

**CHAPTER 6**  
**EQUIPMENT REQUIREMENTS**  
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**CHAPTER 6**  
**EQUIPMENT REQUIREMENTS**

1. GENERAL.

a. Pursuant to Section 34500.7 of the California Vehicle Code (CVC), the State of California has adopted Title 49 of the Code of Federal Regulations (CFR), Part 393, Parts and Accessories Necessary for Safe Operation. All regulated vehicles described in Section 34500 CVC shall comply with the requirements of Title 49 CFR, Part 393.

b. Pursuant to Title 49, Section 392.2 CFR, every commercial motor vehicle (CMV) must be operated in accordance with the laws, ordinances, and regulations of the jurisdiction in which it is being operated. As a result, CMVs are subject to all applicable provisions of the CVC and Title 13 of the California Code of Regulations (CCR).

c. For vehicles which are not defined as a commercial vehicle, enforcement personnel should refer to the equipment requirements contained in General Order 100.5, Regulated Devices.

d. Section 24012 CVC shall be utilized when citing Title 13 CCR lighting violations on enforcement documents. For example, when citing a foglamp violation, the enforcement document should state "Section 24012 CVC, Title 13, Section 691, CCR"

2. FEDERAL MOTOR VEHICLE SAFETY STANDARDS.

a. Federal Motor Vehicle Safety Standards (FMVSS) take precedence over the CVC. Public Law 89-563, Section 103(d), states, in part, "Whenever a Federal Motor Vehicle Standard established under this title is in effect, no state or political subdivision of a state shall have any authority either to establish, or to continue in effect, with respect to any motor vehicle or item of equipment, any safety standard applicable to the same aspect of performance of such vehicle or item of equipment that is not identical to the federal standard."

b. Federal Motor Vehicle Safety Standards contained in Title 49 CFR, Part 571, prescribe general requirements for vehicles with which the manufacturer must comply at the time of first sale. The regulations do not apply subsequent to the first sale by the manufacturer. The State of California cannot require a **manufacturer** to comply with any regulation that is in conflict with the federal standard. In most cases, there is no provision in state law to require the owner of a vehicle to

maintain the vehicle in the condition which was required by federal standards at the first point of sale.

c. Some of the federal standards have been incorporated into the CVC. When adopted as required installations, these provisions become enforceable by state law. Backup lamps on vehicles manufactured and first registered on or after January 1, 1969, are an example. Others have been incorporated as permissive installations and cannot be enforced. The amber and red side-mounted lamps permitted by Section 25106 CVC are an example.

d. State legislation has not been enacted regarding all equipment items. Without such legislation, enforcement actions cannot be taken. Head restraints on seats are an example of such an item. Enforcement action cannot be taken requiring an owner to comply with the FMVSS unless the requirement is adopted specifically into the CVC or Title 13 CCR.

e. Enforcement action shall not be taken against the owner of a vehicle when the vehicle is equipped by a manufacturer in compliance with FMVSS, and the equipment or its mounting location is not permitted by the CVC or Title 13 CCR.

### 3. COMMERCIAL VEHICLE SAFETY ALLIANCE.

a. Personnel assigned to the Commercial Enforcement Program shall utilize the information contained in Commercial Vehicle Safety Alliance (CVSA) Inspection Bulletins, and guidance contained in CVSA Operational Policy 15, Inspection and Regulatory Guidance, and Operational Policy 14, Enhancing Roadside Inspection and Enforcement Data Uniformity, when inspecting equipment on a regulated vehicle. These resources are available on the CVSA website at <https://cvsa.org/>.

### 4. ENFORCEMENT.

a. Policy. Enforcement shall be taken in accordance with this manual.

b. Citing Federal Violations. Title 49 CFR, Part 393, may be directly enforced by citing Section 34500.7 CVC, an infraction.

### 5. EQUIPMENT.

#### a. Brakes.

(1) Brake systems shall comply with the requirements contained in Title 49, CFR, Part 393, Subpart C.

(2) Title 49, Section 393.43 CFR contains requirements for breakaway and emergency brakes.

(a) A tractor protection valve fulfills the breakaway and emergency brake requirements.

(b) An emergency brake will not meet the requirements of a breakaway system.

