

National Safety Code Standard 11

Maintenance and Periodic Inspection Standards



CCMTA | CCATM
Canadian Council of Motor Transport Administrators
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NSC STANDARD 11, PART A

Commercial Vehicle Maintenance Standard

Introduction

Goals of the Standard

The objective of this standard is to ensure that all commercial vehicles are subject to a systematic, regular preventative maintenance program. The intent is to ensure that all operators of commercial trucks, trailers and buses have a regular vehicle maintenance and servicing program for all vehicles under their control. Regular preventative maintenance of equipment ensures small problems can be corrected before they result in accidents, major repairs or a vehicle breakdown. Establishing a preventative maintenance program that systematically identifies defects and allows an operator to effect repairs per this standard will assist in complying with the semi-annual and annual inspection requirements under the Periodic Motor Vehicle Inspection (PMVI) program.

Background

This standard was developed by all jurisdictions and industry to provide guidelines on a minimum acceptable level of performance for commercial vehicle systems and components. Though not identical, the standard is similar to U.S. Federal Motor Carrier Safety Regulations (FMCSR) Part 393, which covers parts and accessories for safe operation. Moreover, many of the equipment regulations in Canadian jurisdictions specify that certain components must be in proper working condition at all times when the vehicle is on the road. Owners that design their preventive maintenance programs to address the conditions in this standard will likely be found in compliance with jurisdictional equipment regulations, semi-annual and annual inspections and pass a roadside inspection. The maintenance standard was used to foster the reciprocity sections of the periodic motor vehicle inspection program for commercial vehicles.

Application

The standard applies to all commercial vehicles under the NSC. For the purposes of the NSC, 'commercial vehicle' is defined as:

- a) a truck, tractor or trailer or combination thereof exceeding a registered gross vehicle weight of 4,500 kg (approximately 10,000 lbs)
- or
- b) A bus designed, constructed and used for the transportation of passengers with a designated seating capacity of more than 10, including the driver, but excluding the operation for personal use.

A number of jurisdictions exempt specific types of vehicles from the requirements of this standard, for example vehicles leased for 30 days or less, light trucks with a gross vehicle weight of 4,500 kg or less, fire trucks or ambulances. Some jurisdictions further exempt farm (2 or 3 axle) vehicles used for hauling primary products and recreational vehicles.

General Requirements

Every commercial vehicle operator must ensure that each vehicle that is owned or leased by the operator, including trailers, meets the requirements contained in the maintenance standard. Every operator must have a system to inspect, maintain and repair each of the owned or leased vehicles at regular intervals.

No predetermined time intervals have been specified in the standard for the cycle of inspection and maintenance. When the standard was first drafted it was considered too difficult to attempt to specify time requirements because of the difference in equipment, the applications for which the equipment is subjected, and the distance which might be travelled by different types of equipment. In addition, industry representatives put forward the view that there was a need for flexibility in implementing fleet maintenance programs. It was acknowledged that carriers and operators were better suited to determine the intervals for regular servicing and maintenance of their vehicles. It should be noted however that some jurisdictions do specify the maximum mileage or time which can elapse between maintenance intervals.

Inspection and Maintenance Cycles

Most established carriers undertake their systematic fleet maintenance and repair programs based on the maintenance servicing schedule suggested by the *original equipment manufacturer* (OEM). This is the single best piece of advice that can be provided in designing a maintenance program. The minimum schedule for regular maintenance and repair specified by the vehicle manufacturer should be followed as it will ensure better fuel mileage and a longer life for specific safety components and the equipment in general.

Many carriers have implemented regular preventative inspection and maintenance cycles which are distinguished by the scope of the inspection and depth of maintenance that is performed on the vehicle. The different inspection cycles for maintenance and repair are based on combinations of elapsed time and the kilometers travelled by the vehicle.

Carriers may for example schedule an A level maintenance inspection on a monthly basis, others by the kilometers travelled, (e.g. 1,600 km), to cover the basic safety components such as lights, tires, body panelling, apparent leaks and the like. The mechanic/technician should check any problems which have been reported by the driver as a result of a daily trip inspection and take the appropriate action to repair as necessary. The vehicle may be cleaned, and fluid levels will be checked and topped up during this maintenance interval. The mechanic/technician will also be looking for obvious problems, such as leaks and signs of unusual wear on key components. This type of inspection will allow the shop to undertake immediate repair of critical or damaged components. If the problem is not serious, it can be scheduled for the vehicle's next regular inspection. This will allow time to order parts not in stock or, in the case of a time-consuming repair, allow for the procedure to be scheduled with the appropriate mechanic/technician and equipment, (e.g. lift or welding materials) at a later date.

The "A" level inspection may be followed by a more extensive "B" level inspection. Generally the same components verified in the "A" level inspection are verified again along with a series of other components or vehicle systems. Depending on the operation and the use of the equipment, this could occur on a bi-monthly or quarterly basis or between 10,000 km to 30,000 km. Worn hoses, brackets and filters might be replaced. Brakes will be checked for adjustment and measured for wear¹. The engine will receive a tune-up. A slight problem on a component noted during the "A" level inspection will be replaced. In addition fittings will be greased and lubricated per OEM or industry standard.

A further "C" level inspection may be scheduled at six-month intervals or after 50,000 kilometers, where the remaining vehicle systems and components identified in the standard will be inspected and repaired or replaced as necessary per OEM or industry standard. Some carriers will time their "C" level inspection to occur immediately prior to their semi-annual or annual PMVI inspection at a government approved facility. Following a "C" level maintenance inspection the cycle will be repeated. Some carriers schedule a fourth-level inspection, (e.g. at 100,000 km) prior to recommencing the cycle. Whatever schedule (time/mileage) is selected, it must be followed by the carrier.

The obligation to inspect and maintain vehicles is ongoing. This ongoing aspect of vehicle maintenance and inspection distinguishes this standard from the PMVI standard, where specific time intervals for inspection are mandated. Indeed the other inspection standards of the NSC can be seen as an audit of the regular maintenance and repair program that is implemented by a motor carrier or commercial vehicle operator.

¹ The general intention of the PMVI standard is that internal brake components shall be inspected and measurements taken and this may entail the removal of wheels. Due to the cost of wheel removal, some alternative inspection methods and procedures have been developed. To benefit from alternate inspection criteria for internal brake components owners should consult the PMVI standard. The substantial time and cost of removing wheels at the time of the semi-annual or annual inspection can be avoided if the vehicle owner has carefully documented the inspections (measured brake components and retained repair invoices) during their normal maintenance cycles (see Section 3, 3A and 3H of the PMVI standard).

Procedures for Compliance

Each carrier must establish a system of preventative vehicle inspection, maintenance and repair for every truck, bus and trailer it operates, and keep an up-to-date maintenance and repair record for each vehicle under its control. As a minimum, the record or vehicle file should contain the following:

- make, model, year and serial number (VIN) of the equipment;
- lessor's name if applicable;
- date and nature of every repair and maintenance activity carried out on the equipment (parts replaced and invoices);
- odometer reading at the time of every servicing or repair;
- description of the type and frequency of regular maintenance and repairs to be undertaken on the equipment; and
- a record of every axle or suspension modification that affects the gross vehicle or axle weight rating.

The information specified above must be assembled and kept current for each vehicle or piece of equipment. Vehicle records must be kept for at least two years at the principal place of business. If a vehicle has been sold, destroyed or returned to the lessor, its records may be discarded after six months.

Note: Many jurisdictions require proof of maintenance, (i.e.: bills or invoices for brake repairs) to be kept for four or five years. Some jurisdictions may also require the filing of a safety plan that includes a maintenance plan for vehicles. As such jurisdictional guidelines for record keeping may vary and should be consulted and followed.

Enforcement

The most significant difference between the maintenance standard and the other inspection standards under the NSC is that there is no on-road enforcement of the requirements. Rather the requirements are enforced by jurisdictional transportation safety officials during the facility audit process (NSC Standard 15).

The auditor will randomly select a number of vehicles in a fleet and then request the vehicle files be provided for review. The auditor will be checking to see that the file is current and complete, and the maintenance program covers the minimum criteria contained in the standard.

Auditors may note deficiencies with the operator's established program, and should provide suggestions for improving the regular inspection and maintenance schedule of vehicle components.

Failure to have a regular maintenance and repair program and/or failure to keep vehicle records current will result in a violation being recorded on the carrier's jurisdictional profile. This will impact the safety rating assigned to a vehicle operator. Failure to bring preventative maintenance programs into compliance with the standard and jurisdictional equipment regulations will result in further sanctions.

The Standard

The maintenance requirements appear on the following pages. The sections are organized on the basis of vehicle systems. In each section various components subject to regular inspection and maintenance are identified, along with guidelines on when the component should be repaired or replaced. All systems and parts contained in this standard should be included in any maintenance program. All measurements are shown in metric. The measurements indicated are based on the manufacturer's recommendations regarding dimensional limits, standard industry practice and the accuracy of tools typically used for such inspections.

The *Original Equipment Manufacturers* (OEM) or industry standard service instructions and dimensions for repair and replacement should always be followed.

Conclusion

The key point to remember with this standard is the inspection and maintenance program must be regular and systematic to ensure only safe equipment is allowed on the road. The other NSC inspection standards, (e.g.: PMVI, Trip Inspection) can be viewed as the means by which the regular inspection and maintenance program is evaluated. Infractions related to the other standards may be an indication that the inspection and maintenance program is not adequate and may prompt a facility audit.

General Requirements**1. Inspection, Repair and Maintenance**

- a) Every carrier shall systematically inspect, repair and maintain, or cause to be systematically inspected, repaired and maintained, all commercial vehicles subject to its control.
 - i) Parts and accessories shall be in safe and proper operating condition at all times. These include those components and component standards specified in this standard and any additional parts and accessories which may affect safety of operation.
 - ii) Replacement parts must be designed for the particular application for which they are used and must meet original equipment manufacturer (OEM) or industry standard specifications. Where practical, replacement parts certified by a recognized industry standard testing organization should always be used; and Replacement parts must be properly installed.
- b) Every carrier shall maintain, or cause to be maintained, the following records for each commercial vehicle:
 - i) an identification of the vehicle, including licence plate number, unit number or company number, if so marked, make, serial number, year and tire size. In addition, if the vehicle is not owned by the motor carrier, the record shall identify the name of the person furnishing said vehicle, (i.e.: leasing company);
 - ii) a means to indicate the nature and due date of the various inspection and maintenance operations to be performed;
 - iii) a record of inspection, repairs and maintenance indicating their date and nature (be sure to retain all invoices and where appropriate mark the measurements on company inspection forms);
 - iv) a lubrication record; and
 - v) a record of modifications involving axles or suspensions that affect a manufacturer's gross vehicle weight rating or gross axle weight rating.
- c) Every carrier shall retain records required under this section where the commercial vehicle is either housed or maintained for a period of at least two years and for six months after the vehicle leaves the motor carrier's control².

2. Lubrication

- a) Every carrier shall ensure that each commercial vehicle subject to its control:
 - i) is properly lubricated, and
 - ii) is free of fluid, oil and grease leaks.

3. Wear Limits and Tolerances

- a) The limits and tolerances indicated in this section are guidelines only. Where Original Equipment Manufacturer (OEM) recommended limits do not match the guidelines, the OEM limits should be used.

4. Applicability

- a) These standards are not intended to override any legislative requirements.

² *Note:* Many jurisdictions require proof of maintenance, (i.e.: bills or invoices for brake repairs) to be kept for four or five years. Some jurisdictions may also require the filing of a safety plan that includes a maintenance plan for vehicles. As such jurisdictional guidelines for record keeping may vary and should be consulted and followed.

Section 1 Power Train

Item and Method of Inspection

1. Accelerator Pedal/Throttle Actuator

- a) The accelerator pedal/throttle actuator shall be mounted securely, shall not be binding, inoperative or missing, and the engine must return to the idle position upon its release.
- b) linkage/cable shall not be binding, broken, inoperative, loose or missing.

2. Clutch/ Clutch Pedal

- a) The clutch/pedal/linkage shall not be broken, cracked, loose, missing or abnormally worn, welded or repaired in way that doesn't meet OEM or industry standard.
- b) No anti-slip feature shall be ineffective, loose or missing.

3. Engine Controls

- a) The engine shall shut down upon activation of the engine shut down control.
- b) Where the engine is equipped with an emergency stopping device, the engine shall stop when the control is actuated.

4. Engine Starter

- a) The engine start safety feature shall function as designed and prevent the engine from starting.

5. Gasoline, Diesel, Pressurized or Liquefied Fuel System

- a) No tank, strap, mounting bracket or other mounting component shall be broken, loose, missing or mounted insecurely.
- b) No filler cap/tube/vent tube shall be of improper type, loose, missing or allow spillage.
- c) No component of any fuel system shall show evidence of leaking.
- d) No fuel line, hose, fitting or connection shall be mounted insecurely.
- e) All pressurized fuel systems shall meet federal and provincial legislation requirements.
- f) If fitted, no fuel tank cage shall be damaged, insecure, loose or missing.

6. Hybrid Electric Vehicle & Electric Vehicle Power Train System

Note: Only a person who is trained on the operation and potential hazards of hybrid or electric vehicle systems can safely conduct an inspection. Visually inspect all accessible parts according to the vehicle manufacturer service instructions.

Consult with the manufacturer service instructions to ensure inspection and maintenance is performed as recommended by the manufacturer.

7. Exhaust System

- a) No catalytic converter, exhaust pipe, muffler, resonator, manifold, diesel particulate filter, turbo or tail pipe shall be broken, bypassed, cracked, disabled, insecure, leaking, loose or missing.
- b) No point of the exhaust system shall show evidence of leakage except through drain holes provided by the manufacturer.
- c) No component shall pass through an occupant compartment and no exhaust gases shall be expelled into the cab, passenger compartment and/or sleeper.
- d) No part of the exhaust system shall be closer than 50 mm to wiring, any part of a fuel or brake component or any combustible material that is not protected by shields except diesel or gasoline fuel tank which requires 25 mm of clearance.
- e) No component shall be detached, located or unguarded so that an individual may be burned on entering or leaving the vehicle.
- f)) No exhaust system shall be shortened or modified from original equipment so as to fail to direct the exhaust beyond the perimeter of the cab, passenger compartment and/or sleeper.

