use the assembly tensile strength values and working load limit values interchangeably. The working load limit values on our assemblies are generally based on a value equal to one-third the assembly tensile strength value as described by the USDOT. The following chart compares the capacity values that are most typically requested for our standard assemblies.

Webbing Width (inches)	Load Hugger Series	Working Load Limit (lbs.)	California Highway Patrol Rating (lbs.)	Assembly Ultimate Strength (lbs.)
1	1,000 Cam	330	N/A	1,000
1	1,000 Ratchet	700	N/A	2,100
2	5,000	1,600	N/A	5,000
2	10,000	3,300	7,000	10,000
3	15,000	5,000	12,000	15,000
4	15,000	5,000	12,000	15,000

Determining the Number of Required Tie Downs (Federal Highway Administration Requirements)

Since 1992, Lift-All Company has been placing working load limit information on most *Load Hugger* cargo

First Basic Requirement - The vehicle must have at least one tie down assembly for each 10 linear feet of lading or fraction thereof.

Second Basic Requirement - Federal Highway Administration Requirement DOT 393.102

In 1994 the Federal Highway Administration adopted a revision to their regulations that now uses the tie down assembly *working load limit* to determine the number of tie downs that are necessary to secure a load. Prior to this change, they specified an equation that was based on the assembly *tensile strength*.

Even though the method of determining the number of required tie downs changes, the actual result did not change. The calculation for determining the required number of tie down assemblies, (N_T), is as follows:

$$N_T = [(\text{Load Weight}) \times (1/2)] / \text{Tie Down Working Load Limit}$$

For Example:

Let's assume that a load weighs 10,000 pounds. We will also assume that 2" wide tie down assemblies, each having a working load limit of 1,600-lbs., will be used to restrain this load. The required minimum number of tie downs is therefore:

$$N_T = [(10,000\text{-lbs.}) \times (.50)] / 1,600\text{-lbs.} = 3.13 \Rightarrow N_T = 4$$

Performance Requirements

SubPart I - Protection Against Shifting and Falling Cargo Source: 67 FR 61225, Sept. 27, 2002, unless otherwise noted.

§ 393.102 What are the minimum performance criteria for cargo securement devices and systems?

(a) *Performance criteria.* Cargo securement devices and systems must be capable of withstanding the following three forces, applied separately:

(1) 0.44 g deceleration in the forward direction; (2) 0.5 g acceleration in the rearward direction; and (3) 0.25 g acceleration in a lateral direction. (Rule change effective July 24, 2006, from previous requirement of .8g, .5g, and .5g respectively)

(b) *Performance criteria for devices to prevent vertical movement of loads that are not contained within the structure of the vehicle.* Securement systems must provide a downward force equivalent to at least 20 per-

cent of the weight of the article of cargo if the article is not fully contained within the structure of the vehicle. If the article is fully contained within the structure of the vehicle, it may be secured in accordance with § 393.106(b).

(c) *Prohibition on exceeding working load limits.* Cargo securement devices and systems must be designed, installed, and maintained to ensure that the maximum forces acting on the devices or system do not exceed the working load limit for the devices under the conditions listed in paragraphs (a) and (b) of this section.

Removal of CHP markings from Tie Down Webbing

The marking of our 3" and 4" webbing being used in the manufacture of cargo securement and winch strap assemblies was discontinued by Lift-All Company in 2002. This change was made in conformity with the decision by the Tie Down Technical Committee of the Web Sling and Tie Down Association (WSTDA) for all manufacturers of these assemblies to remove these markings. The primary reason for this decision included:

- Inconsistency in the marking requirements between the Federal Motor Carrier and the California Highway Patrol.
- The confusion that could exist by product users in regard to the product rating.
- Resulting safety and liability concerns.

The problem lies largely in the failure of the California Highway Patrol organization to keep up with the changes made within the last several years in regard to the required rating method used in establishing Working Load Limit ratings of securement assemblies. Years ago, the Department of Transportation established securement requirements based on the tie down assembly breaking strengths. At the same time, CHP established ratings that were more conservative. For example, the typical winch strap assembly having a breaking strength of 15,000-lbs., was determined to have a CHP rating of 12,000-lbs.. In order to conform to the latest Federal Motor Carrier regulations, this same assembly is assigned with a working load limit of 5,000-lbs. (One-third it's breaking strength).

What resulted were occasional users that misinterpreted the CHP rating of 12,000-lbs., With the Working Load Limit of 5,000-lbs.. If this occurs, the user may attach to the load the number of tie downs equal to less than half the required number of tie downs. Several accidents occurred in the last few years with damages, which in turn led to lawsuit actions being brought against several tie down manufacturers.

Most major manufacturers of winch strap assemblies have removed the CHP markings.

The WSTDA has, without success, solicited the CHP to update their rating method to consider product WLL rather than breaking strength. It was CHP's position that they are simply enforcing Title 13, which is the law. Since Title 13 covers only 10 different loads or commodities, CHP uses CVSA rules and out-of-service criteria when loads are not specifically covered. All Lift-All products conform to CHP requirements. For load commodities specifically addressed by CHP, the load conversions as noted in the above chart should be utilized.

Lift-All Notes:

- Attachment angles of less than 30° should be avoided. In this situation, the number of tie downs should be increased.
- Tie Down Assemblies should only be purchased if they have a working load limit (WLL) value equivalent to one-third the assembly break strength (BS). Many manufacturers **do not currently** meet this criteria. Some manufacturers base their WLL on the webbing strength rather than the assembly strength, and several even interchange BS and WLL values without even considering any reduction factor.
- Attaching a tie down from one anchor point, and then over the load and back down to another anchor point constitutes one assembly. Attaching from an anchor point to the load constitutes one-half of a tie down. When only one end of the tie down is attached to the vehicle, and the other end of the tie down is attached to the load, then you must double the number of required tie downs.

We hope this information is helpful and fully addresses your quality-related inquiry. Please contact me if you have any further questions.

Sincerely,

Greg Babinchak
Manager of Technical Services

**Headquarters, Customer
Service & Manufacturing:**

P.O. Box 27
1909 McFarland Drive
Landisville, PA 17538

800-909-1964

Fax: 717-898-1215

E-Mail: lift-all@lift-all.com

Support: customerservice@lift-all.com

www.lift-all.com

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