

DEPARTMENT OF TRANSPORTATION**Federal Highway Administration****49 CFR Parts 390, 392, and 393**

[FHWA Docket No. MC-97-5]

RIN 2125-AD40

Parts and Accessories Necessary for Safe Operation; General Amendments

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice of proposed rulemaking (NPRM); request for comments.

SUMMARY: The FHWA is proposing to amend part 393 of the Federal Motor Carrier Safety Regulations (FMCSRs), Parts and Accessories Necessary for Safe Operation. The amendments are intended to remove obsolete and redundant regulations; respond to several petitions for rulemaking; provide improved definitions of vehicle types, systems, and components; resolve inconsistencies between part 393 and the National Highway Traffic Safety Administration's Federal Motor Vehicle Safety Standards (49 CFR 571); and codify certain FHWA regulatory guidance concerning the requirements of part 393. Generally, the amendments do not involve the establishment of new or more stringent requirements but a clarification of existing requirements. This action is consistent with the President's Regulatory Reinvention Initiative and furthers the FHWA's ongoing Zero-Base Regulatory Review in that it proposes to make many sections more concise, easier to understand and more performance oriented.

DATES: Written comments must be received on or before June 13, 1997.

ADDRESSES: Signed, written comments should refer to the docket number that appears at the top of this document and must be submitted to the Docket Clerk, U.S. DOT Dockets, Room PL-401, 400 Seventh Street, SW., Washington, DC 20590-0001. All comments received will be available for examination at the above address between 10 a.m. and 5 p.m., e.t., Monday through Friday, except Federal holidays. Those desiring notification of receipt of comments must include a self-addressed, stamped envelope or postcard.

FOR FURTHER INFORMATION CONTACT: Mr. Larry W. Minor, Office of Motor Carrier Research and Standards, HCS-10, (202) 366-4009; or Mr. Charles E. Medalen, Office of the Chief Counsel, HCC-20, (202) 366-1354, Federal Highway Administration, 400 Seventh Street, SW., Washington, DC 20590. Office hours are from 7:45 a.m. to 4:15 p.m.,

e.t., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:**Background**

On December 7, 1988, the FHWA published a final rule on parts and accessories necessary for safe operation (53 FR 49380). The final rule included amendments to the requirements for lamps and reflective devices, brake systems, fuel systems, frames and frame assemblies, suspension systems, steering systems, and axle assemblies. This action was taken to implement sections 206 and 210 of the Motor Carrier Safety Act of 1984 (the Act) (49 U.S.C. 31136 and 31142) and to ensure that commercial motor vehicles are equipped with all parts and accessories considered necessary for safe operation. Since the publication of the final rule, the FHWA has received numerous petitions for rulemaking and requests for interpretation of the requirements of part 393 which have raised the need for additional amendments to clarify several provisions of the 1988 final rule. In addition, the National Highway Traffic Safety Administration (NHTSA), the Federal agency responsible for establishing safety standards for the manufacture of motor vehicles and certain motor vehicle equipment, has made several amendments to its Federal Motor Vehicle Safety Standards (FMVSSs) that necessitate amendments to the FMCSRs in order to eliminate inconsistencies between part 393 and the FMVSSs.

Proposed Amendments*Section-by-Section Discussion of the Proposed Amendments***Section 390.5—Definition of Driveaway-Towaway Operation**

Parts 393 and 396 of the FMCSRs include several exceptions for driveaway-towaway operations. A driveaway-towaway operation is defined as one in which a motor vehicle constitutes the commodity being transported and one or more set of wheels of the vehicle being transported are on the surface of the roadway during transportation. The driveaway-towaway exceptions are intended to address situations in which compliance with some of the vehicle regulations is not practicable because of the circumstances surrounding the delivery or transportation of the vehicle. Examples of driveaway-towaway operations include the delivery of a newly manufactured commercial motor vehicle from a manufacturer to a dealership, the delivery of a new or used motor vehicle

from the dealership to the purchaser, or certain movements of vehicles to a repair or maintenance facility. Among the provisions of parts 393 and 396 which do not apply to driveaway-towaway operations are the requirements for lamps and reflectors, brakes, driver vehicle inspection reports, maintenance records, and periodic inspection.

The concept of providing exceptions for such operations dates back to the Interstate Commerce Commission's (ICC) May 27, 1939, order under Ex-Parte No. MC-2 (14 M.C.C. 669, at 679). A driveaway-towaway operation was originally defined by the ICC as "any operation in which a single motor vehicle or combination of motor vehicles, new or used, constitutes the commodity being transported and in which the motive power of any such motor vehicles is utilized." In 1952, the ICC revised the definition to read "any operation in which any motor vehicle or motor vehicles, new or used, constitute the commodity being transported, when one or more set of wheels of any such motor vehicle or motor vehicles are on the roadway during the course of transportation; whether or not any such motor vehicle furnishes the motive power." (17 FR 4422, 4423, May 15, 1952).

The current definition of a driveaway-towaway operation was published on May 19, 1988 (53 FR 18052). It has become apparent that this definition does not provide sufficient guidance in identifying the specific types of vehicle operations covered. The FHWA has received numerous requests for clarification of the applicability of the driveaway-towaway exceptions to construction equipment and storage trailers. Typically storage trailers are parked for several weeks to several months at a construction site and moved occasionally from one site to another. Construction equipment is also moved only occasionally from site to site. Therefore, the FHWA is proposing to limit the definition of a driveaway-towaway operation to motor vehicles being transported (1) between a vehicle manufacturer and a dealership or a purchaser, (2) between a dealership, or other entity selling or leasing the vehicle, and a purchaser or lessee, (3) to a maintenance/repair facility for the repair of disabling damage (as defined in § 390.5), or (4) by means of a saddle-mount. In addition, the driveaway-towaway exception would only apply to those cases in which the motor vehicles are not transporting cargo or passengers. The proposed revision is intended to reduce confusion.

Section 392.33—Obscured Lamps or Reflectors

The FHWA is proposing to amend § 392.33 to include an exception for the obstruction of trailer conspicuity treatments on the front end protection device. The NHTSA requires trailer manufacturers to apply retroreflective sheeting to the front end protection devices or headerboards of trailers manufactured on or after December 1, 1993 (49 CFR 571.108, S5.7.1.4). Since the headerboard is located at the front of flatbed trailers, the cargo may, depending upon its height, obstruct the conspicuity material located on the headerboard. The FHWA recognizes that this temporary obstruction of the reflective material cannot be avoided in many cases and does not believe that it would be appropriate to penalize motor carriers.

Section 393.1—Scope of the Rules of This Part

The FHWA is proposing a revision of § 393.1 to clarify the applicability of the requirements of part 393. Although § 390.3 explains the applicability of the FMCSRs, and § 390.5 defines the term "commercial motor vehicle," many private motor carriers of property and private motor carriers of passengers do not understand the applicability of the provisions in part 393 when a lightweight vehicle is used to tow a trailer in interstate commerce. Vehicles with a GVWR below 4,536 kg (10,001 pounds) or designed to transport less than 16 passengers are not subject to the FMCSRs when operated singly in interstate commerce unless placardable quantities of hazardous materials are being transported. However, when a small vehicle is coupled to a trailer, the gross combination weight rating (GCWR) often exceeds 4,536 kg (10,001 pounds), making the combination subject to the FMCSRs.

Part 393 cross-references several Federal Motor Vehicle Safety Standards (FMVSSs) which distinguish between vehicles above and below 4,536 kg (10,001 pounds) and passenger vehicles designed to transport fewer than 16 passengers. This rulemaking includes numerous proposals to clarify the cross-references to the FMVSS so that carriers and inspectors can readily locate the applicable paragraphs within the FMVSSs. The amendment to § 393.1 is consistent with that goal.

Section 393.5—Definitions

The FHWA is proposing to amend § 393.5 by adding definitions of air brake system, air-over-hydraulic brake subsystem, auxiliary driving lamp, boat

trailer, brake power assist unit, brake power unit, electric brake system, emergency brake, front fog lamp, hydraulic brake system, intermodal shipping (cargo) containers, multi-piece windshield, split service brake system, tow bar, trailer kingpin, vacuum brake system, and windshield. In addition, the definitions for chassis, clearance lamp, container chassis, heater, heavy hauler trailer, parking brake system, side marker lamps (intermediate), and side marker lamps would be revised. The definition of bus would be removed from § 393.5 in favor of the definition found in § 390.5.

The proposed definitions of brake systems and components would make the brake requirements under subpart C of part 393 easier to understand and enforce.

The proposed definitions of an air brake system and an air-over-hydraulic brake subsystem are based upon NHTSA's July 18, 1995, final rule on FMVSS No. 121 (60 FR 36741). The NHTSA amended FMVSS No. 121 to include a definition of an air-over-hydraulic brake subsystem and to make it clear that vehicles equipped with such systems are classified as air braked vehicles. In initially issuing FMVSS No. 121, the NHTSA stated that "it should be noted that the term 'air brake system' as defined in the standard applies to the brake configuration commonly referred to as 'air-over-hydraulic,' in which failure of either medium can result in complete loss of braking ability." (36 FR 3817, February 27, 1971.) Since the NHTSA has considered air-over-hydraulic brake systems subject to FMVSS No. 121 for more than 20 years, the FHWA's adoption of the NHTSA's definitions should not affect the applicability of the brake requirements under part 393.

The proposed definition of a boat trailer is the same as that contained under 49 CFR 571.3. The NHTSA defines boat trailer as "a trailer designed with cradle-type mountings to transport a boat and configured to permit launching of the boat from the rear of the trailer." The FHWA proposes to include this definition because § 393.11 contains requirements for lamps and reflectors on boat trailers.

The FHWA is proposing to replace its definition of "emergency brake system" with the NHTSA's definition for "emergency brake." This change will ensure consistency between the FHWA's brake regulations covering motor carriers and the NHTSA's regulations covering manufacturers.

The agency is proposing that NHTSA's FMVSS No. 105 definition of a split service brake system be included

under § 393.5. The inclusion of this definition would help to improve the clarity of the hydraulic brake system requirements under subpart C of part 393.

Definitions of an electric brake system and a vacuum brake system would be added to § 393.5 to support other proposed revisions to the brake system requirements of part 393. Since there are no FMVSSs which cover electric and vacuum brake systems, many of the brake requirements under part 393 are *de facto* manufacturing standards. To better identify the applicable requirements, several of the proposed revisions to subpart C would specifically reference electric and vacuum brakes. The proposed definitions would prevent confusion or misunderstandings on the part of motor carriers and enforcement officials.

With regard to the definition of a chassis, the agency is proposing to delete the current reference to a "truck or trailer" in favor of the term "commercial motor vehicle," which includes trucks, truck tractors, trailers, buses and converter dollies. This is especially necessary since the definition of a truck in § 390.5 explicitly excludes truck tractors.

It is proposed that the definition of a clearance lamp be replaced with the Society of Automotive Engineers' (SAE) definition (Glossary of Automotive Terms, SP-750, February 1988). The SAE definition provides a better description of the location and function of the clearance lamps than the current definition in § 393.5.

As for the definition of a heater, the FHWA proposes to replace the reference to paragraph (1) of § 177.834 with a reference to paragraph (l). The reference to paragraph (1) was a typographical error.

A definition of a trailer kingpin is being added to cover non-driveaway-towaway operations. Currently, the definition of a saddle-mount includes a description of a "king-pin." However, this definition does not appear to be appropriate for the trailer kingpin nor is the definition the same as that in the SAE's Truck & Bus Industry Glossary, SP-732, February 1988. The FHWA would adopt the SAE's definition to ensure that definitions in part 393 are consistent with industry definitions.

To clarify the applicability of parking brake requirements, the agency is proposing that the definition of a parking brake system in § 393.5 be revised to replace the term "vehicle" with "motor vehicle," which is defined in § 390.5.

The agency proposes that the definitions of "side marker lamp

(intermediate)" and "side marker lamp" be revised to include motor vehicles other than trailers. Currently, both terms are defined only in the context of trailers. However, side marker lamps are required on almost all motor vehicles and intermediate side marker lamps are required on almost all motor vehicles more than 914.4 centimeters (cm) (30 feet) in length. Therefore the FHWA is proposing to revise the definitions to include trucks, truck-tractors, and buses and to make both definitions consistent with the requirements under § 393.11 relating to side marker lamps and FMVSS No. 108, NHTSA's requirements for lamps and reflective devices.

On November 23, 1990, the NHTSA amended its definition of a heavy hauler trailer to specifically exclude container chassis trailers (55 FR 48850). To maintain consistency between the definitions used by the FHWA and the NHTSA, the FHWA is proposing to amend its definition of a heavy hauler trailer to exclude container chassis trailers.

The FHWA is proposing to add a definition of intermodal shipping container to the FMCSRs to clarify the use of the term in § 393.100(e). The definition would be the same as the definition of "container" under § 390.52.

Subpart B—Lighting Devices, Reflectors, and Electrical Equipment

The FHWA is proposing to revise the title of subpart B to read "Lamps, Reflective Devices, and Electrical Wiring." The new title would be more consistent with the title of FMVSS No. 108, entitled "Lamps, reflective devices, and associated equipment." The new title would reference electrical wiring instead of associated equipment because subpart B includes requirements for the electrical wiring for several vehicle systems in addition to the lamps required by FMVSS No. 108.

Section 393.9—Lamps Operable

The agency is proposing to amend § 393.9 to codify regulatory guidance concerning the use of lamps which are not required by § 393.11 and FMVSS No. 108, and to address obstruction of lamps.

Section 393.9 requires that lamps be capable of being operated at all times. The FHWA has issued regulatory guidance indicating that § 393.9 is only applicable to those lamps which are required by the FMCSRs. Therefore, if a motor carrier installs additional lamps which are found to be inoperable, for whatever reason, the carrier should not be considered in violation of § 393.9.

The FHWA proposes to codify this regulatory guidance.

Section 393.11—Lighting Devices and Reflectors

The FHWA is proposing that the title of § 393.11 be revised to read "Lamps and reflective devices" to maintain consistency between the proposed title for subpart B and § 393.11. The FHWA is also proposing that motor vehicles manufactured on or after December 25, 1968, be required to meet the requirements of FMVSS No. 108 in effect at the time of manufacture or a later, higher, standard. Currently, § 393.11 only requires that vehicles manufactured on or after March 7, 1989, meet the requirements of FMVSS No. 108. Vehicles manufactured prior to March 7 may meet either FMVSS No. 108 or the requirements of part 393 in effect on the date of manufacture.

The NHTSA's FMVSS No. 108 became effective on December 25, 1968, so manufacturers have been required to meet these requirements since that date. The FHWA's reference to March 7, 1989, under § 393.11 is therefore inappropriate. Since vehicles manufactured between December 25, 1968, and March 7, 1989, were originally manufactured to meet FMVSS No. 108, motor carriers who have maintained lamps and reflectors in the required locations for these older vehicles would not be affected by the proposed revision.

In addition, the FHWA is proposing to revise § 393.11 to provide better guidance on the requirements for trailers, and to correct several omissions in Table 1 of that section. The paragraph preceding Table 1 does not present a clear statement of the requirements for lamps and reflectors.

On December 10, 1992, the NHTSA published a final rule requiring that trailers manufactured on or after December 1, 1993, which have an overall width of 2,032 mm (80 inches) or more and a gross vehicle weight rating (GVWR) of more than 4,536 kg (10,000 pounds), be equipped on the sides and rear with a means for making them more visible on the road (57 FR 238). Trailers manufactured exclusively for use as offices or dwellings are exempt.

The NHTSA rule allows trailer manufacturers to install either red and white retroreflective sheeting or reflex reflectors. Manufacturers of retroreflective sheeting or reflectors are required to certify compliance of their product with FMVSS No. 108 (49 CFR 571.108) whether the product is for use as original or replacement equipment.

Currently, § 393.11 requires that all lamps and reflective devices on motor vehicles placed in operation after March 7, 1989, meet the requirements of FMVSS No. 108 in effect on the date of manufacture. Therefore, trailers manufactured on or after December 1, 1993, must have reflective devices of the type and in the locations specified by FMVSS No. 108. To make certain that all motor carriers operating trailers subject to the FMCSRs are aware of their responsibility to maintain the conspicuity treatment, the FHWA is proposing the addition of detailed language under § 393.11. The FHWA would cross-reference the specific paragraphs of FMVSS No. 108 related to the applicability of NHTSA's trailer conspicuity standards, the required locations for the conspicuity material, and the certification and marking requirements.

The FHWA notes that during the NHTSA rulemaking, the issue of requiring conspicuity material on the rear underride device generated industry concerns about the maintainability of the retroreflective sheeting in that location. As stated in the preamble to NHTSA's December 10, 1992, final rule:

Objections were based on the potential for frequent damage that would cause trailers in use to fail inspections by the FHWA. NHTSA has observed that the horizontal bar of the underride device is less subject to docking impacts than the vertical bars because it is below most dock surfaces (and under a NHTSA proposal [a reference to the NHTSA's supplemental notice of proposed rulemaking concerning rear impact guards (57 FR 252, January 3, 1992)] would be even lower). Therefore, the final rule requires retroreflective material to be applied to the horizontal device, instead of the vertical ones as proposed. NHTSA believes that the original conspicuity material should have a long useful life on a large number of trailers, especially if it is applied to a recessed surface. However, NHTSA recognizes that routine damage, as a practical matter, may be unavoidable for some trailers as a consequence of their particular use. Therefore, the FHWA will consider the exclusion of conspicuity treatment from the rear underride device in any future rulemaking concerning trailer conspicuity requirements for vehicles subject to 49 CFR 393 Parts and Accessories Necessary for Safe Operation, and 49 CFR 396 Inspection [,Repair,] and Maintenance.

The proposed cross-reference to the NHTSA conspicuity requirements includes a reference to the specific paragraphs within FMVSS No. 108 concerning the locations for the conspicuity treatments. The proposal does not, however, include an exemption to the requirement that motor carriers maintain the conspicuity

material on the rear underride device. The agency requests comments from motor carriers on the durability of the conspicuity material located on the horizontal member of the rear underride protection devices. Commenters are asked to identify the specific types of trailers and operating conditions that they believe are associated with the durability problems cited in addition to providing color photographs of the damaged conspicuity materials.

The FHWA published an advance notice of proposed rulemaking concerning the possibility of retrofitting trailers manufactured prior to December 1, 1993, with the red and white reflective material (59 FR 2811, January 19, 1994). On August 6, 1996, the FHWA announced that it would issue a notice of proposed rulemaking to require motor carriers to retrofit their trailers with conspicuity material (61 FR 40781). Since the issue of retrofitting is being addressed under FHWA Docket No. MC-94-1, comments on that subject will not be considered in this rulemaking.

In addition to providing explicit guidance on trailer conspicuity, the FHWA proposes to amend § 393.11 to codify certain regulatory guidance on the use of amber stop lamps, amber tail lamps, and optical combinations which would involve the use of amber tail lamps or amber stop lamps. Motor vehicles are required to be equipped with at least two red stop lamps and two red tail lamps. However, some motor carriers have expressed an interest in using additional stop lamps and/or tail lamps that are amber in color.

Federal Motor Vehicle Safety Standard No. 108 does not allow amber as an alternate color for a tail lamp. In an August 23, 1990, interpretation to a manufacturer of lamps and reflectors, NHTSA stated that "We have no intention of allowing amber as an alternate color for a tail lamp." In a December 10, 1991, interpretation to the FHWA, the NHTSA indicated that a combination amber turn signal and tail lamp is implicitly prohibited by FMVSS No. 108.

When combined with an amber turn signal lamp, the intensity of an amber tail lamp might mask the turn signal operation. Because motorists are not used to seeing steady burning amber lamps on the rear of vehicles, amber taillamps could lead to momentary confusion of a driver following the trailer when the stop lamps are activated, thereby impairing the effectiveness of the stop signal. The presence of simultaneously burning amber and red taillamps could also create some confusion of a following driver approaching the trailer from around a corner to its rear. Thus we have concluded that a

combination amber turn signal and taillamp is implicitly prohibited by Standard No. 108.

The FHWA agrees that motorists are not used to seeing amber lamps used in conjunction with red lamps to signal that the vehicle is stopping and believes the FMCSRs should be amended explicitly to prohibit the use of amber tail lamps.

To ensure that the proposed prohibition does not conflict with FMVSS No. 108, the FHWA reviewed the NHTSA requirements. Section S5.1.3 of FMVSS No. 108 prohibits the installation of supplementary lighting equipment that "impairs the effectiveness of lighting equipment required by this standard." Although the determination of impairment is initially that of the vehicle's manufacturer in certifying that the vehicle meets all applicable FMVSSs, the NHTSA may review that determination and, if clearly erroneous, inform the manufacturer of its views.

Since § 393.11 cross-references FMVSS No. 108, the FHWA's regulatory guidance on the use of amber stop lamps and tail lamps is generally contingent upon a NHTSA determination as to whether or not the lamp impairs the effectiveness of other rear lamps. While certification by the vehicle manufacturer and subsequent review by the NHTSA address the vehicle manufacturer's role in the safe operation of the CMV, a less complicated approach is needed to ensure that the FMCSRs are easy to understand, use, and enforce.

Explicit guidance is needed to ensure that once a vehicle manufacturer certifies that a vehicle meets all applicable FMVSSs, the motor carrier does not modify it in a manner inconsistent with FMVSS No. 108. The FHWA is not aware of any vehicle manufacturers that use amber stop lamps or tail lamps as standard equipment. Consequently, the proposed restriction would (1) discourage motor carriers from asking vehicle manufacturers to install amber tail lamps and/or stop lamps on vehicles as optional equipment and (2) prohibit the motor carrier from installing or using such devices on its commercial motor vehicles.