8. Drive Shaft

- a) No universal or constant velocity (CV) joint shall be loose, missing or show evidence of rotational free play.
- b) No cv joint protective boot or u-joint bearing seal shall be damaged, loose or missing.
- c) No drive shaft fasteners, guards or hanger brackets shall be cracked, loose or missing.
- d) No centre (carrier) bearing shall be cracked, damaged, missing or abnormally worn or the rubber mount deteriorated so as to no longer give adequate support to the bearing.
- e) No driveshaft shall be bent or twisted.

9. Engine or Accessory DriveBelt

- a) No engine or accessory drive belt shall be broken, frayed, missing or oil-contaminated.
- b) No belt shall be so loose that it is likely to slip, or so tight it **is** likely to cause bearing damage.

Section 2 Suspension

Item and Inspection Criteria

1. Suspension and Frame Attachments

- a) No suspension shall be so sagged that the vehicle ride height is less than the manufacturer's specified height when measured at the centreline.
- b) No frame bracket, mounting bracket, hanger or mounting fasteners shall be broken, cracked, damaged, loose, missing, or perforated due to corrosion or deterioration or welded or repaired in a way that does not meet OEM standard.

2. Axle Attaching and Tracking Components

- a) No axle attachment or axle saddle shall be bent, broken, loose or missing.
- b) No suspension connecting component, (e.g.: arm, torque rod, radius rod, strut, track rod, control arm) shall be bent, broken, cracked, loose, missing, worn beyond manufacturer specifications, or perforated due to corrosion or deterioration. None of these components shall be welded or repaired in way that does not meet OEM standard.
- c) No stabilizer/anti-sway bar, link, equalizer or "walking" beam shall be bent, broken, cracked, loose, missing or worn beyond manufacturer specifications, or welded or repaired in a way that does not meet OEM standard.

3. Axle and Axle Assembly

- a) No axle or axle assembly shall be bent, cracked, damaged, loose or welded or repaired in a way that does not meet OEM standard.

4. Springs and Spring Attachments

- a) No leaf or composite spring shall be broken, cracked, missing, shifted out of place or worn more than 3 mm in the contact area.
- b) No shackle, pin, u-bolt, hardware or bushing shall be broken, cracked, loose, missing or shifted out of normal position.
- c) No coil spring or torsion bar shall be broken, cracked, missing or repaired by welding.
- d) No bump pad or rubber load cushion shall be broken, loose, missing or split.

5. Air Suspension

- a) No vehicle shall have a ride height that is 50 mm above or below OEM specification.
- b) No air spring or airbag shall be improperly seated, missing, patched or have a reinforcing ply exposed due to damage or deterioration, or have any air leak present.
- c) No air spring base or mounting plate shall be broken, cracked, missing, perforated by corrosion or deterioration, or is welded or repaired in a manner that does not meet OEM standard.
- d) No component of an air system, (i.e.: pressure protection valve, pressure regulator or gauge) shall be inoperative or missing.
- e) No air line, connection or fitting shall be broken, cracked, damaged, flattened, leaking or installed or modified in a manner that does not meet OEM standard.

6. Shock Absorber/Strut Assembly

- a) No shock absorber/strut assembly shall be binding, broken, damaged, detached, loose, missing or leaking oil.

Section 3H – Hydraulic and Electric Brakes

Item and Inspection Criteria

1. Hydraulic Brake System Components

- a) The components of a hydraulic braking system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No metal line or fitting shall be chafed, corroded so as to compromise the structural integrity of the material, be cracked, flattened, improperly mounted, leak, or be restricted.
- c) No metal line or fitting shall be repaired by welding or soldering or repaired using material or method that that does not meet OEM or industry standard.
- d) No flexible line/hose shall be bulged or swell under pressure, chafed, cracked, flattened, insecurely mounted, restricted and must be maintained to OEM standard.
- e) No master cylinder or master cylinder filler cap shall be damaged, insecurely mounted, leaking, loose, missing, plugged or have the gasket missing or swollen.
- f) The hydraulic fluid level in the reservoir shall be at the level recommended by the manufacturer.
- g) No pressure differential switch or electrical connection shall be damaged, inoperative, insecure, leaking or be loose.
- h) No variable or proportioning valve or link shall be damaged, inoperative, leaking, missing or seized.
- i) No auxiliary or work brake (line-lock device) shall be installed that interferes with normal service brake operation.

2. Brake Pedal/Actuator

- a) No brake pedal or mount shall be broken, cracked, damaged, insecure, loose, missing, abnormally worn, welded or repaired in a way that does not meet OEM standard.
- b) No anti-slip feature shall be ineffective, loose or missing.

3. Vacuum Assist (Boost) System on Truck or Bus

- a) The vacuum assist system shall operate as intended and be maintained as described in manufacturer service instructions
- b) No line, hose or clamp shall be broken, chafed, collapsed, cracked, damaged, incorrect type, insecurely mounted, (i.e.: within 50 mm of an exhaust system component without a heat shield), leaking, loose or missing.
- c) No check valve shall be incorrectly installed, inoperative, leaking or missing.
- d) No vacuum reserve tank shall be corroded so that the integrity is compromised, damaged, insecure, leaking, loose or missing.
- e) No vacuum assist system reserve shall be insufficient to assist in two full brake applications or there is no downward movement of the brake pedal when engine is started.
- f) The vacuum pump shall operate within manufacturer specification.

4. Hydraulic Assist (Boost) System on Truck or Bus

- a) The hydraulic assist system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No engine-driven hydraulic pump, reservoir, belt or filler cap shall be damaged, leaking, loose or missing.
- c) No line or hose shall be broken, chafed, collapsed, cracked, of incorrect type, insecurely mounted, leaking, loose or missing.
- d) The hydraulic assist (boost) electric pump, warning lamp and indicator lamp shall function as intended and be maintained per manufacturer service standard.

5. Air Assist (Boost) System on Truck or Bus

- a) The air assist system shall operate as intended and be maintained as described in manufacturer service instructions and downward movement of the brake pedal shall be felt when engine is started.
- b) No line or hose shall be broken, chafed, collapsed, cracked, of incorrect type, insecurely mounted, or be leaking, loose or missing.
- c) No check valve shall be inoperative or missing.

6. Air-Over-Hydraulic Brake System

- a) The air-over-hydraulic system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No line or hose shall be broken, chafed, collapsed, cracked, of incorrect type, insecurely mounted, leaking, loose or missing.
- c) No check valve shall be inoperative or missing.

7. Surge Brake Controller on Trailer

- a) The surge brake controller shall operate as intended and be maintained as intended by the manufacturer and shall not be damaged, defective, seized or fail to operate brakes when actuated manually.
- b) No brake fluid reservoir or filler cap shall be damaged, insecure, leaking, or be missing and the brake fluid will be at the level specified by the manufacturer.
- c) No break-away device shall be damaged, improperly installed, inoperative or missing from a trailer required to have a break-away device.

8. Vacuum System on Trailer

- a) The trailer vacuum system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No vacuum system shall be damaged or fail to operate as intended.

9. Air-Boosted Trailer Brake System

- a) The system shall operate and be maintained as described in manufacturer service instructions.
- b) No air-boosted brake system shall be damaged or fail to operate as intended.

10. Electric Brake System on Trailer

- a) The system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No wheel magnet or actuator component shall be broken, damaged, inoperative, loose, missing or seized.
- c) No wiring shall be improperly spliced or connected, insecure, short-circuited or have insulation that is cracked or peeled.
- d) No battery or controller shall be damaged or fail to operate as intended by the manufacturer.
- e) No break-away device shall be damaged, improperly installed, inoperative or missing from a trailer required to have a break-away device.

11. Brake System Indicator Lamps

- a) The system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No indicator lamp shall be missing or any color other than red and any indicated brake system malfunction or defect shall be repaired.

12. Drum Brake System Components

Note: Best practice is to measure and document brake drum diameter and shoe lining thickness at every comprehensive brake inspection.

- a) The drum brake system components shall operate as intended and be free of defects and be inspected and maintained as described in manufacturer service instructions.

- b) When any brake system inspection reveals evidence of a defect or abnormal condition, wheel and drum disassembly is required to determine the defect and to effect repairs, (i.e.: abnormal appearance, excess corrosion, damage, distortion, glazing or shifting out of place of any brake component, abnormal wear of brake drum or friction material, signs of overheating, discoloration or contamination of brake friction material).
- c) Every major brake inspection requires the brake shoe lining thickness and brake drum diameter to be measured and these measurements should be recorded on a record/report of inspection and be retained. (See Section 3 of PMVI standard to learn how these inspections and records can be used to avoid wheel disassembly at every inspection).
- d) No mechanical or structural part shall be binding, broken, cracked, disconnected, loose, misaligned, missing, seized, worn beyond OEM or industry standard and no backing plate shall be worn so as to restrict free movement of the shoes.
- e) No required brake component shall be inoperative or missing.
- f) No brake shoe lining shall be contaminated by brake fluid, oil or grease and no wheel seal shall show evidence of leaking.
- g) No brake lining shall be broken, damaged, distorted, loose, missing or show any abnormal and/or uneven wear.
- h) No brake shoe lining shall have a crack (other than normal heat check cracks) extending partially through or completely through the lining from the friction surface to the metal backing, passing from any rivet hole to the edge, have lining broken off exposing a rivet or have the lining distorted or separating from shoe. Follow manufacturer recommendations for repair of cracks based on length and crack dimensions.
- i) In no case shall the lining protrude outside the drum by more than 3 mm, be loose, have a loose fastener or a shim used between lining and shoe or be incorrectly installed, (i.e.: such as primary and secondary shoes reversed).
- j) No bonded brake shoe lining thickness shall be less than 2 mm at the centre of the shoe and no bolted or riveted brake shoe lining shall be less than 3 mm at the centre of the shoe.
- k) No brake drum shall show wear that exceeds limit indicated on drum, OEM or industry standard or be contaminated by brake fluid, grease or oil.
- l) No brake drum shall have an external crack, one or more grooves that exceeds OEM or industry standard wear limit, have cracks or heat cracks within 25 mm of the open edge of the drum, or there are hot spots and heat cracks in 3 locations that cannot be removed by machining within drum limits.
- m) No combination of machining and wear to the inside diameter of the drum shall result in a dimension that is greater than the dimension stamped on the drum, or where the dimension is not stamped on the drum, the vehicle manufacturer's wear limit, or if the manufacturer's limit is not available then no combination of wear and machining may exceed 2.3 mm over the original drum diameter of 350 mm (14 in) or less or 3 mm over the original drum diameter of greater than 350 mm (14 in).
- n) No self-adjuster mechanism shall be abnormally worn, have incorrect thread direction, be inoperative or seized.
- o) No anchor pin or return spring shall be abnormally worn, bent, broken, damaged, distorted, loose or missing.
- p) No backing plate shall be bent, damaged or loose.
- q) No axle or spindle shall be cracked.
- r) No wheel cylinder shall be damaged, inoperative, insecurely mounted, leaking brake fluid, loose or have the dust seal cracked, damaged, missing or split.
- s) All drum brakes shall be adjusted within OEM standard and rotate without any brake drag.

13. Disc Brake System Components

Note: Best practice is to measure and document brake pad friction material thickness and rotor thickness at every comprehensive brake inspection.

- a) The disc brake system components shall operate as intended and be free of defects and be inspected and maintained as described in manufacturer service instructions.
- b) When any inspection reveals evidence of a defect or abnormal condition, wheel disassembly is required to determine the defect and to effect repairs, (i.e.: abnormal appearance, excess corrosion, damage, distortion, glazing or shifting out of place of any brake component, abnormal wear of brake rotor or friction material, signs of overheating, discoloration or contamination of brake friction material).
- c) Every major brake inspection requires the brake friction material thickness and rotor thickness to be measured and these measurements should be recorded on a record/report of inspection and be retained (See Section 3 of PMVI standard to learn how these inspections and records can be used to avoid wheel disassembly at every inspection).
- d) No mechanical or structural part shall be binding, broken, cracked, disconnected, loose, misaligned, missing, seized, worn beyond OEM or industry standard.
- e) No required brake component shall be inoperative or missing.
- f) No disc (rotor) shall have a section that is broken or missing.
- g) No disc (rotor) shall have any crack extending from the friction surface to the cooling vent, any surface crack extending to an outer edge, groove or pitted area in rotor that reduces rotor thickness below OEM allowable limit on the friction surface or have the friction surface contaminated by brake fluid, grease or oil.
- h) No disc (rotor) shall have a thickness at any point across the friction surface that is less than the minimum indicated on the brake rotor, OEM or industry standard, and no combination of machining or wear to the disc (rotor) shall result in a dimension that is less than the dimension stamped on the disc or the manufacturer's specification.
- i) No caliper, pad retainer, slide pin/slider, or pad slider shall be abnormally worn, bent, binding, broken, damaged, insecure, leaking, missing, mounted incorrectly or be seized. No boot or bellows shall be cracked, damaged or missing.
- j) No anchor plate or anchor plate fastener shall be loose or missing.
- k) No pad shall be abnormally worn, broken, cracked, damaged, installed incorrectly, loose or have the friction material contaminated by brake fluid, oil or grease.
- l) No pad (friction material) thickness measured at the thinnest point shall be less than manufacture specification or industry standard or if limit not available for bonded friction material less than 3 mm and for riveted friction material less than 5 mm.
- m) The clearance between pads and rotor (caliper adjustment) shall meet manufacturer specifications.
- n) All disc brakes components shall be adjusted within OEM standard, (e.g. torque values).

