

2017-02 – Securement of an Intermodal Container on a Container Chassis Vehicle

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Summary

This Inspection Bulletin reviews accepted standards as well as alternative means for securing intermodal containers on container chassis vehicles.

Background

When an intermodal container is transported on a container chassis, both U.S. 49 Code of Federal Regulations §393.126 and Canadian National Safety Code (NSC) Standard 10 require each lower corner of the container to be secured with an **integral locking device** and for the front and rear of the container to be secured independently. To meet these requirements, intermodal containers are most commonly secured to the container chassis with twist-locks or pin-locks meeting the definitions of integral locking device.

NSC Standard 10 defines an **integral locking device** as “a device that is designed and used to restrain an article of cargo by connecting and locking attachment points on the article to anchor points on the vehicle.” NSC Standard 10, Section 4(3) and 49 CFR §393.126 require integral locking devices to engage in such a way that they cannot unintentionally become unfastened while the vehicle is in transit.

There are numerous twist-lock and pin-lock designs. In general, pin-locks connect when the pin is inserted into the container’s casting and lock when the handle is held in position by a latch, gate or similar mechanism. Pin-locks are typically integrated with a bolster holding the lower front of the container. Similarly, twist-locks connect when the pin head is twisted within the container’s casting and lock when the handle is held in position by a latch, gate or similar mechanism. Twist-locks are found in all positions on a container chassis. Many integral locking devices rely on gravity or spring mechanisms to aid in holding the latch, gate or handle in position.

The U.S. §393.126 and NSC Standard 10 also require that the securement devices restrain the container from moving forward, backward, to the right, to the left and vertically.

On the following page are examples of common twist-lock (Figure 1) and pin-lock (Figure 2) designs. There are dozens of other, acceptable designs in use on container chassis.

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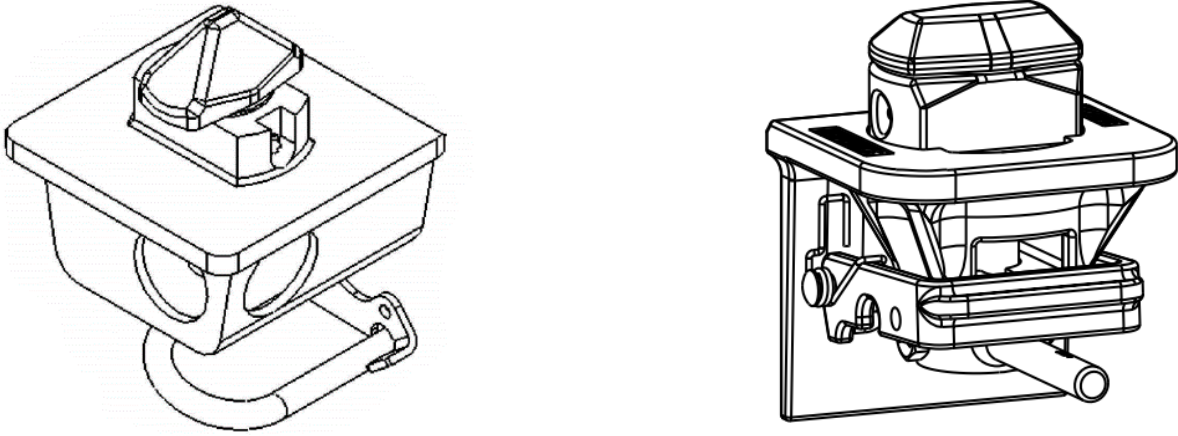