With regard to omissions in Table 1 in § 393.11, the FHWA is proposing amendments to footnotes 4 through 10 to address inconsistencies with other sections of subpart B to part 393. In addition, the agency is proposing to correct the listing for clearance lamps and reflex reflectors and to include metric units in describing the location of the required lamps and reflectors.

The current listing for clearance lamps omits reference to footnote 8 concerning pole trailers and does not include reference to the provision in FMVSS No. 108 (S5.1.1.9) for clearance lamps on boat trailers. Under FMVSS No. 108, a boat trailer with an overall width of 2,032 mm (80 inches) or more is not required to be equipped with both front and rear clearance lamps provided an amber (to the front) and red (to the rear) clearance lamp is located at or near the midpoint on each side to indicate the extreme width of the trailer. This provision for clearance lamps on boat trailers would be covered under a new footnote 17.

The listings for reflex reflectors (front side) and side marker lamps (front) are being revised to address an inconsistency between § 393.11 and FMVSS No. 108 (S5.1.1.15). Under FMVSS No. 108 a trailer that is less than 1,829 mm (6 feet) in length (including the trailer tongue) need not be equipped with front side marker lamps and front side reflex reflectors. This exception would be covered under a new footnote 16.

The FHWA is proposing to remove the last sentence in footnote 4, which requires that the rear side marker lamps be visible in the rearview mirror. This requirement is impractical and is inconsistent with FMVSS No. 108. Section 571.108 (S5.1.1.8) incorporates by reference the Society of Automotive Engineers (SAE) recommended practice Clearance, Side Marker, and Identification Lamps, (SAE J592e, July 1972) which provides photometric standards. These standards cover geometric visibility angles of 45 degrees left to 45 degrees right and 10 degrees up to 10 degrees down. In order for the rear side marker lamps to be visible in the rearview mirrors the left to right angles would each have to be approximately 85 degrees. Since side marker lamps which meet the minimum standards contained in SAE J592e generally are not visible in the rearview mirror, the agency is proposing to amend footnote 4.

The FHWA is proposing editorial changes to footnotes 5 through 8 to improve the manner in which the requirements are presented. For instance, in footnote 5 the change would make it clear that converter dollies are only required to have one stop lamp and one tail lamp. The current wording, when combined with the legend at the end of § 393.11, could be construed as requiring two stop lamps and two tail lamps.

Amendments to footnotes 9 and 10 would remove the requirements that projecting loads be equipped with

lamps and reflectors during daylight hours. There is no apparent safety benefit for requiring lamps and reflectors on projecting loads during times when lamps are not required to be used.

Footnote 15 would be revised to incorporate language consistent with certain FMVSS No. 108 options—covered under S5.3.1.1.1, S5.3.1.4, S5.3.1.6—on the locations for clearance lamps.

Section 393.17—Lamps and Reflectors, Driveaway-Towaway Operations

The FHWA proposes to change the wording of the diagrams which illustrate the requirements of § 393.17. The diagrams incorrectly reference §§ 393.25(e) and 393.26(d) and would be amended to reference § 393.11, which covers the color of exterior lamps and reflective devices.

Section 393.19—Requirements for Turn Signaling Systems

The FHWA is proposing to revise § 393.19 to make it more consistent with FMVSS No. 108 (S5.5.5). Paragraph S5.5.5 provides a concise standard that vehicle manufacturers must meet. To ensure consistency between FMVSS No. 108 and the FMCSRs, the FHWA would adopt the NHTSA standard.

Section 393.20—Clearance Lamps to Indicate Extreme Width and Height

The FHWA is proposing to remove § 393.20 because the requirements for the location and color of clearance lamps are provided in Table 1 of § 393.11. The exceptions concerning the mounting of clearance lamps currently contained in § 393.20 would be included under footnote 15 to Table 1. Illustrations comparable to those provided in § 393.20 are already contained in § 393.11.

Section 393.23—Lighting Devices to be Electric

The FHWA is proposing to amend § 393.23 to incorporate terminology which is more consistent with current industry standards and practices. With the exception of temporary lamps used on projecting loads, lamps would be required to be powered through the electrical system of the commercial motor vehicle. The title of § 393.23 would be revised to read "Power supply for lamps" and the reference to red liquid-burning lanterns would be removed as obsolete.

Section 393.24—Requirements for Headlamps and Auxiliary Road Lighting Lamps

The FHWA is proposing to amend § 393.24 to provide a more straightforward presentation of the requirements for the mounting of headlamps and auxiliary lamps, and to incorporate by reference SAE standards applicable to these lamps. Currently § 393.24 allows auxiliary and fog lamps to be used provided they meet "the appropriate SAE Standard for such lamps." The FHWA would incorporate by reference SAE standards J581 Auxiliary Driving Lamps, January 1995, and J583 Front Fog Lamps, June 1993, for the purpose of establishing more specific performance requirements for such lamps. While auxiliary driving lamps and fog lamps are not required to be used, performance standards should be specified to ensure that the use of such devices does not decrease safety.

A new paragraph is being proposed to address marking of headlamps.

Paragraph S7.2 of FMVSS No. 108 requires the lens of each headlamp and beam contributor manufactured on or after December 1, 1989, to be marked. The FHWA proposes to include this requirement under § 393.24 to ensure that commercial motor vehicles are equipped with original or replacement headlamps which meet the requirements of FMVSS No. 108.

Paragraph (d) of § 393.24, Aiming and intensity, would be revised to reference FMVSS No. 108, and SAE standards J581 and J583. One of the SAE standards currently referenced in § 393.24(d)—Electric Headlamps for Motor Vehicles—was canceled by the SAE. The other SAE standard, J579 Sealed Beam Headlamp Units for Motor Vehicles, is not necessary given the proposed cross-reference to FMVSS No. 108 and the incorporation by reference of SAE J581 and J583.

Section 393.25—Requirements for Lamps Other Than Headlamps

To improve the clarity with which the requirements are presented, the FHWA is proposing to revise § 393.25 in its entirety. Section 393.25(a) would provide a concise description of the mounting requirements for lamps. Paragraph (b) Visibility, would provide technically sound performance standards for all required lamps. Currently § 393.25(b) requires lamps to be mounted such that they are capable of being seen at distances up to 152.4 meters (500 feet) under clear atmospheric conditions during the period when lamps must be used as provided by § 392.30. The FHWA

determined that § 392.30 duplicated State and local regulations and removed that requirement on November 23, 1994 (59 FR 60319). Also, the FHWA believes the performance criteria for lamps are effectively addressed by § 393.11 which cross-references FMVSS No. 108. Lamps must, at a minimum, meet the requirements of FMVSS No. 108 in effect on the date of manufacture of the vehicle. FMVSS No. 108 specifies the minimum and maximum photometric output values for required lamps. Vehicles not subject to FMVSS No. 108 on the date of manufacture would be required to meet the visibility requirements specified in the SAE standards proposed for incorporation by reference under § 393.25(c).

The FHWA is proposing to delete § 393.25(d), Certification and markings, to make the FMCSRs consistent with FMVSS No. 108. With the exception of headlamps and beam contributors, FMVSS No. 108 does not require lamps to be marked. Manufacturers are responsible for ensuring that their products meet the applicable requirements of FMVSS No. 108 but the lamps do not have to be marked by the manufacturer to indicate that the device meets the standards. In this case, § 393.25(d) sets in-service requirements for lamps which are more stringent than the manufacturing standards set by the NHTSA. The removal of § 393.25(d) would correct this inconsistency.

The agency is proposing to amend § 393.25(e), Lighting devices to be steady-burning, and § 393.25(f), Stop lamp operation, to provide more concise statements of the requirements of each. The FHWA is proposing to allow exceptions for the use of amber warning lamps which meet SAE J595, Flashing Warning Lamps for Authorized Emergency, Maintenance and Service Vehicles, January 1990, SAE J845, 360 Degree Warning Lamp for Authorized Emergency, Maintenance and Service Vehicles, March 1992, or SAE J1318 Gaseous Discharge Warning Lamp for Authorized Emergency, Maintenance, and Service Vehicles, April 1986. Only Class 2 and Class 3, 360 degree warning lamps and gaseous discharge warning lamps would be allowed. Class 1, 360-degree and gaseous discharge warning lamps, the primary warning lamps for use on authorized emergency vehicles responding to emergency situations, would not be allowed. All of these SAE recommended practices would be incorporated by reference. In determining the need for this proposal, the FHWA notes that Class 2 and 3, 360-degree warning lamps and similar non-steady burning lamps are used on many commercial motor vehicles which

transport oversized loads, tow trucks, and certain utility company vehicles. Adding these devices to the list of exceptions would prevent confusion as to the applicability of § 393.25(e).

The FHWA is proposing to revise § 393.25(f) to eliminate a regulatory inconsistency between §§ 393.25(f) and 393.49 and to simplify the wording of the requirements. Currently, § 393.25(f) states that stop lamps on a towing vehicle need not be actuated when service brakes are applied to the towed vehicle(s) only. This provision is inconsistent with § 393.49, Single valve to operate all brakes. When a combination vehicle includes a trailer that is required to be equipped with brakes, the braking system must be arranged so that a single valve controls the brakes on the towing unit and the towed unit. Since the FMCSRs do not allow the towing unit to operate without service brakes, and a single valve is required to operate all the brakes on the combination, the current wording of § 393.25(f) is inconsistent with § 393.49. The proposed revision to § 393.25(f) would include language from FMVSS No. 108, S5.5.4, concerning stop lamp operation, to ensure consistency between the FMCSRs and the FMVSSs.

Section 393.26—Requirements for Reflectors

Consistent with the proposed amendments to § 393.25, the FHWA is proposing to revise § 393.26 in its entirety. The agency would amend § 393.26(a) concerning the mounting of reflectors, to provide guidelines comparable to those proposed for § 393.25(a). Paragraph (b) would be revised to include a requirement that reflex reflectors on projecting loads, vehicles transported in driveaway-towaway operations, converter dollies, and pole trailers meet SAE J594—Reflex Reflectors, July 1995. The SAE recommended practice would be incorporated by reference.

The current requirement for certification and marking under § 393.26(c) would be removed to make the FMCSRs consistent with FMVSS No. 108. FMVSS No. 108 does not require that reflectors be marked by the manufacturer to indicate that the device meets the standards. Paragraph (c) would then be used to incorporate American Society for Testing and Materials (ASTM) D4956-90, Standard Specification for Retroreflective Sheeting for Traffic Control, as the minimum standard for reflective tape used in lieu of reflex reflectors. Retroreflective sheeting that conforms to the ASTM standard would generally meet the requirements of FMVSS No.

108, S5.1.1.4, concerning the use of reflective tape in lieu of reflex reflectors. The performance of the reflective sheeting as installed on the vehicle would have to meet the geometric visibility requirements under SAE J594, Reflex Reflectors, July 1995.

Paragraph (d) would be revised to more clearly state that reflective surfaces or materials other than those required by § 393.11 may be used in addition to, but not in lieu of, the required reflective devices.

Sections 393.27, 393.28, 393.29, 393.31, 393.32, 393.33—Regulations on Electrical Wiring

The FHWA is proposing to incorporate by reference in § 393.28, SAE J1292—Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring, October 1981, which covers basic aspects of performance, operating integrity, and service. Section 393.28 would be renamed "Wiring systems." The guidelines contained in J1292 effectively cover the requirements currently addressed by § 393.27, Wiring specifications; § 393.28, Wiring to be protected; § 393.29, Grounds; § 393.31, Overload protective devices; § 393.32, Detachable electrical connections; and § 393.33, Wiring, installation. Among the specific topics addressed by the SAE standard are insulated cables; conductor termination; conductor splicing; conductor grouping; wire assembly construction; wire assembly installation and protection; and wiring overload protective devices. The SAE standard proposed for incorporation would provide a concise presentation of those aspects of commercial vehicle electrical systems that should be addressed by the FMCSRs. Sections 393.27, 393.29, 393.31, 393.32 and 393.33 would be removed.

The incorporation by reference would also remove certain design restrictive language from § 393.28(a)(5) concerning terminals or splices above the fuel tank. The FHWA received petitions from the Ford Motor Company, Freightliner Corporation, and the Motor Vehicle Manufacturers Association (now the American Motor Vehicle Manufacturers Association) requesting an amendment to § 393.28(a)(5), which was adopted in the December 7, 1988, final rule (53 FR 49380). The petitions are available for review in the docket. Each of the petitions pointed out that use of the word "terminal" combined with "above" created ambiguity with respect to the proximity of electrical wiring to the fuel tanks. Electrical terminals performing various functions, from battery terminals (Ford Motor Co.) to relays and switches (Freightliner

Corporation), are mounted above the fuel tanks. In some instances these switches or relays with terminals are mounted 203 mm (8 inches) or more above the fuel tank or on the frame rail (in the case of Freightliner and Daimler-Benz power units). In the case of Ford power units, the fuel tank is specifically designed for battery installation.

The notice of proposed rulemaking that preceded the final rule would have prohibited wiring from being adjacent to any part of the fuel system (52 FR 5892, February 26, 1987). The wording in the final rule was less restrictive than the proposed language and focused specifically on terminals and splices. The FHWA agrees with the petitioners, however, that § 393.28(a)(5) is still unnecessarily restrictive. The proposed incorporation by reference would provide criteria that effectively and safely address the issue of wiring around the fuel system of commercial motor vehicles and resolve the petitioners' concerns.

Subpart C—Brakes

Section 393.40—Required Brake Systems

The FHWA is proposing to revise § 393.40 in its entirety to present more clearly the requirements contained therein. Generally, all vehicles which have been maintained to meet at least the manufacturing standards applicable at the time of manufacture will not be affected by the proposed revisions. Hydraulic braked and air braked vehicles would be required to meet the requirements of FMVSS Nos. 105 and 121, respectively, in effect at the time of manufacture. The service, parking, and emergency brake requirements for vehicles which were not subject to either of the FMVSS brake regulations would be provided by references to other applicable sections in subpart C and by the requirements currently found under § 393.40(b)(2) and (c).

With regard to FMVSS No. 105, the FHWA notes that between September 1, 1975, and October 12, 1976, the standard was applicable to trucks and buses. However, from October 12, 1976, to September 1, 1983, it covered only passenger cars and school buses. From 1983 to the present the standard has applied to trucks and buses. For the purposes of § 393.40, the FHWA will use September 2, 1983, as the date for determining which hydraulic-braked vehicles must be maintained to meet certain requirements under FMVSS No. 105.

There could be some benefit in requiring vehicles manufactured between September 1975 and October

1976 to meet the requirements of FMVSS No. 105 in effect on the date of manufacture. However, the number of these older vehicles still in operation is relatively small, and the brake requirements under part 393 to which these vehicles would continue to be subject should ensure safety of operation.

Section 393.41—Parking Brake System

The December 7, 1988, final rule on part 393 was intended to make the parking brake requirements of the FMCSRs consistent with the parking brake requirements of FMVSS Nos. 105 and 121. The FHWA has since determined that additional changes are necessary. The current language only covers air braked vehicles manufactured on or after March 7, 1990, which are subject to FMVSS No. 121. The wording implies that all non-air braked vehicles, irrespective of the date of manufacture, and air braked motor vehicles manufactured prior to that date are not required to be equipped with parking brakes.

Prior to the 1988 amendment § 393.41 required that every singly driven motor vehicle and every combination of motor vehicles shall at all times be equipped with a parking brake system adequate to hold the vehicle or combination on any grade on which it is operated under any condition of loading on a surface free from ice or snow. The FHWA considers the parking brake requirements in effect prior to the 1988 amendment to provide a more straightforward standard that is easier for the industry and State officials to understand.

The agency is proposing to revise § 393.41 to state clearly that every self-propelled commercial motor vehicle (i.e., trucks, truck-tractors and buses) and every combination of commercial motor vehicles must be equipped with a parking brake system adequate to hold the vehicle or combination on any grade on which it is to be parked and under any condition of loading, on a surface free from ice or snow. Commercial motor vehicles which were subject to the parking brake requirements of FMVSS Nos. 105 or 121 at the time of manufacture would be required to maintain the parking brake systems to meet those standards. Motor vehicles which were not subject to either of the FMVSS parking brake requirements would have to meet the requirements currently found at § 393.41 (b) and (c).

The proposed revisions to § 393.41 would also address a petition for rulemaking from International Transquip Industries, Incorporated (ITI) asking the FHWA to clarify the applicable requirements for air-applied,

mechanically-held parking brakes. The petition is available for review in the docket. The ITI manufactures an air brake system which includes an air-applied, mechanically-held parking brake. The parking brake application is initiated by exhausting air off the supply line. When the control valve senses the supply line pressure drop, it ports air from either the primary or secondary reservoirs at a controlled pressure to the brake chambers resulting in an application of the brakes. The same supply line pressure signal activates a synchronizing device which engages the mechanical pistons immediately after the brakes have been applied.

Section 393.41(b) requires that the parking brake be capable of being applied at all times by either the driver's muscular effort, or by spring action, or by other energy. In the case of "other energy," the accumulation of such energy must be "isolated from any common source and used exclusively for the operation of the parking brake." This wording has been in effect since 1962 and could be construed as requiring a separate reservoir for air-applied, mechanically-held parking brakes. Such a requirement is inconsistent with FMVSS No. 121.

On August 9, 1979, the NHTSA amended FMVSS No. 121 to allow the application of the parking brakes by means of service brake air if (1) the application could be made when a failure exists in the service brake system, and (2) the parking brake is held in the applied position by mechanical means (44 FR 46850). Prior to this amendment, an air-applied, mechanically-held parking brake was required to be applied by a separate reservoir. The proposed revision of § 393.41(b) would include a cross-reference to the parking brake requirements of FMVSS No. 121, thus eliminating any inconsistencies.

For air braked vehicles which were not subject to FMVSS No. 121 at the time of manufacture, § 393.41 would continue to allow the use of air-applied, mechanically-held parking brake systems applied by a separate reservoir. The motor carrier would have the option of modifying the brake system to meet FMVSS No. 121. Air-applied, mechanically-held parking brakes which are designed to operate without a separate reservoir could be used if the conditions specified in FMVSS No. 121 are met.

Section 393.42—Brakes Required On All Wheels

The agency is proposing to revise § 393.42(b)(3) to clarify the exceptions

for lightweight trailers and to address brake requirements on housemoving dollies, three-axle dollies steered by a co-driver, and similar dollies and trailers used for transporting extremely large and heavy loads at low speeds.

As part of the January 27, 1987, final rule on front wheel brakes, the FHWA amended the exemption for brakes on lightweight trailers (52 FR 2801). Prior to the amendment, full trailers, semi-trailers, or pole trailers with a gross weight of less than 1,360 kg (3,000 pounds) were not required to have brakes provided the weight of the trailer did not exceed 40 percent of the weight of the towing unit. The 1987 amendment replaced the term "gross weight" with "GVWR" or gross vehicle weight rating.

While the change to GVWR has certain benefits in terms of applying the regulation to situations in which it is not convenient to weigh the trailer, the amendment did not adequately address concerns about stability and control during braking for trailers that have a GVWR greater than 1,361 kg (3,000 pounds), but an actual or gross weight less than 1,361 kg when lightly loaded. Under certain circumstances, trailers of this weight range may be overbraked resulting in wheel lockup or skidding when the trailer is lightly loaded. The FHWA believes § 393.42 should be amended to make reference to the gross weight. Trailers covered under the current reference to GVWR would be covered under the revised exemption provided the vehicle is not loaded beyond the manufacturer's weight rating. Trailers with a GVWR in excess of 1,361 kg (3,000 pounds) would only be covered by the exemption on those occasions when the gross weight of the trailer is 1,361 kg (3,000 pounds) or less. The proposed language would help to provide a performance-based criteria that is easier to understand and enforce.

Although the exemption concerning lightweight trailers never specifically addressed converter dollies, the issue of overbraking on unladen converter dollies has been the subject of several requests for interpretation of § 393.42(b).

Converter dollies are generally designed to carry loads of approximately 9,072 kg (20,000 pounds) with a brake system sized for the fully loaded condition. While the GVWR is greater than 1,360 kg (3,000 pounds) the unladen weight is usually 1,360 kg or less. When towed behind another motor vehicle, the unladen converter dolly is overbraked, with the application of the service brakes causing wheel lock-up or skidding.

In 1990, the NHTSA's Vehicle Research and Test Center (VRTC)

conducted tests to evaluate the braking and stability of a bobtail truck tractor towing an unladen converter dolly. Both the truck tractor and the converter dolly were equipped with ABS that could be deactivated. The truck tractor was also equipped with an automatic front-axle limiting valve (ALV) and a bobtail proportioning valve (BPV) that could each be deactivated.

The tests included 97 km/hour (60 mph) straight-lane braking, 48 km/hour (30 mph) braking in a 152.4 meters (500 ft) radius curve, and 56 km/hour (35 mph) straight-lane braking. The 97 km/hour straight-lane braking tests were performed on dry concrete (high coefficient of friction surface). The braking-in-a-curve tests were performed on wet Jennite (low coefficient of friction surface). The 56 km/hour straight-lane braking was performed on wet polished concrete. The tests used "driver best effort" for the cases in which the ABS was turned off, and full-treadle brake applications with the ABS turned on.

When the brakes on the converter dolly were not connected, stopping distances were increased by 12 to 30 percent over those for the bobtail tractor without the converter dolly. Also, the absence of braking on the converter dolly made locking the drive axles of the tractor easier which caused the combination to jackknife. The absence of braking on the dolly did, however, prevent locking the wheels and subsequent swing-out of the dolly.

When the brakes on the converter dolly were connected and the tractor did not have a bobtail proportioning valve (BPV) system, stopping distances on the two wet surfaces were 10 to 25 percent shorter than those with the bobtail tractor alone. On the dry surface the stopping distances were slightly longer with the dolly brakes operational. When the tractor was equipped with a BPV system and the dolly brakes were connected, stopping distances were longer on all of the test surfaces and in one case by as much as 60 percent.