14. Mechanical Parking Brake

- a) The system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) The parking brake shall hold as intended and be tested as per manufacturer service instructions.
- c) The indicator lamp shall be present and activate when the control is placed in the applied position.
- d) No parking brake control shall be binding, broken, inoperative, missing or fail to lock.
- e) No parking cable, linkage or equalizer shall be broken, frayed, improperly adjusted or secured, missing or seized.
- f) No friction material thickness on a parking brake shall be less than specified by the OEM, or when not specified less than 3 mm on riveted lining or 2 mm on bonded lining.

15. Spring-Applied Hydraulic-Released (SAHR) Parking Brake

- a) The SAHR system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) When applied, the parking brake shall hold the vehicle, and the indicator light shall function as intended.
- c) No hydraulic line or hose shall be broken, chafed, collapsed, cracked, damaged, flattened, insecure, of incorrect type, leaking, or repaired in a way that does not meet OEM standard.
- d) No release canister shall be damaged, inoperative, insecure, leaking or loose.
- e) No friction material on a SAHR parking brake shall be less than specified by the OEM, or when not specified less than 3 mm on riveted lining or 2 mm on bonded lining.

16. Anti-Lock Brake System (ABS) on a Truck or Bus

- a) The ABS system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No ABS system will be tampered with or defeated or malfunction so as to prevent normal brake operation.
- c) The indicator lamp shall be present and function as intended.
- d) No electronic control unit (ECU) or wiring on the ABS system shall have any connector corroded, be insecurely mounted, be missing or repaired in a way that does not meet OEM standard.
- e) No relay/ABS modulating valve shall have abnormal corrosion, be insecurely mounted to the ECU, or be leaking or missing.
- f) No wheel speed sensor shall have any corroded connectors, be inoperative, insecurely mounted or missing.

17. Stability Control System

- a) The Stability Control system shall operate as intended without malfunction and be maintained as described in manufacturer service instructions.
- b) No Stability Control system shall be tampered with or defeated.

Section 3A – Air Brakes

Item and Inspection Criteria

1. Air Compressor

- a) The air compressor shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No compressor mounting components shall be broken, cracked, or have the bolts missing or loose permitting the compressor to shift from normal position.
- c) No air filter shall be contaminated to restrict air flow or be missing
- d) No pulley or belt shall be bent, broken, cracked, damaged, frayed, loose or out of alignment.

2. Air Supply System

- a) The air supply system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) The air pressure build-up/loss time shall be tested per manufacturer specifications and in no case shall exceed 2 minutes.
- c) No governor shall be inoperative, show evidence of an air leak or the governor cut-in or cut-out pressure is lower or higher than OEM specification.
- d) The low pressure warning system shall activate and operate normally and not be missing.
- e) The air pressure gauge shall be present and provide accurate readings.
- f) No pressure drop of more than 138 kPa (20 psi) should occur when a full service brake application is made with engine off.
- g) No air leakage shall be detected at any location in the system.

3. Air System Leakage on Trailer

- a) Test air loss rate per OEM specifications and follow service instructions.
- b) No air leakage shall be detected at any location in the system.

4. Air Tank

- a) Test air tanks for contamination per service instructions and OEM specifications and if contamination is found purge per service instructions.
- b) No air tank shall be corroded or damaged so that structural integrity is compromised or be leaking, loose or welded (other than factory weld) or fail to meet OEM standard.
- c) No air tank bracket and/or strap shall be broken, cracked, missing or fail to meet OEM standard.
- d) No air tank drain valve shall be inoperative, leaking, loose or missing or fail to meet OEM standard.
- e) No moisture ejector should be inoperative or leaking air.

5. Air Tank Check Valves

- a) Test per OEM service instructions and ensure there is no air pressure drop in the primary or secondary air tank and follow recommended service instructions if an air pressure drop is detected.
- b) No air tank check valve shall be inoperative or missing.

6. Brake Pedal/Actuator

- a) No brake pedal or mount shall be broken, cracked, damaged, insecure, loose, missing, abnormally worn, welded or repaired in a way that does not meet OEM standard.
- b) No anti-slip feature shall be ineffective, loose or missing.

7. Treadle Valve and Trailer Handle Valve

- a) No valve, pivot or plunger shall be binding, inoperative or seized, (i.e.: fails to fully release brakes).
- b) No valve shall be cracked, insecure, loose or have any mount, mounting bracket or mounting fastener damaged, missing or stripped.

8. Brake Valves & Controls

- a) No brake valve or control shall be broken, damaged, inoperative, loose or repaired in a way that does not meet OEM standard,
- b) No brake valve or control mount, mounting bracket or mounting fastener shall be damaged, insecure, loose, missing or stripped.
- c) No quick release or relay valve shall be inoperative, of improper type or allow air to leak from the valve back into the system.
- d) Any air system accessory device, (e.g.: suspension, tire inflation system, landing gear) that draws air from the air brake system must function as intended with a properly functioning pressure protection valve.

9. Proportioning, Inversion or Modulating Valve

- a) The proportioning, inversion or modulating valve system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No required valve shall be inoperative, of improper type or missing.
- c) No valve mounting bracket shall be broken, insecure or loose.

10. Towing Vehicle (Tractor) Protection System

- a) The tractor protection valve system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) The tractor protection valve operation shall be tested per OEM service instructions and ensure no air flows out of the trailer service line during the test. (Follow OEM service instructions when a problem is detected.)
- c) The trailer supply valve shall be tested per OEM standard and follow service instructions when air pressure variances are outside OEM specifications or where the valve fails to close automatically or does not operate as intended or protection valve is missing.

11. Parking Brake and Emergency Application on Truck or Bus

- a) The parking brake shall operate as intended and be maintained as described in manufacturer service instructions.
- b) The parking brake shall apply on any wheel required to have a parking brake.
- c) No parking brake shall drag, hang or release slowly.
- d) When the parking brake is activated by closing the brake control valve the brake shall apply automatically.

12. Parking Brake and Emergency Application on Trailer

- a) The parking brake shall operate as intended and be maintained as described in manufacturer service instructions.
- b) The parking brake shall apply on any wheel required to have a parking brake.
- c) No parking brake shall drag, hang or release slowly.
- d) When the parking brake is activated by closing the brake control valve the brake shall apply automatically.

13. Air System Components

- a) The air system components shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No gladhand shall be corroded, cracked, damaged or insecure, or have a damaged or missing seal.
- c) In jurisdictions where gladhand screens are required, no screen shall be missing, plugged or ruptured.
- d) No air line, connection, fitting, hose or tube shall be broken, cracked, damaged, (i.e.: deformed, flattened, melted), leaking or be improperly installed, modified or repaired in a way that fails to meet OEM or industry standard.
- e) No air system accessory device, (e.g.: suspension, tire inflation system, landing gear) that draws air from the air brake system shall operate without a protection valve, and the valve shall function as intended.
- f) There shall be no air leakage at any location in the system.

14. Brake Chamber (Includes a DD3 chamber on a bus)

- a) All brake chamber components shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No improper type or size brake chamber shall be used.
- c) No brake chamber shall be corroded, cracked, damaged, insecurely mounted, leaking, or loose.
- d) The drain hole shall be pointed downward and not be plugged.
- e) No improper, mismatched (size) or mixed long-stroke or standard stroke chambers shall be installed or used on an axle.
- f) No push rod return spring shall be binding or broken.
- g) No spring brake chamber or park brake-apply spring shall be broken, caged by a caging bolt or made inoperative by other mechanical means.
- h) No chamber caging plate shall be hung up or misaligned.
- i) No chamber shall be insecure, loose, missing or have any non-manufactured hole or crack present.
- j) No chamber brackets, clevis yokes, pins, anchor pins, push rods or spiders shall be bent, broken, cracked, loose, misaligned or missing or have clevis, pin, cotter pins or safety retainers missing.
- k) No DD3 brake chamber shall fail to remain fully applied at any wheel.

15. Drum Brake System Components

Note: Best practice is to measure and document brake drum diameter and shoe lining thickness at every comprehensive brake inspection.

- a) All drum brake system components shall operate as intended and be free of defects and be inspected and maintained as described in manufacturer service instructions.
- b) When any drum brake system inspection reveals evidence of a defect or abnormal condition, wheel and drum disassembly is required to determine the defect and to effect repairs, (i.e.: abnormal appearance, excess corrosion, damage, distortion, glazing or shifting out of place of any brake component, abnormal wear of brake drum or friction material, signs of overheating, discoloration or contamination of brake friction material).
- c) Major brake inspections require certain components to be measured, and these measurements should be recorded on a record/report of inspection and be retained. For drum brakes, the brake shoe lining thickness and brake drum diameter should be recorded and retained along with any repair work order or invoice when brake systems are repaired (See Section 3A of PMVI standard to learn how these inspections and records can be used to avoid wheel disassembly at every inspection).
- d) No mechanical or structural part shall be binding, broken, cracked, disconnected, loose, misaligned, missing, seized, worn beyond OEM or industry standard and no backing plate shall be worn so as to restrict free movement of the shoes.
- e) No required brake component shall be inoperative or missing.
- f) No brake shoe lining shall be contaminated by brake fluid, oil or grease and no wheel seal shall show evidence of leaking.
- g) No brake lining shall be broken, damaged, distorted, loose, missing or show any abnormal and/or uneven wear.
- h) No brake shoe lining shall have a crack (other than normal heat check cracks) extending partially through or completely through the lining from the friction surface to the metal backing, passing from any rivet hole to the edge, have lining broken off exposing a rivet or have the lining distorted or separating from shoe. (Follow manufacturer recommendations for repair of cracks based on length and crack dimensions.)
- i) No lining shall protrude outside the drum by more than 3 mm, be loose, have a loose fastener or a shim used between lining and shoe or be incorrectly installed, (i.e.: such as primary and secondary shoes reversed).
- j) No bonded or riveted continuous strip brake shoe lining thickness shall be less than 5 mm when measured at the centre of the shoe and no bolted or riveted block-type brake shoe lining thickness shall be less than 8 mm at the centre of the shoe.
- k) No brake drum shall show wear that exceeds limit indicated on drum, OEM or industry standard or be contaminated by brake fluid, grease or oil.

- l) No brake drum shall have an external crack, one or more grooves that exceeds OEM or industry standard wear limit, have cracks or heat cracks within 25 mm of the open edge of the drum, have hot spots and heat cracks in 3 locations that cannot be removed by machining within drum limits.
- m) No combination of machining **and** wear to the inside diameter of the drum shall result in a diameter greater than the dimension stamped on the drum, or where the dimension is not stamped on the drum, the vehicle manufacturer's wear limit, or if the manufacturer's limit is not available then no combination of wear and machining may exceed 2.3 mm over the original **drum** diameter of 350 mm (14 in) or less or 3 mm over the original drum diameter of greater than 350 mm (14 in).
- n) No wheel seal shall leak bearing lubricant.
- o) No return spring shall be abnormally worn, bent, broken, damaged, distorted, loose, missing or stretched, or fail to hold both rollers to against cam.
- p) No spider or spider mounting fastener shall be bent, broken, damaged, loose, missing or repaired or welded in a way that does not meet OEM standard.
- q) All drum brakes shall be adjusted within OEM standard.

16. S-Cam Drum Brake System

- a) The S-Cam brake system components shall operate as intended and be maintained as described in manufacturer service instructions and per Canadian Motor Vehicle Safety Standard (CMVSS) 121.
- b) No camshaft shall be bent, broken, damaged, of incorrect type, incorrectly installed or mounted, twisted or repaired by welding, and no camshaft shall move more than 2 mm in a bushing.
- c) No camshaft mounting bracket or bracket fastener shall be broken or loose.
- d) No clevis, pin, clevis yoke, locking device or pushrod shall be bent, binding, broken, cracked, misaligned, loose, missing or welded or repaired in a way that does not meet OEM Standard.
- e) No clevis yoke lock nut shall be loose and no required brake stroke indicator shall be missing.
- f)) When brakes are applied all parts working together must form the correct angle to slack adjuster and brake chamber per manufacturers specifications.
- g) No brake adjuster shall be used that is abnormally worn, bent, broken, of improper type, improper size, improperly installed or inoperative and the self-locking sleeve on manual slack adjusters shall not fail to lock or be seized.
- h) No self-adjusting brake adjuster shall be replaced with a manual slack adjuster.
- i) The distance from the centre of a camshaft to the centre of the clevis pin shall be the same for all brakes on an axle.
- j) No brake shoe roller shall have flat spots, be missing or of the wrong size.
- k) No brake shoe anchor pin shall have wear that allows the lining to protrude beyond the outside edge of the brake drum or be missing.
- l) All brake stroke measurement in relation to the chamber shall be within OEM specification and shall be continuously adjusted to remain within limit established by OEM or industry standard.

17. Brake Shoe Travel (Wedge Brakes)

- a) All wedge brake system components shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No brakes shall fail to operate, no shoes shall fail to move and no shoe movements shall be more than 2 mm.

18. Disc Brake System Components

Note: Best practice is to measure and document brake pad friction material and rotor thickness at every comprehensive brake inspection.

- a) The disc brake system components shall operate as intended and be free of defects and be inspected and maintained as described in manufacturer service instructions.