(c) A lanyard breakaway switch with a self-contained battery meets the requirement of this section on a trailer equipped with electric brakes.

(3) Except for auxiliary dollies and tow dollies (Section 26305 CVC), all dollies, including pole, pipe, and logging dollies, shall be equipped with brakes if the dolly meets the requirements specified in Section 26302 CVC (weight, registration, etc.).

(a) The requirements of Section 26304(a) CVC do not apply to auxiliary dollies, jeeps, "jo dogs," or converter gear whether operated separately or in conjunction with a trailer or semitrailer.

(4) Section 26305 CVC exempts an auxiliary dolly from the requirement to be equipped with brakes.

(a) Brakes installed on an auxiliary dolly when supporting another vehicle shall be operational and all component parts shall be maintained in good working order.

(b) Brakes installed on an auxiliary dolly are not required to be connected when the gross weight of the dolly is less than specified in Section 26302 CVC.

(c) When a jeep, "jo-dog," or other similar type converter is temporarily attached to and used in conjunction with any semitrailer, such vehicles are considered auxiliary dollies and all requirements applicable to auxiliary dollies apply to such vehicles in accordance with the above interpretations.

(d) A vehicle being utilized to support the boom or mast of a mobile crane or shovel is exempt from brake requirements pursuant to Section 26302(e) CVC.

(e) When a set of wheels is permanently attached to a disconnected boom or mast of a vehicle, that set of wheels is considered special mobile equipment and is not required to be equipped with brakes, pursuant to Sections 26302, 26311, and 26457 CVC.

(5) The requirements for parking brakes are contained in Title 49, Section 393.41 CFR.

(6) When brakes are installed on any axle of a motor vehicle or trailer as an optional installation, they shall be operational and maintained in good working order, or completely removed. Brake parts which are permanently welded or riveted to the vehicle, such as backing plates, need not be removed.

(7) Loose air reservoir mount bolts are not considered to be in violation until the tank can be moved more than 1 inch from its attachment point(s).

(8) Loose or missing pushrod clevis jam nuts shall not be documented as a violation.

b. Bus Driveshaft Protection.

(1) Bus driveshaft protection shall comply with requirements contained in Title 49, Section 393.89 CFR.

(2) When inspecting buses with multiple drive shafts, each drive shaft must have a guard or bracket for each end of a shaft which is provided with a sliding connection. This applies to splines or other such devices.

c. Cab and Body Components.

(1) Cab and body components shall comply with requirements contained in Title 49, Section 393.201 CFR.

(2) Cab doors shall not be missing or broken. No door shall be wired shut or otherwise secured in a closed position so that it cannot be opened.

NOTE: When a vehicle which has a roof exit is loaded with pipe or bar stock that blocks the door, it is not required to have an operative side door.

(3) Bolts or brackets securing the cab or body of the vehicle to the frame shall not be loose, broken, or missing.

(4) The hood of a CMV shall be securely fastened.

(5) All seats must be securely fastened.

(6) The front bumper shall not be missing.

d. Conspicuity Systems and Reflectors.

(1) Conspicuity systems shall comply with the requirements contained in Title 49, Sections 393.11(b) and 393.13 CFR.

NOTE: Conspicuity systems can consist of retroreflective sheeting, reflex reflectors, or a combination of both devices.

(2) Reflectors shall comply with the requirements contained in Title 49, Sections 393.11(a)(1), 393.17, and 393.26 CFR.

e. Coupling Devices and Towing Methods.

(1) Commercial motor vehicles used in combination shall comply with the coupling device requirements contained in Title 49 CFR, Part 393, Subpart F.

(a) General requirements for coupling devices and towing methods are contained in Title 49, Section 393.70 CFR. These requirements include vehicle tracking, drawbars, trailer hitches, fifth wheel assemblies, coupling devices, towing of full trailers, safety chains, and safety devices.

(b) Requirements for coupling devices and towing methods for driveaway-towaway operations are contained in Title 49, Section 393.71 CFR.

f. Dump Body Vehicle Equipment.

(1) Every vehicle equipped with a dump body that tilts to release its load through an opening at the rear by gravity, or a hopper body that releases its load through a bottom-hinged opening shall comply with the requirements contained in Title 13, Section 1251 CCR.

