

# COMMERCIAL VEHICLE SAFETY ALLIANCE



An Association of State, Provincial and Federal Officials  
Responsible for the Administration and Enforcement of Motor  
Carrier Safety Laws in the United States, Canada and Mexico.

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QA  
17808

August 13, 1993

Federal Highway Administration  
Docket No. MC-92-4  
Room 4232, HCC-10  
Office of the Chief Counsel  
400 Seventh Street, SW  
Washington, DC 20590

FHWA-97-2180-17

The Commercial Vehicle Safety Alliance (CVSA) appreciates the opportunity to provide comments on the subject docket. The CVSA is an association of federal, state and provincial officials responsible for the administration and enforcement of motor carrier safety laws in the United States, Canada, and Mexico. CVSA offers its support for this rulemaking initiative. We do, however, offer the following comments for your consideration:

Proposed §397.49 - Conditions for safety permit.

While CVSA does not disagree with the proposed conditions for safety permit, in general, we do suggest that inspecting vehicles in accordance with Appendix G to subchapter B of Part 393 would not be sufficient to satisfy the requirements of HMTUSA, which established additional requirements in the Hazardous Materials Transportation Act (HMTA) (49 U.S.C. app. 1801 et seq.) to reduce the risks to life, property, and the environment posed by unintentional releases of hazardous materials. This is especially true with the transportation of highway route controlled quantity radioactive materials. The Federal Highway Administration (FHWA) in its Rulemaking Analyses and Notices under Regulatory Impact states, "The proposals contained in this document would implement the congressional mandate of the HMTUSA which restricts the transportation of certain designated high risk hazardous materials in interstate and intrastate commerce to motor carriers that hold safety permits, issued by the FHWA, authorizing the transport of those hazardous materials. Further, transportation of highway route controlled quantity radioactive materials would be prohibited unless the commercial motor vehicle was inspected and certified to be in compliance with all applicable regulations before each trip.....(emphasis added). It is CVSA's position that inspecting vehicles in accordance with Appendix G to subchapter B before each trip does not satisfy the mandate of congress or of the FHWA Regulatory Impact Statement contained in the Notice of proposed rulemaking, which is repeated, in part, above. For example, let's talk about brake hoses for a moment. Section 393.45, among other requirements, states at §393.45(a)(4) ) Be suitably secured against chafing, kinking, or other mechanical damage. Appendix G to Subchapter B, on the other hand, states,

See Supp Info File for  
Attachment A booklet

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at 1.d.(1), "Hose with any damage extending through the outer reinforcement ply. (Rubber impregnated fabric cover is not a reinforcement ply). Thermoplastic nylon may have braid reinforcement or color difference between cover and inner tube. Exposure of second color is cause for rejection." This is the identical language contained in the North American Uniform Out-of-Service Criteria dated June 21, 1993. Said language in Appendix G suggests that brake hoses are to be inspected to the Out-of-Service Standard as opposed to being inspected to the requirements of the Federal Motor Carrier Safety Regulations, which is contrary to the language contained in the Regulatory Impact Statement of the NPRM.

Section 393.41 requires that every motor vehicle, with certain exceptions, shall be equipped with a parking brake system adequate to hold the vehicle or combination under any condition of loading as required by FMVSS 571.121. Appendix G to Subchapter B and 1.b. states, "No brakes on the vehicle or combination are applied upon actuation of the parking brake control, including driveline hand controlled parking brakes. Again, the requirement in Appendix G appears to be a worst-case situation. The parking brake is apparently O.K. if the brakes simply apply. There appears to be no requirement under the proposed inspection guidelines that the parking brake be capable of holding the vehicle in a stopped position. CVSA believes this to be unacceptable.

We have cited only two examples where Appendix G to Subchapter B would not, in our opinion, be sufficient to insure a vehicle transporting highway route controlled quantity radioactive materials would be in compliance with all applicable regulations before each trip. On the other hand, we do not believe that the North American Uniform Out-of-Service criteria should be the inspection threshold to which these vehicles are subjected. We believe in order to satisfy the mandate of congress and FHWA's own Regulatory Impact Statement that vehicles transporting highway route controlled quantity radioactive materials must be held to a stricter standard than other commodities.

The CVSA has been working with the U.S. Department of Energy (DOE) for a number of years in developing and testing Recommended National Procedures for the Enhanced Safety Inspection of Commercial Highway Vehicles Transporting Transuranics, Spent Fuel, and High-Level Radioactive Waste. We have developed those procedures, as well as in-depth training for selected state inspectors in conducting the enhanced inspection. We recognize that there is a perception among the general public, as well as, some politicians, and business leaders of the increased risk associated with the handling, transportation, and storage of materials which emit high levels of radioactivity.

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FHWA indicates that it examined the procedures contained in current inspection methods. That examination included a review of (1) the North American Uniform Driver/Vehicle Inspection Manual, published by FHWA in September, 1989, (2) a draft of the CVSA document entitled, "Recommended National Procedures for the Safety Inspection of Commercial Highway Vehicles Transporting Spent Fuel/Transuranic and High Level Radioactive Wastes" (March, 1991), (3) "A Guide for the Inspection of Spent Nuclear Fuel Shipments by Motor Vehicle" (RSPA, November, 1988), and (4) "A Guide for the Inspection of Radioactive Material Shipments by Motor Vehicle or at Freight Facilities" (RSPA, November, 1988). FHWA goes on to say it is proposing the use of the general inspection requirements contained in part 396, "Inspection, Repair, and Maintenance," and the more detailed inspection standards found in appendix G to subchapter B, "Minimum Periodic Inspection Standards," to meet the requirement that a vehicle be inspected before each trip. No explanation or rationale is given by FHWA for reaching the decision, after reviewing other available documents, to use Part 396 and appendix G to subchapter B to meet the inspection requirements. CVSA believes that the proposed use of Part 396 and appendix G to subchapter B fall considerably short of the congressional mandate as contained in HMTUSA.

We would urge FHWA to reconsider their position and use the May 17, 1993 version of the Recommended National Procedures for the Enhanced Safety Inspection of Commercial Highway Vehicles Transporting Transuranics, Spent Fuel, and High-Level Radioactive Waste to meet the requirement that a vehicle be inspected before each trip. A copy of the May 17, 1993 inspection procedures are included herewith as Attachment A.

FHWA specifically invited comments on whether radiological monitoring should be included in the proposed rule. CVSA recommends in the strongest sense that radiological monitoring be incorporated into the proposed requirement that a vehicle be inspected before each trip. While the regulatory and packaging requirements which apply to these materials are designed both to adequately identify the presence of these materials and to ensure that the packaging can withstand normal transportation conditions and foreseeable accidents, without a breach of containment integrity, there are no guarantees that specific loads would be in compliance with the regulatory requirements or meet the packaging specifications. A requirement that the origin inspection include radiological monitoring after the vehicle is loaded, would at least ensure that there was limited or no radioactivity leakage at the point of origin of the trip. By definition, highway route controlled quantity radioactive materials are generally quantities of materials that emit high levels of radioactivity. To not require radiological monitoring at the point of origin would border on a breach of the public trust.

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The Recommended National Procedures for the Enhanced Safety Inspection of Commercial Highway Vehicles Transporting Transuranics, Spent Fuel, and High-Level Radioactive Waste dated May 17, 1993 contain provisions for radiological monitoring of highway route controlled quantities of radioactive material. Additionally, the driver and motor vehicle inspection procedures contained in that document are an enhancement to both the requirements of the North American Standard Inspection Procedures and appendix G to subchapter B. A three (3) day training course on the enhanced inspection procedures, including radiological monitoring, has been developed by CVSA and DOE. CVSA would be happy to furnish a detailed curriculum to FHWA for their review and consideration, if so requested.

The Recommended National Procedures for the Enhanced Safety Inspection of Commercial Highway Vehicles Transporting Transuranics, Spent Fuel, and High-Level Radioactive Waste, including the requisite three day training course are now in place in at least seven (7) states. That is the standard to which vehicles transporting highway route controlled quantities of radioactive materials will be inspected by state inspectors in those jurisdictions. To require a lesser inspection requirement by the carrier would only result in confusion, delayed transportation schedules, and out-of-service vehicles involving the transportation of high levels of radioactivity.

FHWA is proposing at §397.49 to incorporate the inspector qualification requirements now specified in §396.19. Those requirements do not contain any requirements for knowledge or training relative to radiological monitoring. CVSA believes there should be a requirement for training in this area and has developed course material in conjunction with the cooperative effort it has with DOE. The additional training curriculum for radiological monitoring should be specified by FHWA made mandatory for motor carrier personnel charged with the responsibility of inspecting equipment before the beginning of each trip where highway route control quantities of radioactive materials are to be transported.

FHWA is further proposing at §397.49 to require written certification that each vehicle has been inspected in accordance with the paragraph and retained for a period of one year. CVSA believes that a copy of the written certification of inspection prior to a specific trip should be carried on the vehicle during the trip for which the certification applies. We do not believe that such a requirement would cause an undue burden on the industry due to the limited number of carriers involved in highway route controlled quantities of radioactive materials. We also believe that if such a certification were on the vehicle and made available to state inspectors upon demand that several purposes might be served, i.e. (1) a reduction in the time required to conduct inspections by state personnel, and (2) a mechanism to determine the quality of inspections being performed by personnel of specific carriers.

