VEHICLE EQUIPMENT SAFETY COMMISSION

Regulation VESC-19

PERFORMANCE REQUIREMENTS FOR FIFTH WHEEL VEHICLE CONNECTING DEVICES AND TOWING METHODS

Approved July 1980

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PERFORMANCE REQUIREMENTS FOR FIFTH WHEEL VEHICLE CONNECTING DEVICES AND TOWING METHODS

1. **PURPOSE** — The purpose of this regulation is to provide the states with a uniform minimum requirement for vehicle connecting devices and towing methods, and is designed to increase highway safety by reducing towing related accidents. It is intended to cover concepts and towing methods associated with the fifth wheel concept and goose neck type trailer tongues connecting to kingpin or ball and socket couplings located above and forward of the rearmost axle of the towing vehicle. This regulation is not intended to cover weight-carrying or weight-distributing hitches as defined in VESC Regulation V-5, "Minimum Requirements for Motor Vehicle Connecting Devices and Towing Methods."

2. **SCOPE**

2.1 The scope of this regulation is directed to regulating coupling devices located above and forward of the rearmost axle of the towing vehicle for towing semi-trailers having a GVWR of 30,000 pounds or less. It includes towing methods, testing methods, certification requirements, installation, compliance, and other requirements as herein defined.

2.2 This regulation is not for those arrangements used for towing a vehicle by means of a tow truck or a wrecker or a semi-trailer transformed into a full trailer by means of a convertor dolly.

3. **DEFINITIONS**

3.1 **COMMISSIONER** — The appropriate state official or state agency responsible for promulgating rules and regulations governing vehicle equipment approval and/or use of motor vehicles over the highways of the state.

3.2 **COUPLING** — Means that part of the connecting system mounted on or attached to the semi-trailer frame.

3.3 **FIFTH WHEEL DEVICE** — Means a load-carrying mechanical or structural towing device that, when in use, is positioned above and forward of the rearmost axle of the towing vehicle and that serves as the primary connecting system for a semi-trailer with a GVWR of 30,000 pounds or less. It includes kingpin and load-bearing plate-type devices.

3.4 **HITCH** — Means that part of the connecting system mounted on the towing vehicle.

3.5 **PIVOT COUPLING** — Means a kingpin, ball and socket coupling or other similar trailer connection method located above and forward of the rearmost axle of the towing vehicle, not utilizing a fifth wheel type load bearing plate, and that serves as the primary connecting system for a semi-trailer with a GVWR of 30,000 pounds or less.

3.6 **SEMI-TRAILER** — Means every vehicle without motive power designed for carrying persons or property and for being towed by a motor vehicle and so constructed that some part of its weight and that of its load rests upon or is carried by the towing vehicle through a device as defined in Sections 3.3 and 3.5 of this regulation.

3.7 **GROSS VEHICLE WEIGHT RATING (GVWR)** — Means the value specified by the vehicle manufacturer as the maximum loaded weight of the vehicle or the value specified by the hitch or coupling manufacturer as the maximum loaded weight of a semi-trailer to be used with the hitch or coupling.

3.8 **VERTICAL LOAD RATING (VLR) (TONGUE WEIGHT)** — Means the value specified by the hitch or coupling manufacturer as the maximum static downward vertical force exerted on the hitch by the coupling at the point of connection of the hitch and coupling. This force is measured at the semi-trailer coupling with the semi-trailer on a level surface and detached from the hitch and positioned at its connecting height.

4. COUPLING

4.1 **COUPLING RATING** — The GVWR and VLR for which the coupling is qualified shall be designated. The VLR of the coupling shall be at least .25 times the GVWR of the coupling.

4.2 **COUPLING STRENGTH REQUIREMENTS** — Each coupling, when subjected to a static bench test, shall conform to the minimum strength requirements as defined in Section 9, Test Procedures and Requirements.

4.3 **ATTACHMENT OF COUPLINGS** — Each coupling is to be mounted to the semi-trailer attaching member in such a manner that the test loads are transferred to that member safely and adequately as defined in Section 9.

5. HITCH

5.1 **HITCH RATING** — The GVWR and VLR for which the hitch is qualified shall be designated. The VLR of the hitch shall be at

least .25 times the GVWR of the hitch.

5.2 **HITCH STRENGTH REQUIREMENTS** — Each hitch when subjected to a static bench test shall conform to the minimum strength requirements as defined in Section 9.