There were no stopping distance decreases observed for the tests performed on the dry concrete when the converter dolly brakes were connected. However, the increases were significantly less than those observed when the converter dolly brakes were disconnected.

While having operable brakes on the unladen converter dolly decreased stopping distances in certain cases, two disadvantages were observed. If the tractor is equipped with a BPV, hooking up the supply (emergency) line to release the parking brakes on the dolly will deactivate the BPV and activate the

ALV. This is true even if the control (service) line is not hooked up to the dolly. This practice significantly degrades braking performance, increasing both the stopping distance and the chance of a jackknife of the combination vehicle. The other disadvantage is that the converter dolly can swing out if the wheels lock up.

Stability and control during braking is an important consideration in determining braking requirements for commercial motor vehicles. While stopping distances for a bobtail tractor towing an unladen converter dolly could be improved in some situations by requiring operable dolly brakes, they could be significantly degraded in others. When consideration is given to the possibility of the converter dolly swinging out as a result of wheel lock up, the FHWA believes the FMCSRs should be amended to include an exception to the requirement for operable brakes on unladen converter dollies.

Although regulatory guidance published by the FHWA on November 17, 1993 (58 FR 60734) stated that § 393.42(b)(3) is applicable to unladen converter dollies, this NPRM would create an exception for converter dollies under § 393.48, Brakes to be operative. Converter dollies are always equipped with brakes. Nevertheless, the air lines for the service brakes are sometimes disconnected from the towing vehicle when the converter dolly is unladen. Therefore, an exception to § 393.42 (the requirement that the converter dolly be equipped with brakes) is not necessary. The FHWA is proposing to address the problem by amending § 393.48 to provide an exception to the requirement that the brakes be operable when the converter dolly is unladen.

The FHWA notes that with NHTSA's March 10, 1995 (60 FR 13216) final rule on antilock braking systems (ABS), the long-term need for this exception for unladen converter dollies will diminish. An ABS-equipped converter dolly will not have the stability and control problems observed with unladen converter dollies that are not equipped with ABS. Therefore, converter dollies manufactured on or after March 1, 1998, the effective date of the NHTSA requirement for ABS on converter dollies, will not be covered by the exception.

On the subject of housemoving dollies and similar vehicles designed to transport extremely large and/or heavy loads, the FHWA is proposing an exemption to the requirement for brakes on all wheels based on the specialized circumstances under which these motor vehicles are used on public roads.

Housemoving dollies are only used on public roads when transporting houses. Semitrailers are used to transport the dollies between jobs. When the dollies are used to transport houses, the average speed is less than 32 km/hour (20 mph). Also, escort vehicles are generally used when the houses are being moved.

Similarly, specialized trailers and dollies used to transport industrial furnaces, reactors and other heavy cargo are operated at speeds less than 32 km/hour (20 mph) and have escort vehicles.

The FHWA does not believe that safety would be compromised by providing an exception to the requirement for brakes on all wheels provided the brakes on the towing unit are capable of stopping the combination within 12.2 meters (40 feet) from the speed at which the vehicle is being operated or 32 km/hour (20 mph), whichever is less.

The proposed exemption to the requirement for brakes on all wheels would also cover the steering axles of three-axle dollies which are steered by a co-driver (tillerman) at the rear. These dollies are often used to transport concrete or steel beams used for bridges or other structures. The loads are often in excess of 30.5 meters (100 feet) in length. The front of the load is secured to the power unit with the rear of the load secured to the three-axle steerable dolly. A co-driver, seated in the dolly, operates the steering controls to help maneuver the combination vehicle. Although the dolly is equipped with brakes via air lines from the towing unit, the steering axle is typically overbraked making it difficult for the co-driver to steer the dolly. When the dolly is loaded, the steering axle weight rarely exceeds 3,402 kg (7,500 pounds).

The FHWA has no reason to believe that an exemption to the requirement for steering axle brakes on these vehicles would degrade safety. The vehicles transport unusually long loads, often require special permits, and have to operate at reduced speeds. Therefore, the agency is proposing to exempt the steering axles of such vehicles from the requirement of § 393.42(a) that all wheels be equipped with brakes provided the combination of vehicles can meet the stopping distance requirements under § 393.52.

Section 393.43—Breakaway and Emergency Braking

The FHWA is proposing to revise § 393.43(a) to include better guidance on the performance requirements for towing vehicle brake protection systems. An explicit requirement that the tractor protection valve or similar device operate when the air pressure on

the towing vehicle is between 138 kilopascals (kPa) and 310 kPa (20 psi and 45 psi) would be added. This criterion has been used for many years during roadside inspections and its inclusion in § 393.43(a) should not create a problem for motor carriers.

The FHWA is proposing to revise § 393.43(b) to codify its interpretation of the number of trailer brakes required to apply automatically upon breakaway from the towing vehicle. On November 17, 1993 (58 FR 60734), the FHWA published regulatory guidance which indicated that all brakes must be applied upon breakaway. This is consistent with the FHWA's November 23, 1977, interpretation (42 FR 60078). Since FMVSS No. 121 does not specify the number of trailer brakes that must apply automatically, it is possible that some trailers may be able to meet those performance requirements without having all the brakes apply upon breakaway. However, the FHWA believes that most trailers would meet the proposed amendment to § 393.43. The FHWA specifically requests comments from trailer manufacturers concerning this issue.

Sections 393.45 and 393.46—Brake Tubing and Hose

The FHWA is proposing to revise § 393.45 to address all aspects of brake tubing and hoses, including connections, and to remove § 393.46. Currently, § 393.45 requires that brake tubing and hose be designed and constructed in a manner that ensures proper, adequate, and continued functioning of the tubing or hose. The tubing or hoses must be long and flexible enough to accommodate without damage all normal motions of the parts to which they are attached; be suitably secured against chaffing, kinking, or other mechanical damage; and be installed in a manner that ensures proper continued functioning and prevents contact with the vehicle's exhaust system. Section 393.45 cross-references FMVSS No. 106 as well as several SAE standards.

The FHWA would retain most of the current language regarding the installation of the brake hoses and the cross-reference to FMVSS No. 106. The current language regarding the design, material, and construction (§§ 393.45(a) and (b)) would be removed because the cross-reference to FMVSS No. 106 addresses manufacturing aspects of brake tubing and hoses.

With the exception of SAE J844—Nonmetallic Air Brake System Tubing, the FHWA would eliminate the references to SAE standards on brake hoses. Since brake hose manufacturers

are required to meet all applicable requirements under FMVSS No. 106, the other SAE references are unnecessary. The FHWA would incorporate by reference SAE J844 (the October 1994 version) for coiled nylon brake tubing because such tubing is not required to meet S7.3.6 (length change), S7.3.10 (tensile strength), and S7.3.11 (tensile strength of an assembly after immersion in water) of FMVSS No. 106. Coiled nylon tubing is exempted from the three specific tests through an FMVSS No. 106 cross-reference to § 393.45. The proposed incorporation by reference to SAE J844 would preserve the current manufacturing standards under FMVSS No. 106 and simplify the cross-referencing between FMVSS No. 106 and § 393.45.

The requirements of § 393.45(c) would be retained because they cover aspects of brake hose and tubing installation that are not covered in the FMVSSs and otherwise would not be adequately addressed in the FMCSRs.

The FHWA would remove § 393.45(d) because it does not impose any specific requirements on motor carriers. As written, the paragraph serves as a suggestion or recommendation on the use of metallic and nonmetallic brake tubing. Also, given the performance-based requirements for brake hose/tubing installation being proposed, the current language of § 393.45(d) would be obsolete.

The proposed changes to § 393.45 would address a petition for rulemaking from Imperial Eastman, a brake tubing/hose manufacturer. The petition is available for review in the docket. Imperial Eastman believes that certain coiled nonmetallic air brake tubing which did not meet FMVSS No. 106 was introduced into the market place as a direct result of § 393.45. Imperial Eastman believes that prior to the December 7, 1988, final rule, § 393.45 was clear and that the 1988 revision has been interpreted by some as not applying the SAE J844 requirements to nonmetallic air brake tubing.

The FHWA believes the proposed cross-reference to FMVSS No. 106 would make it clear that any brake hose, irrespective of the material from which it is manufactured, that meets the requirements of FMVSS No. 106 would satisfy § 393.45. Also, the revision of § 393.45 would have the effect of exempting only coiled nylon tubing which meets SAE J844 from the previously mentioned provisions of FMVSS No. 106.

On the subject of brake tubing and hose connections, the FHWA is proposing that all assemblies and end fittings for air, vacuum, or hydraulic

braking systems be installed so as to ensure an attachment free of leaks, constrictions or other conditions which would adversely affect the performance of the brake system. Brake tubing and hose assemblies and end fittings would be required to meet all applicable requirements under FMVSS No. 106, as is currently the case. These requirements, currently covered under § 393.46, would be covered under § 393.45(e). Since the proposed language for § 393.45 includes requirements concerning installation, connections and attachments, § 393.46 would be removed.

Section 393.47—Brake Lining

Section 393.47 would be revised to cover brake chambers, slack adjusters, linings and pads, drums and rotors. Brake components would be required to be constructed, installed, and maintained to prevent excessive fading and grabbing. The means of attachment and physical characteristics would have to provide for safe and reliable stopping of the commercial motor vehicle. To make the requirements of part 393 consistent with the periodic inspection requirements under appendix G to subchapter B, § 393.47 would be amended to require that the service brake chambers and spring brake chambers on each end of an axle be the same size. The effective length of the slack adjuster on each end of an axle would also be required to be the same. In addition, minimum requirements on the thickness of linings or pads would be specified.

With regard to linings and pads, the proposed criteria would differ from appendix G. Currently, appendix G does not adequately address the issue of brake lining thickness on the steering axles of certain vehicles (typically those with a GVWR between 4,536 and 14,969 kg (10,001 and 33,000 pounds)). This issue was brought to the attention of the FHWA by the American Trucking Associations (ATA). The ATA discussed front brake lining thickness in a petition for reconsideration of the final rule on periodic inspection. The petition is available for review in the docket. In its petition, the ATA stated:

There are two configurations of brake lining used on steering axle brakes: blocks (sometimes called pads) and strips. Block lining is installed in four segments on the two shoes of each front brake. Such lining is typically well over 1/4 inch thick when new and the 1/4 inch annual inspection criteria is correct for it. Strip lining, as the name implies, consists of a continuous band of lining installed in two segments, one on each shoe of an individual front brake. Certain types of strip lining are only slightly over 1/4

inch thick when new. Therefore a 1/4 inch annual inspection criteria is inappropriate.

The roadside inspection guidelines used by Federal and State inspectors have the following criteria to determine if the linings or pads of the steering axle of any power unit are worn to the point of creating an imminent hazard:

Lining with a thickness less than 3/16 inch for a shoe with a continuous strip of lining or 1/4 inch for a shoe with two pads for drum brakes or to wear indicator if lining is so marked, or less than 1/8 inch for air disc brakes, and 1/16 inch or less for hydraulic disc, drum and electric brakes.

The FHWA believes that these guidelines should be added to § 393.47 to help motor carriers identify steering axle brake linings and pads that are excessively worn. Under a separate rulemaking the FHWA will issue a proposal concerning the periodic inspection rule and appendix G to subchapter B.

To address non-steering axle brake lining/pads, the FHWA would incorporate into § 393.47 the same criteria currently found in appendix G.

Brake actuator readjustment limits would also be specified under § 393.47. The pushrod travel for clamp and roto-chamber type actuators would be required to be less than 80 percent of the rated strokes listed in SAE J1817—Long Stroke Air Brake Actuator Marking, June 1991, or 80 percent of the rated stroke marked on the brake chamber by the chamber manufacturer, or the readjustment limit marked on the brake chamber by the chamber manufacturer. The pushrod travel for Type 16 and 20 long stroke clamp type brake actuators (which are not covered under SAE J1817 but for which there are manufacturers' recommendations) would be required to be less than 51 mm (2 inches), or 80 percent of the rated stroke marked on the brake chamber by the chamber manufacturer, or the readjustment limit marked on the brake chamber by the chamber manufacturer. For wedge brakes, the movement of the scribe mark on the lining could not exceed 1.6 mm (1/16 inch).

With regard to brake drums and rotors, the thickness of the drums or rotors would have to meet the limits established by the brake drum or rotor manufacturer.

Section 393.48—Brakes to be Operative

The FHWA is proposing to revise § 393.48 (a) and (b) to make the requirements easier to understand. The revisions would provide a more concise presentation of the requirements.

With regard to paragraph (c), the FHWA would explicitly address the

issue of unladen converter dollies and lift axles. Braking on unladen converter dollies is covered extensively in discussion of the proposed changes to § 393.42. Unladen converter dollies with a gross weight of 1,361 kg (3,000 lbs) or less would not be required to have operable brakes. Brakes on lift axles would not be required to be capable of operation while the lift axle is raised. However, brakes on lift axles would have to be operable whenever the lift axle is lowered and the tires contact the roadway. Therefore, if an enforcement official instructs a driver to lower the lift axle to the ground during an inspection, the driver would be required to demonstrate that the brakes on that axle are operable. The proposed revisions would essentially codify regulatory guidance on these issues.

In addition, the issue of housemoving dollies, three-axle steerable dollies, and similar motor vehicles used to transport extremely heavy loads would be addressed to ensure consistency between the proposed revisions to § 393.42 and § 393.48.

Section 393.50—Reservoirs Required

Section 393.50 would be revised to provide a simpler and more concise presentation of the reservoir requirements and to cross-reference FMVSS No. 121. Each air braked truck, truck-tractor, and bus manufactured on or after March 1, 1975, would at a minimum be required to meet FMVSS No. 121, S5.1.2, in effect on the date of manufacture. Trailers manufactured on or after January 1, 1975, would have to meet the requirements of FMVSS No. 121, S5.2.1, in effect on the date of manufacture. Air braked vehicles manufactured prior to these dates, and vacuum braked vehicles would continue to meet the requirements currently found at § 393.50.

The FHWA believes the revision is necessary to indicate clearly that a vehicle which is maintained to meet the reservoir requirements of FMVSS No. 121 in effect on the date of manufacture would meet the requirements under part 393. This is particularly important given the NHTSA's January 12, 1995, final rule on FMVSS No. 121 (60 FR 2892). The NHTSA amended the reservoir requirements to facilitate the introduction of long-stroke brake chambers. For vehicles manufactured on or after February 13, 1995, the method for calculating the minimum air reservoir capacity is based on either the rated volume of the brake chambers or the volume of the brake chambers at the maximum travel of the brake pistons or push rods, whichever is less.

Section 393.51—Warning Devices and Gauges

The agency is proposing to revise § 393.51 to provide better guidance on the applicability of the warning device requirements to older commercial motor vehicles. Hydraulic braked vehicles manufactured on or after September 1, 1975, the effective date of FMVSS No. 105, would be required to meet the brake system indicator lamp requirements of FMVSS No. 571.105 (S5.3) applicable to the vehicle on the date of manufacture. Vehicles manufactured before September 1, 1975, or to which FMVSS No. 571.105 was not applicable on the date of manufacture, would have to have a warning signal which operates before or upon application of the brakes in the event of a hydraulic-type complete failure of a partial system. The proposed language would retain all current requirements but add the effective date for FMVSS No. 105 and identify the specific paragraph within FMVSS No. 105 that covers warning devices.

In addition, the FHWA would insert a note into § 393.51 to address the warning device requirements for hydraulic braked trucks and buses manufactured between October 12, 1976, and September 1, 1983. During this period, FMVSS No. 105 was only applicable to passenger cars and school buses. Consequently, manufacturers of hydraulic braked trucks and buses were not required to equip those vehicles with a warning device to indicate certain types of brake failure. However, under the FMCSRs, motor carriers are responsible for having warning devices on these vehicles. Since FMVSS No. 105 was not applicable to these vehicles at the time of manufacture, the requirements of § 393.51 are not in conflict with the NHTSA standard.

The FHWA has received numerous requests for interpretation from motor carriers with vehicles manufactured during this period and not equipped with a warning device. Through regulatory guidance, the FHWA has indicated that these vehicles are required to be equipped with warning devices because § 393.51(b)(2)—which covers hydraulic braked vehicles to which FMVSS No. 105 was not applicable at the time of manufacture—was in effect prior to October 12, 1976, and has remained in effect ever since. Therefore, the agency is essentially proposing to codify the regulatory guidance concerning warning devices on these vehicles.

On the subject of air braked vehicles, the FHWA is proposing to revise § 393.51(c) to include reference to the

March 1, 1975, effective date of FMVSS No. 121 for power units. The specific paragraphs within FMVSS No. 121 which address the pressure gauge and warning signal requirements would also be included.

Vehicles which are not required to meet the requirements of FMVSS No. 121 would have to be equipped with a pressure gauge, visible to a person seated in the normal driving position, which indicates the air pressure (in kilopascals (kPa) or pounds per square inch (psi)) available for braking; and, a warning signal that is audible or visible to a person in the normal driving position and provides a continuous warning to the driver whenever the air pressure in the service reservoir system is at 379 kPa (55 psi) and below, or one-half of the compressor governor cutout pressure, whichever is less.

With regard to commercial motor vehicles with hydraulic brakes applied or assisted by air or vacuum, the FHWA is proposing to revise § 393.51(e) to make it applicable only to hydraulic braked vehicles which were not subject to the FMVSS No. 105 at the time of manufacture. The amendment would eliminate the inconsistency between the warning device requirements of FMVSS No. 105 and § 393.51(e). Currently, § 393.51(e) requires a warning device for the hydraulic portion of the brake system as well as a warning device for the air or vacuum portion of the brake system, irrespective of the applicability of FMVSS No. 105. However, FMVSS No. 105 does not require a warning device for the air or vacuum portion of these hydraulic brake systems. The FHWA believes the § 393.51(b) cross-reference to FMVSS No. 105 provides effective requirements for warning devices on hydraulic braked vehicles subject to that standard at the time of manufacture. A requirement for an additional warning device for the air or hydraulic portion of the brake system of these vehicles is not necessary.

For air-assisted or vacuum-assisted hydraulic braked vehicles which were not subject to FMVSS No. 105, the FHWA would retain the current requirements for a warning device for the hydraulic portion of the brake system and a warning device for the air or vacuum portion of the brake system. Section 393.51(e) would continue to require that the hydraulic portion of the vehicle meet the requirements of § 393.51(b) and that the air or vacuum portion of the brake system meet the applicable requirements of paragraph (c) or (d).

The FHWA notes that commercial motor vehicles equipped with air-over-hydraulic brake systems are classified as

air braked vehicles and, as such, would be required to meet the applicable warning device and pressure gauge requirements for air braked vehicles.

With regard to the proposed amendments to § 393.51(e), the FHWA specifically requests comments on the need for retaining the warning device requirement for the air or vacuum portion of air- and vacuum-assisted hydraulic brake systems. The FHWA also requests information from vehicle manufacturers as to the number of commercial motor vehicles manufactured annually with such brake systems or the last model year for which they produced vehicles equipped with this type of brake system.

Finally, the FHWA is proposing to reinstate one of the exemptions that were removed by the December 7, 1988, final rule on part 393. The 1988 rule revised § 393.51 by removing paragraph (g), which contained two exemptions that were considered obsolete with the adoption of the definition of a commercial motor vehicle. The exemptions covered buses with a seating capacity of 10 persons or less (including the driver), and two-axle property-carrying vehicles that were either manufactured before July 1, 1973, or had a GVWR of 4,536 kg (10,000 pounds) or less.

From a practical standpoint, all two-axle property-carrying vehicles with a GVWR of 4,536 kg or less, and equipped with air, vacuum, or air-assisted or vacuum-assisted hydraulic brake systems were exempted irrespective of the date of manufacture. Generally, these vehicles are only subject to the FMCSRs only when transporting hazardous materials in a quantity that requires placarding or when towing another vehicle such that the gross combination weight rating exceeds 4,536 kg (10,000 pounds).

Therefore, the FHWA believes that the exemption for certain two-axle property-carrying vehicles should be reinstated but limited to two-axle property-carrying vehicles manufactured before July 1, 1973. Since the group of vehicles covered by the exemption represents a small segment of the total population of vehicles that fall under the FHWA's jurisdiction, and these vehicles have either reached, or will soon reach the end of their service life, and these vehicles were previously exempted, the proposed reinstatement should not reduce safety on the highways.

The FHWA is not proposing to reinstate the exemption for buses with a seating capacity of 10 persons or less because these vehicles are generally not subject to the FMCSRs.

Subpart D—Glazing and Window Construction

Section 393.60—Glazing in Specified Openings

The FHWA is proposing that glazing material used in windshields, windows and doors of commercial motor vehicles manufactured on or after December 25, 1968, be required at a minimum to meet the requirements of FMVSS No. 205 in effect on the date of manufacture of the vehicle. The glazing material would be required to be marked accordingly. The cross-reference to FMVSS No. 205 would replace the current reference to Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways. Since FMVSS No. 205 incorporates this publication by reference, the requirements for the glazing material would not be affected.

Section 393.60 would also be revised to include a requirement that each bus, truck, and truck-tractor be equipped with a windshield. Each windshield or portion of a multi-piece windshield would be required to be mounted using the full periphery of the glazing material.

With regard to coloring or tinting of windshields and side windows, the FHWA would revise the current requirements to codify regulatory guidance on this topic. Coloring or tinting of windshields and the windows to the immediate right and left of the driver would be allowed provided the parallel luminous transmittance through the colored or tinted glazing is not less than 70 percent of the light at normal incidence in those portions of the windshield or windows which are marked as having a luminous transmittance of at least 70 percent.

The current reference to tinting applied at the time of manufacture would be removed. The restrictions on tinting would be focused solely on ensuring that the glazing material allows light transmittance at a level requisite for driving visibility and not the regulation of when the tinting is applied.