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In conclusion, CVSA would urge FHWA to reconsider its proposed §397.49 - Conditions for safety permit - in the following areas:

1. The vehicle shall be inspected in accordance with Appendix G to subchapter B before each trip. CVSA believes that more stringent inspection requirements are necessary to meet the mandate of HMTUSA.
2. Radiological monitoring should be an important part of any pre-trip inspection required for vehicles transporting highway route controlled quantities of radioactive materials.
3. Radiological monitoring training must be added to the inspector qualification requirements specified in §396.19, and
4. The certification statement required by proposed §397.49 should be carried on the vehicle for the trip to which the certification applies.

CVSA staff would be happy to discuss these issues in greater detail with FHWA personnel, if deemed necessary. We appreciate the opportunity to comment on the proposed docket and hope that our comments will be of some help to you.

Sincerely,

*for*   
William R. Fiste  
Executive Director

Attachment:

GEC/gec

SUPPLEMENTAL INFORMATION  
DOCKET MC-92-4-18

# COMMERCIAL VEHICLE SAFETY ALLIANCE



Recommended National Procedures for the  
Enhanced Safety Inspection of Commercial Highway Vehicles  
Transporting Transuranics, Spent Fuel, and  
High-Level Radioactive Waste

MAY 17, 1993

ATTACHMENT A  
DOCKET NO. MC-92-4



**SUPPLEMENTAL INFORMATION**  
**DOCKET** MC-92-4

Includes Minimum Standards and  
Out-of-Service Criteria

*Prepared for*

The United States Department of Energy  
Under Cooperative Agreement No. DE-FC02-86CH10305

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NOTE: If heading is shaded, the entire section is enhanced. If heading is not shaded, only those enhanced items will be shaded.

## 1.0 GENERAL

CAUTION: Radiation cannot be detected by the five senses. It is important to have access to radiation survey instruments. Radiation surveys should be conducted by a person trained in radiation detection techniques. All commodities subject to inspection under these guidelines are HRCQ (Highway Route Controlled Quantity) or assumed to be HRCQ.

Approach all vehicles transporting **transuranic** waste, spent fuel, or high-level radioactive waste shipments with caution as controlled levels of radiation are present.

Perform radiation level inspections and safety inspections quickly and in a professional manner so as not to delay the shipment or to expose enforcement personnel to unnecessary radiation.

If emergency situations develop during the inspection:

- Initiate IMMEDIATE action to control the situation.
- Isolate the vehicle if possible and evacuate all personnel to areas not affected by radiation emitted by the shipment. If there is a fire, be sure to evacuate personnel to areas clearly outside of any plume.
- Notify the emergency response system that is responsible for handling radioactive material situations within your state. The Department of Energy and Nuclear Regulatory Commission will provide radiological advice and assistance upon request.

If no problems are apparent, the inspection procedures outlined in this guide should be followed.

**DO NOT RELEASE VEHICLES INSPECTED AT POINT OF ORIGIN UNTIL THEY ARE DEFECT FREE.**

**PERFORM EN-ROUTE INSPECTIONS AS SPECIFIED IN THIS DOCUMENT.**

## 2.0 PRELIMINARY ACTIVITIES

- 2.1 It is recommended that two inspectors perform the inspection. The use of two inspectors ensures inspector safety, accuracy of data compiled, expediency, and continuity.
- 2.2 Ensure that you have the equipment listed in Table 1.

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Table 1. Equipment Checklist

- chock blocks
- inspection record form
- radiation monitoring equipment

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- 2.3 Ensure that your radiation monitoring equipment meets minimum standards:
- Use instruments that read dose rates in the range of 0.1 **mrem/hr** to 2 **rem/hr** (1 **microsievert/hr** to 0.02 **sievert/hr**). To ensure the instrument does not default to zero when saturated, at least one radiation survey instrument shall not read zero in radiation fields with an exposure rate of 100 rem/hour (1 **sievert/hr**).

- Ensure that all radiation survey instruments have been calibrated within the past year in accordance with ANSI N323-1978 and meet the durability standards on ANSI N13.4-1971.

- 2.4 Turn on radiation survey instruments to warm them up.
- 2.5 Operationally check your radiation survey instruments as recommended by the manufacturer. Refer to the operators' manual if necessary.
- 2.6 Record background reading on inspection form. NOTE: Subtract the background reading from subsequent readings to get true value. Enter the true values on inspection form.

### 3.0 BEGINNING THE INSPECTION

#### GENERAL SAFETY PRACTICES

- Always inform the driver when you are going underneath the vehicle.
- Never go underneath a vehicle with the engine running.
- Always enter and exit vehicle on the driver's side in full view of the driver.
- Do not get into dangerous positions (e.g., between tandem axles) when checking tires, inside wheels, and suspension components.
- Do not get into dangerous positions when checking steering components (e.g., between front fender well and front tire).
- Look for loose or protruding parts of the vehicle throughout the inspection.

**3.1 Begin the radiation portion of the inspection at the driver's side of the power unit.**

**3.2 With the instrument turned on, approach the rear wheels of the power unit.**

**3.3 Stop when you are 2 meters (6.6 feet) from the unit and take a reading.**

**CAUTION:** Step 3.4 applies throughout the inspection.

**3.4 EMERGENCY PROCEDURES:** If, at any time the survey readings exceed those stated in Table 2 for exclusive use vehicles or non-exclusive-use vehicles, then immediately perform the following actions:

- **STOP!!** Do not continue this procedure.
- Establish a hot line at the 2 mrem/hr level.
- Have the driver come to you.
- Survey the driver for contamination.
- Notify appropriate radiation health agency.
- Notify shipper.
- Place vehicle out-of-service.

Table 2. Summary of U.S. Department of Transportation Radiation Limits

Measuring Point	Rate Limit	
<b>EXCLUSIVE USE VEHICLES</b>		
Two meters (6.6') from sides-enclosed trailer	10	mrem/hr
Two meters (6.6') from vertical plane of trailer edge (flatbed)	10	mrem/hr
At contact on surface of sides and top-enclosed trailer	200	mrem/hr
At contact on any surface of load (flatbed trailer)	200	mrem/hr
On vertical plane of trailer edge (flatbed)	200	mrem/hr
Surface of bottom of trailer	200	mrem/hr
Package surface (enclosed trailer only)	1000	mrem/hr
Occupied area of vehicle	2	mrem/hr
<b>NON-EXCLUSIVE USE VEHICLES</b>		
One meter (3.3') from any surface of package	10	mrem/hr
Package surface	200	mrem/hr

3.5 If the radiation survey instrument readings are less than 10 mrem/hr at 2 meters (6.6 feet), then

- Contact the driver.

- Identify yourself and tell the driver what you are doing.
- Place chock blocks in front of and behind the rear wheels of the power unit.
- Have the driver exit the vehicle and provide the following documents:
  - Operator's License
  - Medical Certificate
  - Vehicle Registration
  - Log Book(s)
  - Permits
  - Shipping Paper(s)
  - Route Plan
  - Training Certificate
  - Vehicle Inspection Report

## 4.0 RADIATION SURVEY

Inspection Item	Out-Of-Service Condition
<b>4.1 In-Cab Survey</b>	
Measure radiation level in the driver position and in the sleeper berth of the cab. (173.441)	When measurement exceeds 2 mrem/hr in a space normally occupied by a person(s).
<b>4.2 External Vehicle Survey</b>	
Measure external radiation level(s)	
· Measured at 2 meters (6.6') from surface. (173.441)	When measurement exceeds 10 mrem/hr at 2 meters from surface of vehicle.
· Measured at surface of vehicle. {173.441}	When measurement exceeds 200 mrem/hr at accessible surface of vehicle.

This information is repeated on the inside of the back cover.

## 5.0 DRIVER INSPECTION STANDARDS

Inspection Item	Out-Of-Service Condition
<b>5.1 Driver's Age</b>	
Is not at least 21 years of age. {391.11 (b) (1)}	Less than 21 years of age; remove driver.
<b>5.2 Commercial Driver License</b>	
Is not licensed to operate the type of vehicle being operated. Out-of-service action to be initiated only upon home state license verification. {39 1.11 (b)(7)}	No valid license; remove driver.
<b>5.3 Medical Examiner's Certificate</b>	
Does not possess current Medical Examiner's Certificate. {391.43}	Medical Examiner's Certificate absent or not current; remove driver.

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Inspection Item

Out-Of-Service Condition

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**5.4 Waiver of Physical Disqualification**

No waiver of physical disqualification in possession when required. (391.49)

No waiver when required; remove driver.

**5.5 Certificate of Training**

Driver must have in possession a current certificate of training that provides the following information:

Certificate of training absent; remove driver.

- Driver's name and operator's license number.
- Date of training, name and address of person providing training.
- Statement of person providing training that certificate information is correct.
- Driver has been trained in the hazards and characteristics of HRCO.

## 5.6 Sickness or Fatigue

When so impaired that the driver should not continue the trip. {392.3}

Driver out-of-service until no longer impaired by sickness or fatigue.