(2) The requirements for dump-body vehicles include the following: identification of load release functions, wiring for electrical controls, pneumatic release controls, warning devices for hydraulic systems, and external control activation.

g. Electrical Wiring and Storage Batteries.

(1) Electrical wiring shall be installed and maintained as required in Title 49, Section 393.28 CFR.

(2) Storage batteries shall be installed and maintained as required in Title 49, Section 393.30 CFR.

h. Emergency Equipment.

(1) Each truck, truck tractor, and bus, except those towed in driveaway-towaway operations, shall comply with the emergency equipment requirements contained in Title 49 CFR, Part 393, Subpart H.

(2) Emergency equipment includes fire extinguishers, spare fuses, and warning devices for stopped vehicles.

i. Exhaust Systems.

(1) Exhaust systems shall comply with the requirements contained in Title 49, Section 393.83 CFR.

(2) In addition to the exhaust-system requirements contained in Title 49 CCFR, Part 393, CMVs shall not:

(a) Be operated in a manner resulting in the escape of excessive smoke, flame, gas, oil, or fuel residue as specified in Section 27153 CVC.

NOTE: During active regeneration, a nongasoline-powered vehicle with a gross vehicle weight rating of more than 14,000 pounds is exempt from the requirement to not release visible smoke.

(b) Be operated on a public highway with an illuminated malfunction indicator light displaying the International Standards Organization 2575 engine symbol FO1. This requirement is only applicable to a nongasoline-powered vehicle with a gross vehicle weight rating of more than 14,000 pounds, as specified in Section 24019 CVC.

(3) Employees of the Department shall take appropriate enforcement action against the driver and/or owner, as provided in Section 40001(a) and (b) CVC, of every motor vehicle subject to registration when the motor vehicle is not equipped with an adequate muffler in constant operation and properly maintained to prevent any excessive or unusual noise.

j. Fenders and Splash Flaps.

(1) Pursuant to Section 23114(b)(2) CVC, all wheels on vehicles hauling aggregate materials, regardless of their position on the vehicle, are always required to be equipped with fenders and splash flaps. Each fender shall start at the splash flap and extend forward at least 6 inches beyond the center of the axle covering the tops of tires not already covered by the truck, truck tractor, or trailer body.

(2) Pursuant to Section 27600 CVC, for vehicles other than those hauling aggregate materials, all wheels in contact with the road must be adequately shielded to minimize the spray or splash of mud or water to the rear of the vehicle.

(3) The following diagram is a representation of an SAE International-recommended practice for rear wheel splash and stone-throw protection which may be utilized to assist in determining compliance with Section 27600 CVC (refer to Figure 6-1).

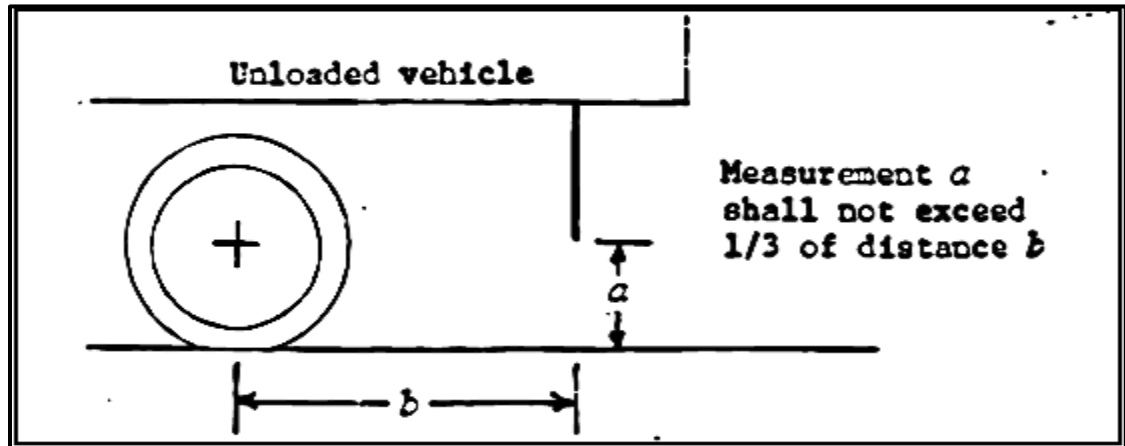


Figure 6-1. Diagram of Flap Measurement.