5.3 **ATTACHMENT OF HITCH** — Each hitch shall be attached to the structural member or members of the towing vehicle in such a manner that the test loads are transferred to the member(s) safely and adequately as defined in Section 9.

5.4 **MAXIMUM VERTICAL LOAD ON HITCH** — The weight load carried by the hitch at its connection with the semi-trailer coupling shall not, when on a level surface, exceed the manufacturer's VLR.

5.5 **PROVISIONS FOR SAFETY** — Each fifth wheel or pivot coupling device shall be equipped with a manually operated mechanism so adapted as to prevent disengagement of the trailer from the towing vehicle while in operation.

6. IDENTIFICATION

6.1 **DEVICE AND COMPONENT MARKINGS** - Each coupling and each hitch shall be legibly and permanently marked, as shown below, so as to be visible to the user and any regulatory authority viewing the coupling or hitch as installed on the vehicle. (A pressure sensitive label will be acceptable if of a weather-resistant type which cannot be removed without destroying or defacing it.)

(A) Manufacturer's or distributor's name, trademark, trade name, or code symbol. (Code symbol shall mean one assigned and approved by an appropriate regulatory authority.)

(B) Model number, part number or style

(C) Gross vehicle weight rating

(D) Vertical load rating

(E) The symbol V- _____

NOTE: Placement of the symbol V-19 on any coupling or any hitch shall constitute manufacturer's certification of compliance with all of the requirements contained in VESC Regulation VESC-19.

6.2 **LABELING** — Each crate, box, or other container in which a coupling or hitch may be packed shall be imprinted or labeled to display at least the same information as required in 6.1. Any restrictions or special applications as to the vehicle on which a coupling or hitch may be installed shall be shown on the container, the accompanying sheet, or the manufacturer's application tables which are kept available at the locations where the device or systems are sold, either for resale or for use.

7. INSTALLATION-MAINTENANCE-COMPLIANCE

7.1 INSTALLATION AND MAINTENANCE

(A) A manufacturer, packager or seller — The manufacturer, packager, or seller of a coupling or hitch shall provide with the device clear and complete published instructions for installation, use, maintenance and repair. When the coupling or hitch is not installed by a dealer, the instructions shall be provided to the purchaser or user.

(B) Owner, lessor, lessee, borrower — Each owner or lessor shall keep the coupling and/or hitch maintained, repaired, and rebuilt in accordance with the manufacturer's instructions and recommendations. Each owner or lessor who leases or lends a coupling and/or hitch shall properly instruct the lessee or recipient in its safe and proper installation, use, and maintenance. Each lessee or borrower shall use and maintain the coupling and/or hitch in accordance with the instructions of the lessor or lender.

7.2 **COMPLIANCE WITH REQUIREMENTS** — Each manufacturer shall be reponsible for the performance ability of the coupling or hitch which it manufacturers.

8. CERTIFICATION AND/OR TESTING

8.1 Each manufacturer shall certify to the commissioner or to an equipment approval program or other agency designated by the commissioner that a coupling or hitch, when installed in accordance with the manufacturer's published instructions, complies with the requirements of this regulation. Such certification shall be corroborated by submission of a properly executed product and certification test report form containing test results and required certifications, accompanied by photo-

graphs of the test site, equipment, and a concise description of the methodology followed.

8.2 Registration — No coupling or hitch shall be sold within (name of jurisdiction) unless the manufacturer has registered the product with the commissioner, has furnished the commissioner — copy(s) of instructions for installation (as applicable), use, maintenance and repair, and has stated the GVWR and VLR of the product. There shall be imprinted on each copy of the instructions provided with the coupling or hitch the following statement: "This product complies with VESC Regulation VESC-19."

9. TEST PROCEDURE AND REQUIREMENTS:

9.1 When a coupling or hitch is to be tested:

(A) Assemble the hitch or coupling in its normal configuration as recommended by the manufacturer.

(B) Attach the coupling or hitch to the test fixture. The attaching means, i.e. bolts, welds, etc., must be the same as the normal coupling-to-semi-trailer and hitch-to-vehicle attaching means as recommeded by the manufacturer. The portion of the restraining fixture to which attachment is made shall reasonably simulate the actual installation recommendation made by the manufacturer including the strength of the portions of the vehicle or semi-trailer to which the coupling or hitch is to be installed.