The agency is proposing to revise § 393.60(c) concerning restrictions on the use of vision-reducing matter on windshields. On March 6, 1995, the FHWA granted a petition from the Commonwealth of Kentucky, and Heavy Vehicle Electronic License Plate, Inc. (HELP) requesting a waiver from the requirements of § 393.60(c) to allow mounting of an automatic vehicle identification transponder at the upper border of the windshields of commercial motor vehicles (60 FR 12146). The waiver was necessary because § 393.60(c) prohibits the operation of a

commercial motor vehicle with vision-reducing matter covering any portion of the windshield with certain exceptions for decals required by law and affixed to the bottom of the windshield.

In evaluating the requests for waivers to § 393.60(c), the FHWA reviewed automotive engineering recommended practices, the NHTSA's FMVSSs, and recent research concerning driver's field of view. The agency also examined current commercial motor vehicle cab designs related to placement of interior mirrors and sun visors which occupy approximately the same space proposed for the transponder. Based upon the information obtained from this review, the FHWA concluded that a transponder mounted at the approximate center of the top of the windshield would be extremely unlikely to create a situation inconsistent with the safe operation of a commercial motor vehicle. This location is well outside the area recommended for windshield wiper sweep under the SAE recommended practice J198, Windshield Wiper Systems—Trucks, Buses, and Multipurpose Vehicles, and the area recommended for windshield defrosting under J342, Windshield Defrosting Systems Performance Guidelines—Trucks, Buses, and Multipurpose Vehicles. The findings of recent research reports on the subject also suggested that the location of an object, such as a transponder device, near the upper margin of a windshield is unlikely to have any effect on a driver's ability to observe nearby objects, such as pedestrians.

For the reasons presented in the notice granting the waiver, the agency is proposing to allow the installation of antennas, transponders, and similar devices in the upper margin of windshields. These devices could not be placed lower than 152 mm (6 inches) from the upper edge of the windshield, must be outside the area swept by the windshield wipers, and must be outside the driver's sight lines to the road and highway signs or signals. The proposed amendment would codify the March 6, 1995, waiver and help to promote the use of advanced technologies to improve the efficiency and safety of operation of commercial motor vehicles.

With regard to the current limitations on the placement of decals and stickers at the bottom of the windshield, the FHWA would adopt a performance-based requirement that decals required by law must not obstruct the driver's view of the road, or traffic signs. Since the decals in question are required by Federal or State law, the FHWA does not believe it is necessary to retain the 11.4 cm (4-1/2 inch) -restriction on the

distance from the bottom of the windshield. It is anticipated that the agencies responsible for specifying the location of such decals will exercise discretion and limit the use of decals in the windshield area.

Sections 393.61, 393.62, 393.63, 393.92—Window Construction and Emergency Exits

Section 393.61 would be revised to cover only truck and truck tractor window construction. Window construction for buses (or emergency exits) would be covered under § 393.62. The prohibitions on window obstructions currently found at § 393.62 would be addressed along with the emergency exits requirements. The provisions of § 393.63 (Windows, markings) and § 393.92 (Buses, marking emergency doors) would also be covered under the revised rule on emergency exits. Sections 393.63 and 393.92 would be removed.

In § 393.61, the FHWA would remove the reference to an ellipse in determining the minimum area of a truck or truck-tractor window. The rectangular dimensions currently provided appear to be sufficient. Also, the rectangular dimensions provide the most practical and enforceable criteria.

As for emergency exits on buses, the FHWA would revise its cross-references to FMVSS No. 217 so that motor carriers and enforcement officials will have better guidance on the applicability of NHTSA's recent amendments to those buses subject to the FMCSRs. On November 2, 1992, FMVSS No. 217 was amended to require that the minimum emergency exit space on school buses be based upon the seating capacity of each bus (57 FR 49413). The NHTSA final rule took effect September 1, 1994.

Further, in a separate notice, the NHTSA proposed allowing non-school buses to meet either the non-school bus requirements or the new upgraded school bus requirements (57 FR 49444, November 2, 1992). The NHTSA issued the final rule on May 9, 1995 (60 FR 24562).

The FHWA has carefully reviewed the NHTSA rulemakings and determined that the FMCSRs should be amended to address the November 2, 1992, and May 9, 1995, final rules. The FHWA is proposing to allow the upgraded school bus emergency exit requirements on buses subject to the FMCSRs so that motor carriers would be afforded the same flexibility given to manufacturers under FMVSS No. 217.

Buses manufactured on or after September 1, 1994, and having a GVWR of 4,536 kg (10,000 pounds) or less must meet the emergency exit requirements of

FMVSS No. 217 (S5.2.2.3) in effect on the date of manufacture. Generally, these buses would only be subject to the FMCSRs when towing a trailer. If the gross combination weight rating (GCWR) for the bus and trailer is greater than 4,536 kg, and the combination is operated in interstate commerce, the emergency exit requirements proposed would be applicable. An example would be a small bus operated by a private motor carrier of passengers.

For buses with a GVWR of more than 4,536 kg (10,000 pounds), the FHWA would require that they have emergency exits which meet the applicable emergency exit requirements of FMVSS No. 217, S5.2.2 (the non-school bus requirements) or S5.2.3 (the upgraded school bus requirements) in effect on the date of manufacture. The provision for buses with a GVWR greater than 4,536 kg would incorporate NHTSA's final rules.

For buses manufactured on or after September 1, 1973, but before September 1, 1994, the FHWA is proposing that each bus (including a school bus used in interstate commerce for non-school bus operations) with a GVWR of more than 4,536 kg (10,000 pounds) meet the requirements of FMVSS No. 217, S5.2.2, in effect on the date of manufacture. Buses with a GVWR of 4,536 kg (10,000 pounds) or less would have to meet the requirements of FMVSS No. 217, S5.2.2.3, in effect on the date of manufacture.

Section 393.62 would be revised to include a paragraph on emergency exit identification. Each bus and each school bus used in interstate commerce for non-school bus operations, manufactured on or after September 1, 1973, would have to meet the applicable emergency exit identification or marking requirements of FMVSS No. 217, S5.5, in effect on the date of manufacture. Buses (including school buses used in interstate commerce for non-school bus operations) would have to be marked "Emergency Exit" or "Emergency Door" followed by concise operating instructions describing each motion necessary to unlatch or open the exit located within 152 mm (6 inches) of the release mechanism.

The emergency exit requirements for buses manufactured before September 1, 1973, would be revised to provide requirements which are easier to understand and enforce. These buses would have to have either laminated safety glass or push-out windows. The regulation would more clearly state that laminated safety glass would, at a minimum, be required to meet Test No. 25, Egress, of the American National

Standards Institute (ANSI), Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways, ANSI Z26.1-1990. The FHWA would incorporate the ANSI document by reference.

With regard to push-out windows, the requirements would be revised to adopt certain provisions of FMVSS No. 217. Each push-out window would be required to be releasable by operating no more than two mechanisms and allow manual release of the exit by a single occupant. For mechanisms which require rotary or straight (parallel to the undisturbed exit surface) motions to operate the exit, the amount of force required to release the exit could not exceed 89 Newtons (20 pounds). For exits which require a straight motion perpendicular to the undisturbed exit surface, the amount of force could not exceed 267 Newtons (60 pounds).

The FHWA believes that the force requirements being proposed should not present a problem for motor carriers and that older buses with emergency exits that cannot meet these basic performance requirements should have the emergency exit release mechanisms replaced. This proposal should not be construed as an attempt to require that the entire emergency exit be replaced, only release mechanisms which do not meet the criteria.

Lastly, the FHWA would codify its regulatory guidance on buses used for the transportation of prisoners. An exception to the emergency exit requirements would be included for buses used exclusively for the transportation of prisoners.

Subpart E—Fuel Systems

Section 393.67—Liquid Fuel Tanks

The FHWA proposes to revise paragraph (a) to indicate that the fuel tank requirements apply not only to tanks containing or supplying fuel for the operation of commercial motor vehicles, but includes tanks needed for the operation of auxiliary equipment installed on, or used in connection with commercial motor vehicles. Section 393.65(a), the requirements for fuel systems, contains similar language and the FHWA believes the applicability statement of § 393.67 should be amended to be consistent with § 393.65.

The FHWA also proposes to revise § 393.67(d) and (e) to include the information currently presented in a footnote to the section. As indicated by the footnote, the fuel tank tests specified by § 393.67 are a measure of performance only. Alternative procedures which assure that the fuel tank meets the performance criteria may

be used. However, this footnote is often overlooked. Including the text of the footnote in paragraphs (d) and (e) would help to prevent further confusion.

In addition, the FHWA proposes to correct an error in § 393.67(f)(2). Currently, each liquid fuel tank manufactured on or after July 1, 1988, must be marked with the manufacturer's name. The July 1, 1988, date is incorrect. The FHWA intended that the date read July 1, 1989, approximately 120 days after the March 7, 1989, effective date of the December 7, 1988, final rule on part 393.

Section 393.68—Compressed Natural Gas Fuel Containers

The FHWA is proposing to create a new section to address requirements for compressed natural gas (CNG) fuel containers. Section 393.68 would cross-reference the NHTSA's new requirements for CNG containers, FMVSS No. 304, Compressed Natural Gas Fuel Container Integrity (September 26, 1994, 59 FR 49010). Under FMVSS No. 304, which is applicable to all CNG containers manufactured on or after March 26, 1995, CNG fuel containers must meet a pressure cycling test which evaluates the container's durability, a burst test to measure its strength, and a fire test to ensure adequate pressure relief characteristics. The rule also specifies labeling requirements.

The FHWA has reviewed the NHTSA requirements and determined that all commercial motor vehicles manufactured on or after March 26, 1995, and equipped with CNG fuel tanks, should be required to be maintained to meet the applicable requirements of FMVSS No. 304.

Subpart F—Coupling Devices and Towing Methods

Section 393.70—Coupling Devices and Towing Methods, Except for Driveaway-Towaway Operations

Currently § 393.70(d) provides requirements for the attachment of safety devices in case of tow-bar failure. If two chains or cables are attached to the same point on the towing vehicle, or if a bridle or a single chain or cable is used, the point of attachment must be on the longitudinal centerline of the towing vehicle. A single safety device, other than a chain or cable, must also be attached to the towing vehicle at a point on its longitudinal centerline.

Western Trailers petitioned the FHWA to amend § 393.70(d)(8) to allow safety devices to be attached as close as practicable to the longitudinal centerline of the towing vehicle. The petition is available for review in the

docket. The petitioner argued that because the pintle hook is mounted on the longitudinal centerline of the towing vehicle, there is no practical centerline mounting position for the safety chain/cable attachment except upon or above the pintle hook itself.

In reviewing the history of the requirements for safety chains from 1941 through the present, the FHWA notes that a certain amount of flexibility had been allowed such that chains could be attached as close as "practicable" to the centerline. Although the current requirements, adopted on October 11, 1972 (37 FR 21439), do not appear to have created problems for other carriers, the FHWA agrees that there is a need to reexamine the requirement and eliminate any unnecessary restrictions. To that end, the FHWA believes that specifying the location for attachment point of the safety devices with such precision is unnecessarily design-restrictive.

The attachment of the safety devices to a point as close as "practicable" to the centerline is needed to ensure that the combination of vehicles will maintain as much stability as possible in the event the coupling device fails. However, given the size and weight of a typical commercial motor vehicle, there is little technical justification for prohibiting attachment of the safety devices at a point within a few centimeters (or inches) off the centerline. In fact, failure of the coupling device at its centerline point of attachment to the towing vehicle might damage the anchor point of the safety chains, possibly resulting in complete separation of the trailer.

In addition, the current language of § 393.70(d)(8) may, under some circumstances, be inconsistent with § 393.70(d)(1), which prohibits the attachment of the safety device to the pintle hook or any other device on the towing vehicle to which a tow-bar is attached.

The previous provisions of § 393.70 provided a performance-based requirement while ensuring the safety of operation of the combination of vehicles. The language used, however, may have been difficult to enforce, in that "practicability" is a subjective term. This generally results in differences of opinion between vehicle manufacturers, motor carriers, and Federal and State enforcement officials as to what constitutes compliance.

An amended rule that allows the attachment point to be offset no more than a certain distance from the longitudinal centerline would provide flexibility without adversely affecting the tracking of the towed unit in the

event of a pintle hook failure. The FHWA notes that the safety device is only intended to keep the combination of vehicles together if the pintle hook or other coupling device fails and then only for a brief period until the driver brings the vehicle to a safe stop. Therefore, the proposed change should not affect the safety of operation of the vehicles.

The FHWA is proposing to allow safety chains or cables to be attached to the longitudinal centerline or within 152 mm (6 inches) to the right of the longitudinal centerline on the towing vehicle. The proposal would be applicable when (1) two chains or cables are attached to the same point on the towing vehicle; (2) a bridle or a single chain or cable is used; or (3) a single safety device is used.

Given the wide variety of vehicle configurations and the condition of loading at the time of a potential tow-bar or pintle hook failure, the current design-restrictive requirement does not appear to ensure a greater degree of safety than the proposed revision. Allowing the safety device to be no more than 152 mm (6 inches) from the longitudinal centerline should provide additional safety benefits in a few cases without changing the level of safety guaranteed by the current centerline requirement in other cases. It would also result in a requirement that is more performance-based and less design-restrictive.

The FHWA specifically requests comments on the following issues:

1. Although the petitioner did not specify a maximum offset distance from the longitudinal centerline for the safety device attachment point, the FHWA believes that a distance of 152 mm (6 inches) is consistent with the diagrams submitted by the petitioner. Would allowing a 152 mm (6 inch) offset provide adequate flexibility to motor carriers and trailer manufacturers without adversely affecting the safety of operation of certain combination vehicles?

2. The petitioner believes that safety chains should be allowed to be offset only to the right side of the longitudinal centerline in order to prevent the towed vehicle from striking oncoming traffic on undivided highways. In cases where a single safety device is used, and it is not practical to attach it to a point at the longitudinal centerline, should the offset be restricted to the right side, or should it be permitted to be on either side?

Section 393.71—Coupling Devices and Towing Methods, Driveaway-Towaway Operations

Section 393.71(a) currently prohibits the use of more than one tow-bar in any combination of vehicles. Section 393.71(g)(2) indicates that coupling devices such as those used for towing house trailers and employing ball and socket connections shall be considered as tow-bars. However, the broad classification of ball and socket connections as tow-bars is not consistent with the definitions of the Society of Automotive Engineers. As a result, the use of more than one ball-and-socket connection in a combination of vehicles is prohibited. This situation requires clarification.

The FHWA considers the stability and control of a combination vehicle using multiple ball-and-socket connections no better than that of a combination using multiple tow-bars. Given that the stability and control would, at best, be comparable to a towing method which is prohibited, the FHWA is proposing that § 393.71(a)(2) be revised to prohibit the use of more than one tow-bar and/or ball-and-socket coupling device in any combination. Section 393.71(g)(2) would be removed.

To improve the consistency between Sections 393.70 and 393.71, the FHWA is proposing to amend § 393.71(b) by adding a new provision addressing weight distribution of towing and towed vehicles for saddle-mount combinations.

Sections 393.70(b)(3), 393.71(b)(2) and 393.71(c)(3) address the proper weight distribution and require that the coupling arrangement be such that it does not unduly interfere with the steering, braking, and maneuvering of the combination of vehicles. Section 393.70(b)(3) covers the use of fifth wheels for non-driveaway-towaway operations and §§ 393.71(b)(2) and (c)(3) cover full-mounted vehicles in driveaway-towaway operations. Section 393.71(b) does not, however, explicitly require that the arrangement of the saddle-mounted vehicles be such that it does not unduly interfere with the steering, braking and maneuvering of the combination of vehicles. The references to undue interference with steering, braking, and maneuvering in §§ 393.70 and 393.71 suggest that such requirements are generally intended for any vehicle configuration covered by these sections. Through regulatory guidance the agency has indicated that saddle-mounted vehicles are to be arranged such that the gross weight of the vehicles is properly distributed to prevent the conditions currently

covered by §§ 393.70(b)(3), 393.71(b)(2) and 393.71(c)(3). The FHWA would codify this guidance in § 393.71(b)(3).

The FHWA is proposing to revise § 393.71(g) to remove obsolete language and provide more technically sound guidance on towing methods. Section 393.71(g)(1) currently requires the use of a tow-bar or saddle-mount connections for all vehicles towed in driveaway-towaway operations. This is inappropriate for towing semitrailers designed to be coupled to a fifth wheel. Through regulatory guidance the agency has allowed the use of a fifth wheel. The agency would codify this guidance by revising § 393.71(g) to explicitly allow the use of a fifth wheel.

Subpart G—Miscellaneous Parts and Accessories

Section 393.75—Tires

The FHWA is proposing to amend § 393.75(e) in order to make the requirements easier to understand. Section 393.75(e) prohibits the use of regrooved tires which have a load carrying capacity greater than that of 8.25-20 8 ply-rating tires, but does not specify the load range rating for this tire. According to the Tire and Rim Association's 1996 Year Book, an 8.25-20 bias ply tire has a maximum load carrying capacity of 2,232 kg (4,920 pounds) at 793 kPa (115 psi) cold inflation pressure. This maximum capacity applies to tires of load range G. Tires with the load range of E and F have maximum load carrying capacities of 1,837 kg (4,050 pounds) and 2,041 kg (4,500 pounds), respectively. The FHWA is proposing to use the 2,232 kg limit under § 393.75.

The difference in load carrying capacity between a tire rated load range E and one rated load range G is 395 kg (870 pounds). In the absence of tire overloading, the difference in the amount of front axle loading between an axle equipped with load range E tires and a front axle equipped with load range G tires would be 790 kg (1,740 pounds). There is no apparent safety benefit from adopting the more stringent limit of load range E for regrooved tires. Therefore, the use of a regrooved tire with a load carrying capacity equal to or greater than 2,232 kg (4,920 pounds) would be a violation of § 393.75(e) if used on the front wheels of a truck or truck tractor.

The FHWA notes that a radial ply tire of the same size and load range (i.e., 8.25R20) has the same load carrying capacity but at 827 kPa (120 psi) cold inflation pressure. Since the prohibition is based on load carrying capacity, the FHWA is proposing to replace the

reference to a specific tire size with the 2,232 kg (4,920 pound) value currently listed in the Tire and Rim Association's publication.

Section 393.78—Windshield Wipers

The FHWA is proposing that § 393.78 be revised to cross-reference FMVSS No. 104. The NHTSA requirement has been in effect since December 1968. Since vehicle manufacturers have been required to meet the requirements since 1968, the FHWA does not believe that motor carriers who have maintained their commercial motor vehicles should have any problem complying with the proposed revision. As for motor vehicles manufactured before December 1968, they would be required to be equipped with a power-driven windshield wiping system with at least two wiper blades, one on each side of the centerline of the windshield. Motor vehicles which depend upon vacuum to operate the windshield wipers would have to have the wiper system constructed and maintained such that the performance of the wipers will not be adversely affected by a change in the intake manifold pressure. The requirements for vehicles manufactured before December 1968 were originally established by the Interstate Commerce Commission and were applicable to vehicles manufactured on and after June 30, 1953.

The FHWA is proposing to remove the exemption for the towing vehicle in a driveaway-towaway operation because there appears to be no justification for allowing a vehicle to be driven without both windshield wipers in proper working order. The proposed change should not result in an increased economic burden on the motor carrier industry.

Section 393.79—Windshield Defrosting Device

Section 393.79 would be revised to cross-reference FMVSS No. 103. Vehicles manufactured on or after December 25, 1968, would be required to meet the requirements in effect on the date of manufacture. Vehicles manufactured before December 25, 1968, would be required, at a minimum, to be equipped with a means for preventing the accumulation of ice, snow, frost, or condensation to obstruct the driver's view through the windshield while the vehicle is being driven.

In addition, the exemption for the towing vehicle in a driveaway-towaway operation would be removed. There is no justification for allowing a vehicle to be driven without a windshield

defrosting device in proper working order.

Section 393.82—Speedometer

Section 393.82 requires that every bus, truck, and truck-tractor be equipped with a speedometer indicating speed in miles per hour. The rule requires the speedometer to be operative with "reasonable accuracy." Appendix A to subchapter B (prior to its removal from the FMCSRs on November 23, 1994 (59 FR 60319)) interpreted as "reasonable" an accuracy of plus or minus 8 km/hr (5 mph) at a speed of 80 km/hr (50 mph). The interpretation indicated that accuracy within these limits is sufficient for a professional driver to ascertain the true speed of the vehicle. The FHWA is proposing to include this accuracy limit in § 393.82 to make the requirement easier to understand. The FHWA is also proposing to remove the driveaway-towaway exemption to the speedometer requirements because there is no justification for allowing a vehicle to be driven without a speedometer in proper working order. The proposed changes should not result in an increased economic burden on the motor carrier industry.

Section 393.87—Flags on Projecting Loads

Section 393.87 would be revised to make the requirements consistent with the American Association of State Highway and Transportation Officials's (AASHTO) Guide for Maximum Dimensions and Weights of Motor Vehicles and for the Operation of Nondivisible Load Oversize and Overweight Vehicles, GSW-3, 1991. The AASHTO publication provides guidance on the use of warning flags for vehicles and loads which exceed legal width or length, or which have a rear overhang in excess of the legal limit. The AASHTO guidelines call for the use of red or orange fluorescent warning flags which are at least 457 mm (18 inches) square. Since the AASHTO guide appears to cover the majority of the cases to which the current rule would be applicable, and represents a consensus of State and industry practices, the FHWA proposes to revise § 393.87 to adopt certain provisions of those guidelines.