NOTE: Figure 6-1 is based on an industry standard and is not codified in law.

(4) The requirements of Sections 27600 and 23114 CVC must be met regardless of whether the pavement is wet or dry.

k. Floors.

(1) Floors shall comply with requirements contained in Title 49, Section 393.84 CFR.

(2) Flooring requirements are applicable to motor vehicles as defined in Title 49, Section 390.5 CFR. Sound, professional judgement shall be used when applying these requirements to trailers.

l. Frames.

(1) Frames shall comply with requirements contained in Title 49, Section 393.201 CFR.

- (2) The frames or chassis of a CMV shall not be cracked, loose, sagging, or broken.
- (3) Bolts or brackets securing the cab or the body of a CMV to the frame shall not be loose, broken, or missing.
- (4) The frame rail flanges shall only be bent, cut, or notched as specified by the manufacturer.
- (5) Any welded repair and/or parts and accessories welded to the frame or chassis shall be in accordance with the manufacturer's recommendations.
- (6) Holes shall only be drilled into the top or bottom rail flanges as specified by the manufacturer.

m. Glazing and Windows.

- (1) Windshields and windows shall comply with the requirements contained in Title 49 CFR, Part 393, Subpart D.
- (2) Pursuant to Section 26708 CVC, objects and materials shall not obstruct or reduce the driver's view through the windshield or side windows.
- (3) Requirements for windshield wiping and washing systems are contained in Title 49, Section 393.78 CFR.
- (4) Window defrosting and defogging system requirements are contained in Title 49, Section 393.79 CFR.

n. Heaters.

- (1) Heaters shall comply with requirements contained in Title 49, Section 393.77 CFR.
- (2) Heater specification requirements contained in Title 49, Section 393.77 CFR, include, but are not limited to, the following: element protection, guards, securement, operating controls, and hoses.

o. Horns.

- (1) Horns shall comply with requirements contained in Title 49, Section 393.81 CFR.
- (2) Every bus, truck, truck tractor, and driven motor vehicle in driveaway-towaway operations shall be equipped with a horn. There are

no requirements for specific horn types or minimum sound levels contained in the Federal Motor Carrier Safety Regulations.

p. Lamps.

(1) Required lamps, reflective devices, and electrical wiring shall comply with requirements contained in Title 49 CFR, Part 393, Subpart B. In addition to these requirements, the following is applicable:

(a) Required type lighting equipment is defined as any lighting equipment used to perform a required function when installed in the location specified for the particular type of lamp. Lighting equipment of a required type includes, but is not limited to, headlamps, tail lamps, stop lamps, clearance lamps, side marker lamps, license plate lamps, turn signal lamps, and backup lamps.

NOTE: Required type does not include lamps designed to perform one of the functions listed above when installed on a vehicle in a location other than specified for that lamp.

NOTE: When a vehicle is towing another **motor vehicle**, turn signal lamps are not required on the rear of the towed vehicle if the lamps on the rear of the towing vehicle are clearly visible to the rear of the towed motor vehicle pursuant to Section 24605(c) CVC. Additionally, the lighting on a laden converter dolly is not required to be operational (CVSA Operational Policy 15).

(b) All lighting equipment of a required type contained in Section 24252(a)(2) CVC includes lighting equipment required pursuant to Title 49 CFR, Parts 393 and 571.

(c) All required type lighting equipment shall be maintained in good working order at all times, both night and day. This includes required type lighting installed on a vehicle otherwise exempt from that specific lighting requirement.

(d) The lens of each original equipment and replacement headlamp, and of each original equipment and replacement beam contributor, and each replacement headlamp lens for an integral beam or replaceable bulb headlamp must be marked either horizontally or vertically with the initialism "DOT" (Department of Transportation) to indicate certification under Title 49 of the U.S. Code, Section 30115, or Title 49, Section 571.108 CFR. Other required or permitted lamps should be marked with DOT or SAE International markings.