## 5.7 Driver Disqualification

Driver disqualification under the provisions of 391.15.

Driver out-of-service until requalification is established.

## 5.8 Drugs and Other Substances

Is in possession. { 392.4}

Driver to be placed out-of-service for 24 hours.

Is under the influence, with probable cause. {392.4}

Driver to be placed out-of-service for 24 hours.

## 5.9 Intoxicating Beverages

Is in possession. { 392.4}

Driver to be placed out-of-service for 24 hours.

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**Inspection Item**

**Out-Of-Service Condition**

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Has consumed within the last four hours before going on duty. (392.5 }

Driver to be placed out-of-service for 24 hours.

Is under the influence. (392.5 }

Driver to be placed out-of-service for 24 hours.

**5.10 Driver's Record of Duty Status**

Driving more than ten hours following eight consecutive hours off duty. (395.3 (a) }

Driver to be placed out-of-service for eight consecutive hours.

Driving for any period after having been on duty 15 hours following eight consecutive hours off duty. {395.3 (a) }

Driver to be placed out-of-service for eight consecutive hours.

Driving after being on duty more than 60 hours in seven consecutive days or 70 hours in eight consecutive days. (395.3 (b) }

Driver to be placed out-of-service until eligibility to drive is reestablished.

No record of duty status in possession when one is required.

Driver to be placed out-of-service for eight consecutive hours.

Failing to have in possession a record of duty status for the previous seven consecutive days. See Exception 395.13 (b) (3).

Driver to be placed out-of-service for eight consecutive hours.

A record of duty status does not accurately reflect the driver's actual activities and duty status (including time and location of each duty status change and the time spent in each duty status) in an apparent attempt to conceal a violation of an hours-of-service limitation. (395.8 (e))

Driver to be placed out-of-service for eight consecutive hours.

### **5.11 Vehicle Inspection Report**

Driver must have in possession a legible copy of the last vehicle inspection report and all enroute inspection documents.

## 6.0 SHIPPING PAPER AND ROUTE PLAN STANDARDS

Inspection Item	Out-Of-Service Condition
<b>6.1 Route Plan</b>	
Driver must have in possession a written route plan, and be on the route designated by the plan. {177.825}	Proper route plan is not present. Not on designated route.
<b>6.2 Shipping Papers</b>	
Drivers must have in possession documents that indicate the hazardous material being transported. { 177.817)	No hazardous material shipping papers in possession when required.
The papers must be:	
<ul style="list-style-type: none"><li>• Readily visible to a person entering the driver's compartment, or in a holder on the driver's door; and</li><li>• in immediate reach of the driver when restrained by seat belt.</li></ul>	

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**Inspection Item**

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**Out-Of-Service Condition**

The entries must:

- Appear as the first entry on the shipping paper, or
- Be designated by an "X" in the hazardous material column ("RQ" must be used in the case of a hazardous substance), or
- Be highlighted or entered in a contrasting color that clearly distinguishes the entry from other shipping descriptions.
- Be legible and printed in English.
- Contain only authorized abbreviations.

**The shipping paper must include:**

- Proper shipping name — As prescribed by the tables in 172.101 or 172.102; for example:
  - Radioactive Fissile Material N.O.S.
  - Radioactive Material N.O.S.
- Proper hazard class — 7 (Radioactive Material).
- Identification number — Appropriate UN ID Number.
- Total quantity and unit of measurement — Entry of the total quantity and unit of measurement (e.g., one cask 36,000 lbs. or three packages 60,000 lbs.).

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**Inspection Item****Out-Of-Service Condition**

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- Radionuclides — Entry of name of each radionuclide in the radioactive material.
- Physical and chemical form — Description of physical and chemical form or material if not in special form.
- Activity — Entry of activity in curies, millicuries, microcuries, or becquerels, with abbreviations allowed.
- "Highway route controlled quantity"
- Label type — Category of label applied to each package (e.g., Radioactive Yellow III).
- Transport index — Index assigned to each package labeled as Radioactive Yellow III.
- Fissile class — Entry of Fissile class if appropriate.
- An entry of warning statement for Fissile Class III, if applicable.

- Additional notation — Entry of warning statement for Fissile Class III, if applicable.
- Package identification — Entry of NRC or DOT certificate identification marking (e.g., "U.S.A./9001/B( ) F").
- Instructions for exclusive use vehicles only — Specific instructions for maintenance of exclusive use shipment controls must be issued in writing and included with the shipping paper information.
- Shipper's Certification — "This is to certify that the above-named material are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation."

## 7.0 EXTERNAL HAZARDOUS MATERIAL IDENTIFICATION STANDARDS

Inspection Item	Out-Of-Service Condition
<b>7.1 Placarding</b>	
Each motor vehicle must be properly placarded on each side and each end. { 177.8231	No Placards.
	When any of the required placards for a hazard class are missing or any placards misrepresent the hazardous material being transported.
Each placard must be readily visible from each direction it faces. Placarding is permitted on the front of a motor vehicle instead of the front of the cargo body.	
Each placard must be securely attached or affixed.	
Each placard must be located clear of appurtenances, ladders, etc.	

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**Inspection Item**

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**Out-Of-Service Condition**

Each placard must be located away from other markings that may reduce the placard's effectiveness.

Highway route controlled quantity radioactive material must have the required "RADIOACTIVE" warning placards placed on a square white background having a black border.

Words must be printed horizontally reading from left to right.

Each placard must be legible and visible.

## 7.2 Labeling

Each package shall be properly labeled.

Type of label — Proper label shall be the highest category required for any of the determining conditions for the package as set forth in 172.403 (c).

Number of labels displayed — The package is required to have two labels, affixed on opposite sides.

Marking of labels — The labels are to be legibly marked with contents/radionuclides, activity, and transport index.

Compare to shipping paper to ensure matching entries.

Contents/radionuclides — The name or symbol of the radionuclide shall be listed on the label.

Activities — Units shall be expressed in appropriate curie units. For fissile material, the weight in grams or kilograms of the fissile radioisotopes may be listed.

**7.3 Package Marking**

Gross weight — Packages of over 110 pounds (50kg.) shall have the gross weight marked on the outside of the package.

'Type B' requirements — "Type B" shall be marked on the outside of the package.

Package identification marking — Outside package shall be marked with identification markings indicating package certificate number (e.g., U.S.A./9001/B( ) F) or DOT specification number (e.g., "DOT 6M").

Proper shipping name and UN number.

Name and address of consignee/consignor,

Security seal on package.

## 8.0 IN-CAB PARTS AND ACCESSORIES INSPECTION STANDARDS

Inspection Item	Out-Of-Service Condition
<b>8.1 Seat Belts</b>	
As prescribed by 393.93:	
<ul style="list-style-type: none"><li>• Webbing must not be frayed, split, or torn.</li><li>• Attachment fittings must not be loose, badly corroded, or missing.</li><li>• Anchor bolts must be present and securely fastened to the floor.</li></ul>	
<b>8.2 Horn</b>	
As prescribed by 393.81:	
<ul style="list-style-type: none"><li>• Each power unit must be equipped with an operative horn.</li></ul>	

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**Inspection Item****Out-Of-Service Condition**

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**8.3 Windshield Glazing/Wipers**

All glazing used in the motor vehicle must be approved safety glass. The windshield must be "AS1" and all other glass must be "AS2."

As prescribed by 393.60, in the area wiped by the full length of the blade(s), the windshield:

- Must not have scratches or abrasions that are more than 1/2-inch wide and more than 6 inches in length.
- Must not have holes or intersecting cracks.
- Must not have nicks or chips larger than 1-1/2 inches.
- Must not have a crack whose edge can be felt on the wiper side of the windshield.
- Must not have discoloration extending more than 3 inches up from the right or left side, more than 1 inch in from the right or left side, or more than 1 inch down from the top.

Any crack over 1/4-inch wide, intersecting cracks, discoloration not applied in manufacture, or other vision-distorting matter in the sweep of the wiper on the driver's side.

The windshield must not have signs, posters, stickers, or other non-transparent material extending more than 4-1/2 inches from the bottom.

The power unit must have operable windshield wipers.

NOTE: If a motor vehicle was originally equipped (manufactured) with only one wiper, only one wiper is required. If originally equipped (manufactured) with two or more wipers, all wipers are required. {393.78}

Any power unit that has an inoperative wiper or missing or damaged parts that render it ineffective.

The windshield wipers must operate for a full stroke and must return to the proper "park" position out of the driver's view when shut off.

The windshield wiper blades or arm parts must not be missing or damaged.

The windshield wiper controls must operate properly and must be located within the driver's reach while at the controls.

**Inspection Item**

**Out-Of-Service Condition**

**8.4 Defroster**

The power unit must have a properly functioning device for removing condensation from the inside of the windshield and ice, snow, or frost from the outside of the windshield.  
{393.79}

Inoperative or fails to function properly.

**8.5 Rear Vision Mirrors**

As prescribed under 393.80, mirrors must:

- Be present.
- Not obstruct forward vision of the driver.
- Not be cracked, pitted, broken, discolored, or clouded to the extent that rear vision is obscured.
- Hold adjustment so as to provide a clear view of the area the mirrors were designed to reflect.
- Not have objects or material hung from or blocking mirrors.

