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Road Safety

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Standards and Regulations Division

TEST METHOD 905

Trailer Cargo Anchoring Devices

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Motor Vehicle Standards and Research Branch
Road Safety and Motor Vehicle Regulation Directorate
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Ottawa, Ontario
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1. Introduction

Test Method 905 — Trailer Cargo Anchoring Devices (November 1997) is to be used for demonstrating compliance with the requirements of section 905 of Schedule IV to the *Motor Vehicle Safety Regulations*.

(Original signed by)

Director, Motor Vehicle Standards and Research
for the Minister of Transport
Ottawa, Ontario

Safety Note

The forces used in the tests specified in this test method are sufficient to cause serious injury or death should a test component fail. In order to ensure the safety of personnel, the test equipment used must be capable of withstanding the prescribed loads, and test personnel must be adequately protected.

2. Definitions

“Breaking Strength” means the maximum continuous load that a cargo anchoring device and assembly can support without failing. (*résistance à la rupture*)

“Working Load Limit” or **“WLL”** means a load that is one-third the breaking strength of a tie-down component or assembly. For instance, if the breaking strength of a tie-down component or assembly is 6 800 kg (15 000 lb.), its working load limit would be 2 268 kg (5 000 lb.). (*charge utile*)

3. General Requirements

- 3.1 The tests prescribed by this test method may be performed on either a completed trailer or on a fixture that accurately simulates a cargo anchoring device when it is installed on a trailer.

Note: The Department of Transport conducts its compliance tests on completed trailers.

- 3.2 Each cargo anchoring device is to be tested individually. No more than one cargo anchoring device may be loaded at the same time.
- 3.3 Post-test deformation of a cargo anchoring device and the surrounding support structure is permitted, as long as the structure resists a force equal to or greater than 67 000 N (15 056 lb.), as specified in subsection 905(4) of the *Motor Vehicle Safety Regulations*.
- 3.4 A load cell with an accuracy of 1% of full scale and with a capacity of 70 000 N (15 730 lb.) or greater must be used to measure the applied load. The load cell must be calibrated in accordance with the manufacturer's instructions and be traceable to national standards.

4. Test Procedure for Stake Pockets

- 4.1 The chain used in this test must conform to the requirements of the National Association of Chain Manufacturers, *Welded Steel Chain Specifications*, dated May 1, 1996; it must have a minimum size of 10 mm (3/8 inch); and it must have a grade of 70 with a WLL of 2 290 kg (6 600 lb.) or a grade of 80 with a WLL of 3 200 kg (7 100 lb.).
- 4.2 The grab hooks must be specified by the manufacturer to be suitable for use with stake pockets, and they must have a minimum breaking strength equivalent to that of the grade of chain to which they are attached.
- 4.3 The chain-and-grab-hook assembly must be attached to the stake pocket in a manner similar to that illustrated in Figure 1 below.

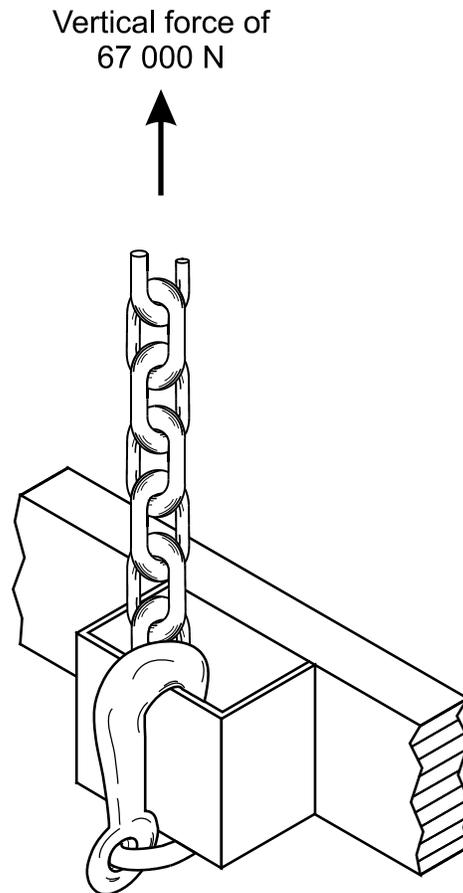
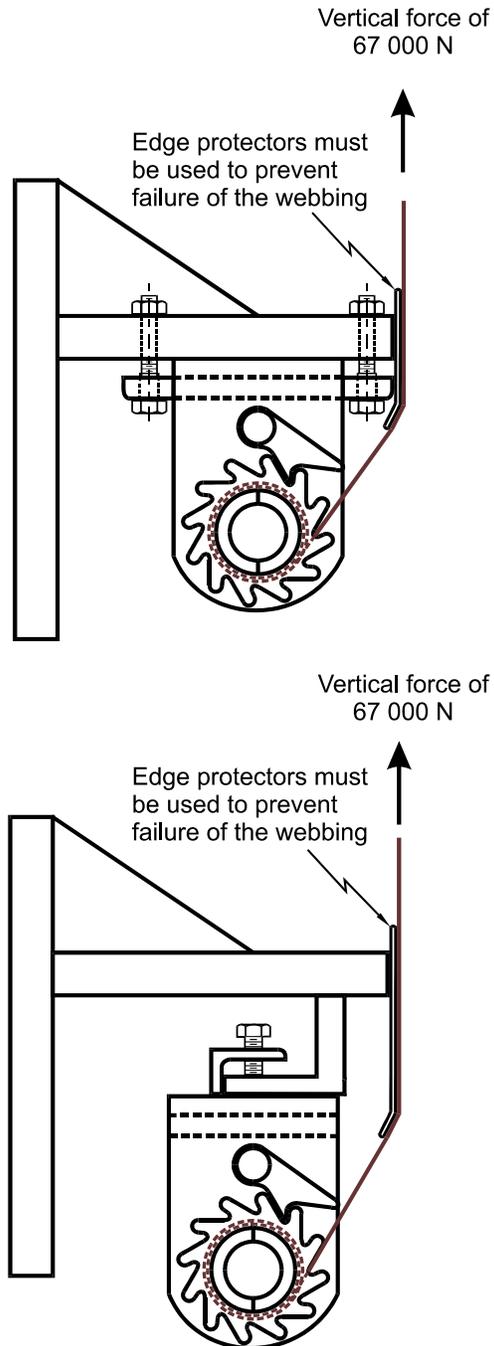