- b) When any inspection reveals evidence of a defect or abnormal condition wheel disassembly is required to determine the defect and to effect repairs, (i.e.: abnormal appearance, excess corrosion, damage, distortion, glazing or shifting out of place of any brake component, abnormal wear of brake rotor or friction material, signs of overheating, discoloration or contamination of brake friction material).
- c) Major brake inspections require certain components to be measured and these measurements should be recorded on a record/report of inspection and be retained. For disc brakes, the brake friction material thickness and rotor thickness should be recorded and retained along with any repair work order or invoice when brake systems are repaired (See Section 3 of PMVI standard to learn how these inspections and records can be used to avoid wheel disassembly at every inspection).
- d) No mechanical or structural part shall be binding, broken, cracked, disconnected, loose, misaligned, missing, seized, worn beyond OEM or industry standard.
- e) No required brake component shall be inoperative or missing.
- f) No disc (rotor) shall have a section that is broken or missing.
- g) No disc (rotor) shall have any crack extending from the friction surface to the cooling vent, any surface crack extending to an outer edge, or have any groove or pitted area in rotor that reduces rotor thickness below OEM allowable limit on the friction surface or the friction surface is contaminated by brake fluid, grease or oil.
- h) No disc (rotor) shall have a thickness at any point that is less than the minimum indicated on the brake rotor, OEM or industry standard. No combination of machining and wear to the disc (rotor) shall be less than the dimension stamped on the disc or the manufacturers' specification.
- i) No caliper, pad retainer, slide pin/slide or pad slider shall be abnormally worn, bent, binding, broken, damaged, insecure, leaking, missing, mounted incorrectly or be seized.
- j) No boot or bellows shall be cracked, damaged or missing.
- k) No anchor plate or anchor place fastener shall be loose or missing.
- l) No pad shall be abnormally worn, broken, cracked, damaged, incorrectly installed, loose or have the friction material contaminated by brake fluid, oil or grease.
- m) No pad (friction material) thickness measured at the thinnest point shall be less than manufacture specification or industry standard or if limit not available for bonded friction material less than 3 mm and for riveted friction material less than 5 mm.
- n) The clearance between pads and rotor (caliper adjustment) shall meet manufacturer specifications.
- o) All disc brakes shall be continuously adjusted within OEM standard specifications.

19. Spring-Applied Air-Released (SAAR) Parking Brake

- a) The SAAR system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) The parking brake shall hold the vehicle and the indicator light shall function as intended.
- c) No air line, connection or fitting shall be broken, cracked, damaged, defective, flattened, leaking or repaired in a way that does not meet OEM standard.
- d) No air tank shall be damaged, corroded, loose or welded other than factory weld.
- e) No friction material on a SAAR parking brake will be less than specified by the OEM, or when not specified less than 3 mm on riveted lining or 2 mm on bonded lining.

20. Anti-Lock Brake System (ABS) on a Truck or Bus

- a) The ABS system shall operate as intended and be maintained as described in manufacturer service instructions.
- b) No ABS system shall be tampered with or defeated or malfunction so as to prevent normal brake operation.
- c) The indicator lamp shall be present and function as intended.
- d) No electronic control unit (ECU) or wiring on the ABS system shall have any connector corroded, be insecurely mounted, be missing or repaired in a way that does not meet OEM standard.
- e) No relay/ABS modulating valve shall have abnormal corrosion, be insecurely mounted to the ECU, or be leaking or missing.
- f) No wheel speed sensor shall have any corroded connectors, be inoperative, insecurely mounted or missing.

21. Anti-Lock Brake System (ABS) on a Trailer

- a) The ABS system on a trailer shall operate as intended and be maintained as described in manufacturer service instructions.
- b) The ABS system shall be tested per OEM specifications, and the service instructions shall be followed when a problem is detected.
- c) No ABS system shall be tampered with or defeated or malfunction so as to prevent normal trailer brake operation.
- d) The indicator lamp (trailer mounted) shall be present, amber in color and function as intended.
- e) No electronic control unit (ECU) or wiring on the ABS system shall have connector corroded, be insecurely mounted, missing or be repaired in a way that does not meet OEM standard.
- f) No relay/ABS modulating valve shall have abnormal corrosion, be insecurely mounted to the ECU, or be leaking or missing.
- g) No wheel speed sensor shall have any corroded connector, be inoperative, insecurely mounted or missing.

22. Stability Control System on Truck or Bus

- a) The Stability Control system shall operate as intended without malfunction and shall be maintained as described in manufacturer service instructions.
- b) No Stability Control system shall be tampered with or defeated.

23. Stability Control System (Electronic Stability Control {ESC}) or Roll Stability System on Trailer

- a) The Stability Control system shall operate as intended without malfunction and shall be maintained as described in manufacturer service instructions.
- b) No Stability Control system shall be tampered with or defeated.

Section 4 Steering

Item and Inspection Criteria

1. Steering Control and Linkage

- a) No steering box or rack and pinion unit shall be broken, cracked, insecure, loose, missing or leaking.
- b) No tie rod, tie rod end, drag link, ball and socket joint, or pitman arm shall be bent, broken, cracked, damaged, insecure, loose, missing, worn, welded or repaired in way that does not meet OEM standard.
- c) No ball joint in upper or lower control arm shall be insecure or loose, or have wear that exceeds limit shown by wear indicator or OEM standard limit or is injected with repair material.
- d) No steering column or any mounting attachment shall be insecure, loose or missing.
- e) No steering shaft, universal joint, yoke, or steering column slip joint shall be binding, insecure loose, seized, welded or repaired in way that does not meet OEM standard, or has any rotational free play.
- f) No adjusting sleeve shall be bent, loose, welded or repaired in a way that does not meet OEM standard.

2. Power Steering System

- a) The power steering drive belt shall not be cracked, frayed, loose, missing, and shall have the correct tension.
- b) The fluid in the power steering reservoir shall not be lower than that specified by the vehicle manufacturer and the fluid must not be contaminated.
- c) No hose, pump or cylinder, if fitted, shall be inoperative, insecure, loose or leaking.

Note: Hose must not be mounted within 25 mm of the exhaust system.

- d) No mounting bracket or attaching component shall be broken, cracked, loose or *missing*.
- e) The power steering assist system shall operate as designed.

3. Steering Operation (Active Steer Axle)

- a) No steering wheel shall be binding, broken, damaged, loose on spline, modified, or jam during rotation.
- b) No steering wheel shall operate with steering lash or free play in excess of OEM standards.
- c) No steering stop shall be improperly adjusted or missing and there shall be a minimum of 25 mm between the tire and frame, fender or any other part.

4. Kingpin Play

- a) No kingpin shall bind, jam or be worn to allow lateral or vertical movement in excess of manufacturers specifications.

5. Self –Steer and Controlled Steer Axle

- a) No passive steer axle shall bind or jam during rotation.
- b) No passive steer axle stop shall be improperly adjusted or missing and there shall be a minimum of 25 mm between the tire and frame, fender or any other part.
- c) No air pressure regulator or pressure gauge shall be inaccurate, inoperative or missing.

Section 5 Instruments and Auxiliary Equipment

Item and Inspection Criteria:

1. **Fire Extinguisher**
 - a) Where required by legislation, all commercial vehicles shall be equipped with a fire extinguisher that is approved, secure, charged, of correct type and ready for use.
 - b) No required fire extinguisher shall be loose or missing.
2. **Hazard Warning Kit**
 - a) Where required by legislation, all commercial vehicles shall be equipped with a hazard warning kit and where required, triangle reflectors shall not be broken, damaged, insecure or missing.
3. **Horn**
 - a) The horn shall not be loose on its mounting or missing.
 - b) The activating device shall be easily identified and readily accessible to the driver.
 - c) The horn shall be audible and function as intended.
 - d) Where equipped, the backup alarm shall be audible and function as intended.
4. **Speedometer and Odometer**
 - a) The speedometer and odometer/hubometer shall not be inoperative or missing.
5. **Instruments and Gauges on a Bus**
 - a) The engine temperature gauge or indicator, oil pressure gauge or indicator, ammeter, voltmeter or charge indicator and fuel gauge shall be operative and provide accurate information.
6. **Windshield Wiper/Washer**
 - a) All windshield wiper/washer system components shall operate as intended.
7. **Heater and Windshield Defroster**
 - a) The heater and windshield defroster shall be operative and function in all operating modes and positions.
8. **Chain/ "Headache" Rack**
 - a) The chain and "headache" rack shall not be broken, cracked, insecure, loose or missing.
9. **Indicator Lamps**
 - a) The brake warning indicator, high beam headlamp indicator, turn signal indicator, hazard warning indicator and anti-lock brake indicator shall operate in accordance with manufacturer's specifications.
10. **First Aid Kit**
 - a) All school buses and buses shall be equipped with an approved and fully stocked first aid kit, as required by jurisdictional legislation/regulations.

Section 6 Lamps

Item and Inspection Criteria:

1. General

- a) Each circuit shall light the filaments of all the lamps on that circuit when the appropriate switch is in the "ON" position, and each indicator light shall operate correctly.
- b) The operation of any lighting circuit shall not interfere with the operation of any other circuit.
- c) Each lens and reflex reflector shall be correctly and securely installed and shall not be discolored or missing in whole or in part, and comply with Canadian Motor Vehicle Safety Standards (CMVSS).

2. Headlamps

- a) A vehicle shall be equipped with two or four white in color headlamps mounted in the same location as the manufacturer's design, and operate on both high and low beam and all diodes on an LED lamp must be functional.
- b) No headlamp shall be equipped with a tinted cover or coated with a color lacquer.
- c) No headlamp shall be modified by the attachment to the lamp or to the vehicle of any device that reduces the effective area of the lens or the brightness of the light.
- d) Each headlamp shutter or retracting headlamp shall operate over the full range of movement or shall be secured in the fully open position.
- e) All headlamps shall be properly aligned.
- f) All required headlamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

3. Tail Lamps

- a) Every vehicle shall be equipped with a minimum of two red tail lamps mounted at the rearmost location of the vehicle.
- b) All required tail lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

4. Stop Lamps

- a) Every vehicle shall be equipped with a minimum of two red stop lamps mounted at the rearmost part of the vehicle and activated when service brakes are applied.
- b) All required stop lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

5. Turn Signal Lamps

- a) Every vehicle shall be equipped with four signal lamps, two amber in colour facing forward and two amber or red in color facing rearward.
- b) The turn signal flasher shall function properly.
- c) All required turn signal lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

6. Hazard Warning Lamps

- a) Every vehicle shall be equipped with four hazard lamps, two amber in colour facing forward and two amber or red in color facing rearward.
- b) The hazard flasher shall function properly.
- c) All required hazard lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

7. Side Marker Lamps

- a) Every vehicle shall be equipped with four side marker lamps, two at the front facing the side, amber in colour, and two at the rear facing the side, red in colour.
- b) Every vehicle greater than 9.1 m (30 ft) in length shall be equipped with an intermediate side marker lamp, amber in color, on each side.
- c) All required side marker lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.
- d) Rear side marker lamps are not required on truck-tractors.

8. Clearance Lamps

- a) All vehicles 2.05m (80 in) in width and greater are required to be equipped with four operating clearance lamps, two at the front amber in colour and two at the rear red in colour.
- b) Rear clearance lamps are not required on truck-tractors.
- c) All required clearance lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

9. Identification Lamps

- a) All vehicles 2.05m (80 in) in width and greater are required to be equipped with six identification lamps, three facing the front, amber in colour, three facing the rear, red in colour.
- b) Rear identification lamps are not required on truck-tractors, and front identification lamps are not required on trailers.
- c) All required identification lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

10. Back-Up Lamps

- a) All trucks, buses and truck-tractors manufactured after January 1, 1971 are required to have a minimum of one back-up lamp, white in colour, located at the rear.
- b) All required back-up lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

11. Licence Plate Lamp

- a) All vehicles shall be equipped with a white lamp that illuminates the licence plate.
- b) All required licence plate lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

12. Daytime Running Lamps

- a) All vehicles manufactured after December 1, 1989 are required to be equipped with daytime running lamps.
- b) All required daytime running lamps shall meet CMVSS, DOT or SAE standards, and shall not be broken, cracked, inoperative, loose or missing.

13. Auxiliary Lighting

- a) In the case of a school bus, bus or physically-disabled passenger vehicle, all interior lamps, stepwell lamps or lamps used to illuminate loading equipment shall illuminate when the appropriate switch is in the "ON" position or the doors are opened.

14. Instrument Lamps

- a) All instrument lamps shall function as required by OEM standards.

15. Reflex Reflectors

- a) A lamp or cover that emits reflection may be considered a reflector and it must not be broken, cracked, missing or obscured, and it must meet CMVSS, DOT or SAE standards.
- b) Commercial vehicles are required to comply with the conspicuity requirements and retro-reflective markings as defined in CMVSS 108 or, in the case of school buses, the requirements of CSA D-250.

16. Retro-Reflective Marking

- a) Commercial vehicles are required to comply with the conspicuity requirements and retro-reflective markings as defined in CMVSS 108 or, in the case of school buses, the requirements of CSA D-250.

Section 7 Electrical System

Item and Inspection Criteria:

1. Wiring

- a) No electrical wiring shall be cut, deteriorated, peeled, short circuited or have any sections rubbed through the insulation or be so loose so as to contact moving parts.
- b) All electric wiring shall be secured at least every 1800 mm.
- c) No electrical component or wiring shall show signs of arcing, shorting or hot spots.
- d) No electrical cable shall be burnt, chafed, damaged or frayed to expose the conductor.

2. Battery

- a) No battery shall be cracked, insecurely mounted, loose, have fluid leaking from case (bus only), have hold-downs missing, have corroded posts or cables, or have weakened cracked or missing mounts or mounts perforated by corrosion.

3. Trailer Cord

- a) No trailer cord shall be cut, deteriorated, peeled, short circuited or have any sections rubbed through the insulation or be so loose so as to contact moving parts.
- b) Connectors shall not be cracked or have split ends and shall not be improperly repaired.
- c) If OEM equipped, constant ABS power must be continuously supplied to the auxiliary circuit (centre pin, blue wire) while the ignition is in the "On" position.

4. Switches

- a) All switches must function as designed.
- b) Any switch pertaining to safety items shall not fail to operate.

Section 8 Body and Chassis

Item and Inspection Criteria:

1. Hood or Engine Enclosure

- a) No hood or latch (primary or secondary) shall fail to open or close properly, be broken, insecure, missing or seized, or be welded or repaired in a way that does not meet OEM standards.
- b) No safety cable, assist spring, support/dampener, hinge or support spring shall be abnormally worn, broken, insecure, missing or seized.

2. Tilt Cab

- a) No tilt cab latch, secondary latch or hinge shall fail to open or close normally, be abnormally worn, broken, inoperative, insecurely mounted, loose, missing, seized or welded or repaired in a way that does not meet OEM standard.