Not present.

Obstructs forward vision of driver.

Rear vision obscured.

Does not hold adjustment.

Objects or material hanging from or blocking mirrors.

- Be securely mounted on a stable support.
- Reflect to the driver a view of the highway to the rear of such motor vehicle.

Not securely mounted.  
View of highway to the rear not reflected to driver.

## 8.6 Air Pressure

Have driver start the engine, build reservoir pressure between 90 and 100 psi, and, with engine at idle, make a full treadle valve brake application and hold it for one full minute.  
NOTE: There will be an initial drop in air pressure registered by the dash gauge. { 396.3 (a) (I) }

If an air leak is discovered and the reservoir pressure is not maintained when governor is cut in, reservoir pressure is between 80 and 90 psi, engine is at idle, and service brakes are fully applied.

## 0.7 Low Air Warning Device

The vehicle must be equipped with a low air warning device, visual and/or audible as required. { 393.51 }

Missing, inoperative, or does not operate at 55 psi and below or  $1/2$  the governor cut-out pressure, whichever is less.

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**Inspection Item**

**Out-Of-Service Condition**

**8.8 Steering Lash**

Ask the driver to rock the steering wheel to check for steering wheel free play. Also, check the steering column for proper securement.

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When any of these values — inch movement or degrees — is met or exceeded, vehicle shall be placed out-of-service. {393.209(b)} (For power steering systems, engine must be running.)

<b>Steering Wheel</b>	<b>Manual System Movement 30 Degrees or:</b>	<b>Power System* 45 Degrees or:</b>
16" (41cm)	4-1/2" (11.5 cm) (or more)	6-3/4" (17 cm) (or more)
18" (46 cm)	4-3/4" (12 cm) (or more)	7-1/8" (18 cm) (or more)
19" (48 cm)	5" (13 cm) (or more)	7 1/2" (19 cm) (or more)
20" (51 cm)	5-1/4" (13 cm) (or more)	7-7/8" (20 cm) (or more)
21" (53 cm)	5-1/2" (14 cm) (or more)	8-1/4" (21 cm) (or more)
22" (56 cm)	5-3/4" (15 cm) (or more)	8-5/8" (22 cm) (or more)

\*For power systems, if steering wheel movement exceeds 45 degrees before steering axle tires move, rock the steering wheel left to right between points of power steering valve resistance. If that motion exceeds 30 degrees (or the inch movement values shown for manual steering), vehicle shall be placed out-of-service.

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### 8.9 Floor, Firewall, and Internal Wiring

The floor and the firewall of the driver's compartment must not contain holes that would permit exhaust gases to enter the compartment.

Wiring shall be grouped together and protected to withstand abrasion.

Wiring shall not be located so as likely to be charred, overheated, or enmeshed in moving parts.

Wiring shall not be adjacent to any part of the fuel system.

The edges of all holes through which wiring passes, unless the wiring is metal covered, shall be rolled or bushed with a grommet of rubber or other suitable material.

The presence of bare, loose, dangling, chafing, or poorly connected wires is prohibited.

Vehicle to be placed out-of-service.

Presence of bare, loose, dangling, chafing, or poorly connected wires.

### **8.10 Headlight Beam Indicator**

The beam indicator in the driver's compartment must operate when the headlamps are on high beam setting.

### **8.11 Sleeper Berth**

Sleeper berths must meet the requirements of 393.76.

### **8.12 Emergency Equipment**

Fire extinguisher and warning devices for stopped vehicles.

- A commercial motor vehicle used to transport hazardous material/transuranic waste must be equipped with a fire extinguisher having an Underwriter's Laboratories rating of 10 B:C or more, securely fastened on the power unit.
- Each commercial motor vehicle must be equipped with three bidirectional emergency reflective triangles, except as provided by 393.95 (f).

## 9.0 EXTERNAL PARTS AND ACCESSORIES INSPECTION STANDARDS — POWER UNIT

### Inspection Item

### Out-Of-Service Condition

#### 9.1 General

Start at the front of the vehicle and proceed counterclockwise around the vehicle. Check the power unit for identification of:

- Motor carrier name, city, and state.
- ICC/MC number or U.S. DOT number as appropriate.
- State license plate/number.

The vehicle must not have metal, glass, or other loose or dislocated parts protruding from the surface of the vehicle so as to cause a safety hazard.

The vehicle's front bumper must not be missing, loosely attached, or protruding so as to create a safety hazard.

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**Inspection Item**

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**Out-Of-Service Condition**

The vehicle must not be missing fenders that were present as original equipment.

The passenger compartment must not have doors or door parts missing, broken, or sagging so that the door cannot be properly operated.

### 9.2 Front of Vehicle (Power Unit)

Move to a position near or underneath the front of the power unit and examine the steering components while the driver is rocking the steering wheel:

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>• Examine the front axle beam and all steering components for cracks, looseness, and welded repair. {393.209} and {393.209 (d)}</li><li>• Examine the steering gearbox for cracks or loose or missing mounting bolts. {393.209 (c)}</li><li>• Examine the pitman arm on the steering gear output shaft. {393.209 (d)}</li></ul> | <p>Any crack.</p> <p>Any welded repair.</p> <p>Any absence of or loose mounting bolts or positioning parts.</p> <p>Any looseness or welding of the pitman arm on the output shaft,</p> |
|---|--|

- Check the steering column universal joints for proper condition, operation, and repair. { 393.209 (d) }

Worn, faulty, or obviously welded repairs.
- Check the steering wheel for proper securement and condition. { 393.209 (c) }

Steering wheel not properly secured.
- Check the ball and socket joints on the pitman arm, drag link, steering arms, and tie rod ends. { 393.209 (d) }

Any movement of a stud nut under steering load.

Any motion, other than rotational, between any linkage member and its attachment point of more than **1/8 inch (3 mm) measured with hand pressure only.**
- Check the tie rods and drag links for loose clamps or looseness in any threaded joint. { 393.209 (d) }

Loose clamp(s) or clamp bolt(s) on tie rods or drag links,

Any looseness in any threaded joint.

Inspection Item	Out-Of-Service Condition
<ul style="list-style-type: none"> <li>Check for any modification to the steering system or any condition that interferes with free movement of any steering component. (393.209 (d))</li> </ul>	<p>Any modification or other condition that interferes with free movement of any steering component.</p>
<p><b>9.3 Power Steering</b></p>	
<p>Check the auxiliary power assist cylinder for leaks or looseness. (393.2~9 (e))</p>	<p>Auxiliary power assist cylinder loose.</p>
<ul style="list-style-type: none"> <li>Hoses, tubes, or connectors must not show evidence of being rubbed by moving parts.</li> </ul>	
<p><b>9.4 Hood Securement and Hinges</b></p>	
<p>Check the hood latches for securement. Cab-over units must be securely fastened at the rear of the cab.</p>	<p>Latch does not securely hold the hood of cab in fully closed position (e.g., broken, missing).</p>

## 9.5 Engine Compartment

Check air compressor, pulley, belts, bolts, and securement.  
{396.3 (a) (1)}

Compressor drive belts in  
condition of impending or  
probable failure.

Loose compressor mounting bolts.

Broken, missing, or loose  
mounting bolts, brackets, braces or  
adaptors.

Cracked, broken, or loose pulley.

## 9.6 Steering Axle Suspension and Related Components

Inspect suspension hangers or other axle positioning parts for  
alignment, looseness, and condition. { 393.207 (a)}

U-bolt(s), spring hanger(s), or  
other axle positioning part(s)  
cracked, broken, loose, or missing.

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**Inspection Item**

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**Out-Of-Service Condition**

Inspect leaf spring assemblies for alignment and condition.  
~393.207 (c)}

Any leaf in a spring leaf assembly broken or missing.

A coil spring must not be cracked or broken. (393.207 (d))

Coil spring broken.

The leaves in any leaf spring assembly must not shift or be displaced in a manner that could result in contact with the tire, rim, brake drum, or frame. ~393.207 (c)}

One or more leaves displaced in a manner that could result in contact with a tire, rim, brake drum, or frame.

### 9.7 Steering Axle BrakeComponents

Check for operative brakes:

- Each commercial motor vehicle must have operative brakes on each axle. (393.48 (a))
- The braking system shall not have missing, broken, loose, or inoperative components including shoes, springs, anchor pins, spiders, cam rollers, push rods, cam shaft brackets, and air chamber mounting bolts. (393.48 (a))

Absence of effective braking action on any steering axle of any vehicle.

Missing, broken, loose, or inoperative components, including shoes, springs, anchor pins, spiders, cam rollers, push rods, cam shaft brackets, and air chamber mounting bolts,

- The service brake system must fully release when the brake pedal is in the released position.
- Check for a mismatch of air chamber sizes and slack adjuster length. { 393.48 (a)}
- Inspect the lining or pads for securement, thickness, and functionability. { 393.47}
- Lining must be firmly attached to the shoe and not saturated with oil, grease, or brake fluid. { 393.47)

Mismatch across any power unit steering axle of air chamber sizes or slack adjuster length.

