

From: Lift-All Quality Assurance Department Date: 10/12/06
To: Lift-All Customer
Re: Cargo Securement Guidelines

We are contacting you in regard to an inquiry that was forwarded to our Landisville Division. This inquiry questioned the applicable regulations

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 US Department of Transportation, the North American Out-Of-Service Standard, the Webbing Sling and Tiedown Association Standards, and, in part, the California Highway Patrol Regulations.

The primary compliance requirements include:

Regulating Body	Standard / Regulation	Subject
US Department of Transportation	Department of Transportation – Federal Motor Carrier Safety Administration (est. Jan 2000) Federal Motor Carrier Safety Regulations, Title 49 393.102 Securement Systems (also ref. 393.124)	Nationwide regulations applicable to transportation.
Various local, and state governments.	North America Out-of-Service Criteria <i>(Written by the Commercial Vehicle Safety Alliance-CVSA)</i>	Covers: - Inspection requirements - 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 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 on January 1, 2000, pursuant to the Motor Carrier Safety Improvement Act of 1999.

On September 27, 2002, FMCSA revised its regulations concerning protection against shifting and falling cargo for commercial motor vehicles (CMVs) 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, CMVs. In some instances, the changes may require motor carriers to increase the number of tiedowns used to secure certain types of cargos. However, the rule generally does not prohibit the use of tiedowns 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, CMVs 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 a 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.

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

Since 1992, Lift-All Company has been placing working load limit information on most Loadhugger cargo securement assemblies.

Some confusion does exist however 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 US DOT. The following chart compares the capacity values that are most typically requested for our standard assemblies.

Webbing Width (Inches)	Working Load Limit (Lbs.)	California Highway Patrol Rating (Lbs.)	Assembly Ultimate Strength (Lbs.)
1	330	N/A	1,000
2	1,600	N/A	5,000
2	3,300	7,000	10,000
3	5,000	12,000	15,000
4	5,000	12,000	15,000

Determining the number of required tiedowns (Federal Highway Administration Requirements)

Basic Requirements

First Basic Requirement

The vehicle must have at least one tiedown 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 tiedown assembly *working load limit* to determine the number of tiedowns 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 tiedowns changed, the actual result did not change.

The calculation for determining the required number of tiedowns, (N_T), is as follows:

$$N_T = [(Load\ Weight) \times (1/2)] / Tiedown\ Working\ Load\ Limit$$

For Example:

Lets assume that a load weighs 10,000 pounds. We will also assume that 2" wide tiedown assemblies, each having a working load limit of 1600 pounds, will be used to restrain this load.

The required minimum number of tiedowns is therefore:

$$N_T = [(10,000\ lbs.) \times (.5)] / 1600\ lbs. = 3.13 \Rightarrow N_T \equiv 4$$

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 percent 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 systems 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 Tiedown Webbing:

The marking of our 3" and 4" webbing being used in the manufacture of cargo securement / winch strap assemblies was discontinued by Lift-All in 2002.

This change was made in conformity with the decision by the Tiedown Technical Committee of the Web Sling and Tiedown Association (WSTDA) for all manufacturers of these assemblies to remove these markings.

The primary reasons 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 tiedown 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.. Well, now, 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 tiedowns equal to less than half the required number of tiedowns. Several accidents occurred in the last few years with damages, which in turn lead to lawsuit actions being brought against several tiedown manufacturers.

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

The WSTDA has, without success, solicited 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 degrees should be avoided. In this situation, the number of tiedowns should be increased.
- Tiedown assemblies should only be purchased if they have a working load limit (WLL) value equivalent to one-third the assembly breaking 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 Break Strength and WLL values without considering any reduction factor.
- Attaching a tiedown from one anchor point, and then over the load and back down to another anchor point constitutes one assembly. Attaching from the anchor point to the load constitutes one-half of a tiedown. When only one end of the tiedown is attached to the vehicle and the other end of the tiedown is attached to the load, then double the number of required tiedowns.

We hope this information fully addresses your inquiry. Please contact me if you have any further questions.

Sincerely,

Gregory S. Babinchak
Manager of Technical Services