Commercial motor vehicles transporting loads which extend beyond the sides by more than 102 mm (4 inches) or more than 1,219 mm (4 feet) beyond the rear would be required to have the extremities of the load marked with red or orange fluorescent warning flags. Each warning flag would be required to be at least 457 mm (18 inches) square as opposed to the current

requirement of 305 mm (12 inches) square.

With regard to the number of flags and their positions, a single flag at the extreme rear would be required if the projecting load is 610 mm (2 feet) wide or less. Two warning flags would be required if the projecting load is wider than 610 mm. Flags would be required to be positioned to indicate maximum width of loads which extend beyond the sides and/or rear of the vehicle.

Section 393.94—Vehicle Interior Noise Level

The FHWA is taking this opportunity to clarify and simplify its regulation concerning the applicability of the interior noise levels in commercial motor vehicles. Section 393.94(a) and (d) make reference to certain vehicles manufactured before October 1, 1974, and grant motor carriers until April 1, 1975, to comply with the regulation. For vehicles operated wholly within Hawaii, carriers were given until April 1, 1976, to comply. Since these deadlines have passed, the FHWA is proposing to delete the references from § 393.94.

In addition, the FHWA is proposing to update the reference to the American National Standards Institute (ANSI) specifications for sound level meters. Currently, § 393.94 references the 1971 version of ANSI S1.4, Specification for Sound Level Meters. The FHWA would incorporate by reference the 1983 version and remove the footnote to paragraph (c). Information on the availability of the ANSI document would be covered under § 393.7.

Section 393.95 Emergency Equipment on All Power Units

The FHWA is proposing to eliminate the reference to lightweight vehicles in paragraph (a). The term became obsolete when the agency implemented the requirements of the Motor Carrier Safety Act of 1984 and limited the applicability of the part 393 to "commercial motor vehicles" as defined in that statute (53 FR 18042, May 19, 1988). Sections 393.95(a)(2)(i) and (a)(2)(ii) would also be amended to remove obsolete references to vehicles equipped with fire extinguishers prior to July 1, 1971, and January 1, 1973, respectively. While some of these vehicles are still in operation, it is unlikely that the motor carriers would still be using fire extinguishers that are more than 20 years old.

The FHWA would revise § 393.95 by removing the specifications for bidirectional warning triangles manufactured prior to January 1, 1974. Such triangles are already prohibited on

any vehicle manufactured on or after January 1, 1974. Therefore, only those carriers operating commercial motor vehicles manufactured before January 1, 1974, and equipped with warning triangles manufactured before that date, would be affected.

The FHWA would revise the requirements on the mounting of fire extinguishers to provide more specific guidance. Fire extinguishers would be required to be securely mounted to prevent sliding, rolling, or vertical movement relative to the motor vehicle. Currently, § 393.95(a)(1) states only that the extinguisher be securely mounted.

With regard to extinguishing agents, the agency is proposing to replace the reference to the Underwriters Laboratories' (UL) Classification of Comparative Life Hazard of Gases and Vapors. The UL study was conducted in the 1950's and is considered obsolete information. The UL has recommended that the FHWA consider referencing the Environmental Protection Agency's regulations under Subpart G of 40 CFR 82, Protection of Stratospheric Ozone. Subpart G implements section 612 of the Clean Air Act by determining safe alternatives to ozone-depleting compounds. It is usually referred to as the "Significant New Alternatives Policy" (SNAP) program. The SNAP regulations take into consideration the toxicity of proposed substitutes for ozone-depleting compounds, but they also address potential impacts on atmospheric ozone, global warming and other issues related to human exposure and the environment. The FHWA is therefore proposing to require that fire extinguishers comply with the toxicity provisions of the SNAP regulations. While the other issues (ozone depletion, global warming, etc.) are important, there would be no practical reason to address these issues in § 393.95.

Section 93.102—Securement Systems

On July 6, 1994, the FHWA amended § 393.102(b) to adopt the use of working load limits (WLL) in specifying the minimum strength of cargo securement devices (59 FR 34712). Under the new rule, the aggregate working load limit of the tiedown assemblies used to secure an article against movement in any direction must be at least 1/2 times the weight of the article secured. Although the rule did not require manufacturers to attach a WLL label to their products, it did add a table of working load limits for unmarked webbing, wire rope, etc., to provide motor carriers with a means of determining the number of tiedown assemblies required.

The FHWA did not provide guidance on unmarked welded steel chain,

however. The National Association of Chain Manufacturers' (NACM) Welded Steel Chain Specifications (which were incorporated by reference into § 393.102(b)) include guidelines on the marking of chain. While grades 43, 70, and 80 have periodic embossing for identification purposes, Grade 30, or proof coil chain, is marked at the option of the manufacturer. The use of unmarked chain for cargo securement purposes would not be a cause for concern if all unmarked chain were the same grade or strength. The FHWA has no indication that this is the case.

Generally, manufacturers which meet the NACM's guidelines would mark their chain accordingly. But some manufacturers which produce chain that meets the NACM guidelines may choose, for whatever reason, not to mark their products. If unmarked chains of varying grades are readily available, motor carriers could unknowingly violate § 393.102(b) by failing to have an adequate number of securement devices. The consequences for a load such as a steel or aluminum coil could be fatal to other motorists.

The risks of such an accident could be greatly minimized by prohibiting motor carriers from using unmarked chain. Before doing so, the FHWA would have to quantify the potential economic burden on the motor carrier industry and those involved with the manufacture, sale, and distribution of unmarked chain. Since the FHWA has no reliable information on the number of manufacturers, distributors, and retailers of unmarked chain, the quality or strength of such chain, or the amount of this chain currently in use by motor carriers and in retailers' stock, it would be inappropriate to propose a prohibition at this time. However, in view of the potential safety hazards of motor carriers misidentifying unmarked chain, the FHWA is proposing that all unmarked welded steel chain be considered to have a working load limit equal to that of grade 30 proof coil. This is consistent with the way in which the FHWA addressed the use of synthetic cordage (e.g., nylon, polypropylene, polyester) in the July 6, 1994, final rule. The FHWA specifically requests comments on this proposal.

Section 393.201—Frames

In the final rule published on December 7, 1988 (53 FR 49380) prohibiting cracked, loose, sagging or broken frames, the FHWA inadvertently failed to include trailer frames. The FHWA proposes to remedy this oversight by replacing "bus, truck and truck-tractor" with the term

"commercial motor vehicles" in paragraph (a).

The FHWA is proposing to revise § 393.201(d) to make the regulation more practical. Paragraph (d) was meant to prohibit welding on vehicle frames constructed of certain types of steel which would be weakened by the welding process. However, the current wording is overly restrictive. To address this issue, paragraph (d) would be revised to allow welding which is performed in accordance with the vehicle manufacturer's recommendations.

In addition, the FHWA is proposing that paragraph (f) be removed. Paragraph (f) states that field repairs are allowed. There is no practical reason for retaining this provision since there was never a requirement that the motor carrier repair its vehicle only at certain locations.

Section 393.207—Suspension Systems

The Truck Trailer Manufacturers Association (TTMA) petitioned the FHWA to amend part 393 to prohibit any device which is capable of dumping air individually from either of the two axle suspension systems on a semitrailer equipped with air-suspended "spread" or "split" tandem axles. The TTMA indicated that the petition was not intended to prohibit (1) devices that could exhaust air from both axle systems simultaneously or (2) lift axles on multi-axle units. The petition is available for review in the docket.

According to the TTMA, about 30,000 semitrailers are manufactured each year with split tandem axles and air suspensions. These axles are not genuine tandems, but rather two single axles spaced at least 3,048 mm (10 feet) apart, the minimum separation required by the bridge formula [23 U.S.C. 127(a)] before each of them can carry the full 9,072 kg (20,000 pounds) allowed by Federal law. The TTMA estimates that 5,000 of these trailers are also equipped with valves to depressurize the suspension system of one of the trailer axles, and sometimes of either axle. These valves are installed to compensate for problems created by the split tandem configuration. Normal tandems experience moderate tire scrubbing in turns because the trailer pivots around a point that lies between the two axles. Tire scrubbing is more severe in split tandems because the pivot point is much farther from either axle. Dumping air pressure from the suspension system of the rear (or less often the leading) trailer axle reduces its load and allows the trailer to pivot around the other axle with less resistance and tire scrubbing. The

TTMA's own tests showed that if each axle in a split tandem is loaded to 8,845 kg (19,500 pounds) and pressure in the rear axle is dumped, the resulting weight shift will make the front axle 3,175 to 5,443 kg (7,000 to 12,000 pounds) heavier than the rear.

Dump valves were originally designed to aid maneuvering at 8 km/hour (5 mph) or less, mainly at terminals or other loading points. According to the TTMA, however, many drivers now activate them at higher speeds on streets and highways to turn corners more easily and to reduce tire wear. The TTMA also believes that suspension pressure is sometimes vented accidentally because of wiring problems the moment the tractor hooks up to the trailer. In both cases, the inevitable weight shift often produces a load on the pressurized axle that exceeds the manufacturers' ratings for that axle and its wheels, tires and brakes. In addition, the loaded axle frequently exceeds the single-axle weight limit.

The FHWA believes that the petition has merit and proposes to amend § 393.207 to prohibit controls of this type. Although § 393.3, which allows the use of equipment and accessories that do not decrease operational safety, could be interpreted as prohibiting the use of equipment to disable the air suspension of one axle on a two-axle trailer, addressing this issue through rulemaking is the most appropriate course of action.

Section 393.209—Steering Wheel Systems

The FHWA is proposing to amend § 393.209(b) to correct an error in the maximum steering wheel lash for 406 mm (16 inch) steering wheels and to add steering wheel lash limits for 483 mm (19 inch) and 533 mm (21 inch) diameter steering wheels. The table specifying steering wheel lash limits currently allows 114 mm (4½ inches) lash for steering wheel diameters of 406 mm (16 inches) or less if the vehicle has a power steering system. This corresponds to an angle of approximately 32 degrees which is about 2 degrees more than the steering wheel lash limits for power steering systems using larger diameter steering wheels. Since there is no apparent technical basis for having a less stringent standard for 406 mm (16 inch) diameter steering wheel systems the FHWA proposes to change the steering wheel lash limit to 108 mm (4¼ inches).

The FHWA is proposing the addition of steering wheel lash limits for 483 mm (19 inch) and 533 mm (21 inch) diameter steering wheels because these are relatively common steering wheel

sizes. The limits that would be adopted for these steering wheel diameters would be consistent with the 14 degree and 30 degree limits currently used for manual and power steering systems respectively.

Section 393.209 would also be amended to include the term ball-and-socket joints. Some steering system designs include ball-and-socket joints instead of universal joints. While the basic function of the two types of joints is similar, only universal joints are covered by § 393.209(d). Defects or unsafe conditions of ball-and-socket joints are currently implicitly covered under § 396.3(a)(1). The agency believes that such important items should be explicitly covered whenever possible.

Rulemaking Analyses and Notices

All comments received before the close of business on the comment closing date indicated above will be considered and will be available for examination in the docket at the above address. Comments received after the comment closing date will be filed in the docket and will be considered to the extent practicable, but the FHWA may issue a final rule at any time after the close of the comment period. In addition to late comments, the FHWA will also continue to file in the docket relevant information that becomes available after the comment closing date, and interested persons should continue to examine the docket for new material.

Executive Order 12866 (Regulatory Planning and Review) and DOT Regulatory Policies and Procedures

The FHWA has considered the impacts of this document and has determined that it is neither a significant rulemaking action within the meaning of Executive Order 12866 nor a significant rulemaking under the regulatory policies and procedures of the Department of Transportation. The rulemaking would amend parts 390, 392, and 393 of the FMCSRs by removing obsolete and redundant regulatory language; responding to several petitions for rulemaking; providing improved definitions of vehicle types, systems, and components; resolving inconsistencies between part 393 and the FHWA's periodic inspection criteria (appendix G to subchapter B); resolving inconsistencies between part 393 and the NHTSA's Federal Motor Vehicle Safety Standards (49 CFR 571); and codifying certain FHWA regulatory guidance concerning the requirements of part 393. Generally, the proposed amendments do not involve the establishment of new or

more stringent requirements but a clarification of existing requirements. It is anticipated that the economic impact of this rulemaking will be minimal. Therefore, a full regulatory evaluation is not required.

The new or more stringent requirements include a cross-reference to the NHTSA's compressed natural gas (CNG) fuel container regulations which would result in carriers having to ensure that the CNG containers are properly maintained. In addition, the agency is proposing to prohibit certain controls used for dumping air individually from either of the two-axle suspension systems on a semitrailer equipped with air-suspended "spread" or "split" tandem axles. The FHWA does not believe the new requirements will result in an increased economic burden on the motor carrier industry.

Regulatory Flexibility Act

In compliance with the Regulatory Flexibility Act (5 U.S.C. 601–612), the FHWA has evaluated the effects of this rule on small entities. Based on this evaluation, and for the reasons set forth in the preceding paragraph, the FHWA certifies that this rule would not have a significant economic impact on a substantial number of small entities.

Executive Order 12612 (Federalism Assessment)

This action has been analyzed in accordance with the principles and criteria contained in Executive Order 12612, and it has been determined that this rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Executive Order 12372 (Intergovernmental Review)

Catalog of Domestic Assistance Program Number 20.217, Motor Carrier Safety. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities do not apply to this program.

Paperwork Reduction Act

This document does not contain information collection requirements for the purposes of the Paperwork Reduction Act of 1980 [44 U.S.C. 3501 *et seq.*].

National Environmental Policy Act

The agency has analyzed this rulemaking for the purpose of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and has determined that this action would not have any effect on the quality of the environment.

Regulation Identification Number

A regulation identification number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN contained in the heading of this document can be used to cross-reference this action with the Unified Agenda.

List of Subjects in 49 CFR Part 390

Highway safety, Highways and roads, Intermodal transportation, Motor carriers, Motor vehicle identification, Motor vehicle safety, Reporting and recordkeeping requirements.

49 CFR Part 392

Highway safety, Highways and roads, Motor carriers—driving practices, Motor vehicle safety.

49 CFR Part 393

Highways and roads, Incorporation by reference, Motor carriers, Motor vehicle equipment, Motor vehicle safety.

Issued on: April 1, 1997.

Jane Garvey,

Acting Administrator, Federal Highway Administration.

In consideration of the foregoing, the FHWA proposes to amend title 49, Code of Federal Regulations, subchapter B, chapter III, as follows:

PART 390—[AMENDED]

1. The authority citation for Part 390 continues to read as follows:

Authority: 49 U.S.C. 5901–5907, 13301, 13902, 31132, 31133, 31136, 31502, and 31504; 49 CFR 1.48.

2. Section 390.5 is amended by revising the definition of driveaway-towaway operation to read as follows:

§ 390.5 Definitions.

* * * * *

Driveaway-towaway operation means an operation in which an empty or unladen motor vehicle with one or more set of wheels on the surface of the roadway is being transported

(1) between a vehicle manufacturer and a dealership or purchaser,

(2) between a dealership or other entity selling or leasing the vehicle and a purchaser or lessee,

(3) to a maintenance/repair facility for the repair of disabling damage (as defined in § 390.5), or

(4) by means of a saddle-mount.

* * * * *

PART 392—[AMENDED]

3. The authority citation for Part 392 is revised to read as follows:

Authority: Section 1041(b) of Pub. L. 102–240, 105 Stat. 1914, 1993 (1991), 49 U.S.C. 31136 and 31502; 49 CFR 1.48.

4. Section 392.33 is revised to read as follows:

§ 392.33 Obscured lamps or reflective devices/material.

(a) No commercial motor vehicle shall be driven when any of the lamps or reflective devices/material required by subpart B of part 393 are obscured by the tailboard, or by any part of the load, by dirt, or otherwise.

(b) Exception. The conspicuity treatments on the front end protection devices of the trailer may be obscured by part of the load being transported.

PART 393—[AMENDED]

5. The authority citation for part 393 continues to read as follows:

Authority: Section 1041(b) of Pub. L. 102–240, 105 Stat. 1914, 1993 (1991), 49 U.S.C. 31136 and 31502; 49 CFR 1.48.

6. Section 393.1 is revised to read as follows:

§ 393.1 Scope of the rules in this part.

(a) The rules in this part establish minimum standards for commercial motor vehicles as defined in § 390.5 of this title. Only motor vehicles (as defined in § 390.5) and combinations of motor vehicles which meet the definition of a commercial motor vehicle are subject to the requirements of this part. All requirements that refer to motor vehicles with a GVWR below 4,536 kg (10,001 pounds) are applicable only when the motor vehicle or combination of motor vehicles meets the definition of a commercial motor vehicle.

(b) Every employer and employee shall comply and be conversant with the requirements and specifications of this part. No employer shall operate a commercial motor vehicle, or cause or permit it to be operated, unless it is equipped in accordance with the requirements and specifications of this part.

7. Section 393.5 is amended by removing the definition of “bus”; and by adding definitions for “air brake system,” “air-over-hydraulic brake system,” “auxiliary driving lamp,” “boat trailer,” “brake power assist unit,” “brake power unit,” “container chassis trailer,” “electric brake system,” “emergency brake,” “front fog lamp,” “hydraulic brake system,” “intermodal shipping container,” “multi-piece

windshield,” “split service brake system,” “tow bar,” “trailer kingpin,” “vacuum brake system,” “windshield”; and by revising the definitions of “chassis,” “clearance lamp,” “container chassis” (now “container chassis trailer”), “heater,” “heavy hauler trailer,” “parking brake system,” “side marker lamp (intermediate),” and “side marker lamps”, keeping them in alphabetical order, to read as follows:

§ 393.5 Definitions.

* * * * *

Air brake system. A system, including an air-over-hydraulic brake subsystem, that uses air as a medium for transmitting pressure or force from the driver control to the service brake, but does not include a system that uses compressed air or vacuum only to assist the driver in applying muscular force to hydraulic or mechanical components.

Air-over-hydraulic brake subsystem. A subsystem of the air brake system that uses compressed air to transmit a force from the driver control to a hydraulic brake system to actuate the service brakes.

Auxiliary driving lamp. A lighting device mounted to provide illumination forward of the vehicle which supplements the upper beam of a standard headlamp system. It is not intended for use alone or with the lower beam of a standard headlamp system.

Boat trailer. A trailer designed with cradle-type mountings to transport a boat and configured to permit launching of the boat from the rear of the trailer.

* * * * *

Brake power assist unit. A device installed in a hydraulic brake system that reduces the operator effort required to actuate the system, but which if inoperative does not prevent the operator from braking the vehicle by a continued application of muscular force on the service brake control.

Brake power unit. A device installed in a brake system that provides the energy required to actuate the brakes, either directly or indirectly through an auxiliary device, with the operator action consisting only of modulating the energy application level.

* * * * *

Chassis. The load-supporting frame of a commercial motor vehicle, exclusive of any appurtenances which might be added to accommodate cargo.

Clearance Lamps. Lamps mounted on the permanent structure of the vehicle as near as practicable to the upper left and right extreme edges that provide light to the front or rear to indicate the overall width and height of the vehicle.

Container chassis trailer. A semitrailer of skeleton construction

limited to a bottom frame, one or more axles, specially built and fitted with locking devices for the transport of intermodal cargo containers, so that when the chassis and container are assembled, the units serve the same function as an over the road trailer.

* * * * *

Electric brake system. A system that uses electric current to actuate the service brake.

Emergency brake. A mechanism designed to stop a motor vehicle after a failure of the service brake system.

* * * * *

Front fog lamp. A lighting device mounted to provide illumination forward of the vehicle under conditions of rain, snow, dust, or fog. The lamp may be used with a lower beam headlamp or switch controlled in conjunction with the headlamps and used at the driver's discretion with either low or high beam headlamps.

* * * * *

Heater. Any device or assembly of devices or appliances used to heat the interior of any motor vehicle. This includes a catalytic heater which must meet the requirements of § 177.834(l)(2) of this title when Class 3 (flammable liquid) or Division 2.1 (flammable gas) is transported.

Heavy hauler trailer. A trailer which has one or more of the following characteristics, but which is not a container chassis trailer:

(1) Its brake lines are designed to adapt to separation or extension of the vehicle frame; or

(2) Its body consists only of a platform whose primary cargo-carrying surface is not more than 1,016 mm (40 inches) above the ground in an unloaded condition, except that it may include sides that are designed to be easily removable and a permanent "front-end structure" as that term is used in § 393.106 of this title.

* * * * *

Hydraulic brake system. A system that uses hydraulic fluid as a medium for transmitting force from a service brake control to the service brake, and that may incorporate a brake power assist unit, or a brake power unit.

* * * * *

Intermodal shipping container. An article of transport equipment;

(1) Of a permanent character and accordingly strong enough to be suitable for repeated use;

(2) Specially designed to facilitate the carriage of goods by one or more modes of transport, without intermediate reloading;

(3) Fitted with devices permitting its ready handling, particularly its transfer from one mode of transport to another;

(4) So designed as to be easy to fill and empty; and

(5) Having an internal volume of one cubic meter (35.3 cubic feet) or more.

* * * * *

Multi-piece windshield. A windshield consisting of two or more windshield glazing surface areas.

Parking brake system. A mechanism designed to prevent the movement of a stationary motor vehicle.

* * * * *

Side marker lamp (Intermediate). A lamp shown to the side of a motor vehicle to indicate the approximate middle of the vehicle, when the motor vehicle is 9.14 meters (30 feet) or more in length.

Side marker lamps. Lamps mounted on the permanent structure of the motor vehicle as near as practicable to the front and rear edges, that provide light to the side to indicate the overall length of the motor vehicle.

Split service brake system. A brake system consisting of two or more subsystems actuated by a single control designed so that a leakage-type failure of a pressure component in a single subsystem (except structural failure of a housing that is common to two or more subsystems) shall not impair the operation of any other subsystem.