Drum Brakes: Lining with a thickness less than  $\frac{3}{16}$ " for a shoe with a continuous strip of lining or  $\frac{1}{4}$ " for a shoe with two pads or to wear indicator if lining is so marked.

Air Disc Brakes: Lining with a thickness less than  $\frac{1}{8}$ ".

Lining or pad not firmly attached to the shoe.

Lining or pad is saturated with oil, grease, or brake fluid.

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**Inspection Item**

**Out-Of-Service Condition**

**9.6 Brake Adjustment**

Check brake chambers and mark each push rod, Brake adjustment measurements shall be taken when brake chamber air pressure is between 90 and 100 psi.

Any brake that meets or exceeds the specifications in the table below.

Shall not meet or exceed those specifications in the table below. (Dimensions in inches.)

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CLAMP TYPE BRAKE CHAMBER DATA  
(Dimensions in inches)

Type	Outside Diameter	Maximum Stroke at Which Brakes Must be Readjusted
6	4-1/2	1-11/4
9	5-11/4	1-3/8
12	5-1 1/16	1-3/8
16	6-3/8	1-3/4
20	6-25/32	1-3/4
24	7-7/32	1-3/4*
30	8-3/32	2
36	9	2-11/4

\*Two inches for long stroke design

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**BOLT TYPE BRAKE CHAMBER DATA**  
**(Dimensions in inches)**

A	6-15/16	1-3/8
B	9-3/16	1-3/4
C	8-1/16	1-3/4
D	5-1/4	1-1/4
E	6-3/16	1-3/8
F	11	2-1/4
G	9-7/8	2

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**ROTOCHAMBER DATA**  
(Dimensions in inches)

9	4-9/32	1-1/2
12	4-13/16	1-1/2
16	5-13/32	2
20	5-15/16	2
24	6-13/32	2
30	7-1/16	2-1/4
36	7-5/8	2-3/4
50	8-7/8	3

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**WEDGE BRAKE DATA**  
(Dimensions in inches)

Movement of the scribe mark on the lining shall not exceed 1/16".

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**Inspection Item**

**Out-Of-Service Condition**

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**9.9 Brake Drums**

Must not be cracked on friction surface extending to an open edge. (396.3 (a) (1))

Drums with an external crack.

Must not have any portion missing or external cracks.  
(NOTE: Do not confuse short hairline heat check cracks with flexural cracks.) {396.3 (a) (1)}

Any portion of the drum or rotor (discs) missing or in danger of falling away.

**9.10 Brake Hose/Tubing**

Check brake hoses for securement against chafing, kinking, or damage. {396.3 (a) (1)}

Hose with any damage extending through the outer reinforcement ply. (Rubber-impregnated fabric cover is not a reinforcement ply. Thermoplastic nylon may have braid reinforcement or color difference between cover and innertube. Exposure of second color is out-of-service.)

Check for any bulging or swelling when air pressure is applied. { 396.3 (a) (1)}

Check for leaks. { 396.3 (a) (1)}

Check for improper splices (e.g., sliding the hose ends over a piece of tubing and clamping). {393.46}

Check hoses for cracks or any area that restricts air. { 393.45 (a) (4)}

Bulge or swelling when air pressure is applied.

**Hose or connection with audible leak.**

Two hoses improperly joined such as a splice made by sliding the hose ends over a piece of tubing and clamping the hose to the tube.

Air hose cracked, broken, or crimped in such a manner as to restrict air flow.

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Inspection Item

Out-Of-Service Condition

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**9.11 Frame and Frame Assemblies**

Check frame and cross members for cracks, alignment, looseness, or sagging parts. {393.201 (a)} and {396.3 (a) (1)}

- Tire and wheel clearance: Under no circumstances shall the body or frame be capable of coming in contact with a tire or any part of the wheel assemblies.

Any cracked, loose, sagging, or broken frame member.

Any cracked, loose, or broken frame member adversely affecting support of functional components such as steering gear, fifth wheel, engine, transmission, body parts and suspension.

Any crack in the frame web that is directed toward bottom flange.

Any crack in the frame web around the radius and into the bottom flange.

Any crack in the bottom flange.

Check to ensure that the cab or the body of the vehicle is securely fastened/attached to the frame.

Cab or body not securely fastened/attached to the frame.

## 9.12 Lighting Devices

All lights and reflectors required by 393 must be present and capable of being operated at all times as follows:

- Any exterior bulb or sealed beam must light properly. { 393.24 (b)}
- Turn signal lamps must properly indicate right or left when so switched. { 393.19)

Headlamps — The single vehicle or towing vehicle does not have both head lamps operative on low beam.

Does not have operative turn signal on each side of the front of the power unit. (Unless manufactured otherwise, truck tractor turn signals must be double faced and located so as to be visible to passing drivers. There must be two turn signals on the rear of the cab, one at each side.)

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**Inspection Item**

**Out-Of-Service Condition**

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Check lamps and reflectors for proper color permitted.  
{ 393.25 (b) }

Lamps on truck — Does not have at least one steady burning red lamp on each side of the rear, visible from 500 feet.

Inspect condition of lamps and reflectors for cleanliness, visibility, and securement. { 393.25 (f) }

Stop lamp — Does not have at least one operative stop lamp on the rear of the vehicle.

**9.13 Steering Axle Wheels, Rims, and Fasteners**

Inspect the rim for imperfections, cracks, bends, etc.  
{ 393.2~5 (a) }

Rim cracks — Any circumferential crack except a manufactured crack at the valve stem hole.

Inspect steel disk and aluminum cast wheels thoroughly for warpage, alignment, and cracks.

Any disc or cast wheel cracks.

Inspect stud or bolt holes on the wheel for elongation (e.g., worn out of round). (393.2~5 (b) }

Any elongated stud holes.

Inspect wheels both in the spoke and web areas for cracks.  
{ 393.205 (a)}

Any spoke wheel crack.

Check for cracks in the tubeless demountable adapter.

Any crack at a spoke in the tubeless demountable adapter.

Inspect wheel lug nuts and bolts for securement, proper thread engagement, or failure to function as designed by the manufacturer. { 393.205 (c)}

Any loose, missing, broken, cracked, or stripped (both spoke and disc wheels) fasteners.

Inspect steering axle wheels for welded repair. { 396.3 (a) (1)}

Any welded repair other than disc to rim attachment on steel disc wheel(s) mounted on the steering axle.

Inspect all welds in any wheel. { 393.205 (a)} and { 396.3 (a) (1)}

Any cracks in welds attaching disc wheel to rim.

Any cracks in welds attaching tubeless demountable rim to adapter.

Any welded repair on aluminum wheel(s) on a steering axle.

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**Inspection Item**

**Out-Of-Service Condition**

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**9.14 Tires on Steering Axle**

Inspect steering axle tires for minimum tread depth.

- Must not have less than 4/32-inch tread when measured in any major tread groove, {393.75 (b)}

Less than 4/32-inch tread measured in any major tread groove at any location on the tire.

Inspect the tread area of each tire around the circumference. (393.75 (a))

When any part of the breaker strip or casing ply is showing in the tread.

Inspect the sidewall of each tire for damage or defects. (393.75 (a))

When sidewall is cut, worn, or damaged to the extent the ply cord is exposed,

Inspect the tire markings to ensure that the tires are suitable for highway use. (396.3 (a) (1))

Labeled "Not For Highway Use" or carrying other markings that would exclude use on steering axle.

Inspect the radial tube stem for proper markings.  
{396.3 (a) (1)}

Ensure that bias ply and radial construction tires are not on the same axle. {396.3 (a) (1)}

Steering axle tires should not be regrooved. (393.75 (e))

Inspect each tire for observable bumps, bulges, or knots.  
{396.3 (a) (1)}

Inspect each tire for ply repair. {396.3 (a) (1)}

Check the tire load/limit to ensure the tires are not overloaded per the manufacturer's specifications. {393.75 (f)}

Check for flat or leaking tires. {393.75 (a) (3)}

A tube-type radial tire without tube stem markings. These include a red band around the tube stem, the word "radial" embossed in metal stems, or the word "radial" molded in rubber.

Mixing bias and radial tires on the same axle.

**Any regrooved tire.**

**Any tire with observable bumps, bulges, or knots.**

Boot, patch, or other ply repair.

Weight carried exceeds tire load limit. This includes overloaded tire resulting from **low** air pressure.

Tire is flat or has a noticeable leak (e.g., can be heard or felt).

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**Inspection Item****Out-Of-Service Condition**

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Ensure that tires are mounted or inflated in such a manner that they do not come in contact with any part of the vehicle. {393.75}

Any tire so mounted or inflated that it comes in contact with any part of the vehicle.

**9.15 Fuel Tanks and Their Mounting**

Inspect the vehicle's fuel system for integrity. {393.67}

A fuel system with a visible leak at any point.

Each fuel tank must be properly closed with a cap designed for that tank. {393.67}

Fuel tank filler cap missing.