3. Air Suspended Cab

- a) No air bag shall leak, be cracked, damaged or patched, or be improperly inflated causing the cab to tilt to one side.
- b) No air line, connection or fitting shall be broken, damaged, flattened, leaking or repaired in a manner that does not meet OEM or industry standard.
- c) No mount, rod or attachment shall be bent, broken, loose or welded or repaired in a way that does not meet OEM standard.
- d) No pressure protection valve or height control valve shall be of improper type, inoperative or missing.
- e) No shock absorber shall be broken, damaged, disconnected, leaking, loose or missing.

4. Cab and Passenger-Vehicle Body

- a) No cab or passenger-vehicle body component shall have any section with an exposed sharp edge, or that is corroded or torn in a manner that reduces structural integrity of a panel or floor, or allows exhaust gases to enter the occupant compartment.
- b) No cab or passenger-vehicle body shall have its integrity reduced due to a loose body component, broken weld, missing fastener, failed adhesive, or is repaired in a way that does not meet OEM standard.
- c) There shall be no hole(s) present in a panel or floor.
- d) No body mount/support shall be broken, bulged, cracked, loose, be missing parts or be welded or repaired in a way that does not meet OEM standard.
- e) No fender shall be damaged, detached, loose or missing, and all fenders must extend to the full width of the tires.

5. Cargo Body

- a) No sheet metal shall have an exposed sharp edge, be torn or protruding or have any panel or rivet that is insecure, loose, missing or welded or repaired in a way that does not meet OEM standard.
- b) No floor or deck shall have any condition that allows a person or cargo to fall through or is welded or repaired in a way that does not meet OEM standard.
- c) No frame, sub-frame, cross-member or attaching fastener shall be bent, broken, bulged or perforated by corrosion, collapsed, cracked, loose, missing or welded or repaired in a way that does not meet OEM standard.
- d) No inner or outer side rail or body-long sills or attaching fastener shall be bent, broken, bulged by corrosion, cracked, insecure, loose, missing or be welded or repaired in a way that does not meet OEM standard.
- e) No required stake pocket/tiedown, cargo securing point or cargo securing device shall be broken, cracked, distorted, elongated, insecure or missing.
- f) No tailgate, hopper or end-dump door shall have any gap that allows leakage, loss or spillage of cargo.

- g) No tailgate, hopper or end-dump door shall be broken, cracked, insecure, loose or missing, or be welded or repaired in a way that does not meet manufacturer standards, or contain a component that is broken, cracked or missing, (i.e. hinges, pin lock).
- h) No body-to-frame attachment, spacer or insulator shall be abnormally worn, bent, broken, cracked, loose or missing.
- i) No body rail or structural member, floor cross member or roof support shall be bent, buckled, loose or sagging.
- j) No body panel or panel fastener shall be bent, broken, insecure, loose or missing, or be repaired or welded in a way that does not meet OEM standard.
- k) No body panel shall have any gap that allows leakage, loss or spillage of cargo, or an exposed sharp edge or section that is protruding.

6. Frame, Rails & Mounts

- a) No frame, rail or mount shall be bent, broken, bulged or perforated due to corrosion, cracked or welded, modified or repaired in a way that does not meet OEM standard.
- b) No frame fastener shall be ineffective, loose or missing.
- c) No cross member or sub-frame assembly shall be bent, broken, cracked, cut, loose, missing, notched, rusted or corroded to a depth sufficient to cause weakness, or repaired using material or a method that does not meet OEM or industry standard.

7. Unitized Body Elements

- a) No load-carrying panel, bulkhead, structural element, mount or attaching fasteners shall be bent, broken, cracked, loose or missing, or be welded or repaired in a way that does not meet OEM standard.

8. Cab or Cargo Door

- a) No cab or cargo door shall have a gap that may allow exhaust gases to enter cab, passenger compartment and/or sleeper.
- b) No cab or cargo door shall bind or fail to lock securely, be insecure or fail to operate or latch on both primary and secondary latches, or be welded or repaired in a way that does not meet OEM standard.
- c) No door opener, handle or hinge shall be broken, inoperative, insecure, loose or missing.
- d) No cargo door shall have a gap that would allow leakage, loss or spillage of cargo.

9. Cargo Tank or Vessel

- a) No cargo tank or vessel shall be broken, bulged by corrosion, cracked, leaking or loose on its mounts, or be welded or repaired in a way that does not meet OEM standard.
- b) No cap, hatch, hose or valve shall be broken, inoperative, insecure, leaking, loose or missing.

10. Special Body, Device or Equipment Attached or Mounted to Vehicle

- a) Any special equipment, (e.g. snow plow, grader) or devices mounted or attached on a vehicle, (e.g. crane, log loader) shall be secured and maintained per OEM or industry standard so as not to pose a hazard.

11. Bumper

- a) No bumper shall be broken, loose or missing or protrude so as to pose a hazard, or be replaced or repaired by any part that does not meet OEM standard.

12. Windshield

- a) No windshield shall be missing, clouded, damaged or deteriorated so as to impair driver's vision.
- b) The windshield shall be laminated safety glass manufactured and marked to OEM and industry standard, (i.e. AS-1, AS-10).
- c) No windshield shall have any crack through both layers of glass, any intersecting cracks in an area swept by the wipers that extends more than 50 mm, or any star chips greater than 13 mm in diameter in an area swept by the OEM windshield wipers.

- d) No windshield shall have any after-market tinting, or OEM tinting extending more than 75 mm from the top of the windshield.
- e) No windshield shall have any obstruction, decal or device in the area swept by the OEM wipers.

13. Side Windows

- a) No side window shall fail to open or close normally, have an exposed sharp edge, be broken, damaged, missing or deteriorated in such a way that driver's vision is impaired.
- b) Side windows shall be manufactured and marked to OEM and industry standard, (i.e. AS-1, AS-2, AS-10 or AS-11).
- c) No side window shall contain any after-market tint (Requirements may vary by jurisdiction; confirm applicable requirement).

14. Rear Window

- a) No rear window shall be broken or contain an exposed sharp edge.
- b) The rear window shall be manufactured and marked to OEM and industry standard, (i.e. AS-1, AS-2, AS-10 or AS-11, or if rigid plastic AS-4 or AS-5).

15. Interior Sun Visor

- a) No interior sun visor shall be missing on the driver's side, or be bent, broken, loose or missing, or fail to maintain a set position.

16. Exterior Windshield Sun Visor

- a) No exterior windshield sun visor shall extend more than 150 mm below the upper edge of the windshield and overlap the portion of the windshield swept by the OEM wiper arm and wiper blade.

17. Rear-view Mirror

- a) No required rear-view mirror shall be broken, cracked, detached, insecure, loose or missing, or have obscured vision due to the condition of the glass, or fail to maintain a set position.

18. Seat

- a) No seat shall have a broken frame, be insecure or have any exposed metal component or spring.
- b) No driver seat shall fail to adjust in a forward, backward or recline position, or fail to lock into position or contain a seat assembly that does not meet OEM standard.
- c) No passenger seat on a bus shall have a frame or mounting that is broken, insecure or loose.
- d) No seating surface, seat back or barrier surface on a bus shall have the covering material that is loose, missing or torn so as to render the protective quality ineffective.

19. Seat Belt/Occupant Restraint

- a) If originally manufactured with a seat belt assembly or assemblies, each belt anchorage shall be secure, each buckle and retractor shall operate as intended, and no belt webbing shall be broken, cut, damaged, frayed or torn so as to reduce its effectiveness.
- b) Where required under Canadian Motor Vehicle Safety Standards (CMVSS), no seat belt assembly or anchorage shall be removed, rendered partly or wholly inoperative, or be modified so as to reduce their effectiveness.
- c) No seat belt anchor, belt release or buckle shall be broken, insecure or missing, or fail to retract properly or lock into position.
- d) No supplemental restraint system (air bag) shall be by-passed, disabled, disconnected, inoperative or missing.
- e) All air bag systems must be maintained or serviced to OEM or industry standard.

20. Fender/Mud Flap

- a) No required fender or mud flap shall be broken, insecure, loose or missing, or fail to cover the full tread width of the tire(s).

21. Landing Gear on Trailer

- a) No landing gear, brace, pad or crank handle shall be bent, binding, broken, cracked, inoperative, insecure, loose, missing or seized.

22. Sliding Axle Assembly (Sliding Bogie) on Trailer

- a) No frame or sub-frame rail on a sliding axle assembly shall be bent, broken, cracked, perforated or separated due to corrosion or welded or repaired in a way that does not meet OEM standard.
- b) No slider-guide/hold-down bracket, locking device or stop on a sliding axle assembly shall be bent, broken, cracked, disengaged, inoperative, loose or missing.

23. Aerodynamic Device and Attachment

- a) No aerodynamic device or attachment shall be insecure or loose or have any section with an exposed sharp edge that is torn or protrudes.

24. Rear Impact Guard (RIG) on Trailer

- a) No rear impact guard shall be bent, broken, distorted, loose or missing.
- b) All rear impact guards must conform to the industry standard based on TMC RP 732.

25. Floor Pan/Baggage Floor/Step Well on a Bus

- a) No floor shall be bent, cracked, deformed, split or corroded sufficiently to result in structural weakness or allow exhaust gases to enter occupant compartment.
- b) No floor attaching fastener shall be loose or missing.
- c) No floor covering shall be abnormally worn, cracked, loose, missing or **of** improper type.
- d) No step well shall be bent, cracked, deformed or contain holes that are not properly patched, or be rusted so as to result in structural weakness.

26. Interior Body and Fixtures on a Bus

- a) No OEM stanchion, guard rail, grab handle, retainer barrier or attaching fastener shall be broken, loose or missing, or have any metal that is torn in a way that could present a hazard.

27. Service and Exit Door on a Bus

- a) No service or exit door on a bus shall bind or fail to lock securely, be insecurely mounted or corroded through, or fail to latch on both the primary and secondary latches.
- b) No service or exit door on a bus shall have a gap that would allow exhaust gases to enter the passenger compartment or be welded or repaired in a way that does not meet OEM standard.
- c) No door opener, handle or latch shall be broken, inoperative, loose or missing.
- d) No remote door operator shall bind, jam or malfunction or be inoperative or missing, and manual override device on power operated door must be present and operate as designed.
- e) No service or exit door edge material shall be loose, of improper material, missing or torn.
- f) No window of a school bus door shall have fog or visible moisture between the panes or fail to meet OEM type and size.
- g) The windows of a school bus door shall be marked as type AS-1, AS-2, AS-10 or AS-11.

28. Emergency Exit (Door, Window and Roof Hatch) on a Bus

- a) No emergency exit shall have the passage blocked, or the release or latch failing to operate normally, or have the identifying label and signage missing.
- b) No emergency door or roof latch interlock system shall fail to operate as intended.
- c) No emergency exit window warning device on a school bus shall be inoperative or missing.

29. Passenger Compartment Window on a Bus (Except Emergency Exit Window)

- a) No side window on a bus shall fail to open, close or latch as intended.
- b) No side window on a bus shall be broken, cracked or have an exposed edge.

- c) Side window material must be glass type AS-1, AS-2, AS-3, AS-10 or AS-11 or rigid plastic type AS-4, AS-5, AS- 12.

30. School Bus Exterior Mirror (Except Standard Left and Right Side Mirror)

- a) No required convex mirror shall be broken, cracked, insecure, loose, missing or pitted or fail to meet any applicable requirement of the jurisdiction.
- b) The mirror heating and controls must function as intended.

31. School Bus Body Exterior

- a) The paint on the body, hood and bumper must be the required colour as specified by jurisdictional regulation or standard, (i.e.: D-250).
- b) Norubrail or attaching fastener shall be bent, broken, corroded, cracked, loose, missing, missing sections, protruding or torn.
- c) No required sign shall be damaged, illegible or missing.
- d) No required stop arm, stop arm control, stop arm lamp or pedestrian crossing arm shall be bent, broken, inoperative or fail to operate as intended.

32. Auxiliary Compartment on a Bus

- a) All access, baggage door latches and hinges must open and close normally.
- b) No hinge, counterbalance cable or latch shall be broken, frayed, inoperative, insecure, missing or seized
- c) No overhead shelf/parcel rack or mounting fastener shall be broken, insecure, loose or missing.

Section 9 Tires and Wheels

Item and Inspection Criteria:

1. Tire Tread Depth

- a) No front tire shall have a tread depth less than 3 mm.
- b) No rear tire shall have tread depth less than 2 mm.
- c) Vehicles transporting dangerous goods may require different minimum tread depth based on jurisdictional requirements (consult applicable legislation).

2. Tire Tread Condition

- a) No retreaded tire shall be installed and operated on an active steering axle.
- b) No retreaded tire material shall be loose, missing or separated at the interface where the retread is bonded to the tire casing.
- c) No tire tread shall have a cut or crack greater than 25 mm long that extends deeper than a major tread groove, or extends into the casing ply, or have any body cord exposed.
- d) No tire shall have any piece of tread longer than 25 mm missing.
- e) No tire shall be regrooved that is not marked "Regroovable".
- f) No tire should have any visible bump or bulge in the tread area indicating tread separation.
- g) No regrooved, recapped or retreaded tire shall be on the front steering axle of any bus.
- h) No tire shall contact any part of the vehicle.

3. Tire Sidewall and Manufacturer Markings

- a) No radial tire shall be mixed with a non-radial tire on an axle.
- b) Rim and wheel size must match tire size.
- c) No tire that is labelled "Not for Highway Use" shall be used on a public road.
- d) No required tire shall be missing.
- e) The manufacturer's recommendation for nominal tire size and markings shall be followed.
- f) No tire shall be used that has a bump or bulge caused by tread, ply or sidewall separation, or when body cords are exposed, or the casing is broken or distorted.
- g) No tire shall be used that has a plug-type repair in a sidewall or shows UV degradation damage more than 3 mm deep.