* * * * *

Tow bar. A strut or column-like device temporarily attached between the rear of a towing vehicle and the front of the vehicle being towed.

Trailer kingpin. A pin (with a flange on its lower end) which extends vertically from the front of the underside of a semitrailer and which locks into a fifth wheel.

* * * * *

Vacuum brake system. A system that uses a vacuum and atmospheric pressure for transmitting a force from the driver control to the service brake, not including a system that uses vacuum only to assist the driver in applying muscular force to hydraulic or mechanical components.

Windshield. The principal forward facing glazed surface provided for forward vision in operating a motor vehicle.

8. Section 393.7 is amended by adding paragraphs (b)(7) and (b)(8) to read as follows:

§ 393.7 Matter incorporated by reference.

* * * * *

(b) * * *

(7) Standards of the Society of Automotive Engineers (SAE).

Information and copies may be obtained by writing to: Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, Pennsylvania 15096.

(8) Standards of the American National Standards Institute (ANSI). Information and copies may be obtained by writing to: American National Standards Institute, 11 West 42nd Street, New York, New York 10036.

* * * * *

9. The title of subpart B is revised to read as follows:

Subpart B—Lamps, Reflective Devices, and Electrical Wiring

10. Section 393.9 is revised to read as follows:

§ 393.9 Lamps operable, prohibition of obstructions of lamps and reflectors.

(a) All lamps required by this subpart shall be capable of being operated at all times. This paragraph shall not be construed to require that any auxiliary or additional lamp be capable of operating at all times.

(b) Lamps and reflective devices/material required by this subpart must not be obscured by the tailboard, or by any part of the load, by dirt, or otherwise. Exception: The conspicuity treatments on the front end protection devices may be obscured by part of the load being transported.

11. Section 393.11 is amended by revising paragraphs (a) through (c), table 1 and footnotes 4 through 10 and 15, and adding footnotes 16 and 17 to read as follows:

§ 393.11 Lamps and reflective devices.

(a)(1) Lamps and reflex reflectors. Table 1 of this section specifies the requirements for lamps, reflective devices and associated equipment by the type of commercial motor vehicle. The diagrams in this section illustrate the position of the lamps, reflective devices and associated equipment specified in Table 1. All commercial motor vehicles manufactured on or after December 25, 1968, must, at a minimum, meet the applicable requirements of 49 CFR 571.108 (FMVSS No. 108) in effect at the time of manufacture of the vehicle. Commercial motor vehicles manufactured before December 25, 1968, must, at a minimum, meet the requirements of this subpart in effect at the time of manufacture.

(2) Exceptions: Pole trailers and trailer converter dollies must meet the part 393 requirements for lamps, reflective devices and electrical equipment in effect at the time of manufacture. Trailers which are equipped with conspicuity material which meets the

requirements of paragraph (b) of this section are not required to be equipped with the reflex reflectors listed in Table 1 if—

(i) The conspicuity material is placed at the locations where reflex reflectors are required by Table 1; and

(ii) The conspicuity material when installed on the motor vehicle meets the geometric visibility requirements for the reflex reflectors.

(b) Conspicuity systems. Each trailer of 2,032 mm (80 inches) or more overall width, and with a GVWR over 4,536 kg (10,000 pounds), manufactured on or

after December 1, 1993, except pole trailers and trailers designed exclusively for living or office use, shall be equipped with either retroreflective sheeting that meets the requirements of FMVSS No. 108 (49 CFR 571.108, S5.7.1), reflex reflectors that meet the requirements FMVSS No. 108 (49 CFR 571.108, S5.7.2), or a combination of retroreflective sheeting and reflex reflectors that meet the requirements of FMVSS No. 108 (49 CFR 571.108, S5.7.3). The conspicuity system shall be installed and located as specified in FMVSS No. 108 (49 CFR 571.108)

[S5.7.1.4 (for retroreflective sheeting), S5.7.2.2 (for reflex reflectors), S5.7.3 (for a combination of sheeting and reflectors)] and have certification and markings as required by S5.7.1.5 (for retroreflective tape) and S5.7.2.3 (for reflex reflectors).

(c) Prohibition on the use of amber stop lamps and tail lamps. No commercial motor vehicle may be equipped with an amber stop lamp, tail lamp, or other lamp which is optically combined with an amber stop lamp or tail lamp.

TABLE 1.—REQUIRED LAMPS AND REFLECTORS ON COMMERCIAL MOTOR VEHICLES

Item on the vehicle	Quantity	Color	Location	Position	Height above the road surface in millimeters (mm) (with English units in parenthesis) measured from the center of the lamp at curb weight	Vehicles for which the devices are required
Headlamps	2	White	Front	On the front at the same height, with an equal number at each side of the vertical centerline as far apart as practicable.	Not less than 559 mm (22 inches) nor more than 1,372 mm (54 inches).	A, B, C
Turn signal (front). See footnotes #2 and 12.	2	Amber	At or near the front.	One on each side of the vertical centerline at the same height and as far apart as practicable.	Not less than 381 mm (15 inches) nor more than 2,108 mm (83 inches).	A, B, C
Identification lamps (front). See footnote #1.	3	Amber	Front	As close as practicable to the top of the vehicle, at the same height, and as close as practicable to the vertical centerline of the vehicle (or the vertical centerline of the cab where different from the centerline of the vehicle) with lamp centers spaced not less than 152 mm (6 inches) or more than 305 mm (12 inches) apart. Alternatively, the front lamps may be located as close as practicable to the top of the cab.	All three on the same level as close as practicable to the top of the motor vehicle.	B, C
Tail lamps. See footnotes #5 and 11.	2	Red	Rear	One lamp on each side of the vertical centerline at the same height and as far apart as practicable.	Both on the same level between 381 mm (15 inches) and 1,829 mm (72 inches).	A, B, C, D, E, F, G, H
Stop lamps. See footnotes #5 and 13.	2	Red	Rear	One lamp on each side of the vertical centerline at the same height and as far apart as practicable.	Both on the same level between 381 mm (15 inches) and 1,829 mm (72 inches).	A, B, C, D, E, F, G

TABLE 1.—REQUIRED LAMPS AND REFLECTORS ON COMMERCIAL MOTOR VEHICLES—Continued

Item on the vehicle	Quantity	Color	Location	Position	Height above the road surface in millimeters (mm) (with English units in parenthesis) measured from the center of the lamp at curb weight	Vehicles for which the devices are required
Clearance lamps. See footnotes #8, 9, 10, 15 & 17.	2	Amber	One on each side of the rear of the vehicle.	One on each side of the vertical centerline to indicate overall width.	Both on the same level as high as practicable.	B, C, D, G, H
	2	Red	One on each side of the front of the vehicle.	One on each side of the vertical centerline to indicate overall width.	Both on the same level as high as practicable.	B, D, G, H
Reflex reflector, intermediate (side).	2	Amber	One on each side.	At or near the midpoint between the front and rear side marker lamps, if the length of the vehicle is more than 9,144 mm (30 feet).	Between 381 mm (15 inches) and 1,524 mm (60 inches).	A, B, D, F, G
Reflex reflector (rear). See footnotes #5, 6, and 8.	2	Red	Rear	One on each side of the vertical centerline, as far apart as practicable and at the same height.	Both on the same level, between 381 mm (15 inches) and 1,524 mm (60 inches).	A, B, C, D, E, F, G
Reflex reflector (rear side).	2	Red	One on each side (rear).	As far to the rear as practicable.	Both on the same level, between 381 mm (15 inches) and 1,524 mm (60 inches).	A, B, D, F, G
Reflex reflector (front side). See footnote #16.	2	Amber	One on each side (front).	As far to the front as practicable.	Between 381 mm (15 inches) and 1,524 mm (60 inches).	A, B, C, D, F, G
License plate lamp (rear). See footnote #11.	1	White	At rear license plate to illuminate the plate from the top or sides.		No requirements.	A, B, C, D, F, G
Side marker lamp (front). See footnote #16.	2	Amber	One on each side.	As far to the front as practicable.	Not less than 381 mm (15 inches).	A, B, C, D, F
Side marker lamp, intermediate.	2	Amber	One on each side.	At or near the midpoint between the front and rear side marker lamps, if the length of the vehicle is more than 9,144 mm (30 feet).	Not less than 381 mm (15 inches).	A, B, D, F, G
Side marker lamp (rear). See footnotes #4 and 8.	2	Red	One on each side.	As far to the rear as practicable.	Not less than 381 mm (15 inches) and, on the rear of trailers, not more than 1,524 mm (60 inches).	A, B, D, F, G

TABLE 1.—REQUIRED LAMPS AND REFLECTORS ON COMMERCIAL MOTOR VEHICLES—Continued

Item on the vehicle	Quantity	Color	Location	Position	Height above the road surface in millimeters (mm) (with English units in parenthesis) measured from the center of the lamp at curb weight	Vehicles for which the devices are required
Turn signal (rear). See footnotes #5 and 12.	2	Amber or red	Rear	One lamp on each side of the vertical centerline as far apart as practicable.	Both on the same level, between 381 mm (15 inches) and 2,108 mm (83 inches).	A, B, C, D, E, F, G
Identification lamp (rear). See footnotes #3, 7, and 15.	3	Red	Rear	One as close as practicable to the vertical centerline. One on each side with lamp centers spaced not less than 152 mm (6 inches) or more than 305 mm (12 inches) apart.	All three on the same level as close as practicable to the top of the vehicle.	B, D, G
Vehicular hazard warning signal flasher lamps. See footnotes #5 and 12.	2	Amber	Front	One lamp on each side of the vertical centerline, as far apart as practicable.	Both on the same level, between 381 mm (15 inches) and 2,108 mm (83 inches).	A, B, C,
	2	Amber or red	Rear	One lamp on each side of the vertical centerline, as far apart as practicable.	Both on the same level, between 381 mm (15 inches) and 2,108 mm (83 inches).	A, B, C, D, E, F, G
Backup lamp. See footnote #14.	1	White	Rear	Rear	No requirement.	A, B, C
Parking lamp	2	Amber or white.	Front	One lamp on each side of the vertical centerline, as far apart as practicable.	Both on the same level, between 381 mm (15 inches) and 1,829 mm (72 inches).	A

Legend: Types of commercial motor vehicles shown in the last column of Table 1.

- A. Buses and trucks less than 2,032 mm (80 inches) in overall width.
- B. Buses and trucks 2,032 mm (80 inches) or more in overall width.
- C. Truck tractors.
- D. Semitrailers and full trailers 2,032 mm (80 inches) or more in overall width except converter dollies.
- E. Converter dolly.
- F. Semitrailers and full trailers less than 2,032 mm (80 inches) in overall width.
- G. Pole trailers.
- H. Projecting loads.

Note: Lamps and reflectors may be combined as permitted by § 393.22 and S5.4 of 49 CFR 571.108, Equipment combinations.

* * * * *

Footnote—4

Any semitrailer or full trailer manufactured on or after March 1, 1979, shall be equipped with rear side-marker lamps at a height of not less than 381 mm (15 inches) nor more than 1,524 mm (60 inches) above the road surface, as measured from the center of the lamp on the vehicle at curb weight.

Footnote—5

Each converter dolly, when towed singly by another vehicle and not as part of a full trailer, shall be equipped with one stop lamp, one tail lamp, and two reflectors (one on each side of the vertical centerline, as far apart as practicable) on the rear. Each converter dolly shall be equipped with rear turn signals and vehicular hazard warning signal flasher lamps when towed singly by another vehicle and not as part of a

full trailer, if the converter dolly obscures the turn signals at the rear of the towing vehicle.

Footnote—6

Pole trailers shall be equipped with two reflex reflectors on the rear, one on each side of the vertical centerline as far apart as practicable, to indicate the extreme width of the trailer.

Footnote—7

Pole trailers, when towed by motor vehicles with rear identification lamps meeting the requirements of § 393.11 and mounted at a height greater than the load being transported on the pole trailer, are not required to have rear identification lamps.

Footnote—8

Pole trailers shall have on the rearmost support for the load: (1) Two front clearance lamps, one on each side of the vehicle, both on the same level and as high as practicable to indicate the overall width of the pole trailer; (2) two rear clearance lamps, one on each side of the vehicle, both on the same level and as high as practicable to indicate the overall width of the pole trailer; (3) two rear side marker lamps, one on each side of the vehicle, both on the same level, not less than 375 mm (15 inches) above the road surface; (4) two rear reflex reflectors, one on each side, both on the same level, not less than 375 mm (15 inches) above the road surface to indicate maximum width of the pole trailer; and (5) one red reflector on each side of the rearmost support for the load. Lamps and reflectors may be combined as allowed in § 393.22.

Footnote—9

Any motor vehicle transporting a load which extends more than 102 mm (4 inches) beyond the overall width of the motor vehicle shall be equipped with the following lamps in addition to other required lamps when operated during the hours when headlamps are required to be used.

(1) The foremost edge of that portion of the load which projects beyond the side of the vehicle shall be marked (at its outermost extremity) with an amber lamp visible from the front and side.

(2) The rearmost edge of that portion of the load which projects beyond the side of the vehicle shall be marked (at its outermost extremity) with a red lamp visible from the rear and side.

(3) If the projecting load does not measure more than 914 mm (3 feet) from front to rear, it shall be marked with an amber lamp visible from the front, both sides, and rear, except that if the projection is located at or near the rear it shall be marked by a red lamp visible from front, side, and rear.

Footnote—10

Projections beyond rear of motor vehicles. Motor vehicles transporting loads which extend more than 1,219 mm (4 feet) beyond the rear of the motor vehicle, or which have tailboards or tailgates extending more than 1,219 mm (4 feet) beyond the body, shall have these projections marked as follows when the vehicle is operated during the

hours when headlamps are required to be used:

(1) On each side of the projecting load, one red side marker lamp, visible from the side, located so as to indicate maximum overhang.

(2) On the rear of the projecting load, two red lamps, visible from the rear, one at each side; and two red reflectors visible from the rear, one at each side, located so as to indicate maximum width.

Footnote—15

(1) For the purposes of § 393.11, the term "overall width" refers to the nominal design dimension of the widest part of the vehicle, exclusive of the signal lamps, marker lamps, outside rearview mirrors, flexible fender extensions, and mud flaps.

(2) Clearance lamps may be mounted at a location other than on the front and rear if necessary to indicate the overall width of a vehicle, or for protection from damage during normal operation of the vehicle.

(3) On a trailer, the front clearance lamps may be mounted at a height below the extreme height if mounting at the extreme height results in the lamps failing to mark the overall width of the trailer.

(4) On a truck tractor, clearance lamps mounted on the cab may be located to indicate the width of the cab, rather than the width of the vehicle.

(5) When the rear identification lamps are mounted at the extreme height of a vehicle, rear clearance lamps are not required to be located as close as practicable to the top of the vehicle.

Footnote—16

A trailer subject to this part that is less than 1829 mm (6 feet) in overall length, including the trailer tongue, need not be equipped with front side marker lamps and front side reflex reflectors.

Footnote—17

A boat trailer subject to this part whose overall width is 2032 mm (80 inches) or more need not be equipped with both front and rear clearance lamps provided an amber (front) and red (rear) clearance lamp is located at or near the midpoint on each side so as to indicate its extreme width.

12. Section 393.17 is amended by revising the text below the illustrations to the tow-bar diagram, the double-saddle-mount diagram and the single-saddle-mount diagram to read as follows:

§ 393.17 Lamps and reflectors—combinations in driveaway-towaway operation.

* * * * *

(Tow-bar diagram to illustrate § 393.17.)

* * * * *

Lamps may be combined as permitted by § 393.22. The color of exterior lighting devices and reflectors shall conform to requirements of § 393.11.

* * * * *

(Double-saddle-mount diagram to illustrate § 393.17.)

* * * * *

Lamps may be combined as permitted by § 393.22. The color of exterior lighting devices and reflectors shall conform to the requirements of § 393.11.

* * * * *

(Single-saddle-mount diagram to illustrate § 393.17.)

* * * * *

Lamps may be combined as permitted by § 393.22. The color of exterior lighting devices and reflectors shall conform to requirements of § 393.11.

13. Section 393.19 is revised to read as follows:

§ 393.19 Hazard warning signals.

The hazard warning signal operating unit on each commercial motor vehicle shall operate independently of the ignition or equivalent switch, and when activated, cause all turn signals required by § 393.11 to flash simultaneously.

§ 393.20 [Removed and Reserved]

14. Section 393.20 is removed and reserved.

15. Section 393.23 is revised to read as follows:

§ 393.23 Power supply for lamps.

All required lamps must be powered by the electrical system of the motor vehicle with the exception of battery powered lamps used on projecting loads.

16. Section 393.24 is revised to read as follows:

§ 393.24 Requirements for head lamps, auxiliary driving lamps and front fog lamps.

(a) *Headlamps.* Every bus, truck and truck tractor shall be equipped with headlamps as required by § 393.11(a). The headlamps shall provide an upper and lower distribution of light, selectable at the driver's will and be steady-burning. The headlamps shall be marked in accordance with FMVSS No. 108, 49 CFR 571.108, S7.2. Auxiliary driving lamps and/or front fog lamps may not be used to satisfy the requirements of this paragraph.

(b) *Auxiliary driving lamps and front fog lamps.* Commercial motor vehicles may be equipped with auxiliary driving lamps and/or front fog lamps for use in conjunction with, but not in lieu of the required headlamps. Auxiliary driving lamps shall meet SAE Standard J581 Auxiliary Driving Lamps, January 1995, and front fog lamps shall meet SAE

Standard J583 Front Fog Lamps, June 1993. (See § 393.7(b) for information on the incorporation by reference and availability of this document.)

(c) *Mounting.* Headlamps, auxiliary driving lamps and front fog lamps shall be mounted so that the beams are adjustable, both vertically and horizontally and the mounting shall prevent the aim of the lighting device from being disturbed while the vehicle is operating on public roads.

(d) *Aiming and intensity.* Headlamps shall be constructed and installed to meet, at a minimum, the applicable requirements of FMVSS No. 108 in effect at the time the vehicle was manufactured. Auxiliary driving lamps and front fog lamps shall meet the aiming and intensity specifications in the SAE standards referenced in paragraph (b) of this section.

17. Section 393.25 is revised to read as follows:

§ 393.25 Requirements for lamps other than head lamps.

(a) *Mounting.* All lamps shall be securely mounted on a rigid part of the vehicle. Temporary lamps must be securely mounted to the load and are not required to be mounted to a permanent part of the vehicle.

(b) *Visibility.* Each lamp shall be located so that it meets the visibility requirements specified by FMVSS No. 108 in effect at the time of manufacture of the vehicle. Vehicles which were not subject to FMVSS No. 108 at the time of manufacture shall have each lamp located so that it meets the visibility requirements specified in the SAE standards listed in paragraph (c) of this section. If motor vehicle equipment (e.g., mirrors, snow plows, wrecker booms, backhoes, and winches) prevents compliance with this paragraph by any required lamp, an auxiliary lamp or device meeting the requirements of this paragraph shall be provided. This shall not be construed to apply to lamps on one unit which are obscured by another unit of a combination of vehicles.

(c) *Specifications.* All required lamps (except marker lamps on projecting loads, lamps which are temporarily attached to vehicles transported in driveaway-towaway operations, and lamps on converter dollies and pole trailers) on vehicles manufactured on or after December 25, 1968, shall, at a minimum, meet the applicable requirements of FMVSS No. 108 in effect on the date of manufacture of the vehicle. Marker lamps on projecting loads, all lamps which are temporarily attached to vehicles transported in driveaway-towaway operations, and all

lamps on converter dollies and pole trailers must meet the following applicable SAE standards: J586—Stop Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width, December 1989; J1398—Stop Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width, May 1985; J585—Tail Lamps (Rear Position Lamps) for Use on Motor Vehicles Less Than 2032 mm in Overall Width, December 1994; J588—Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width, December 1994; J1395—Front and Rear Turn Signal Lamps for Use on Motor Vehicles 2032 mm or More Overall Width, June 1991; J592—Clearance, Side Marker, and Identification Lamps, December 1994. (See § 393.7(b) for information on the incorporation by reference and availability of these documents.)

(d) *(Reserved).*

(e) *Lamps to be steady-burning.* All exterior lamps (both required lamps and any additional lamps) shall be steady-burning with the exception of turn signal lamps; hazard warning signal lamps; school bus warning lamps; amber Class 2 or Class 3, 360 degree warning lamps or flashing warning lamps on tow trucks and commercial motor vehicles transporting oversized loads; and warning lamps on emergency and service vehicles authorized by State or local authorities. Lamps combined into the same shell or housing with a turn signal are not required to be steady burning while the turn signal is in use. Amber Class 2 or Class 3, 360 degree warning lamps must meet SAE J845—360 Degree Warning Lamp for Authorized Emergency, Maintenance and Service Vehicles, March 1992. Class 1, 360 degree warning lamps are prohibited. Amber flashing warning lamps must meet SAE J595—Flashing Warning Lamps for Authorized Emergency, Maintenance and Service Vehicles, January 1990. Amber Class 2 or Class 3 gaseous discharge warning lamps must meet SAE J1318 Gaseous Discharge Warning Lamp for Authorized Emergency, Maintenance, and Service Vehicles, April 1986. Class 1 gaseous discharge warning lamps are prohibited. (See § 393.7(b) for information on the incorporation by reference and availability of these documents.)

(f) *Stop lamp operation.* The stop lamps on each vehicle shall be activated upon application of the service brakes. The stop lamps are not required to be activated when the emergency feature of

the trailer brakes is used or when the stop lamp is optically combined with the turn signal and the turn signal is in use.

18. Section 393.26 is amended by revising paragraphs (a), (b), (c), and (d) and introductory text to read as follows:

§ 393.26 Requirements for reflex reflectors.