Inspect the mounting bolts or brackets securing the fuel tank to the motor vehicle. NOTE?: Some fuel tanks use springs or rubber bushings to permit movement. {393.65}

A fuel tank not securely attached to the motor vehicle by reason of loose, broken, or missing mounting bolts or brackets. (NOTE: Some fuel tanks use springs or rubber bushings to permit movement. 393.65~

## 9.16 Headerboard

Vehicle shall be equipped with a headerboard or similar device of sufficient strength to prevent load shifting, penetrating, or crushing the driver's compartment. {393.106}

Any vehicle without a front-end structure or equivalent device as required.

## 9.17 Battery

Every storage battery shall be covered by a fixed part of the motor vehicle or protected by a removable cover or enclosure. {393.30}

Exposed battery.

## 9.18 Exhaust Systems

Inspect the exhaust system for integrity and leaks.

Exhaust system determined to be leaking at a point forward of or directly below the driver/ sleeper compartment.

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**Inspection Item**

**Out-Of-Service Condition**

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**9.19 Coupling Device**

Inspect the coupling device of the tractor and trailer for cracks, defects, or looseness of parts. Check the attachment of the fifth wheel to the trailer and examine the coupling plate attachment to the trailer for cracks or defects. {393.70}

If equipped with an adjustable fifth wheel assembly, inspect the locking pins for security. {393.70}

Check the fifth wheel play lengthwise of the vehicle between the upper and lower fifth wheel halves. (393.70)

Locking jaws do not lock around kingpin properly.

Locking mechanism parts missing, broken, or not engaged.

Horizontal movement between the upper and lower fifth wheel halves exceeds 1/2 inch.

## 9.20 Fifth Wheel Mounting to Frame

Inspect fifth wheel mounting to frame.

Any fasteners missing or ineffective.

Any movement between mounting components.

Any mounting angle iron cracked or broken.

## 9.21 Mounting Plates and Pivot Brackets

Inspect mounting plates and pivot brackets.

Any fasteners missing or ineffective.

**Inspection Item**

**Out-Of-Service Condition**

Inspect mounting plates and pivot brackets (continued).

Any welds or parent metal cracked. (SPECIAL NOTE: Any repair weld cracking, well defined (especially open) cracks in stress or load-bearing areas, cracks through 20 percent or more original welds or parent metal. 393.70)

More than 1/4-inch horizontal movement between pin and bracket.

Pivot bracket pin missing or not secured.

**9.22 Sliders**

Inspect slider component integrity.

Any latching fasteners ineffective.

Any fore or aft stop missing or not securely attached.

Movement of more than 3/8 inch between slider bracket and slider base.

Any slider component cracked in parent metal or weld.

### 9.23 Lower Coupler

Inspect lower coupler securement and integrity.

Operating handle not in closed or locked position.

Separation between upper and lower coupler allowing light to show through from side to side.

Cracks in fifth wheel plate.

**SPECIAL NOTE:** Any repair weld cracking, well-defined (especially open) cracks in stress or load-bearing areas.

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**Inspection Item**

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**Out-Of-Service Condition**

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Inspect lower coupler securement and integrity (continued).

**EXCEPTIONS:** (1) Cracks in fifth wheel approach ramps and (2) casting shrinkage cracks in the ribs of the body of a cast fifth wheel.

Locking mechanism parts missing, broken, or deformed to the extent that the kingpin is not securely held.

### 9.24 Safety Devices

Check the safety chain, cable, or other device for proper attachment. {393.70(c)}

Missing.

Unattached or incapable of secure attachment.

Chains and hooks worn to the extent of a measurable reduction in link cross section.

Improper repairs to chains and hooks, including welding, wire, small bolts, rope, and tape.

Kinked or broken wire rope strands.

Improper clamps or clamping on wire rope.

## 9.25 Drive Axle Tires

Check the tire load limit to ensure that the tires are not overloaded per the manufacturer's specifications. { 393.75 (f) }

Weight carried exceeds tire load limit. This includes overloaded tire resulting from **low** air pressure.

Check for leaking or flat tires. { 393.75 (a) (3) }

Tire is flat or has noticeable leak (e.g., can be heard or felt).

**Inspection Item**

**Out-Of-Service Condition**

Inspect the sidewall of each tire for damage or defects.  
{ 393.75 (a) }

Bias ply tire — When any ply is exposed in the tread area or sidewall.

Radial ply tire — When any ply is exposed in the tread area or damaged cords are evident in the sidewall.

Inspect the tire markings to ensure that the tires are suitable for highway use. (396.3 (a) (1))

Is marked "Not For Highway Use" or otherwise marked and having like meaning.

Ensure that tires are mounted or inflated in such a manner that they do not come in contact with any part of the vehicle.  
{ 396.3 (a) (1) }

So mounted or inflated that it comes in contact with any part of the vehicle. (This includes any tire contacting its mate in a dual set.)

Inspect each tire for observable bumps, bulges, or knots.  
{ 396.3 (a) (1) }

Any tire with observable bumps, bulges, or knots.

Inspect each tire for minimum tread depth. Must have at least 2/32-inch tread when measured in a major tread groove.  
{ 393.75 (c)}

So worn that less than 2/32-inch tread remains when measured in any major tread groove at any location on the tire.

Inspect tires for size to ensure that the sizes are the same across a single axle.

75% or more of the tread width missing in excess of 12 inches (30 cm) in circumference.  
(393.75(c)).

Ensure that bias ply and radial construction tires are not on the same axle.

## 9.26 Drive Axle Wheels, Rims, and Fasteners

Inspect the rim for imperfections, cracks, bends, etc.  
{ 393.205 (a)}

Rim cracks — Any circumferential rim crack except an intentional manufactured crack at the valve stem hole

Inspect steel disc and aluminum cast wheels thoroughly for warpage, alignment, and cracks.

Any disc or cast wheel cracks.

Inspection Item	Out-Of-Service Condition
Inspect stud or bolt holes on the wheel for elongation (e.g., worn out of round). {393.205 (b)}	Any elongated stud holes.
Inspect wheels both in the spoke and web areas for cracks. {393.205 (a)}	Any spoke wheel crack.
Check for cracks in the tubeless demountable adapter.	Any crack at a spoke in the tubeless demountable adapter.
Inspect wheel lug nuts and bolts for securement, proper thread engagement, or failure to function as designed by the manufacturer. {393.205 (c)}	Any loose, missing, broken, cracked, or stripped (both spoke and disc wheels) fasteners.
Inspect axle wheels for welded repair. {396.3 (a) (1)}	Any welded repair other than disc to rim attachment on steel disc wheel(s) mounted on the axle.

Inspect all welds in any wheel. { 393.205 (a) } and {396.3 (a) (1)}

Any cracks in welds attaching disc wheel to rim.

Any cracks in welds attaching tubeless demountable rim to adapter.

Any welded repair on aluminum wheel(s).

## 9.27 Drive Axle Brake Components

Check for operative brakes:

- Each commercial motor vehicle must have operative brakes on each axle. { 393.48 (a) }

Absence of effective braking action on any brake on any drive axle of any vehicle.

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**Inspection Item**

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**Out-Of-Service Condition**

- The braking system shall not have missing, broken, loose, or inoperative components, including shoes, springs, anchor pins, spiders, cam rollers, push rods, cam shaft brackets, and air chamber mounting bolts. ~393.48 (a)

Missing, broken, loose, or inoperative components, including shoes, springs, anchor pins, spiders, cam rollers, push rods, cam shaft brackets, and air chamber mounting bolts.

Audible air leak at brake chamber (e.g., ruptured diaphragm, loose chamber clamp).

- The service brake system must fully release when the brake pedal is in the released position.
- Check for a mismatch of air chamber sizes and slack adjuster length. (393.48 (a))

Mismatch across any drive axle of air chamber sizes or slack adjuster length.

- \* Inspect the lining or pads for securement, thickness, and functionality. { 393.47)

**Drum Brakes:** Lining with a thickness less than 3/16" for a shoe with a continuous strip of lining or 1/4" for a shoe with two pads or to wear indicator if lining is so marked.

**Air Disc Brakes:** Lining with a thickness less than 1/8".

- Lining must be firmly attached to the shoe and not saturated with oil, grease, or brake fluid. { 393.473

Lining or pad not firmly attached to the shoe.

Saturated with oil, grease, or brake fluid.

## 9.28 Parking Brake

Have the driver apply parking brake. Ensure that the brake applies at both ends of the axle. { 393.41)

Any parking brake on the vehicle or combination not applied upon actuation of the parking brake.

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**Inspection Item**

**Out-Of-Service Condition**

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Have the driver apply parking brake (continued).

Inoperable breakaway braking system on trailer(s). (Note: No trailer brake application upon actuation of the parking brake control indicates an inopable breakaway braking system.)

**9.29 Brake Adjustment**

Check brake chambers and mark each push rod. Brake adjustment measurements shall be taken when brake chamber air pressure is between 90 and 100 psi.

Any brake that meets or exceeds the specifications in the following table.

Brake adjustment shall not meet or exceed those specifications in the following table. (Dimensions in inches.)

