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The Commercial Vehicle Safety Alliance inspectors conduct approximately four million vehicle inspections every year throughout North America. The purpose of the inspections is to ensure that commercial vehicles on the roadways are operating safely. In the Walk-Around/Vehicle Inspection, the inspection will include an examination of the securement of the cargo. The most common violations found during roadside inspections are “failure to prevent shifting cargo” and “leaking/spilling/blowing/falling cargo”.

Improper cargo securement can damage cargo, which can be costly to your business and result in lost customers. In the worst scenarios, improperly secured cargo can cause injury to drivers and/or other parties. That is why the Federal Motor Carrier Safety Administration (FMCSA) has issued very detailed procedures for the protection of cargo. The rules are based on the North American Cargo Securement Standard Model Regulations, which reflect the results of a multi-year research program to evaluate U.S. and Canadian cargo securement regulations and the motor carrier industry best practices.

Staying compliant with cargo securement rules means having a good understanding of the regulations and having cargo securement equipment that is up to the task. It is important that drivers review and understand the following Federal Motor Carrier Safety Regulations (FMCSR) before securing cargo:

- FMCSR Part 392.9 – covers inspection of cargo, cargo securement devices and systems
- FMCSR Parts 393.5 and 393.100 – covers specific securement requirements

Vehicles Covered by Federal Regulations

The FMCSR standards apply to commercial motor vehicles, including vehicle combinations that:

- Have a gross vehicle weight rating (GVWR) or gross combination weight rating (GCWR) of 10,001 pounds or more
- Are used in transporting hazardous materials in any quantity that requires placarding

Cargo Not Included

Cargo securement applies to all types of cargo except:

- Commodities in bulk that lack structure or fixed shape (for example: liquids, gases, grain, sand, gravel, aggregate, and liquid concrete)
- Commodities that are transported in the structure of a commercial motor vehicle such as a tank, hopper, or box

Cargo Placement and Restraint

Articles of cargo that are likely to roll must be restrained by chocks, wedges, a cradle, or other equivalent means to prevent rolling. The means of preventing rolling must not be capable of becoming unintentionally unfastened or loose while the vehicle is in transit. Articles of cargo placed beside each other and secured by transverse tie-downs must be placed in direct contact with each other or prevented from shifting towards each other while in transit.



Specific Securement Requirements by Commodity Type

There are specific requirements and drivers must have training and the proper securement equipment for the following types of cargo:

- Logs, dressed lumber, or similar building products
- Metal coils
- Paper rolls
- Concrete pipe
- Intermodal containers
- Automobiles
- Light trucks and vans
- Heavy vehicles
- Equipment and machinery
- Flattened or crushed vehicles
- Roll-on/roll-off or hook lift containers
- Large boulders



At the Dock

The driver should supervise all loading activity to ensure no damaged cargo is put on the trailer, and cargo is loaded properly and evenly distributed throughout the trailer or truck bed.

Here are a few important cargo tips:

- Once content is checked, lighter cargo can be stacked on top of heavier cargo.
- The load should be as low as possible and toward the center of the trailer.
- The driver must make sure incompatible cargo is not loaded on the same pallet or trailer.
- Cargo must not obscure the driver's view ahead, to the right side or to the left side; interfere with movement of the driver's arms or legs; prevent free and ready access to emergency equipment; or prevent a ready exit from the driver's compartment.
- Cargo must be secured in such a manner as to prevent it from leaking, spilling, and blowing off the vehicle; falling from the vehicle; or otherwise becoming dislodged from the vehicle.
- Cargo must be secured to prevent shifting within the trailer to the extent that the trailer's or truck's stability or maneuverability is adversely affected.
- Even though cargo is secure, caution should be taken when opening trailer doors as cargo may fall out.
- Cargo must be firmly immobilized or secured on or within a vehicle by structures of adequate strength, dunnage (loose materials used to support and protect cargo) or dunnage bags (inflatable bags intended to fill space between articles of cargo or between cargo and the wall of the vehicle), shoring bars, tie-downs, or a combination of these. Note: Cargo in a sided vehicle may not need additional securement if each article of cargo is in contact with or sufficiently close to a wall or other articles so the cargo cannot shift or tip.



