

### § 393.29

shall be protected by being enclosed in a sheath or tube;

(3) Be properly supported in a manner to prevent chafing;

(4) Not be so located as to be likely to be charred, overheated, or enmeshed in moving parts;

(5) Not have terminals or splices located above the fuel tank except for the fuel sender wiring and terminal; and

(6) Be protected when passing through holes in metal by a grommet, or other means, or the wiring shall be encased in a protective covering.

(b) The complete wiring system including lamps, junction boxes, receptacle boxes, conduit and fittings must be weather resistant.

(c) Harness connections shall be accomplished by a mechanical means.

[53 FR 49397, Dec. 7, 1988]

### § 393.29 Grounds.

The battery ground and trailer return ground connections on a grounded system shall be readily accessible. The contact surfaces of electrical connections shall be clean and free of oxide, paint, or other nonconductive coating.

### § 393.30 Battery installation.

Every storage battery on every vehicle, unless located in the engine compartment, shall be covered by a fixed part of the motor vehicle or protected by a removable cover or enclosure. Removable covers or enclosures shall be substantial and shall be securely latched or fastened. The storage battery compartment and adjacent metal parts which might corrode by reason of battery leakage shall be painted or coated with an acid-resisting paint or coating and shall have openings to provide ample battery ventilation and drainage. Wherever the cable to the starting motor passes through a metal compartment, the cable shall be protected against grounding by an acid and waterproof insulating bushing. Wherever a battery and a fuel tank are both placed under the driver's seat, they shall be partitioned from each other, and each compartment shall be provided with an independent cover, ventilation, and drainage.

### 49 CFR Ch. III (10-1-02 Edition)

### § 393.31 Overload protective devices.

(a) The current to all low tension circuits shall pass through overload protective devices except that this requirement shall not be applicable to battery-to-starting motor or battery-to-generator circuits, ignition and engine control circuits, horn circuits, electrically-operated fuel pump circuits, or electric brake circuits.

(b) Trucks, truck-tractors, and buses meeting the definition of a commercial motor vehicle and manufactured after June 30, 1953 shall have protective devices for electrical circuits arranged so that:

(1) The headlamp circuit or circuits shall not be affected by a short circuit in any other lighting circuits on the motor vehicle; or

(2) The protective device shall be an automatic reset overload circuit breaker if the headlight circuit is protected in common with other circuits.

[33 FR 19735, Dec. 25, 1968, as amended at 53 FR 49397, Dec. 7, 1988]

### § 393.32 Detachable electrical connections.

Electrical wiring between towing and towed vehicles shall be contained in a cable or cables or entirely within another substantially constructed protective device. All such electrical wiring shall be mechanically and electrically adequate and free of short or open circuits. Suitable provision shall be made in every such detachable connection to afford reasonable assurance against connection in an incorrect manner or accidental disconnection. Detachable connections made by twisting together wires from the towed and towing units are prohibited. Precaution shall be taken to provide sufficient slack in the connecting wire or cable to accommodate without damage all normal motions of the parts to which they are attached.

### § 393.33 Wiring, installation.

Electrical wiring shall be systematically arranged and installed in a workmanlike manner. All detachable wiring, except temporary wiring connections for driveaway-towaway operations, shall be attached to posts or terminals by means of suitable cable