4. Tire Inflation Pressure

- a) No tire shall leak, or have an inflation pressure 10% above or below OEM or industry standard recommended pressure, or the tire pressure difference between dual-mounted tires is more than 10%.
- b) No tire shall be used with a valve stem that is cracked, damaged, inaccessible or leaking or has a missing valve stem cap.
- c) No tire shall be used with a tire inflation system that is insecure, leaking air, or in danger of falling off.

5. Wheel Hub

- a) No wheel hub shall be bent, broken, cracked, damaged, distorted, repaired by welding, or have the bearing cup loose in the hub bore.
- b) No wheel hub stud hole shall be enlarged or damaged in a way that prevents proper fitting or retention of studs.
- c) No wheel hub seal shall be leaking or out of position.
- d) The wheel hub lubricant (oil or grease) shall be maintained per OEM or industry standard to address minimum level of lubricant and to avoid contamination.

6. Wheel Bearing

- a) All wheel bearings, locking devices, spindles and axle stubs shall be serviced and maintained per OEM or industry standard.
- b) No wheel bearing, race or roller shall show any signs of binding, damage, overheating or roughness.

7. Wheel/Rim (Applies to all wheel types)

- a) No wheel or rim shall be bent, broken, cracked, damaged or distorted or show signs of overheating, or be welded or repaired in a way that does not meet OEM standard.
- b) Rim and wheel size must match tire size.

8. Multi-Piece Wheel/Rim

- a) No multi-piece wheel or rim shall be used that has any component that is bent, broken, cracked, damaged, distorted, improperly assembled or shifted out of position, is severely corroded or pitted, or shows evidence of damage caused by heating, or has been repaired by welding.
- b) No multi-piece wheel or rim shall be used that has mismatched components, shows signs of improper seating, or that has more than 3 mm of clearance between butt ends of the lock ring.

9. Spoke Wheel/Demountable Rim System

- a) No spoke wheel or demountable rim system shall be used that shows evidence of rim slippage, incorrect positioning of rim on spokes, damage, corrosion or pitting, or lateral runout exceeds 6 mm at the sidewall of the tire.
- b) No rim clamp shall be broken, cracked, mismatched, missing, repaired by welding, twisted or worn out in the mounting area, or gap between rim clamp and heel spoke is less than OEM or industry standard.
- c) No spacer band shall be collapsed, cracked, distorted, missing or of incorrect size or type, or welded or repaired in a way that does not meet OEM standard.

10. Disc Wheel System

- a) No incompatible wheel or component shall be used on a disk wheel system.
- b) No disc wheel system fastener shall be loose or ineffective, and no bolt/stud hole shall be elongated.
- c) No disc wheel system shall be welded or repaired in a way that does not meet OEM standard.

11. Wheel Fasteners (Nuts, Bolts and Studs)

- a) All wheel fasteners must be of the correct type, thread direction and style, and any nut must be fully engaged with the stud or the bolt.
- b) No wheel fastener shall be bent, broken, damaged or missing.
- c) All wheel fasteners must be secured per the torque value specified by OEM or industry standard.

Section 10 Coupling Devices

Item and Inspection Criteria:

1. Hitch Assembly, Structure and Attaching Components

- a) No hitch component shall be of improper type or inadequate capacity.
- b) No hitch assembly, receiver, draw bar, draw beam, slider, supporting structure or mounting fastener shall be bent, broken, cracked, ineffective, leaking, loose, missing, worn beyond manufacturer's specification, or welded or repaired in a way that does not meet OEM standard.

2. Secondary Attachment (Safety Chain or Cable)

- a) No safety chain or cable shall be of improper type or inadequate capacity.
- b) No safety chain or cable shall be abnormally worn, bent, broken, cracked, ineffective, insecure, of improper length, loose or missing.

3. Pintle Hook, Pin Hitch or Coupler Hitch

- a) No hitch component shall be of improper type or inadequate capacity.
- b) No pintle hook, pin hitch, coupler hitch, mounting or mounting fastener shall be bent, cracked, damaged, loose, missing or improperly repaired.
- c) No cast or forged part shall be cracked, worn or repaired by welding.
- d) No air chamber cushion or component shall be used that is damaged or leaking from an air chamber, air line or fitting, or that does not have a properly-functioning pressure protection valve installed.
- e) No lunette (or draw bar eye) on a trailer shall be cracked or worn.

4. Ball Type Hitch

- a) No component shall be of improper type or inadequate capacity.
- b) No ball, neck or stem shall be bent, cracked, loose, worn or welded or repaired in a way that does not meet OEM standard.
- c) No component in the ball deck area, ball coupler and latch shall be bent, cracked, inoperative, loose or welded or repaired in a way that does not meet OEM standard.

5. Roll-Coupling Hitch

- a) No component shall be of improper type or inadequate capacity.
- b) No roll-coupling hitch shall be bent, broken, cracked, or welded or repaired in a way that does not meet OEM standard.
- c) No fastener shall be ineffective, loose, missing, or smaller than specified by the manufacturer or less than SAE grade 8 or ISO class 10.9.
- d) No roll-coupling hitch shall fail to operate as intended.

6. Automated Coupling Device

- a) No component shall be of improper type or inadequate capacity.
- b) No component shall be bent, broken, cracked, damaged, inoperative, loose, missing or welded or repaired in a way that does not meet manufacturer standard.

7. Fifth Wheel Coupler

- a) No component shall be of improper type or inadequate capacity.
- b) No upper coupler (pick up plate) on a trailer shall be bent, cracked, damaged, loose, warped, worn or in a condition that the plate or king pin is weakened.
- c) No upper coupler mounting bolt or rivet shall be broken, corroded, loose or missing.
- d) No king pin on trailer (or towing vehicle) shall be bent, broken, cracked, deformed, loose, worn or repaired by welding.

- e) The kingpin must be of correct length to fit properly into fifth wheel jaws.
- f) No lower coupler top plate shall have any part that is broken, cracked, damaged, distorted, missing, worn or welded, or repaired in a way that does not meet manufacturer standard.
- g) No latching mechanism shall have any component that is broken, cracked, inoperative, improperly adjusted, modified, seized or worn beyond manufacturer specified limit.
- h) No lower coupler pivot (fifth wheel saddle) shall exceed manufacturer wear limits.
- i) No slider assembly and locking mechanism shall have any component that is bent, broken, cracked, damaged, inoperative, insecure or missing.
- j) No slider assembly and locking mechanism shall have fore/aft movement of the fifth wheel in slider that exceeds manufacturer specification or fails to lock securely.
- k) No slider stop shall be insecure or missing.
- l) No fifth wheel coupler air-operated control or feature shall fail to operate as intended by the manufacturer.
- m) No upper or lower coupler attachment to frame component shall be broken, cracked, damaged, distorted, missing or welded or repaired in a way that does not meet manufacturer standard.
- n) Upper or lower coupler attachment fastener shall not be cracked, ineffective, loose or missing, and must meet OEM or industry standard.

8. Oscillating Fifth Wheel Coupler

- a) No component shall be of improper type or inadequate capacity.
- b) The components and structure of the oscillating fifth wheel coupler shall not be cracked, damaged, defective or worn beyond manufacturer specification.

9. Ball-Bearing Type Turntable on Trailer

- a) No component shall be of improper type or inadequate capacity.
- b) No component of a ball-bearing type turntable on a trailer shall be cracked, loose, missing or worn beyond manufacturer specification.

NSC STANDARD 11, PART B

Periodic Commercial Motor Vehicle Inspections (PMVI)

Introduction

Goals of the Standard

The objectives of the PMVI standard are to reduce collisions due to mechanical defects on vehicles, improve highway safety, and ensure the consistency of periodic inspections across Canada. The PMVI requirements represent one of the most significant amendments to the *National Safety Code* (NSC) since its inception.

Background

In 1988, CCMTA began work on a reciprocal agreement to promote uniformity and reciprocity among jurisdictions with inspection programs, and to encourage those provinces and territories without mandatory inspections for commercial vehicles to develop and implement such programs. In September 1991, the Council of Ministers Responsible for Transportation and Highway Safety signed a Memorandum of Understanding (MOU) on periodic motor vehicle inspections, which was designed to address the lack of uniformity and reciprocity with respect to mandatory periodic commercial vehicle inspection programs in Canada.

Under the MOU, all Canadian jurisdictions agreed to work towards implementing compulsory periodic inspection programs for commercial vehicles, and all committed to implementing the uniform PMVI standard which appears in the following pages. All jurisdictions further extend recognition and reciprocity to vehicles inspected pursuant to this standard from other jurisdictions party to the PMVI agreement. While Quebec was not a signatory to the agreement, it participated in the development of the standard and has entered into separate bi-lateral arrangements with the other Canadian jurisdictions to give effect to the reciprocity provisions contained in the agreement.

Application

This standard generally applies to all commercial vehicles as defined by the NSC: trucks, truck-tractors, semi-trailers, trailers and combinations thereof exceeding a registered gross vehicle weight of 4,500 kg (approximately 10,000 lbs), as well as buses designed, constructed and used for the transportation of passengers with a designated seating capacity of more than 10, including the driver, but excluding the operation for personal use.

It is important to note that for the purposes of the national PMVI program the above definition of a commercial vehicle applies. A number of jurisdictions may exempt or include specific types of vehicles from the requirements of their particular PMVI programs, (e.g. farm vehicles).

General Requirements

All commercial trucks, truck-tractors, semi-trailers, trailers and combinations thereof are required to be inspected to the standard at least annually. Buses are required to be inspected to the standard at least semi-annually.

Inspections must be conducted by an authorized inspector in a government establishment, or at an inspection facility approved by a government agency.

The status of implementation of the program including inspection cycles and weight thresholds appears below.

Mandatory Periodic Commercial Motor Vehicle Inspection Programs**Inspection Cycles by Jurisdiction**

Jurisdiction	Weight Threshold (kg)	Inspection Interval (months)		
		Truck	Trailer	Bus
BC	8,201	6	6/12 ¹	6
AB	11,794 ²	12	12	6
SK	11,794 ²	6/12 ³	12	6/12 ⁴
MB	4,500	12	12	6
ON	4,500	12	12	6 ⁵
QC	4,500	12	12	6
NB	4,500	12	12	6
NS	4,500	12	12	6
PE	4,500	12	12	6
NL	4,500	12	12	6
YT	11,794	6	12	6
NT ⁶	4,500	12	12	6
NU ⁷				

¹ For BC – log & dump trailers: 6 months, other trailers: 12 months

² For AB and SK – 11,794 kg for vehicles that operate solely within the province; vehicles travelling in other jurisdictions must comply with the inspection requirements applicable in the jurisdiction in which they are travelling.

³ For SK – truck-tractors: 6 months, other trucks: 12 months

⁴ For SK – school buses: 12 months, other buses: 6 months

⁵ For ON – Accessible vehicles and vehicles used for school purposes are inspected using the bus criteria

⁶ For NT – The program is administered by Alberta

⁷ For NU – PMVI Regulation yet to be implemented.

Procedures for Compliance

Jurisdictions which have mandatory inspection requirements for vehicles at the 4,500 kg level (**refer to the chart Mandatory Periodic Commercial Motor Vehicle Inspection Programs - Inspection Cycles by Jurisdiction, above**) expect all vehicles 4,500 kg and above to be inspected and PMVI-certified prior to departing from the base, or plate, jurisdiction. A unique feature of the agreement is that it permits vehicles from jurisdictions which have not yet legislated to the lower weight threshold to be voluntarily inspected in the base jurisdiction, or alternatively the vehicles can be inspected in another jurisdiction, and either inspection will be accepted by every other signatory jurisdiction.

All jurisdictions recognize inspections of each participating province or territory, and, except in rare circumstances, will accept the host jurisdiction's inspection to be equivalent to the inspection mandated by their legislation. This feature was built into the agreement to address the situation where a vehicle or trailer is not in its base jurisdiction when an inspection is due. The reciprocity provisions may be limited to six months for trucks and trailers which are base-plated in a jurisdiction with a six-month inspection cycle. Trucks and trailers base-plated or registered in a jurisdiction with a twelve-month inspection cycle do not have to be reinspected in jurisdictions with six-month inspection cycles. The twelve-month inspection decal will be recognized as satisfying the requirements of jurisdictions with six-month programs.

Following a “passed” inspection, a report will be provided to the operator and the inspector will affix a decal to the vehicle. The inspection report should be carried in the vehicle at all times (please check with jurisdiction). Regardless of the inspection result, copies of the completed inspection reports should also be kept at the carrier’s principal place of business and the PMVI Facility, while another copy must be sent to the jurisdiction the inspection was conducted in within 15 business days. If a vehicle fails an inspection, jurisdictions generally permit the vehicle to be repaired on-site and re-inspected, or the vehicle can be towed or transported to another facility for repair and re-inspection.

The previous PMVI decal must then be removed and a current decal indicating compliance with the standard will be placed on the vehicle. The inspection decal will indicate either the date of inspection or the month and year of expiry. As per Canadian Council of Motor Transport Administrators agreed/approved policy, CCMTA policy, jurisdictions will be moving to a system where the month/year of expiry will be indicated on the decal.

CCMTA jurisdictions have further agreed the inspection decals issued pursuant to the PMVI program will be placed in the following locations:

- **for trucks and truck-tractors** – on the left-hand corner of the windshield or in a conspicuous position on the left-hand side of the cab;
- **for trailers and converter dollies** – on the left-hand side as close as practicable to the front of the equipment;
- **for buses** – on the lower right-hand corner of the windshield, to a fixed side window as close as practicable to the right front of the vehicle, or in a conspicuous position on the right side of the vehicle body close to the front of the vehicle.

In the event the vehicle fails the inspection, the necessary repairs must be undertaken to bring the vehicle into compliance with the standard prior to a decal being placed on the vehicle.