Driver Responsibilities

Drivers must know the weight of the cargo. The maximum gross vehicle weight should be 80,000 pounds except when lower gross vehicle weight is dictated by local road or bridge requirements. Cargo should be distributed so the maximum gross weight upon any one axle is 20,000 pounds and any tandem axle is 34,000 pounds. Companies should be aware of state and local weight restrictions for both gross vehicle weight and individual axle weight. In addition, some states have cargo covering requirements for some flatbed operations. Regulations may vary from state to state, so drivers must know the regulations for each state through which they travel.

The route duties of drivers starts with trip planning. Trip planning includes reviewing the route to determine how it may affect the cargo, what type of trailer to use, and if more than one type of cargo can be transported together. Drivers must inspect the cargo and the devices used to secure the cargo:

- Pre-trip, before leaving the shop/facility
- Within the first 50 miles after starting and adjust cargo or load securement as necessary
- When driver duty status changes
- Every three hours or 150 miles, whichever occurs first

Cargo must be immobilized or secured on or within a vehicle by tie-downs along with blocking, bracing, friction mats, other cargo, void fillers, or a combination of these. Drivers must determine the proper number and type of tie-downs needed to secure the cargo. When tie-downs are used as part of a cargo securement system, the number of tie-downs needed depends on:

- Whether the cargo is prevented from moving forward
- The length and weight of the cargo
- The strength of the tie-downs

If cargo is **not** prevented from forward movement by the header board, bulkhead, other cargo, or tie-downs attached to the cargo, the following requirements apply:

- If the article is 5 feet or shorter and 1,100 pounds or lighter – one tie-down
- If the article is 5 feet or shorter and over 1,100 pounds – two tie-downs
- If the article is between 5 and 10 feet, no matter what the weight is – two tie-downs
- If the article is more than 10 feet – two tie-downs, plus one additional tie-down for every additional 10 feet or part thereof

If cargo is prevented from forward movement by the header board, bulkhead, other cargo, or tie-downs attached to the cargo, the following requirement applies. If the article is prevented from moving forward, use at least one tie-down for every 10 feet or part thereof. Note: It is always better to go beyond the minimum so the cargo remains secure even if one component of the securement system fails.

Standard tie-down materials are chains, wire rope, steel strapping, synthetic webbing, and cordage. The type and strength of tie-down used depends on the cargo. The tie-down must be free of knots and other damage. Check the working load limit marked on the tie-down by the manufacturer.

Use the table found in FMCSR Part 393.108 as a guide based on the size of the chain, webbing, wire rope, manila rope, fiber rope, nylon rope, and steel strapping. The aggregate working load limit for tie-downs used to secure an article or group of articles against movement must be at least half the weight of the article or group of articles. The aggregate working load limit is the sum of:

- One-half the working load limit of each tie-down that goes from an anchor point on the vehicle to an anchor point on an article of cargo
- One-half the working load limit of each tie-down that is attached to an anchor point on the vehicle; passes through, over, or around the article of cargo; and is then attached to an anchor point on the same side of the vehicle
- The working load limit of each tie-down that goes from an anchor point on the vehicle; through, over, or around the article of cargo; and then attaches to another anchor point on the other side of the vehicle.

Understanding the regulations and making sure drivers are well informed of their obligations will help protect your cargo and the profitability of your business.



While additional driver training in cargo securement practices could never be considered a bad investment, perhaps the best return would come from very close and regular inspections of the fleet's tie-down equipment. The following violations top the list as most frequent:

1. 393.104(b) Damaged securement systems
2. 393.104(f)(3) Loose/unfastened tie-downs
3. 393.130 Improper securement of heavy equipment
4. 393.134(b)(3) and 393.126 (combined) Marine containers: Rear of container not properly secured and fail to ensure intermodal container secured
5. 393.110 Fail to meet minimum tie-down requirements

This bulletin offers only an overview of the FMCSR information. For more detailed information, please refer to the FMCSR standard at www.fmcsa.dot.gov.

Additional Resources:

Drivers Handbook on Cargo Securement

<http://www.fmcsa.dot.gov/regulations/cargo-securement/drivers-handbook-cargo-securement>

Commercial Vehicle Safety Alliance

<http://www.cvsa.org/home.php>

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