Figure 1: Twist-lock example

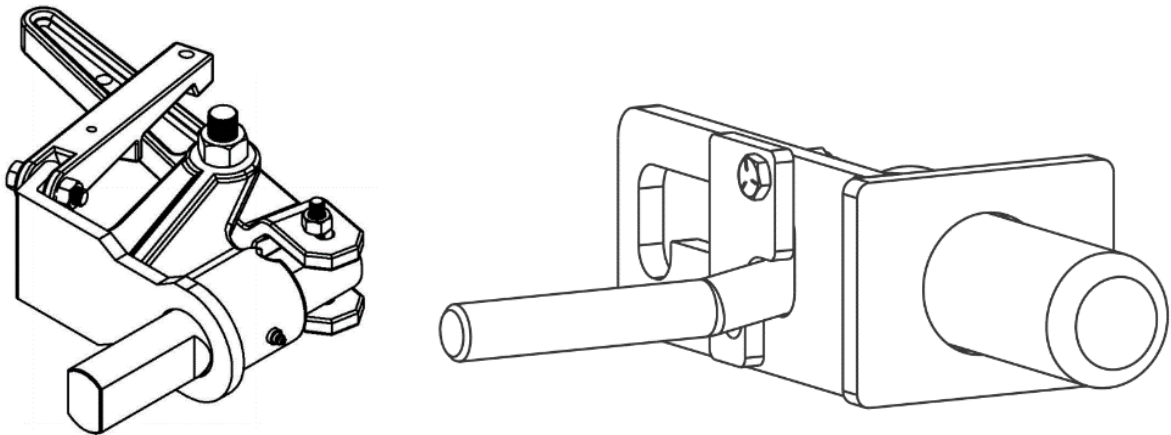
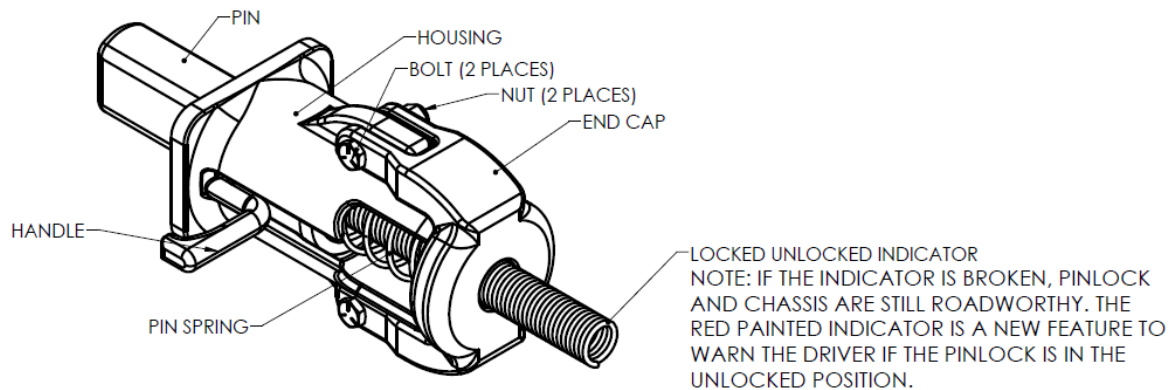


Figure 2: Pin-lock example

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Buffers USA Spring Loaded Pin-lock

Spring-loaded pin-locks could be found at the front of a container chassis rather than manual pins. In these cases, the pin should be inspected to ensure it is engaged and in the locked position as shown in Figure 1.



Step 1: Visually inspect the pin-lock to ensure the components required for safe securement are not missing or damaged, including:

- Housing
- End cap
- Handle
- Spring
- Pin
- Bolts and nuts

If the pin is locked/extended and the spring is applying pressure to the pin, the chassis is roadworthy. If a component of the pin-lock appears to be missing or damaged, ask the driver to operate the pin-lock as explained in Step 2.

Step 2: Driver Operation Test (if requested by an inspector)

a) To check if the pin-lock is functioning correctly, the pin needs to be retracted by pulling the handle from the locked position (Figures 2A and 2B) to the partially retracted position (Figures 3A and 3B) so that the handle moves approximately 1-2 inches.

NOTE: If the pin is pinched by the container and cannot be retracted easily, adjustment of the container may be necessary so it is centered, and the pin can be retracted. (This is not always possible at roadside.)

NOTE: The red indicator will protrude out of the bolster end cap approximately 1-2 inches when in the partially retracted position, as shown in Figure 3B. The pin will stay fully engaged inside the corner casting of the container.

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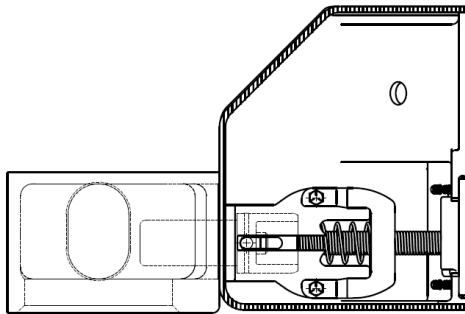