Figure 1 — Chain Loading Method for the Stake Pocket Test

- 4.4 For stake pockets manufactured from aluminum alloys, block-type test fixtures may be used, if it can be demonstrated that the use of chain-and-grab-hook assemblies would cause excessive distortion.
- 4.5 The direction of the upward vertical force that is applied to the chain exiting the stake pocket must be ± 10 degrees from the true vertical.
- 4.6 A upward vertical force must be equal to or greater than 67 000 N (15 056 lb.), as indicated by the load cell, must be attained within 2 minutes of commencing the application of the force.
- 4.7 A force equal to or greater than 67 000 N (15 056 lb.), as indicated by the load cell, must be maintained for 15 seconds.

5. Test Procedure for Winch Assemblies

- 5.1 The breaking strength of the webbing or the webbing-and-chain assembly used in this test must be specified by the manufacturer as being equal to or greater than 89 000 N (20 000 lb.).
- 5.2 Due to the elastic nature of webbing, the length of webbing between the winch and test fixture must be kept to a minimum.
- 5.3 The webbing must be wrapped around the winch spool 2 to 4 times.
- 5.4 The webbing or webbing-and-chain assembly must be attached to the winch assembly in a manner similar to that illustrated in Figure 2 below.
- 5.5 The direction of the upward vertical force that is applied to the webbing or the webbing-and-chain assembly exiting the winch assembly must be ± 10 degrees from the true vertical.
- 5.6 A upward vertical force must be equal to or greater than 67 000 N (15 056 lb.), as indicated by the load cell, must be attained within 2 minutes of commencing the application of the force.
- 5.7 A force equal to or greater than 67 000 N (15 056 lb.), as indicated by the load cell, must be maintained for 15 seconds.



Notes:

1. The webbing must be wrapped around the winch spool 2 to 4 times.
2. Representative test fixture shown

Figure 2 — Webbing Loading Methods for the Winch Assembly Test

6. Test Procedure for D-Rings and Similar Devices

- 6.1 The chain used in this test must conform to the requirements of the National Association of Chain Manufacturers, *Welded Steel Chain Specifications*, dated May 1, 1996; it must have a minimum size of 10 mm (3/8 inch); and it must have a grade of 70 with a WLL of 2 290 kg (6 600 lb.) or a grade of 80 with a WLL of 3 200 kg (7 100 lb.).
- 6.2 The chain shackles must be certified by the manufacturer to be suitable for use with D-rings and similar devices, and they must have a minimum breaking strength equivalent to that of the grade of chain to which they are attached.
- 6.3 The D-ring or similar device must be tested in a manner similar to that illustrated in Figure 3 below.
- 6.4 The direction of the upward vertical force that is applied to the chain assembly extending from the D-ring or similar device must be ± 10 degrees from the true vertical.
- 6.5 A upward vertical force must be equal to or greater than 67 000 N (15 056 lb.), as indicated by the load cell, must be attained within 2 minutes of commencing the application of the force.
- 6.6 A force equal to or greater than 67 000 N (15 056 lb.), as indicated by the load cell, must be maintained for 15 seconds.

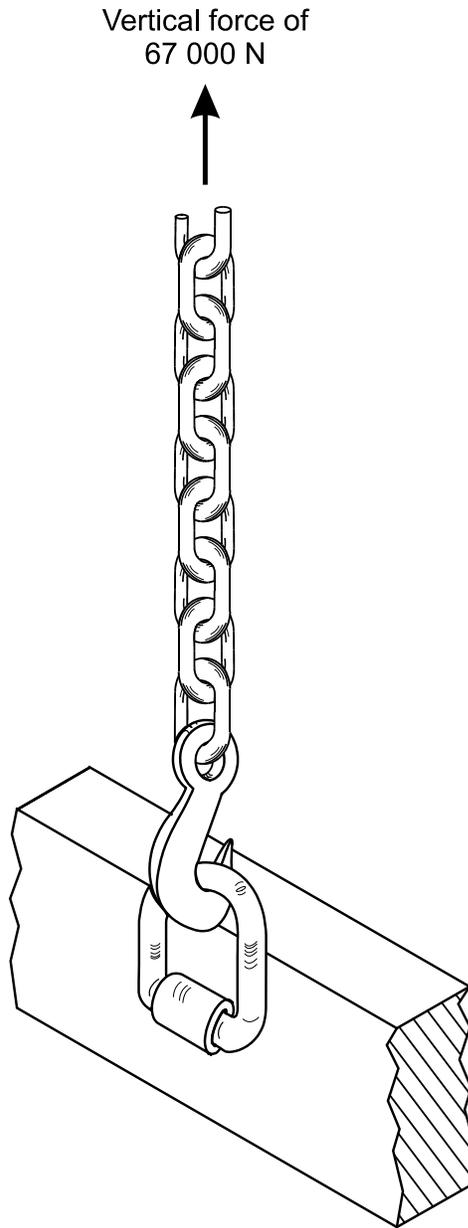


Figure 3 — Chain Loading Method for D-Rings and Similar Devices