(a) *Mounting.* Reflex reflectors shall be mounted at the locations required by § 393.11. In the case of motor vehicles so constructed that requirement for a 381 mm (15-inch) minimum height above the road surface is not practical, the reflectors shall be mounted as high as practicable. All permanent reflex reflectors shall be securely mounted on a rigid part of the vehicle. Temporary reflectors on projecting loads must be securely mounted to the load and are not required to be permanently mounted to a part of the vehicle. Temporary reflex reflectors on vehicles transported in driveaway-towaway operations must be firmly attached.

(b) *Specifications.* All required reflex reflectors (except reflex reflectors on projecting loads, vehicles transported in a driveaway-towaway operation, converter dollies and pole trailers) on vehicles manufactured on or after December 25, 1968, shall meet the applicable requirements of FMVSS No. 108 in effect on the date of manufacture of the vehicle. Reflex reflectors on projecting loads, vehicles transported in a driveaway-towaway operation, and all reflex reflectors on converter dollies, pole trailers must conform to SAE J594—Reflex Reflectors, July 1995.

(c) *Substitute material for side reflex reflectors.* Reflective material conforming to ASTM D 4956-90, Standard Specification for Retroreflective Sheeting for Traffic Control, may be used in lieu of reflex reflectors if the material as used on the vehicle, meets the performance standards in either Table I or Table IA of SAE J594—Reflex Reflectors, July 1995. (See § 393.7(b) for information on the incorporation by reference and availability of these documents.)

(d) *Use of additional retroreflective surfaces.* Additional retroreflective surfaces may be used in conjunction with, but not in lieu of the reflex reflectors required in subpart B of part 393, and the substitute material for side reflex reflectors allowed by paragraph (c) of this section, provided:

* * * * *

19. Section 393.28 is revised to read as follows:

§ 393.28 Wiring systems.

Electrical wiring shall be installed and maintained to conform to SAE J1292—Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring, October 1981. (See § 393.7(b) for information on the incorporation by reference and availability of this document.)

§ 393.27, 393.29, 393.31, 393.32, and 393.33 [Removed and Reserved]

20. Sections 393.27, 393.29, 393.31, 393.32, and 393.33 are removed and reserved.

21. Section 393.40 is revised to read as follows:

§ 393.40 Required brake systems.

(a) Each commercial motor vehicle must have brakes adequate to stop and hold the vehicle or combination of motor vehicles. Each commercial motor vehicle must meet the applicable service, parking, and emergency brake system requirements provided in this section.

(b) *Service brakes*—(1) *Hydraulic brake systems*. Motor vehicles equipped with hydraulic brake systems and manufactured on or after September 2, 1983, must, at a minimum, have a service brake system that meets the requirements of FMVSS No. 105 in effect on the date of manufacture. Motor vehicles which were not subject to FMVSS No. 105 on the date of manufacture must have a service brake system that meets the applicable requirements of §§ 393.42, 393.48, 393.49, 393.51, and 393.52 of this subpart.

(2) *Air brake systems*. Buses, trucks and truck-tractors equipped with air brake systems and manufactured on or after March 1, 1975, and trailers manufactured on or after January 1, 1975, must, at a minimum, have a service brake system that meets the requirements of FMVSS No. 121 in effect on the date of manufacture. Motor vehicles which were not subject to FMVSS No. 121 on the date of manufacture must have a service brake system that meets the applicable requirements of §§ 393.42, 393.48, 393.49, 393.51, and 393.52 of this subpart.

(3) *Vacuum brake systems*. Motor vehicles equipped with vacuum brake systems must have a service brake system that meets the applicable requirements of §§ 393.42, 393.48, 393.49, 393.51, and 393.52 of this subpart.

(4) *Electric brake systems*. Motor vehicles equipped with electric brake systems must have a service brake system that meets the applicable requirements of §§ 393.42, 393.48, 393.49 and 393.52 of this subpart.

(c) *Parking brakes*. Each commercial motor vehicle must be equipped with a parking brake system that meets the applicable requirements of § 393.41.

(d) *Emergency brakes*—partial failure of service brakes—(1) *Hydraulic brake systems*. Motor vehicles manufactured on or after September 2, 1983, and equipped with a split service brake system must, at a minimum, meet the partial failure requirements of FMVSS No. 105 in effect on the date of manufacture.

(2) *Air brake systems*. Buses, trucks and truck tractors manufactured on or after March 1, 1975, and trailers manufactured on or after January 1, 1975, must be equipped with an emergency brake system which, at a minimum, meets the requirements of FMVSS No. 121 in effect on the date of manufacture.

(3) *Vehicles not subject to FMVSS Nos. 105 and 121 on the date of manufacture*. Buses, trucks and truck tractors not subject to FMVSS Nos. 105 or 121 on the date of manufacture must meet the requirements of § 393.40(e). Trailers not subject to FMVSS No. 121 at the time of manufacture must meet the requirements of § 393.43.

(e) *Emergency brakes, vehicles manufactured on or after July 1, 1973*.

(1) A bus, truck, truck tractor, or a combination of motor vehicles manufactured on or after July 1, 1973, and not covered under paragraphs (d)(1) or (d)(2) of this section, must have an emergency brake system which consists of emergency features of the service brake system or an emergency system separate from the service brake system. The emergency brake system must meet the applicable requirements of §§ 393.43 and 393.52.

(2) A control by which the driver applies the emergency brake system must be located so that the driver can operate it from the normal seating position while restrained by any seat belts with which the vehicle is equipped. The emergency brake control may be combined with either the service brake control or the parking brake control. However, all three controls may not be combined.

(f) *Interconnected systems*. (1) If the brake systems required by § 393.40(a) are interconnected in any way, they must be designed, constructed, and maintained so that in the event of a failure of any part of the operating mechanism of one or more of the systems (except the service brake actuation pedal or valve), the motor vehicle will have operative brakes and, for vehicles manufactured on or after July 1, 1973, be capable of meeting the requirements of § 393.52(b).

(2) A motor vehicle to which the requirements of FMVSS No. 105 (49 CFR 571.105, S5.1.2), dealing with partial failure of the service brake, applied at the time of manufacture meets the requirements of § 393.40(f)(1) if the motor vehicle is maintained in conformity with FMVSS No. 105 and the motor vehicle is capable of meeting the requirements of § 393.52(b), except in the case of a structural failure of the brake master cylinder body.

(3) A bus is considered to meet the requirements of § 393.40(f)(1) if it meets the requirements of § 393.44 and § 393.52(b).

22. Section 393.41 is revised to read as follows:

§ 393.41 Parking brake system.

(a) *Hydraulic-braked vehicles manufactured on or after September 2, 1983*. Each truck and bus (other than a school bus) with a GVWR of 4,536 kg (10,000 pounds) or less which is subject to this part and school buses with a GVWR greater than 4,536 kg (10,000 pounds) shall be equipped with a parking brake system as required by FMVSS No. 105 (49 CFR 571.105, S5.2) in effect at the time of manufacture. The parking brake shall be capable of holding the vehicle or combination of vehicles stationary under any condition of loading in which it is found on a public road (free of ice and snow). Hydraulic-braked vehicles which were not subject to the parking brake requirements of FMVSS No. 105 (49 CFR 571.105, S5.2) must be equipped with a parking brake system that meets the requirements of paragraph (c) of this section.

(b) *Air-braked power units manufactured on or after March 1, 1975, and air-braked trailers manufactured on or after January 1, 1975*. Each air-braked bus, truck and truck tractor manufactured on and after March 1, 1975, and each air-braked trailer except an agricultural commodity trailer, converter dolly, heavy hauler trailer or pulpwood trailer, shall be equipped with a parking brake system as required by FMVSS No. 121 (49 CFR 571.121, S5.6) in effect at the time of manufacture. The parking brake shall be capable of holding the vehicle or combination of vehicles stationary under any condition of loading in which it is found on a public road (free of ice and snow). An agricultural commodity trailer, heavy hauler or pulpwood trailer shall carry sufficient chocking blocks to prevent movement when parked.

(c) *Vehicles not subject to FMVSS Nos. 105 and 121 on the date of manufacture and all vacuum braked vehicles and electric braked trailers*. (1)

All hydraulic-braked motor vehicles not subject to FMVSS No. 105 (49 CFR 571.105, S5.2) at the time of manufacture; hydraulic-braked trailers; air-braked buses, trucks and truck tractors manufactured before March 1, 1975; air-braked trailers (other than agricultural commodity, heavy hauler, or pulpwood trailers) manufactured before January 1, 1975; and vacuum braked motor vehicles and electric braked trailers (regardless of the date of manufacture) shall be equipped with a parking brake system adequate to hold the vehicle or combination on any grade on which it is operated, under any condition of loading in which it is found on a public road (free of ice and snow).

(2) The parking brake system shall, at all times, be capable of being applied by either the driver's muscular effort or by spring action. If other energy is used to apply the parking brake, there must be an accumulation of that energy isolated from any common source and used exclusively for the operation of the parking brake. *Exception:* This paragraph shall not be applicable to air-applied, mechanically-held parking brake systems which meet the parking brake requirements of FMVSS No. 121 (49 CFR 571.121, S5.6).

(3) The parking brake system shall be held in the applied position by energy other than fluid pressure, air pressure, or electric energy. The parking brake system shall not be capable of being released unless adequate energy is available to immediately reapply the parking brake with the required effectiveness.

23. Section 393.42 is amended by revising paragraph (b) to read as follows:

§ 393.42 Brakes required on all wheels.

* * * * *

(b) *Exception.* (1) Trucks or truck tractors having three or more axles and manufactured before July 25, 1980, are not required to have brakes on the front wheels. However, these vehicles must meet the requirements of § 393.52.

(2) Motor vehicles being towed in a driveaway-towaway operation are not required to have operative brakes provided the combination of vehicles meets the requirements of § 393.52. This exception is not applicable to:

(i) Any motor vehicle towed by means of a tow-bar when another motor vehicle is full-mounted on the towed vehicle; and

(ii) Any combination of motor vehicles utilizing three or more saddle-mounts.

(3) Any semitrailer or pole trailer (laden or unladen) with a gross weight of 1,361 kg (3,000 pounds) or less which

is subject to this part is not required to be equipped with brakes if the axle weight of the towed vehicle does not exceed 40 percent of the sum of the axle weights of the towing vehicle.

(4) Any full trailer or four-wheel pole trailer (laden or unladen) with a gross weight of 1,361 kg (3,000 pounds) or less which is subject to this part is not required to be equipped with brakes if the sum of the axle weights of the towed vehicle does not exceed 40 percent of the sum of the axle weights of the towing vehicle.

(5) Brakes are not required on the steering axle of a three-axle dolly which is steered by a co-driver.

(6) Loaded housemoving dollies, specialized trailers and dollies used to transport industrial furnaces, reactors, and similar motor vehicles are not required to be equipped with brakes, provided the speed at which the combination of vehicles will be operated does not exceed 32 km/hour (20 mph) and brakes on the combination of vehicles are capable of stopping the combination within 12.2 meters (40 feet) from the speed at which the vehicle is being operated or 32 km/hour (20 mph), whichever is less.

* * * * *

24. Section 393.43 is amended by revising paragraphs (a), (d) and (f) and by adding initial subheadings to paragraphs (b), (c), and (e) to read as follows:

§ 393.43 Breakaway and emergency braking.

(a) *Towing vehicle protection system.* Every motor vehicle, if used to tow a trailer equipped with brakes, shall be equipped with a means for providing that in the case of a breakaway of the trailer, the service brakes on the towing vehicle will be capable of stopping the towing vehicle. For air braked towing units, the tractor protection valve or similar device shall operate automatically when the air pressure on the towing vehicle is between 138 kPa and 310 kPa (20 psi and 45 psi).

(b) *Emergency brake requirements, air brakes.* * * *

(c) *Emergency brake requirements, vacuum brakes.* * * *

(d) *Breakaway braking requirements for trailers.* Every trailer required to be equipped with brakes shall have brakes which apply automatically and immediately upon breakaway from the towing vehicle. All brakes with which the trailer is required to be equipped must be applied upon breakaway from the towing vehicle. The brakes must remain in the applied position for at least 15 minutes.

(e) *Emergency valves.* * * *

(f) *Exception.* The requirements of paragraphs (b), (c) and (d) of this section shall not be applicable to commercial motor vehicles being transported in driveaway-towaway operations.

25. Section 393.45 is revised to read as follows:

§ 393.45 Brake tubing and hoses; hose assemblies and end fittings.

(a) *General construction requirements for tubing and hoses, assemblies, and end fittings.* All brake tubing and hoses, brake hose assemblies, and brake hose end fittings must meet the applicable requirements of FMVSS No. 106 (49 CFR 571.106).

(b) *Special rule for coiled nylon brake tubing in air brake systems.* Coiled nylon brake hose or hose assemblies which meet SAE J844, Nonmetallic Air Brake System Tubing, October 1994, are not required to meet 49 CFR 571.106, S7.3.6 (length change), S7.3.10 (tensile strength), and S7.3.11 (tensile strength of an assembly after immersion in water) of FMVSS No. 106.

(c) *Brake tubing and hose installation.* Brake tubing and hose must—

(1) Be long and flexible enough to accommodate without damage all normal motions of the parts to which it is attached;

(2) Be secured against chaffing, kinking, or other mechanical damage; and

(3) Be installed in a manner that prevents it from contacting the vehicle's exhaust system or any other source of high temperatures.

(d) *Nonmetallic brake tubing.* Coiled nonmetallic brake tubing may be used for connections between towed and towing motor vehicles or between the frame of a towed vehicle and the unsprung subframe of an adjustable axle of the motor vehicle if—

(1) The coiled tubing has a straight segment (pigtail) at each end that is at least 51 mm (2 inches) in length and is encased in a spring guard or similar device which prevents the tubing from kinking at the fitting at which it is attached to the vehicle; and

(2) The spring guard or similar device has at least 51 mm (2 inches) of closed coils or similar surface at its interface with the fitting and extends at least 38 mm (1½ inches) into the coiled segment of the tubing from its straight segment.

(e) *Brake tubing and hose connections.* All connections for air, vacuum, or hydraulic braking systems shall be installed so as to ensure an attachment free of leaks, constrictions or other conditions which would adversely affect the performance of the brake system.

§ 393.46 [Removed and Reserved]

26. Section 393.46 is removed and reserved.

27. Section 393.47 is revised to read as follows:

§ 393.47 Brake actuators, slack adjusters, linings/pads and drums/rotors.

(a) *General requirements.* Brake components must be constructed, installed and maintained to prevent excessive fading and grabbing. The means of attachment and physical characteristics must provide for safe and reliable stopping of the commercial motor vehicle.

(b) *Brake chambers.* The service brake chambers and spring brake chambers on each end of an axle must be the same size.

(c) *Slack adjusters.* The effective length of the slack adjuster on each end of an axle must be the same.

(d) *Linings and pads.* The thickness of the brake linings or pads shall meet the applicable requirements of this paragraph —

(1) *Steering axle brakes.* The brake lining/pad thickness on the steering axle of a truck, truck-tractor or bus shall not be less than 4.8 mm ($\frac{3}{16}$ inch) at the shoe center for a shoe with a continuous strip of lining; less than 6.4 mm ($\frac{1}{4}$ inch) at the shoe center for a shoe with two pads; or worn to the wear indicator if the lining is so marked, for air drum brakes. The steering axle brake lining/pad thickness shall not be less than 3.2 mm ($\frac{1}{8}$ inch) for air disc brakes, or 1.6 mm ($\frac{1}{16}$ inch) or less for hydraulic disc, drum and electric brakes.

(2) *Non-steering axle brakes.* An air braked commercial motor vehicle shall not be operated with brake lining/pad thickness less than 6.4 mm ($\frac{1}{4}$ inch) or to the wear indicator if the lining is so marked (measured at the shoe center for drum brakes); or less than 3.2 mm ($\frac{1}{8}$ inch) for disc brakes. Hydraulic or electric braked commercial motor vehicles shall not be operated with a lining/pad thickness less than 1.6 mm ($\frac{1}{16}$ inch) (measured at the shoe center) for disc or drum brakes.

(e) *Clamp and roto-chamber brake actuator readjustment limits.* The pushrod travel for clamp and roto-chamber type actuators must be less than 80 percent of the rated strokes listed in SAE J1817—Long Stroke Air Brake Actuator Marking, June 1991, or 80 percent of the rated stroke marked on the brake chamber by the chamber manufacturer, or the readjustment limit marked on the brake chamber by the chamber manufacturer. The pushrod travel for Type 16 and 20 long stroke clamp type brake actuators must be less than 51 mm (2 inches) or 80 percent of

the rated stroke marked on the brake chamber by the chamber manufacturer, or the readjustment limit marked on the brake chamber by the chamber manufacturer.

(f) *Wedge brake adjustment.* The movement of the scribe mark on the lining shall not exceed 1.6 mm ($\frac{1}{16}$ inch).

(g) *Drums and rotors.* The thickness of the drums or rotors shall not be less than the limits established by the brake drum or rotor manufacturer.

28. Section 393.48 is revised to read as follows:

§ 393.48 Brakes to be operative.

(a) *General rule.* Except as provided in paragraphs (b) and (c) of this section, all brakes with which a commercial motor vehicle is equipped must be operable at all times.

(b) *Devices to reduce or remove front-wheel braking effort.* A commercial motor vehicle may be equipped with a device to reduce the front wheel braking effort (or in the case of a three-axle truck or truck tractor manufactured before March 1, 1975, a device to remove the front-wheel braking effort) if that device meets the applicable requirements of paragraphs (b) (1) and (2) of this section.

(1) *Manually operated devices.* Manually operated devices to reduce or remove front-wheel braking effort may only be used on buses, trucks, and truck tractors manufactured before March 1, 1975. Such devices must not be used unless the vehicle is being operated under adverse conditions such as wet, snowy, or icy roads.

(2) *Automatic devices.* Automatic devices must not reduce the front-wheel braking force by more than 50 percent of the braking force available when the automatic device is disconnected (regardless of whether or not an antilock system failure has occurred on any axle). The device must not be operable by the driver except upon application of the control that activates the braking system. The device must not be operable when the brake control application pressure exceeds 85 psig (for vehicles equipped with air brakes) or 85 percent of the maximum system pressure (for vehicles which are not equipped with air brakes).

(c) *Exception.* Paragraph (a) of this section does not apply to—

(1) A towed vehicle with disabling damage as defined in § 390.5;

(2) A vehicle which is towed in a driveaway-towaway operation and is included in the exemption to the requirement for brakes on all wheels, § 393.42(b);

(3) Unladen converter dollies with a gross weight of 1,361 kg (3,000 lbs) or

less, and manufactured prior to March 1, 1998;

(4) The steering axle of a three-axle dolly which is steered by a co-driver;

(5) Loaded house moving dollies, specialized trailers and dollies used to transport industrial furnaces, reactors, and similar motor vehicles provided the speed at which the combination of vehicles will be operated does not exceed 32 km/hour (20 mph) and brakes on the combination of vehicles are capable of stopping the combination within 12.2 meters (40 feet) from the speed at which the vehicle is being operated or 32 km/hour (20 mph), whichever is less.

(6) Raised lift axles. Brakes on lift axles need not be capable of being operated while the lift axle is raised. However, brakes on lift axles must be capable of being applied whenever the lift axle is lowered and the tires contact the roadway.

29. Section 393.50 is revised to read as follows:

§ 393.50 Reservoirs required.

(a) *Reservoir capacity for air-braked power units manufactured on or after March 1, 1975, and air-braked trailers manufactured on or after January 1, 1975.* Buses, trucks, and truck-tractors must meet the reservoir requirements of FMVSS No. 121, (49 CFR 571.121, S5.1.2), in effect on the date of manufacture.

(b) *Reservoir capacity for air-braked vehicles not subject to FMVSS No. 121 on the date of manufacture and all vacuum braked vehicles.* Each motor vehicle using air or vacuum braking must have either reserve capacity, or a reservoir, that would enable the driver to make a full service brake application with the engine stopped without depleting the air pressure or vacuum below 70 percent of that indicated by the air or vacuum gauge immediately before the brake application is made. For the purposes of this paragraph, a full service brake application means depressing the brake pedal or treadle valve to the limit of its travel.

(c) *Safeguarding of air and vacuum.* Each service reservoir system on a motor vehicle shall be protected against a loss of air pressure or vacuum due to a failure or leakage in the system between the service reservoir and the source of air pressure or vacuum, by check valves or equivalent devices whose proper functioning can be checked without disconnecting any air or vacuum line, or fitting.

(d) *Drain valves for air braked vehicles.* Each reservoir must have a condensate drain valve that can be manually operated. Automatic

condensate drain valves may be used provided they may be operated manually, or a manual means of draining the reservoirs is retained.

30. Section 393.51 is revised to read as follows:

§ 393.51 Warning signals, air pressure and vacuum gauges.

(a) *General rule.* Every bus, truck and truck tractor, except as provided in paragraph (f) of this section, must be equipped with a signal that provides a warning to the driver when a failure occurs in the vehicle's service brake system. The warning signal must meet the applicable requirements of paragraphs (b), (c), (d) or (e) of this section.

(b) *Hydraulic brakes.* Vehicles manufactured on or after September 1, 1975, must meet the brake system indicator lamp requirements of FMVSS No. 105 571.105, (49 CFR (S5.3)), applicable to the vehicle on the date of manufacture. Vehicles manufactured on or after July 1, 1973 but before September 1, 1975, or to which FMVSS No. 105 (49 CFR 571.105), was not applicable on the date of manufacture, must have a warning signal which operates before or upon application of the brakes in the event of a hydraulic-type complete failure of a partial system. The signal must be either visible within the driver's forward field of view or audible. The signal must be continuous.