Figure 2A

Locked Position

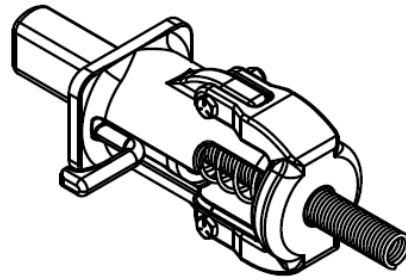


Figure 2B

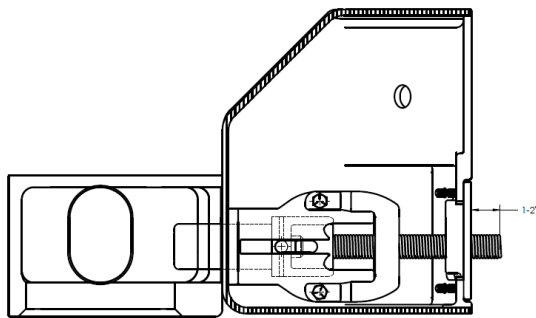


Figure 3A

Partially Retracted Position

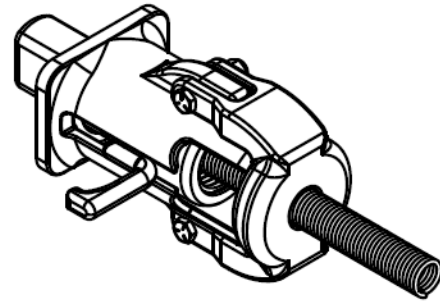


Figure 3B

- b) Once the pin is in the partially retracted position (Figures 3A and 3B), let go of the handle, and the pin should spring forward and back into the locked position (Figures 2A and 2B).
- c) If the pin springs forward to the locked position (Figures 2A and 2B), the pin-lock is operating correctly. If the pin does not spring forward into the locked position, it is either hitting the corner casting of the container (not aligned) or the locking spring is broken.

This spring-loaded pin-lock provides the means for the pin-lock to not unintentionally become unfastened while the vehicle is in transit. If the spring lock is not working, the vehicle should be placed out of service.

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Inspection Guidance

1. 49 CFR §393.126 allows a corner of an intermodal container to be secured on an intermodal chassis by any securement devices or an integral locking device providing each corner is independently secured (see Operational Policy 15 Cargo Securement b.(13)). Through an interpretation, Canadian NSC Standard 10 only permits the use of chain or wire rope to secure the corner of an intermodal container, and only as a temporary tiedown to replace a defective or broken integral locking device. An example is shown in Figure 3.

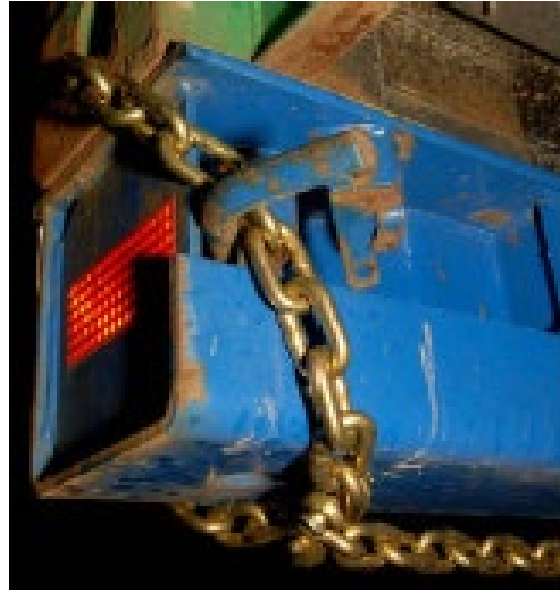


Figure 3: Chain Tie-down

2. Integral locking devices must lock and be secured so that they do not become unintentionally unfastened. Properly maintained and functioning twist-locks and pin-locks normally include a latch or gate mechanism, which should be engaged during inspection. If the securement device on the lock is engaged at time of inspection, no enforcement action should be taken. Some carriers attach plastic or wire tie-wraps to the latch or gate handle but it is not required by U.S. or Canadian motor carrier regulations. (Figure 4)



Figure 4: Use of Additional Tie-wrap

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3. In all cases, when the latch, gate or similar mechanism that keeps the integral locking device from becoming unintentionally unfastened is broken, ineffective or missing, a temporary method can be used, as seen in Figure 4. This may consist of a tie-wrap. As noted, this type of temporary locking method is not required when the integral locking device is working as designed and intended by the manufacturer.

Examples of Twist-Locks with an Acceptable Latch or Gate