Canada/U.S. Reciprocity Issues

On September 23, 1991 the U.S. Federal Highway Administration (now the Federal Motor Carrier Safety Administration) recognized the inspection programs of every Canadian jurisdiction as being equivalent to the U.S. PMVI requirements. Canadian vehicles bearing a valid inspection decal from any Canadian jurisdiction already meet U.S. standards and are not required to be reinspected to U.S. requirements. Canadian carriers who have experienced any problems with having their Canadian PMVI inspection report or decal accepted by U.S. enforcement personnel are encouraged to report this problem to a jurisdictional representative.

All vehicles registered in Canada must be inspected to the Canadian PMVI inspection standard to benefit from the reciprocity provisions contained in the PMVI agreement. Canadian-registered vehicles bearing U.S. compliance stickers are not eligible for the reciprocity provisions contained in the Canadian agreement on PMVI. Some Canadian jurisdictions permit equipment, (i.e. trailer) which is out of the country when an inspection is due to be inspected to the U.S. standard. These vehicles have to be re-inspected to the Canadian standard in order for the inspection to be recognized by other Canadian jurisdictions.

For U.S. base-plated vehicles, Canadian jurisdictions will accept inspections conducted to the FMCSA standard, or an inspection conducted in a state which meets or exceeds the FMCSA standard. The FMCSA has determined the following have mandatory periodic inspection programs that are comparable to or as effective as the FMCSA program:

Arkansas, California, Connecticut, District of Columbia, Hawaii, Illinois, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Ohio, , Pennsylvania, Rhode Island, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin and the Alabama Liquified Petroleum (LPG) Board.

U.S. carriers should ensure the inspection report and/or certificate of compliance with U.S. federal requirements or a recognized state program is carried in the vehicle at all times.

U.S. carriers are advised that a CVSA decal and/or inspection report based on a roadside inspection will not be accepted as proof of compliance with the requirements of the annual PMVI programs which have been implemented in Canada.

Canadian rules require buses to be inspected on a semi-annual basis. U.S. buses entering Canada should ensure their PMVI inspection was conducted in the previous six months.

Enforcement

Enforcement of the requirements of the PMVI program occurs on-road and during facility audits. For record keeping, proof of PMVI inspections, (i.e. inspection reports) may have to be kept up to a maximum of four years. Vehicle owners are reminded they should keep all proof of repair, (i.e. bill or invoice showing parts replaced) as these are required and verified during a facility audit when the maintenance program implemented by a vehicle owner is evaluated (see Maintenance Standard – 11A). In addition, the invoices are required in order to benefit from alternate inspection requirements for internal brake components.

It is an offence to operate a vehicle which has not been inspected pursuant to the PMVI program. Fines are imposed for non-compliance.

The Standard

The PMVI standard which has been agreed to by all jurisdictions appears below.

The standard contains 10 Sections organized by major vehicle systems, and an appendix on alternate fuel systems. A check mark (✓) appears in the right column to indicate whether the inspection method and “reject if” criteria apply to a truck, trailer or bus. Trailer converter dollies must comply with the trailer requirements. For school bus inspections all of the applicable bus inspection criteria apply along with the additional requirements which are identified throughout the standard.

Within each of these sections the item and method of inspection are listed in the left column. The corresponding “reject if” criteria to be used by the inspecting mechanic/technician appears in the right column. The term “reject if” means a condition is observed or present which causes the vehicle to fail the inspection and no decal can be issued until the condition is corrected. Under the criteria of some items in the right column the words “hazardous condition” appear with some descriptive text in bold. The hazardous condition criteria are meant to alert the inspection mechanic/technician to a potentially dangerous or unsafe condition for which corrective action should be taken prior to the vehicle being returned to service.

The vehicle owner should be advised of the unsafe condition and that immediate repairs are required before the vehicle goes back on the road. In most jurisdictions the owner is allowed to have the repairs conducted at the inspection facility or garage or permitted to have the vehicle towed or transported to another facility for repairs. In some jurisdictions a “condemned” vehicle decal or sticker will be affixed to the vehicle. In other jurisdictions the rules require the garage to report the situation when an owner attempts to leave the facility with the vehicle without the necessary repairs being conducted. Please check jurisdictional policy and procedures if this situation is encountered.

Instructions for Technician-Inspector Conducting Inspections

Workplace Safety

Some of the inspection procedures described in this standard require the use of tools and equipment, and may involve safety hazards. It is assumed that the individual performing inspections according to this standard is fully familiar with all relevant workplace safety requirements and protocols.

No specific safety warnings are provided within this document. All relevant and appropriate safety precautions are the responsibility of the inspector/mechanic/technician and the workplace where the inspection is conducted.

Inspection Outcome Based on Current Vehicle Condition

A vehicle is to be inspected and determinations made about the pass or fail outcome of the inspection based on the condition of the vehicle at the time of inspection. The inspection is not intended to ensure that a vehicle remains in a safe condition for any particular period after the inspection.

Inspection Methods

The inspection of vehicle components and systems conducted to determine compliance with this standard consists mainly of visual inspection activities.

An inspection will also involve testing, removal and/or disassembly of components, measurements and other actions in certain cases. Whenever inspection of an item requires more than a visual inspection, additional inspection procedures are specifically provided for each item. These are displayed with the heading “*Additional Inspection Procedure(s):*” “*Optional Additional Inspection Procedure(s)*” or Optional Inspection Procedure(s)”, appearing before the text describing the necessary steps.

The items that require inspection on any particular vehicle are based on the specific components and systems that were required by any applicable regulations, (e.g.: CMVSS or Provincial/Territorial legislation/regulation) applicable to the vehicle at the time it was manufactured, are ordinarily present on a vehicle; were present on a vehicle when that vehicle was manufactured, or are required for normal and safe vehicle operation. This standard is not meant to be used to identify all of the components or systems that are present on that vehicle.

Informational Notes

In many cases additional information is provided to clarify the inspection procedure or assist in consistent interpretation of the standard. These are displayed with the heading “*Note:*” appearing before the text.

Definitions

Various terms and acronyms are used throughout this standard. These terms have specific and consistent meanings as they relate to conducting periodic inspections, and identifying defective conditions. The purpose of defining these terms is to support consistent interpretation and application of the language used in this standard. The terms that are defined below are highlighted whenever they appear in each section to remind the reader that the condition is one of those that is specifically defined. This reminder also appears in the footer of each page of this document.

The meaning of each of the terms, for the purposes of conducting inspections according to this standard, is as follows:

“**abnormally worn**” – means unusual, excessive or exceptional wear of a vehicle component, indicative of the presence of some deterioration or defect in that component, or in a related part of a vehicle. This term is used selectively in this standard for a component or system where some wear is normal, and does not directly have any effect on vehicle safety. It is expected that the inspector knows the amount of wear, and the type of wear, that is typical (normal) based on the age and operation of a vehicle.

“**ANSI**” – means the American National Standards Institute, and standards developed by ANSI which have been adopted in jurisdictional equipment regulations.

“**applicable requirements**” – means the applicable requirements of the relevant jurisdiction, (i.e.: province or territory). This phrase is used in situations where one or more provinces, or territories, have a different standard, requirement or criteria. It is expected that the inspecting technician will know what the requirements are in the jurisdiction where they perform inspections.

“**CMVSS**” – means the Canadian Motor Vehicle Safety Standards (CMVSS) and their supporting Technical Standards Documents. These are Canadian manufacturing standards for vehicles which are developed and updated by Transport Canada and which are referenced in jurisdictional equipment regulations.

“**CSA**” – means the Canadian Standards Association, an association that develops standards that apply to vehicles, (i.e.: CSA B51, B109, B620, D250, D409, D435, D436 etc.). These standards are updated on a periodic basis and are often referenced in jurisdictional equipment regulations.

“CVSA” – means the Commercial Vehicle Safety Alliance, a voluntary organization comprised primarily of on-road enforcement officers from Canada, United States and Mexico. The CVSA administers the North American Standard Out-of-Service Criteria (OOSC) that are similar, but not identical, to the Hazardous Conditions defined in this standard. The basis for any differences in these conditions stems from the fact that the OOSC apply at a road side inspection while the Hazardous Conditions apply in a shop setting.

“damaged” – means any unintended condition, or condition caused by means other than normal use, that is likely to impair normal function.

“FMVSS” – means Federal Motor Vehicle Safety Standards. These are U.S. manufacturing standards for vehicles which are developed and updated by the National Highway Traffic Safety Administration of the Department of Transport.

“Hazardous Condition” – means a condition that is so dangerous or unsafe that it requires corrective action before the vehicle can return to service and be permitted to operate. A vehicle with a hazardous condition is considered too unsafe to be driven and in some jurisdictions driving a vehicle with a hazardous condition is prohibited. (*Note: In most cases driving a vehicle with a condition that causes it to fail an inspection is a violation. Driving a vehicle with a hazardous condition is an additional and more serious offence.*)

“industry standard” – means installation, modification or repair methods described in industry-accepted recommended practices published by the Society of Automotive Engineers (SAE), recommended practices published in the Technology and Maintenance Council (TMC) of the American Trucking Associations, standards developed and published by Canadian Standards Association (CSA), and other similar documents from similar organizations.

“inoperative” – means a vehicle component or system does not operate the way it ordinarily operates; it operated when the vehicle was manufactured, or it is required to operate for normal and safe vehicle operation.

“insecure” – means that an item is beginning to become detached due to deterioration of the means of mounting. This can also mean that a method of attachment has been used that is in itself unsafe by being unable to withstand normal vehicle operation, or is not at least equivalent to the OEM standard method of attachment.

“loose” - means that an item is detached, or no longer fully attached, due to failure or deterioration of one or more means of attachment.

“missing” – means that an item is absent (such as ‘removed’ or ‘detached’) that is ordinarily present on the vehicle; was present on the vehicle when the vehicle was manufactured, or is required for normal and safe vehicle operation.

“manufacturer” – means the manufacturer of the vehicle, the manufacturer of a major vehicle component or system, or manufacturer of aftermarket parts that are direct replacements for OEM parts. Examples of major components or systems include, but are not limited to: engines, transmissions, axles, brake systems, steering systems, suspension systems, etc.

“OEM” – means ‘original equipment manufacturer’ and refers to the ‘brand name’ manufacturer of the vehicle.

“OEM standard” – means the manufacturing methods, component or assembly quality, and performance level, set by the manufacturer of a vehicle, or vehicle component, to ensure a vehicle is able to safely perform at its intended level, and to ensure the vehicle complies with the relevant CMVSS (or FMVSS) requirements. It includes component quality, performance levels, repair methods, durability, safety, and the service methods outlined in the warranty and service literature provided for the use and maintenance of a vehicle. Parts supplied by OEM, and established aftermarket manufacturers of parts intended for direct replacement of OEM parts, are generally considered to meet OEM standard.

“operate as intended” – means the manner in which a vehicle component or system ordinarily operates; it operated when the vehicle was manufactured, or is required to operate for normal and safe vehicle operation.

“reject if” – means a condition if present at time of inspection, or if present after repairs, results in a failed inspection.

“rust jacking” – means a build up of rust that results in lifting, separation or bulging of components originally designed to remain in contact with each other, (i.e.: brake linings, suspension, frame and body components).

“SAE” – means the Society of Automotive Engineers.

Categorization of Fluid (Liquid) Leaks

Every reference to a fluid (or liquid) leak listed as a reject condition is categorized with respect to the level of severity of the leak. The level of severity is categorized as either level 1, level 2, or level 3, and each category is defined below. A vehicle with a leak that meets the defined level, or leaking more severely than this level, will cause the vehicle to fail inspection.

“level 1 leak” – means seepage of fluid that is not great enough to form drops

“level 2 leak” – means seepage of fluid that is great enough to form drops, but not great enough to cause the drops to fall during inspection

“level 3 leak” – means seepage of fluid that forms drops and those drops fall during inspection

Illustrations and Diagrams used in the Standards

In an effort to improve the consistency and uniformity of the inspection process a series of diagrams and illustrations are used in this version of the standard. When a diagram or illustration is in conflict with a legislated or regulatory requirement the latter prevails.

Measurements and Tolerances

Many of the inspection items and reject conditions involve measurements of mass or weight, pressure and distance. To achieve consistent application of each criterion that involves such a measurement, it is necessary to address the degree of precision associated with such measurements. In determining the appropriate level of precision or tolerance, it is also necessary to consider the measuring tools that will be commonly used to make each of these measurements.

The level of precision associated with any measurement is defined by the tolerance stipulated for that measurement. Tolerance is expressed as a plus or minus (+/-) value. The actual window of precision is double the value of the tolerance. For example 20 kg with a tolerance of +/- 0.5 kg, means that the precision of the measurement is to the nearest 1 kg. Similarly, 50 mm (+/- 1 mm), means a value of 49 to 51 mm. The measurement tolerance of 1 mm renders a measurement precision of within 2 mm.

Given the similarities in the measurements that appear most frequently in this standard, standard tolerances are given for most of these measurements. The standard tolerances that are listed below apply in all cases where no additional tolerance is provided. In cases where the standard tolerance does not apply, the tolerance for that criterion is provided adjacent to the measurement. Whenever a tolerance is provided adjacent to a measurement, the tolerance stipulated with the measurement is to be used in place of the standard tolerance listed below.

Measurements of distance are the most common in this standard and also have a significant variance in terms of the range of distance that is used. Four different standard tolerance values are used for distance.

Pressure

Metric (“SI” or “International System of Units”) pressure value = *kilopascals (kPa)*, Imperial (American) pressure value = *pounds per square inch or pounds/inch² (psi)* **Conversion Factors:** 1 kPa = 0.145 psi, 6.9 kPa = 1 psi

Standard tolerance for all pressure values: +/- 5 kPa (0.5 psi)

Mass (weight)

Metric (SI) mass value: *kilogram (kg)*
Imperial (American) mass value: *pound (lb.)*
Conversion Factors: 1 kg = 2.2 lb., 0.454 kg = 1 lb.

Standard tolerance for all mass (weight) values: +/- 0.5 kg (1 lb.)