(C) The points of attachment must be located in the same positions as the attachment point locations recommended by the manufacturer.

9.2 Test force applications — With the coupling or hitch attached to the test fixture, as specified immediately above, apply the forces designated in Table 1 in any sequence as follows:

(A) Apply the specified compressive longitudinal force (+L)* concurrently with the specified downward vertical force (+V).

*In parentheses are the forces and direction of application of forces as shown in Table 1 and Figure 1.

(B) Apply the specified tensile longitudinal force (—L*) concurrently with the specified downward vertical force (+V).

(C) Apply the specified tensile longitudinal force (-L) concurrently with the specified upward vertical force (-V).

(D) Apply the specified leftward transverse force (-T) concurrently with the specified downward vertical force (+V').

(E) Apply the specified rightward transverse force (+T)* concurrently with the specified downward vertical force (+V).

Each is to be applied with a constant onset rate to reach maximum force level in no less than 10 seconds, and maintained at the maximum specified force level for at least five seconds.

9.3 Each coupling or hitch, when tested as specified above, shall be capable of withstanding the forces applied in accordance with Table I and the test procedure immediately above without causing residual deformation.

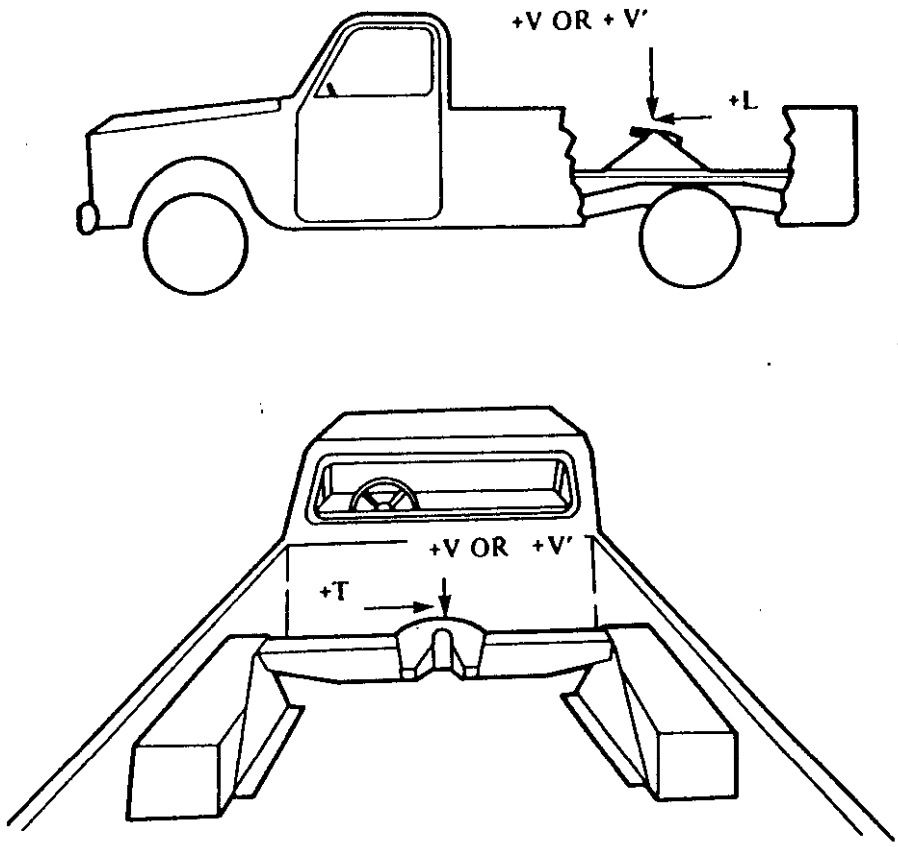
TABLE I
HITCH AND COUPLING TEST FORCES

V	=	.75 GVWR or 2.0 times VLR, whichever is greater
V'	=	.35 GVWR or 1.0 times VLR, whichever is greater
L	=	1.5 GVWR
T	=	.75 GVWR

*In parentheses are the forces and direction of application of forces as shown in Table I and Figure 1.

FIGURE 1
APPLICATION OF TEST FORCES TO HITCH OR COUPLING

(Illustrations are intended to depict test forces and mounting location rather than specific design.)

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