(e) Required lights equipped with light-emitting diode (LED) lamps usually contain multiple LEDs in a fixture. An individual fixture is to be considered one lamp, regardless of the number of individual LEDs contained within it. Light-emitting diodes in the lamp fixture may fail at different rates. The number of inoperative LEDs in the lamp shall not be used to determine if the lamp is in good working order. An LED lamp shall be considered to be in good working order when the visibility requirements for the location of the lamp are met (CVSA Operational Policy 14).

(f) Vehicles equipped with more than the minimum number of lamps of a required type shall not be considered in violation if the minimum number of lamps in the required location are in good working order. The following are examples:

1 A vehicle equipped with a second set of headlamps (such as on a snowplow truck) need only have one set in good working order.

2 A vehicle equipped with five tail lamps and six stop lamps need only have two tail lamps and two stop lamps in good working order, provided one lamp on each side of the vehicle is in good working order.

3 A vehicle equipped with four turn signal lamps in front and four turn signal lamps in the rear need only have two lamps on the rear (one on each side) and two on the front (one on each side) in good working order.

(2) Enforcement personnel should review applicable CVC sections to determine if a light which is not required is permitted or unlawful. Lamps of a permitted type are not required to be maintained. However, the following requirements apply to permitted lighting and lamps:

(a) Although not required to be maintained under Section 24252 CVC, lamps, such as auxiliary driving, passing, and fog lamps, must meet mounting requirements and aiming requirements specified in Title 13 CCR and Section 24012 CVC.

(b) Under-cab lighting and/or decorative lighting installed on a vehicle may only be mounted in a manner where it is not directly visible to other drivers. Additionally, the light source may reflect nonglaring or emit diffused light of any color except red, pursuant to Section 25102 CVC.

(c) Small lamps may be installed in doors and running boards if they meet the requirements of Section 25105 CVC.

(3) Mounting requirements for lamps are contained in Title 49 CFR, Part 393, Subpart B. Rigid mounting is required. Lights and reflectors must be mounted with the lens in the vertical position and aimed parallel to the longitudinal axis of the vehicle.

(a) Lamps of a type required or permitted on a vehicle may be mounted on a load carried by the vehicle in lieu of, or in addition to, such equipment on the vehicle when in compliance with Title 49 CFR, Part 393, Subpart B.

(b) Unless permitted, such as a headlight concealment device in compliance with Title 13, Section 692(b) CCR, a lighting device shall not be mounted behind any portion of the vehicle, or load or equipment on the vehicle, which interferes with the distribution of light or decreases its intensity.

(4) Unlawful lamps installed on a vehicle are a violation of Section 24003 CVC. Covering the lamp or disconnecting the wiring does not constitute removal and is not an acceptable method of complying with Section 40151 CVC.

NOTE: Unless excepted by Section 24003 CVC, lighting equipment installed on a vehicle that is not required at the time of manufacture by Title 49 CFR, Part 571, or not required or permitted by the CVC and/or Title 49 CFR, Part 393, is prohibited.

NOTE: Section 24411 CVC specifically permits equipping a vehicle with auxiliary headlamps for off-highway use if wired independently of other lighting circuits, turned off, and covered with an opaque hood or cover while the vehicle is being driven on the highway.

(a) Lighting equipment is not considered a lamp after the bulb, wiring, and bulb receptacle have been removed.

(b) Section 24005 CVC makes it unlawful to install or replace any equipment on a vehicle with any equipment of a type which is not in conformity with the CVC or regulations adopted thereunder, such as:

- 1 Replacing a tail lamp lens with clear or red plastic, tape, or cloth.
- 2 Replacing headlamps with spot lamps.

q. Noise Levels in Power Units.

(1) The interior noise levels in power units shall comply with requirements contained in Title 49, Section 393.94 CFR.