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**CLAMP TYPE BRAKE CHAMBER DATA**  
(Dimensions in inches)

<b>Type</b>	<b>Outside Diameter</b>	<b>Maximum Stroke at Which Brakes Must be Readjusted</b>
6	4-1/2	1-1/4
9	5-1/4	1-3/8
12	5-11/16	1-3/8
16	6-3/8	1-3/4
20	6-25/32	1-3/4
24	7-7/32	1-3/4*
30	8-3/32	2
36	9	2-1/4

\*Two inches for long stroke design

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**BOLT TYPE BRAKE CHAMBER DATA**  
(Dimensions in inches)

A	6-15/16	1-318
B	9-3/16	1-314
c	8-11/16	1-314
D	5-1/4	1-114
E	6-3/16	1-318
F	11	2-114
G	9-7/8	2

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**RUTUCHAMBER DATA**  
(Dimensions in inches)

9	4-9/32	1-1/2
12	4-13/16	1-1/2
16	5-13/32	2
20	5-15/16	2
24	6-13/32	2
30	7-1/16	2-1/4
36	7-5/8	2-3/4
50	8-7/8	

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**WEDGE BRAKE DATA**  
(Dimensions in inches)

Movement of the scribe mark on the lining shall not exceed 1/16".

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**Inspection Item**

**Out-Of-Service Condition**

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**9.30 Drive Axle(s) Suspension and Spring Assembly**

Inspect suspension U-bolt(s), spring leaf(s), spring hanger(s), or other axle positioning part(s) for alignment, looseness, and condition. ~393,207 (a)}

U-bolt(s), spring hanger(s), or other axle positioning part(s) cracked, broken, loose, or missing.

Inspect leaf spring assemblies for alignment and condition. { 393,207 (c)}

Any leaf in a spring leaf assembly broken or missing.

A coil spring must not be cracked or broken. {393.207 (d)}

Coil spring broken.

A rubber spring must not be missing. {393.207 (a)}

Rubber spring missing.

The leaves in any leaf spring assembly must not shift or be displaced in a manner that could result in contact with the tire, rim, brake drum, or frame. ~393.207 (c) }

One or more leaves displaced in a manner that could result in contact with a tire, brake drum, rim, or frame.

A torsion bar spring in the torsion bar suspension must not be cracked or broken. { 393,207 (e) }

Broken torsion bar spring in the torsion bar suspension.

### 9.31 Torque, Radius, or Tracking Components

Any part of a torque, radius, or tracking component assembly, or any part used for attaching the same to the vehicle frame or axle, must not be cracked, loose, broken, or missing. (This does not apply to loose bushings in torque or track rods.)

Any part of a torque, radius, or tracking component assembly, or any part used for attaching the same to the vehicle frame or axle, that is cracked, loose, broken, or missing (including missing bushings, but not loose bushings in torque or track rods).

## 10.0 EXTERNAL PARTS AND ACCESSORIES INSPECTION STANDARDS — TRAILER

Inspection Item	Out-Of-Service Condition
<b>10.1 Trailer Frame and Frame Assemblies</b>	
Check frame and cross members for cracks, alignment, looseness, or sagging parts. { 393.201 (a) } and { 396.3 (a) (1) }	Any cracked, loose, sagging, or broken frame member.
<ul style="list-style-type: none"><li>• Tire and wheel clearance: Under no circumstances shall the body or frame be capable of coming in contact with a tire or any part of the wheel assemblies.</li></ul>	Any crack in the frame web which is directed toward bottom flange.
	Any crack in the frame web around the radius and into the bottom flange.
	Any crack in the bottom flange.

## 10.2 Trailer Lighting Devices

All lights and reflectors required by 393 must be present and capable of being operated at all times as follows:

- Any exterior bulb or sealed beam must light properly.
  - Turn signal lamps must properly indicate right or left when so switched. {393.19}
- Check lamps and reflectors for proper color. {393.25 (b)}
- Inspect condition of lamps and reflectors for cleanliness, visibility, and securement. {393.25 (f)}

Does not have an operative turn signal on each side of the rear most vehicle.

Lamps on trailer — Not having at least one steady burning red lamp on each side of the rear, visible from 500 feet.

Stop lamp — Does not have an operative stop lamp on each side of the rear most vehicle.

### 10.3 Suspension Assembly and Other Axle Positioning Parts

Inspect suspension U-bolt(s), spring leaf(s), spring hanger(s), or other axle positioning part(s) for alignment, looseness, and condition. {393.207 (a)}

U-bolt(s), spring hanger(s), or other axle positioning part(s) cracked, broken, loose, or missing.

Inspect leaf spring assemblies for alignment and condition. {393.207 (c)}

Any leaf in a spring leaf assembly broken or missing.

A coil spring must not be cracked or broken. {393.207 (d)}

Coil spring broken.

A rubber spring must not be missing. {393.207 (a)}

Rubber spring missing.

The leaves in any leaf spring assembly must not shift or be displaced in a manner that could result in contact with the tire, rim, brake drum, or frame. {393.207 (c)}

One or more leaves displaced in a manner that could result in contact with a tire, brake drum, rim, or frame.

A torsion bar spring in the torsion bar suspension must not be cracked or broken. {393.207 (e)}

Broken torsion bar spring in the torsion bar suspension.

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**Inspection Item**

**Out-Of-Service Condition**

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**10.4 Sliding Axle Positioning Component**

Check adjustable axle assemblies for locking pin engagement.  
{ 393,207 (b) }

- All axles on the motor vehicle must be in proper alignment with the longitudinal axis of the vehicle.

Adjustable axle assembly (sliding sub frame) with any locking pins missing or not engaged.

Locking bar not closed or not in the locked position.

**10.5 Fifth Wheel Kingpin**

Check kingpin assembly.

Horizontal movement between the upper and lower fifth wheel halves exceeds 1/2 inch. (393.70)

Kingpin can be moved by hand in any direction. Note: This item is to be used when uncoupled semitrailers are encountered, such as at a terminal inspection, and it is impossible to check item (1) above. Kingpins in coupled vehicles are to be inspected using items (1) above and (3) and (4) below. Vehicles are not to be uncoupled. (393.70)

Kingpin not properly engaged. (393.70)

Separation between upper and lower coupler allowing light to show through from side to side. (393.70)

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**Inspection Item**

**Out-Of-Service Condition**

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Check kingpin assembly (continued).

Any semitrailer with a bolted upper coupler having fewer bolts than shown in the following table:

Minimum Total Quantity of Bolts  
(Total minimum quantity of bolts must be equally divided with 1/2 on each side of the coupler.)

Bolt Size

1/2 " 5/8 " and larger

14 (7 ea. side)      10 (5 ea. side)

## 10.6 Trailer Axle Wheels, Rims, and Fasteners

Inspect the rims for imperfections, cracks, bends, etc. { 393.205 (a)}

Rim cracks — Any circumferential crack except a manufactured crack at the valve stem hole.

Any disc or cast wheel cracks.

Inspect steel disc and aluminum cast wheels thoroughly for warpage, alignment, and cracks.

Any elongated stud holes.

Inspect stud or bolt holes on the wheel for elongation (e.g., worn out of round). { 393.205 (b)}

Any spoke wheel crack.

Inspect wheels both in the spoke and web areas for cracks. (393.205 (a))

Any crack at a spoke in the tubeless demountable adapter.

Check for cracks in the tubeless demountable adapter.

Any loose, missing, broken, cracked, or stripped (both spoke and disc wheels) fasteners.

Inspect wheel lug nuts and bolts for securement, proper thread engagement, or failure to function as designed by the manufacturer. { 393.205 (c)}

**Inspection Item**

**Out-Of-Service Condition**

Inspect axle wheels for welded repair. { 396.3 (a) (I) }

Any welded repair other than disc to rim attachment on steel disc wheel(s) mounted on the trailer axle.

Inspect all welds in any wheel. { 393.205 (a) } and 1395.3 (a) (1) }

Any cracks in welds attaching wheel disc to rim.

Any cracks in welds attaching tubeless demountable rim to adapter.

Any welded repair on aluminum wheel(s).

## 10.7 Trailer Tires

Check the tire load limit to ensure that the tires are not overloaded per the manufacturer's specifications. (393.75 (f))

Weight carried exceeds tire load limit. This includes overloaded tire resulting from low air pressure.

Check for leaking or flat tires. { 393.75 (a) (3)}

Tire is flat or has noticeable leak (e.g., can be heard or felt).

Inspect the sidewall of each tire for damage or defects. { 393.75 (a)}

**Bias ply tire — When any ply is exposed in the tread area or sidewall.**

**Radial ply tire — When any plies are exposed in the tread area or damaged cords are evident in the sidewall.**

Inspect the tire markings to ensure that the tires are suitable for highway use. { 396.3 (a) (I)}

Is marked "Not For Highway Use" or otherwise marked and having like meaning.