(Note: FMVSS No. 105 was applicable to trucks and buses from September 1, 1975 to October 12, 1976, and from September 1, 1983, to the present. FMVSS No. 105 was not applicable to trucks and buses manufactured between October 12, 1976, and September 1, 1983. Motor carriers have the option of equipping those vehicles to meet either the indicator lamp requirements of FMVSS No. 105, or the indicator lamp requirements specified in this paragraph for vehicles which were not subject to FMVSS No. 105 on the date of manufacture.)

(c) *Air brakes.* A commercial motor vehicle (regardless of the date of manufacture) equipped with service brakes activated by compressed air (air brakes) or a commercial motor vehicle towing a vehicle with service brakes activated by compressed air (air brakes) must be equipped with a pressure gauge and a warning signal. Trucks, truck tractors, and buses manufactured on or after March 1, 1975, must, at a minimum, have a pressure gauge and a warning signal which meets the requirements of FMVSS No. 121 (49 CFR 571.121, S5.1.4 for the pressure gauge and S5.1.5 for the warning signal) applicable to the vehicle on the date of manufacture of the vehicle. Power units

to which FMVSS No. 121 (49 CFR 571.121) was not applicable on the date of manufacture of the vehicle must be equipped with—

(1) A pressure gauge, visible to a person seated in the normal driving position, which indicates the air pressure (in kilopascals (kPa) or pounds per square inch (psi)) available for braking; and

(2) A warning signal that is audible or visible to a person in the normal driving position and provides a continuous warning to the driver whenever the air pressure in the service reservoir system is at 379 kPa (55 psi) and below, or one-half of the compressor governor cutout pressure, whichever is less.

(d) *Vacuum brakes.* A commercial motor vehicle (regardless of the date it was manufactured) having service brakes activated by vacuum or a vehicle towing a vehicle having service brakes activated by vacuum must be equipped with—

(1) A vacuum gauge, visible to a person seated in the normal driving position, which indicates the vacuum (in millimeters or inches of mercury) available for braking; and

(2) A warning signal that is audible or visible to a person in the normal driving position and provides a continuous warning to the driver whenever the vacuum in the vehicle's supply reservoir is less than 203 mm (8 inches) of mercury.

(e) *Hydraulic brakes applied or assisted by air or vacuum.* Each vehicle equipped with hydraulically activated service brakes which are applied or assisted by compressed air or vacuum, and to which FMVSS No. 105 was not applicable on the date of manufacture, must be equipped with a warning signal that conforms to paragraph (b) of this section for the hydraulic portion of the system; paragraph (c) of this section for the air assist/air applied portion; or paragraph (d) of this section for the vacuum assist/vacuum applied portion. This paragraph shall not be construed as requiring air pressure gauges or vacuum gauges, only warning signals.

(f) *Exceptions.* The rules in paragraphs (c), (d) and (e) of this section do not apply to property carrying commercial motor vehicles which have less than three axles and—

(1) Were manufactured before July 1, 1973, and

(2) Have a manufacturer's gross vehicle weight rating less than 4,536 kg (10,001 pounds).

31. Section 393.60 is revised to read as follows:

§ 393.60 Glazing in specified openings.

(a) *Glazing material.* Glazing material used in windshields, windows and doors on a motor vehicle manufactured on or after December 25, 1968, shall at a minimum meet the requirements of FMVSS No. 205 in effect on the date of manufacture of the motor vehicle. The glazing material shall be marked in accordance with FMVSS No. 205 (49 CFR 571.205, S6).

(b) *Windshields required.* Each bus, truck and truck-tractor shall be equipped with a windshield. Each windshield or portion of a multi-piece windshield shall be mounted using the full periphery of the glazing material.

(c) *Windshield condition.* With the exception of the conditions listed in paragraphs (c)(1), (c)(2), and (c)(3) of this section, each windshield shall be free of discoloration or damage in the area extending upward from the height of the top of the steering wheel (excluding a 51 mm (2 inch) border at the top of the windshield) and extending from a 25 mm (1 inch) border at each side of the windshield or windshield panel. Exceptions:

(1) Coloring or tinting which meets the requirements of paragraph (d) of this section;

(2) Any crack less than 6 mm (¼ inch) wide, if not intersected by any other cracks;

(3) Any damaged area which can be covered by a disc, 19 mm (¾ inch) in diameter, if not closer than 76 mm (3 inches) to any other similarly damaged area.

(d) *Coloring or tinting of windshields and windows.* Coloring or tinting of windshields and the windows to the immediate right and left of the driver is allowed provided the parallel luminous transmittance through the colored or tinted glazing is not less than 70 percent of the light at normal incidence in those portions of the windshield or windows which are marked as having a parallel luminous transmittance of not less than 70 percent. The transmittance restriction does not apply to other windows on the commercial motor vehicle.

(e) *Prohibition on obstructions to the drivers field of view—(1) Devices mounted at the top of the windshield.* Antennas, transponders, and similar devices must not be mounted more than 152 mm (6 inches) from the upper edge of the windshield. These devices must be located outside the area swept by the windshield wipers, and outside the driver's sight lines to the road and highway signs and signals.

(2) *Decals and stickers mounted on the windshield.* Commercial Vehicle Safety Alliance (CVSA) inspection

decals, and stickers and/or decals required under Federal or State laws may be placed at the bottom or sides of the windshield provided such decals or stickers are located outside the area swept by the windshield wipers, and outside the driver's sight lines to the road and highway signs or signals.

32. Section 393.61 is revised to read as follows:

§ 393.61 Truck and truck tractor window construction.

Each truck and truck tractor (except trucks engaged in armored car service) shall have at least one window on each side of the driver's compartment. Each window must have a minimum area of 1,290 cm² (200 in²) formed by a rectangle 33 cm by 45 cm (13 inches by 17³/₄ inches). The maximum radius of the corner arcs shall not exceed a 152 mm (6 inches). The long axis of the rectangle shall not make an angle of more than 45 degrees with the surface on which the unladen vehicle stands. If the cab is designed with a folding door or doors or with clear openings where doors or windows are customarily located, no windows shall be required in those locations.

33. Section 393.62 is revised to read as follows:

§ 393.62 Emergency exits for buses.

(a) *Buses manufactured on or after September 1, 1994.* Each bus with a GVWR of 4,536 kg (10,000 pounds) or less must meet the emergency exit requirements of FMVSS No. 217 (49 CFR 571.217, S5.2.2.3) in effect on the date of manufacture. Each bus with a GVWR of more than 4,536 kg (10,000 pounds) must have emergency exits which meet the applicable emergency exit requirements of FMVSS No. 217 (49 CFR 571.217, S5.2.2 or S5.2.3) in effect on the date of manufacture.

(b) *Buses manufactured on or after September 1, 1973, but before September 1, 1994.*

(1) Each bus (including a school bus used in interstate commerce for non-school bus operations) with a GVWR of more than 4,536 kg (10,000 lbs) must meet the requirements of FMVSS No. 217, (49 CFR 571.217 S5.2.2) in effect on the date of manufacture.

(2) Each bus (including a school bus used in interstate commerce for non-school bus operations) with a GVWR of 4,536 kg (10,000 lbs) or less must meet the requirements of FMVSS No. 217 (49 CFR 571.217, S5.2.2.3) in effect on the date of manufacture.

(c) *Buses manufactured before September 1, 1973.* For each seated passenger space provided, inclusive of the driver there shall be at least 432 cm²

(67 square inches) of glazing if such glazing is not contained in a push-out window; or, at least 432 cm² (67 square inches) of free opening resulting from opening of a push-out type window. No area shall be included in this minimum prescribed area unless it will provide an unobstructed opening of at least 1,290 cm² (200 in²) formed by a rectangle 33 cm by 45 cm (13 inches by 17³/₄ inches). The maximum radius of the corner arcs shall not exceed 152 mm (6 inches). The long axis of the rectangle shall not make an angle of more than 45 degrees with the surface on which the unladen vehicle stands. The area shall be measured either by removal of the glazing if not of the push-out type, or of the movable sash if of the push-out type. The exit must comply with paragraph (d) of this section. Each side of the bus must have at least 40 percent of emergency exit space required by this paragraph.

(d) *Laminated safety glass/push-out window requirements for buses manufactured before September 1, 1973.* Emergency exit space used to satisfy the requirements of paragraph (c) of this section must have laminated safety glass or push-out windows designed and maintained to yield outward to provide a free opening.

(1) *Safety glass.* Laminated safety glass must meet Test No. 25, Egress, of American National Standard for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways—Safety Code, Z26.1-1990.

(2) *Push-out windows.* Each push-out window shall be releasable by operating no more than two mechanisms and allow manual release of the exit by a single occupant. For mechanisms which require rotary or straight (parallel to the undisturbed exit surface) motions to operate the exit, no more than 89 Newtons (20 pounds) of force shall be required to release the exit. For exits which require a straight motion perpendicular to the undisturbed exit surface, no more than 267 Newtons (60 pounds) shall be required to release the exit.

(e) *Emergency exit identification.* Each bus and each school bus used in interstate commerce for non-school bus operations, manufactured on or after September 1, 1973, shall meet the applicable emergency exit identification or marking requirements of FMVSS No. 217, (49 CFR 571, 217, S5.5), in effect on the date of manufacture. The emergency exits and doors on all buses (including school buses used in interstate commerce for non-school bus operations) must be marked "Emergency Exit" or "Emergency Door" followed by concise operating instructions

describing each motion necessary to unlatch or open the exit located within 152 mm (6 inches) of the release mechanism.

(f) *Exception for the transportation of prisoners.* The requirements of this section do not apply to buses used exclusively for the transportation of prisoners.

§ 393.63 [Removed and Reserved]

34. Section 393.63 is removed and reserved.

35. Section 393.67 is amended by removing the footnote to paragraphs (d) and (e); by revising the introductory text of paragraphs (a), (d), and (e); and by revising paragraph (f)(2) to read as follows:

§ 393.67 Liquid fuel tanks.

(a) *Application of the rules in this section.* The rules in this section apply to tanks containing or supplying fuel for the operation of commercial motor vehicles or for the operation of auxiliary equipment installed on, or used in connection with commercial motor vehicles.

* * * * *

(d) *Liquid fuel tank tests.* Each liquid fuel tank must be capable of passing the tests specified in paragraphs (d)(1) and (2) of this section. The specified tests are a measure of performance only. Alternative procedures which assure that equipment meets the required performance standards may be used.

* * * * *

(e) *Side-mounted liquid fuel tank tests.* Each side-mounted liquid fuel tank must be capable of passing the tests specified in paragraphs (e)(1) and (2) of this section and the test specified in paragraphs (d)(1) and (2) of this section. The specified tests are a measure of performance only. Alternative procedures which assure that equipment meets the required performance criteria may be used.

* * * * *

(f) * * *

(2) The manufacturer's name on tanks manufactured on and after July 1, 1989, and means of identifying the facility at which the tank was manufactured, and

* * * * *

36. Section 393.68 is added to part 393 and reads as follows:

§ 393.68 Compressed natural gas fuel containers.

(a) *Applicability.* The rules in this section apply to compressed natural gas (CNG) fuel containers used for supplying fuel for the operation of commercial motor vehicles or for the operation of auxiliary equipment

installed on, or used in connection with commercial motor vehicles.

(b) *CNG containers manufactured on or after March 26, 1995.* Any motor vehicle manufactured on or after March 26, 1995, and equipped with a CNG fuel tank must meet the CNG container requirements of FMVSS No. 304 (49 CFR 571.304) in effect at the time of manufacture of the vehicle.

(c) *Labeling.* Each CNG fuel container shall be permanently labeled in accordance with the requirements of FMVSS No. 304, (49 CFR 571.304, S7.4). 37. Section 393.70 is amended by revising paragraph (d)(8) to read as follows:

§ 393.70 Coupling devices and towing methods, except for driveaway-towaway operation.

(d) * * * (8)(i) When two safety devices, including two safety chains or cables, are used and are attached to the towing vehicle at separate points, the points of attachment on the towing vehicle shall be located equally distant from, and on opposite sides of, the longitudinal centerline of the towing vehicle.

(ii) Where two chains or cables are attached to the same point on the towing vehicle, and where a bridle or a single chain or cable is used, the point of attachment must be on the longitudinal centerline or within 152 mm (6 inches) to the right of the longitudinal centerline of the towing vehicle.

(iii) A single safety device, other than a chain or cable, must also be attached to the towing vehicle at a point on the longitudinal centerline or within 152 mm (6 inches) to the right of the longitudinal centerline of the towing vehicle.

38. Section 393.71 is amended by revising paragraphs (a)(2) and (g) and the heading of paragraph (b) and by adding paragraph (b)(3):

§ 393.71 Coupling devices and towing methods, driveaway-towaway operations.

(a) * * *

(2) No more than one tow-bar or ball-and-socket type coupling device may be used in any combination.

* * * * *

(b) *Carrying vehicles on towing vehicles, and multiple saddle-mounts.*

* * *

* * * * *

(3) Saddle-mounted vehicles must be arranged such that the gross weight of the vehicles is properly distributed to prevent undue interference with the steering, braking, or maneuvering of the combination of vehicles.

* * * * *

(g) *Means required for towing.* No motor vehicles or combination of motor vehicles shall be towed in driveaway-towaway operations by means other than a tow-bar, ball-and-socket type coupling device, saddle-mount connections which meet the requirements of this section, or in the case of a semi-trailer equipped with an upper coupler assembly, a fifth-wheel meeting the requirements of § 393.70.

* * * * *

39. Section 393.75 is amended by revising paragraph (e) to read as follows:

§ 393.75 Tires.

* * * * *

(e) A regrooved tire with a load-carrying capacity equal to or greater than 2,232 kg (4,920 pounds) shall not be used on the front wheels of any truck or truck tractor.

* * * * *

40. Section 393.78 is revised to read as follows:

§ 393.78 Windshield wiping and washing systems.

(a) *Vehicles manufactured on or after December 25, 1968.* Each bus, truck, and truck-tractor manufactured on or after December 25, 1968, must have a windshield wiping system that meets the requirements of FMVSS No. 104 (49 CFR 571.104, S4.1) in effect on the date of manufacture. Each of these vehicles must have a windshield washing system that meets the requirements of FMVSS No. 104 (49 CFR 571.104, S4.2.2) in effect on the date of manufacture.

(b) *Vehicles manufactured between June 30, 1953, and December 24, 1968.* Each truck, truck-tractor, and bus manufactured between June 30, 1953, and December 24, 1968, shall be equipped with a power-driven windshield wiping system with at least two wiper blades, one on each side of the centerline of the windshield. Motor vehicles which depend upon vacuum to operate the windshield wipers, shall have the wiper system constructed and maintained such that the performance of the wipers will not be adversely affected by a change in the intake manifold pressure.

(c) *Driveaway-towaway operations.* Windshield wiping and washing systems need not be in working condition while a commercial motor vehicle is being towed in a driveaway-towaway operation.

41. Section 393.79 is revised to read as follows:

§ 393.79 Windshield defrosting and defogging systems.

(a) *Vehicles manufactured on or after December 25, 1968.* Each bus, truck, and

truck-tractor manufactured on or after December 25, 1968, must have a windshield defrosting and defogging system that meets the requirements of FMVSS No. 103 in effect on the date of manufacture.

(b) *Vehicles manufactured before December 25, 1968.* Each bus, truck, and truck-tractor shall be equipped with a means for preventing the accumulation of ice, snow, frost, or condensation that could obstruct the driver's view through the windshield while the vehicle is being driven.

42. Section 393.82 is revised to read as follows:

§ 393.82 Speedometer.

Each bus, truck, and truck-tractor must be equipped with a speedometer indicating vehicle speed in miles per hour and/or kilometers per hour. The speedometer must be accurate to within plus or minus 8 km/hr (5 mph) at a speed of 80 km/hr (50 mph).

43. Section 393.87 is revised to read as follows:

§ 393.87 Warning flags on projecting loads.

(a) Any commercial motor vehicle transporting a load which extends beyond the sides by more than 102 mm (4 inches) or more than 1,219 mm (4 feet) beyond the rear must have the extremities of the load marked with red or orange fluorescent warning flags. Each warning flag must be at least 457 mm (18 inches) square.

(b) *Position of flags.* There must be a single flag at the extreme rear if the projecting load is two feet wide or less. Two warning flags are required if the projecting load is wider than two feet. Flags must be located to indicate maximum width of loads which extend beyond the sides and/or rear of the vehicle.

§ 393.92 [Removed and Reserved]

44. Section 393.92 is removed and reserved.

45. Section 393.94 is amended by revising the section heading, by removing paragraph (d) and the footnote to paragraph (c), and by revising paragraphs (a) and (c)(4) to read as follows:

§ 393.94 Interior noise levels in power units.

(a) *Applicability of this section.* The interior noise level requirements apply to all trucks, truck-tractors, and buses.

* * * * *

(c) * * *

(4) The sound level meters used to determine compliance with the requirements of this section must meet

the American National Standards Institute "Specification for Sound Level Meters," ANSI S1.4-1983. (See § 393.7(b) for information on the incorporation by reference and availability of this document.)

* * * * *

46. Section 393.95 is amended by revising the introductory text; by removing and reserving paragraphs (c), (h) and (i); by revising paragraphs (a), and (f) and adding (b) to read as follows:

§ 393.95 Emergency equipment on all power units.

Each truck, truck tractor, and bus (except those towed in driveaway-towaway operations) must be equipped as follows:

(a) *Fire extinguishers*—(1) *Minimum ratings:* (i) A power unit that is used to transport hazardous materials in a quantity that requires placarding (See § 177.823 of this title) must be equipped with a fire extinguisher having an Underwriters' Laboratories rating of 10 B:C or more.

(ii) A power unit that is not used to transport hazardous materials must be equipped with either:

(A) A fire extinguisher having an Underwriters' Laboratories rating of 5 B:C or more; or

(B) Two fire extinguishers, each of which has an Underwriters' Laboratories rating of 4 B:C or more.

(2) *Labeling and marking.* Each fire extinguisher required by this section must be labeled or marked by the manufacturer with its Underwriters' Laboratories rating.

(3) *Visual Indicators.* The fire extinguisher must be designed, constructed, and maintained to permit visual determination of whether it is fully charged.

(4) *Condition, location, and mounting.* The fire extinguisher(s) must be filled and located so that it is readily accessible for use. The extinguisher(s)

must be securely mounted to prevent sliding, rolling, or vertical movement relative to the motor vehicle.

(5) *Extinguishing agents.* The fire extinguisher must use an extinguishing agent that does not need protection from freezing. Extinguishing agents must comply with the toxicity provisions of the Environmental Protection Agency's Significant New Alternatives Policy (SNAP) regulations under 40 CFR Part 82, Subpart G.

(b) *Spare fuses.* Power units for which fuses are needed to operate any required parts and accessories must have at least one spare fuse for each type/size of fuse needed for those parts and accessories.

* * * * *

(f) *Warning devices for stopped vehicles.* Except as provided in paragraph (g) of this section, one of the following options must be used:

(1) Three bidirectional emergency reflective triangles that conform to the requirements of Federal Motor Vehicle Safety Standard No. 125, § 571.125 of this title; or

(2) At least 6 fuses or 3 liquid-burning flares. The vehicle must have as many additional fuses or liquid-burning flares as are necessary to satisfy the requirements of § 392.22.

(3) Other warning devices may be used in addition to, but not in lieu of, the required warning devices, provided those warning devices do not decrease the effectiveness of the required warning devices.

* * * * *

47. Section 393.102(b)(6) is amended by adding a sentence at the end of the paragraph preceding the tables of working load limits to read as follows:

§ 393.102 Securement systems.

* * * * *

(b) * * *

(6) *Tables of working load limits.* * * *. Welded steel chain which is not marked or labeled to enable

identification of its grade or working load limit shall be considered to have a working load limit equal to that for grade 30 proof coil chain.

* * * * *

48. Section 393.201 is amended by removing paragraph (f) and by revising paragraphs (a) and (d) to read as follows:

§ 393.201 Frames.

(a) The frame or chassis of each commercial motor vehicle shall not be cracked, loose, sagging or broken.

* * * * *

(d) Parts and accessories shall not be welded to the frame or chassis of a commercial motor vehicle except in accordance with the vehicle manufacturer's recommendations. Any welded repair of the frame must also be in accordance with the vehicle manufacturer's recommendations.

* * * * *

49. Section 393.207 is amended by adding paragraph (g) to read as follows:

§ 393.207 Suspension systems.

* * * * *

(g) *Air suspension exhaust controls.* The air suspension exhaust controls must not have the capability to exhaust air from the suspension system of one axle of a two-axle air suspension trailer. This paragraph shall not be construed to prohibit—

(1) Devices that could exhaust air from both axle systems simultaneously; or

(2) Lift axles on multi-axle units.

50. Section 393.209 is amended by revising paragraph (b) and the first sentence of paragraph (d) to read as follows:

§ 393.209 Steering wheel systems.

* * * * *

(b) *Steering wheel lash.* (1) The steering wheel lash shall not exceed the following parameters:

Steering wheel diameter	Manual steering system	Power steering system
406 mm or less (16 inches or less)	51 mm (2 inches)	108 mm (4¼ inches).
457 mm (18 inches)	57 mm (2¼ inches)	121 mm (4¾ inches).
483 mm (19 inches)	60 mm (2⅜ inches)	127 mm (5 inches).
508 mm (20 inches)	64 mm (2½ inches)	133 mm (5¼ inches).
533 mm (21 inches)	67 mm (2⅝ inches)	140 mm (5½ inches).
559 mm (22 inches)	70 mm (2¾ inches)	146 mm (5¾ inches).

(2) For steering wheel diameters not listed in paragraph (b)(1) of this section the steering wheel lash shall not exceed 14 degrees angular rotation for manual

steering systems, and 30 degrees angular rotation for power steering systems.

* * * * *

(d) *Steering system.* Universal joints and ball-and-socket joints shall not be

worn, faulty or repaired by welding.

* * * * *

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