- (2) Interior sound levels as measured from the driver's seat of a truck, truck tractor, or bus must not exceed 90 decibels. While the testing procedures are described in Title 49, Section 393.9(c) CFR, departmental personnel shall not conduct these tests roadside.
- r. Rear Impact Guards and Rear End Protection.
- (1) Rear impact guards and rear end protection shall comply with the requirements contained in Title 49, Section 393.86 CFR.
- (2) The requirements contained in Title 49, Section 393.86 CFR, include, but are not limited to, the following: impact guard width, guard height, guard rear surface, vertical height, certification and labeling, and exceptions.
- s. Rear-Vision Mirrors.
- (1) Rear-vision mirrors shall comply with the requirements contained in Title 49, Section 393.80 CFR.
- (2) Every bus, truck, and truck tractor shall be equipped with two rear-vision mirrors, firmly attached to each side, which allow the driver a view of the highway to the rear of the vehicle.
- (3) When inspecting a vehicle which is not equipped with two mirrors, inspectors should ensure the vehicle is not being operated under an exception contained in Title 49, Section 393.80(b) CFR.
- t. Seats and Seat Belts.
- (1) Seats and seat belts shall comply with requirements contained in Title 49, Section 393.93 CFR.
- (2) Additional California-specific seat belt requirements are contained in Division 12 CVC, Chapter 5.
- u. Sleeper Berths.
- (1) Sleeper berths shall comply with the requirements contained in Title 49, Section 393.76 CFR.
- (2) Requirements for sleeper berths include the following: dimensions, location, exits, communication requirements, equipment, ventilation, protection from exhaust and fuel leaks, and occupant restraint.

v. Speedometers.

(1) Speedometers shall comply with the requirements of Title 49, Section 393.82 CFR.

(2) Every bus, truck, and truck tractor is required to be equipped with a speedometer. Speedometers are required to be accurate within plus or minus 5 miles per hour.

w. Steering Wheel Systems.

(1) Steering wheel systems shall comply with requirements contained in Title 49, Section 393.209 CFR.

(2) Steering wheels shall be secured and must not have any spokes cracked through or broken.

(3) Steering wheels shall turn freely in both directions of travel.

(4) Steering wheel lash shall not exceed the parameters contained in Title 49, Section 393.209(b)(1) CFR.

(5) Steering wheel columns must be securely fastened.

(6) Steering system universal joints and ball-and-socket joints shall not be worn, faulty, or repaired by welding. The steering gear box and the pitman arm on the steering gear output shaft shall not be loose.

(7) All power steering components shall be in operating condition, free of leaks, and secured. Additionally, the power steering system shall have sufficient fluid in the reservoir.

x. Suspension Systems.

(1) Suspension systems shall comply with requirements contained in Title 49, Section 393.207 CFR.

(2) The provisions of Title 49, Section 393.207 CFR, include requirements for axles, leaf springs, coil springs, torsion bars, and air suspensions.

y. Television Receivers.

(1) Television receivers shall comply with the requirements that are contained in Title 49, Section 393.88 CFR. These television receiver requirements are only applicable to devices which receive a television broadcast.

(2) Section 27602 CVC has additional requirements for television receivers, video monitors, and video screens which display video signals in a motor vehicle.

z. Tires and Tire Load Limits.

(1) Tires shall comply with the requirements contained in Title 49, Section 393.75 CFR.

(2) Tire load limit ratings are included on a tire's sidewall and shall comply with the requirements contained in Title 49, Section 393.75(g) and (h) CFR.

(a) The load limits marked on the tire are computed for the maximum recommended cold tire inflation pressure. In applying these limits, tires shall be assumed to be inflated to appropriate recommended maximum cold inflation pressure.

(b) To determine the weight on the individual tire, the total axle weight (after application of the measurement variation factor, refer to Chapter 8, Size and Weight, of this manual) is divided by the number of tires distributing the weight to the pavement. When the weight is greater on one end of an axle because of an uneven load (e.g., mobile home), the weight on the ends of the axles shall be measured separately.

(c) When citing violations of tire load limits on a CHP 215, Notice to Appear, the following shall apply:

1 Section 34506.3 CVC; Title 13, Section 1085 CCR; or, alternatively, Section 34500.7 CVC (Title 49, Section 393.75[g] CFR), for vehicles subject to motor carrier safety regulations, except school buses, as specified in Section 34500 CVC.

2 Section 34506(c) CVC; Title 13, Section 1085 CCR, for school buses.

3 Section 27501(b) CVC; Title 13, Section 1085 CCR, for all other vehicles.

aa. Wheels.

(1) Wheels shall comply with requirements contained in Title 49, Section 393.205 CFR.

(2) Wheels and rims shall not be cracked or broken.

- (3) Stud or bolt holes on the wheels shall not be elongated.
- (4) Nuts or bolts shall not be missing or loose.

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