Inspection Item	Out-Of-Service Condition
Ensure that tires are mounted or inflated in such a manner that they do not come in contact with any part of the vehicle. {396.3 (a) (1)}	So mounted or inflated that it comes in contact with any part of the vehicle. (This includes any tire contacting its mate in a dual set.)>
Inspect each tire for observable bumps, bulges, or knots. {396.3 (a) (1)}	Any tire with observable bumps, bulges, or knots.
Inspect each tire for minimum tread depth. Must have at least 2/32-inch tread when measured in a major tread groove. (393.75 (c) }	So worn that less than 2/32-inch tread remains when measured in any major tread groove at any location on the tire.
Inspect tires for size to ensure that the sizes are the same across a single axle.	75% or more of the tread width missing in excess of 12 inches (30 cm) in circumference. (393.75(c))
Ensure that bias ply and radial construction tires are not on the same axle,	

## 10.8 Trailer Axle Brake Components

Check for operative brakes:

- Each commercial motor vehicle must have operative brakes on each axle. { 393.48 (a)}
- The braking system shall not have missing, broken, loose, or inoperative components, including shoes, springs, anchor pins, spiders, cam rollers, push rods, cam shaft brackets, and air chamber mounting bolts. { 393.48 (a)}
- The service brake system must fully release when the brake pedal is in the released position.

Absence of effective braking action on any brake on any trailer axle.

Missing, broken, loose, or inoperative components, including shoes, springs, anchor pins, spiders, cam rollers, push rods, cam shaft brackets, and air chamber mounting bolts.

Audible air leak at brake chamber (e.g., ruptured diaphragm, loose chamber clamp).

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- Check for a mismatch of air chamber sizes and slack adjuster length. {393.48 (a)}
- Inspect the lining or pads for securement, thickness, and functionality. {393.47}
- Lining must be firmly attached to the shoe and not saturated with oil, grease, or brake fluid. {393.47}

Mismatch across any axle of air chamber sizes or slack adjuster length.

Drum Brakes: Lining with a thickness less than 3/16" for a shoe with a continuous strip of lining or 1/4" for a shoe with two pads or to wear indicator if lining is so marked.

Air Disc Brakes: Lining with a thickness less than 1/8" .

Lining or pad not firmly attached to the shoe.

Saturated with oil, grease, or brake fluid.

## 10.9 Trailer Brake Drums

Must not be cracked on friction surface extending to an open edge. (396.3 (a) (1))

Must not have any portion missing or external cracks.  
(NOTE: Do not confuse short hairline heat check cracks with flexural cracks.) (396.3 (a) (1))

### Drums with an external crack.

Any portion of the drum or rotor (discs) missing or in danger of falling away.

## 10.10 Trailer Brake Hose/Tubing

Check brake hoses for securement against chafing, kinking, or other damaged. (396.3 (a) (I))

Hose with any damage extending through the outer reinforcement ply. (Rubber-impregnated fabric cover is not a reinforcement ply. Thermoplastic nylon may have braid reinforcement or color difference between cover and inner-tube. Exposure of second color is out-of-service.)

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**Inspection Item**

**Out-Of-Service Condition**

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Check for any bulging or swelling when air pressure is applied. {396.3 (a) (1)}

Bulge or swelling when air pressure is applied.

Check for leaks. {396.3 (a) (1)}

Hose and/or connection with audible leak.

Check for improper splices (e.g., sliding the hose ends over a piece of tubing and clamping). {393.46}

Two hoses improperly joined, such as a splice made by sliding the hose ends over a piece of tubing and clamping the hose to the tube.

Check hoses for cracks or any area that restricts air. {393.45 (a) (4)}

Air hose cracked, broken, or crimped in such a manner as to restrict air flow.

## 10.11 Brake Adjustment

Check brake chambers and mark each push rod. Brake adjustment measurements shall be taken when brake chamber air pressure is between 90 and 100 psi.

Brake adjustment shall not meet or exceed those specifications in the following table. (Dimension in inches.)

Any brake that meets or exceeds the specifications in the following table.

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**CLAMP TYPE BRAKE CHAMBER DATA**  
(Dimensions in inches)

Type	Outside Diameter	Maximum Stroke at Which Brakes Must be Readjusted
6	4-1/2	1-114
9	5-1/4	1-318
12	5-11/16	1-318
16	6-3/8	1-314
20	6-25/32	1-314
24	7-7/32	1-3/4*
30	8-3/32	2
36	9	2-114

\*Two inches for long stroke design

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**BOLT TYPE BRAKE CHAMBER DATA**  
(Dimensions in inches)

A	6-15/16	1-3/8
B	9-3/16	1-3/4
C	8-1/16	1-3/4
D	5-1/4	1-1/4
E	6-3/16	1-3/8
F	11	2-1/4
G	9-7/8	2

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**ROTOCHAMBER DATA**  
(Dimensions in inches)

9	4-9/32	1-112
12	4-13/16	1-112
16	5-13/32	2
20	5-15/16	2
24	6-13/32	2
30	7-11/16	2-114
36	7-5/8	2-314
50	8-7/8	3

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**WEDGE BRAKE DATA**  
(Dimensions in inches)

Movement of the scribe mark on the lining shall not exceed 1116".

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## 10.12 Rear-End Protection

Each motor vehicle must be equipped with a rear-end protection device meeting the requirements of 393.86.

## 10.13 Spare Tire Securement

Spare tire(s), wheel(s), and other equipment must be securely fastened to the motor vehicle. {392.9}

Part(s) of a vehicle or a condition of loading such that the spare tire or any part of the load or damage can fall onto the roadway.

## 10.14 Load Securement

Check all tie down or cargo securement devices for looseness, damage, wear, etc.

When any accessible cargo securement device is defective.

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**Inspection Item**

**Out-Of-Service Condition**

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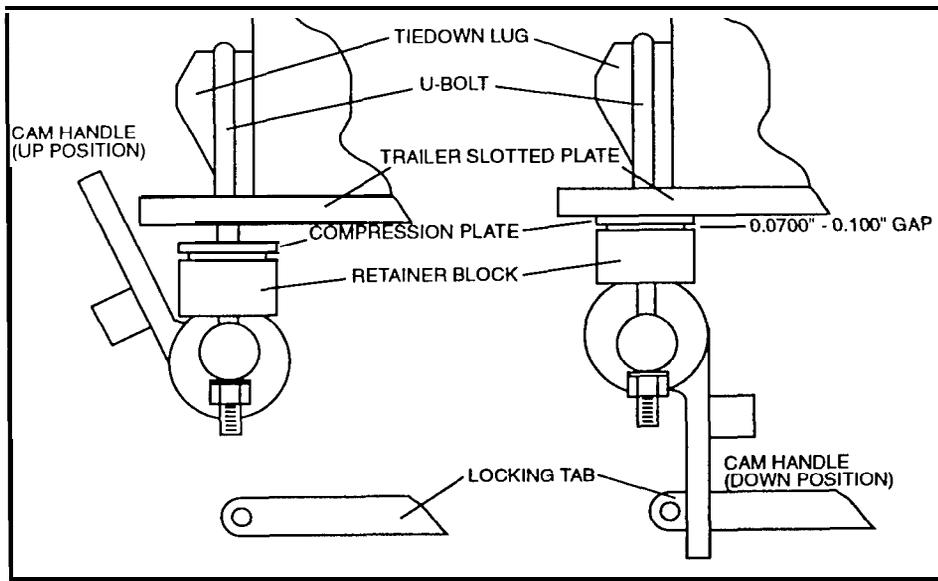
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**10.15 Trupact-II Package Tie Down Assemblies**

All tie down assemblies must be securely locked.

When the gap between the trailer locking plate and the compression plate exceeds 0.100".

When the cam handle locking pin is missing.



## 11.0 COMPLETING THE INSPECTION

- 11.1 Place vehicle and/or driver out-of-service, if necessary.
- Do not allow a vehicle displaying an out-of-service sticker to be driven. If necessary to escort out-of-service vehicles to another location, DO NOT affix sticker until vehicle is parked at that location.
- 11.2 Show the driver all defects listed on inspection form and instruct the driver on the disposition of driver-vehicle inspection form and in the correction of out-of-service defects or violations.
- 11.3 Conclude the driver-vehicle examination by recording the time completed and the inspector's signature.
- 11.4 Request driver to sign the form and give driver a copy.
- 11.5 Place out-of-service vehicle(s) in suitable location.
- On an out-of-service power unit, place **the** out-of-service sticker on the outside of the windshield (driver's side) in the driver's line of vision.
  - On an out-of-service trailer, place **the** out-of-service sticker on the left front of the trailer at about eye level where the sticker would be easily observed by someone coupling or uncoupling **the** vehicle combination.

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**Inspection Item**

**Out-Of-Service Condition**

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11.6 Apply a CVSA pilot study (radioactive) decal to each vehicle.

Location:

- Power Unit - Passengers windshield adjacent to the CVSA decal.
- Trailing Unit - Right side near the front adjacent to the CVSA decal.

11.7 Have driver set the parking brake, then remove wheel chocks.

## RADIATION SURVEY

Inspection Item	Out-Of-Service Condition
<b>4.1 In-Cab Survey</b>	
Measure radiation level in the driver position and in the sleeper berth of the cab. { 173.441 }	When measurement exceeds <b>2 mrem/hr</b> in a space normally occupied by a person(s).
<b>4.2 External Vehicle Survey</b>	
Measure external radiation level(s)	
• Measured at 2 meters (6.6') from surface. { 173.441 }	When measurement exceeds <b>10 mrem/hr</b> at 2 meters from surface of vehicle.
• Measured at surface of vehicle. { 173.441 }	When measurement exceeds <b>200 mrem/hr</b> at accessible surface of vehicle.

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