Distance

Metric (SI) distance value: *millimetre (mm)*

Imperial (American) distance value: *inch (in.)*

Conversion Factors: $1 \text{ mm} = 0.039 \text{ in.}$, $1 \text{ in.} =$

25.4 mm **Standard tolerance for distance**

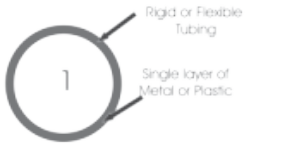
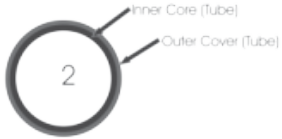
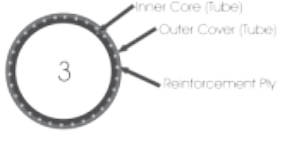

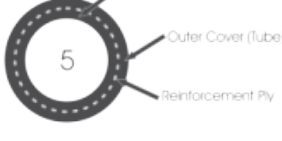



value ranges

Tolerances for distance measurements vary based on the type and precision of the criterion as follows:

1. **Large distance measurements of greater than 25 mm:**
tolerance is $\pm 5 \text{ mm}$ (accuracy is to the nearest 10 mm)
2. **Short distance measurements of 1 to 25 mm, where the distance value is expressed as a whole mm:**
tolerance is $\pm 0.5 \text{ mm}$ (accuracy is to the nearest 1 mm)
3. **Precise short distance measurements of 1.0 to 25.0 mm, where the distance value is expressed as one-tenth of a mm:** tolerance is $\pm 0.05 \text{ mm}$ (accuracy is to the nearest 0.1 mm)
4. **Micro distance measurements of less than 1 mm:** tolerance is $\pm 0.005 \text{ mm}$ (accuracy is to the nearest 0.01 mm)
5. For the purpose of these tolerances, the following equivalent values are used:

Comparable Measurement Tolerances	
Tolerance in metric measurements	Tolerance in Imperial measurements
$\pm 5 \text{ mm}$	$\pm 0.125 \text{ (1/8) in.}$
$\pm 0.5 \text{ mm}$	$\pm 0.02 \text{ in.}$
$\pm 0.05 \text{ mm}$	$\pm 0.002 \text{ in.}$
$\pm 0.005 \text{ mm}$	$\pm 0.0005 \text{ in.}$

Identification of Defective Conditions of the Types of Hose, Tubing and Lines used on Vehicles

	Characteristics	Defective Condition
	<p>Type 1 – Copper, Steel or plastic tubing used for liquid or vapour.</p> <p>Made of a single layer of material.</p>	<p>Damage is visible on the outside that is reducing the wall thickness.</p>
	<p>Type 2 – Plastic (usually Nylon) tubing commonly used in air brake systems. <u>No reinforcement ply</u>. Inner core and outer cover are usually different color.</p>	<p>Inner core becomes visible from the outside, as shown by color change.</p>
	<p>Type 3 – Plastic (usually Nylon) tubing commonly used in air brake systems. <u>With reinforcement ply</u>. Inner and outer core are different color. (Note: Type 2 and 3 may appear identical externally.)</p>	<p>Reinforcement ply or inner core is visible from the outside, as shown by color change.</p>
	<p>Type 4 – Stainless steel outer cover with inner layer of tubing.</p>	<p>Damage through the outer cover.</p>
	<p>Type 5 – Synthetic rubber hose with inner reinforcement ply.</p>	<p>Wear or damage exposing the reinforcement ply.</p>
	<p>Type 6 – Synthetic rubber hose with multiple reinforcement plies.</p>	<p>Wear or damage exposing the outer reinforcement ply.</p>
	<p>Type 7 – Flexible hose with one or more reinforcement plies that may be fabric or steel, and an outer protective layer.</p>	<p>Wear or damage through the outer protective layer and outer cover, exposing a reinforcement ply.</p>

Section 1 – Power Train

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Accelerator Pedal/Throttle Actuator <i>Additional Inspection Procedure(s):</i> With engine running, press and release the accelerator pedal. Check engine response.	Truck ✓ Trailer Bus ✓
a) pedal/actuator	a) binding, <u>inoperative</u> , <u>missing</u> , or engine <u>fails to</u> respond normally modified, or repaired by welding
b) anti-slip feature	b) ineffective, <u>loose</u> or <u>missing</u>
c) throttle position sensor and connections	c) corroded, <u>inoperative</u> , <u>insecure</u> or improperly connected
d) mount	d) deteriorated or weakened by corrosion, or <u>insecure</u>
e) linkage/cable	e) binding, broken or <u>insecure</u> deficient part is used that is <u>not</u> equivalent to <u>OEM standard</u> throttle cable is binding, frayed or seized
f) springs	f) broken, corroded, deteriorated, <u>missing</u> , stretched or improper type
	<u>Hazardous Condition(s)</u> i. engine <u>fails to</u> return to idle ii. throttle position sensor is <u>inoperative</u> iii. pedal is <u>missing</u>
2. Exhaust System <i>Additional Inspection Procedure(s):</i> Inspect with engine running. <i>Note:</i> Minor leaking and resulting soot tracks are normal at joints in diesel exhaust systems.	Truck ✓ Trailer ✓ Bus ✓
a) manifold	a) broken, cracked, leaking, <u>loose</u> or <u>missing</u>
b) muffler	b) cracked, perforated or leaking bypassed, disabled, <u>missing</u> or removed deficient part is used that does <u>not</u> meet <u>OEM standard</u> patched in any manner other than by welding
<i>Note:</i> The <u>OEM</u> muffler or one that meets the <u>OEM standard</u> is required on every vehicle.	

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
 Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) resonator	c) cracked, leaking, <u>missing</u> or perforated patched in any manner other than by welding
d) exhaust pipe	d) cracked, collapsed or pinched, <u>missing</u> , perforated or leaking patched in any manner other than by welding
e) mounting hardware	e) broken, <u>insecure</u> or <u>loose</u> , or <u>missing</u> deficient part is used that does <u>not</u> meet <u>OEM standard</u>
f) heat shields <i>Note:</i> All heat shields provided by the <u>manufacturer</u> , installed as part of a retrofit for certain fuels, or installed for specialty applications, are considered required and must remain functional as intended.	f) a <u>required heat shield</u> is broken, <u>insecure</u> or <u>loose</u> , or <u>missing</u>
g) location	g) any part of the exhaust system is less than 50 mm away from a brake system component, any combustible material, or any part of the fuel system except a diesel or gasoline fuel tank, and is not protected by a heat shield any part of the exhaust system is less than 25 mm away from a diesel or gasoline fuel tank and is not protected by heat shield any exhaust component passes through an occupant compartment
h) turbocharger	h) leaking exhaust gases <u>level 2 leak</u> of engine oil
i) exhaust system and pipe termination <i>Note:</i> Also applies to the exhaust system of any auxiliary equipment. On a school bus, inspection must be conducted according to the <u>applicable requirements</u> and the applicable <u>CSA</u> D250 Standard.	i) exhaust gases are expelled into cab, passenger compartment, and/or sleeper exhaust gases are expelled within the perimeter of the cab, passenger compartment, and/or sleeper on a school bus, does <u>not</u> terminate as required by jurisdiction and applicable <u>CSA</u> D250 Standard

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. exhaust leak, other than a minor leak at a joint, within the perimeter of the cab, passenger compartment, and/or sleeper ii. perforation or separation of any exhaust system component iii. any part of the exhaust system has caused, or is likely to cause, burning or charring damage to electrical wiring, fuel system or any other combustible part iv. <u>on a bus with a gasoline fuel system</u>, the exhaust system is leaking or discharging more than 160 mm forward of the rear most part, <u>and</u> discharging forward of any door or window designed to be opened (except door or window intended solely for emergency use) v. <u>on a bus with a diesel, pressurized, or liquefied fuel system</u>, the exhaust system is leaking or discharging more than 400 mm forward of the rear most part, <u>and</u> discharging forward of any door or window designed to be opened (except door or window intended solely for emergency use)
<p><u>3. Emission Control Systems and Devices</u></p> <p><i>Note:</i> Requirements Vary - The emission control devices and system required on any particular vehicle will vary based on the vehicle's date of manufacture.</p> <p>Possible Roadside Violation - In some jurisdictions a vehicle will fail an inspection if the vehicle is not equipped with either a National Emissions Mark (Canada) or U.S. Emissions Control Information Label. If the emission label is not present, advise vehicle owner that the vehicle may violate a roadside inspection requirement based on jurisdictional regulation. Further questions or issues are to be directed to the relevant jurisdictional authorities.</p>	
<p>a) engine malfunction indicator lamp (MIL) ("check engine lamp")</p> <p><i>Additional Inspection Procedure(s):</i> Cycle the ignition off and on and check the status displayed by the lamp.</p>	<p>a) **lamp fails to illuminate during bulb-check, is <u>missing</u> or has been disabled</p> <p>**lamp remains on after bulb-check to indicate a malfunction</p> <p>Each of the conditions above marked with a double asterisk (**) are to be recorded on the inspection report, however a vehicle is not rejected for this condition alone.</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) exhaust gas recirculation (EGR) system <i>Additional Inspection Procedure(s):</i> Visually inspect system using <u>OEM</u> service information as a guide.	b) there is evidence that any part of the EGR system has been bypassed, defeated, disabled, improperly modified, removed, or is <u>missing</u>
c) catalytic converter	c) cracked, leaking, <u>missing</u> , or perforated patched in any manner other than by welding there is evidence that the catalytic converter has been defeated or disabled
d) diesel particulate filter (DPF) and regeneration system <i>Additional Inspection Procedure(s):</i> Visually inspect system using <u>OEM</u> service information as a guide.	d) there is evidence that any part of the DPF or any related regeneration system has been bypassed, defeated, disabled, improperly modified, removed, or is <u>missing</u>
e) diesel exhaust fluid (DEF) system <i>Additional Inspection Procedure(s):</i> Visually inspect system using <u>OEM</u> service information as a guide.	e) storage tank is <u>damaged</u> , <u>insecure</u> or <u>missing</u> <u>level 2 leak</u> of DEF at any location in the DEF system storage tank filler cap is <u>missing</u>
	<u>Hazardous Condition(s)</u> i. any part is in a condition where it appears likely to become detached, or imminent failure appears likely
<u>4. Drive Shaft and Differential</u> <i>Additional Inspection Procedure(s):</i> Inspect using hand pressure and suitable tools.	Truck ✓ Trailer Bus ✓
a) u-joint/CV joint	a) rotational free-play is present horizontal or vertical movement within the u-joint can be detected by hand u-joint cap, cap fastener or fastener locking device is <u>loose</u> or <u>missing</u> u-joint bearing seal is <u>damaged</u> , <u>missing</u> CV joint protective boot is <u>loose</u> , <u>missing</u> , or torn lubricant is leaking from CV joint

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) drive shaft yoke <i>Note:</i> This includes: slip yoke, shaft yoke, input yoke, output yoke, tube yoke and end yoke.	b) cracked mounting hardware is loose yoke can be moved by hand vertically or horizontally more than 3 mm yoke end fitting has broken, <u>loose</u> , or <u>missing</u> fastener
c) drive shaft tube	c) crack in weld or tube twisted tube
d) drive line attaching hardware	d) <u>loose</u> , <u>missing</u> or stripped
e) centre (carrier) bearing and mount	e) cracked, <u>damaged</u> , <u>loose</u> , <u>missing</u> or <u>abnormally worn</u> <u>insecure</u> mounting or mount is abnormally deteriorated
f) slip joint	f) radial wear at joint exceeds <u>manufacturer</u> specification
g) hanger bracket and hardware, and metal guard or catch -Where equipped from O.E.M.	g) cracked, <u>loose</u> , <u>missing</u> mounted in a manner that <u>fails to</u> prevent drive shaft from falling to ground <u>on a bus</u> , metal floor guard is <u>missing</u> or fails to protect occupant compartment
h) differential <i>Additional Inspection Procedure(s):</i> With vehicle raised, check differential for condition and proper functioning	h) <u>missing or loose fasteners, level 2 leak, not functioning as intended</u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p><u>Hazardous Condition(s)</u></p> <p>i. any part is in a condition where it appears likely to become detached, or imminent failure appears likely</p> <p><u>Driveline/Driveshaft</u></p> <p>ii. a yoke end has a visible crack</p> <p>iii. yoke mounting, or end fitting fastener hardware, is broken, <i>loose</i>, or <i>missing</i></p> <p><u>Universal Joint</u></p> <p>iv. vertical movement between opposing yoke ends is greater than 3.0 mm</p> <p>v. bearing cap, or bearing cap bolt, is broken, <i>loose</i>, or <i>missing</i></p> <p><u>Centre Bearing (Carrier Bearing)</u></p> <p>vi. mounting bracket, bracket bolt or hardware is broken, <i>loose</i>, or <i>missing</i></p> <p>vii. mounting bracket has a crack longer than one-half of the original bracket width</p> <p>viii. vertical movement of the shaft in the centre bearing carrier is greater than 13 mm</p> <p><u>Drive Shaft Tube</u></p> <p>ix. twisted, or has a crack in the metal or any weld longer than 6 mm</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
5. Clutch and Clutch Pedal	Truck ✓ Trailer Bus ✓
<i>Additional Inspection Procedure(s):</i> Inspect clutch operation and adjustment according to <u>manufacturer</u> service instructions.	
a) operation	a) <u>fails to</u> operate in the manner prescribed by the <u>manufacturer</u>
b) adjustment	b) is <u>not</u> adjusted according to <u>manufacturer</u> instructions
c) pedal and linkage	c) broken, cracked, <u>loose</u> , <u>missing</u> or <u>abnormally worn</u> welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> deteriorated or weakened by corrosion, or <u>insecure</u> anti-slip feature is ineffective, <u>loose</u> or <u>missing</u>
d) clutch pedal hydraulic system	d) fluid reservoir is below minimum level indicated by <u>manufacturer</u> or <u>level 2 leak</u> of fluid at any point
	<u>Hazardous Condition(s)</u> i. clutch <u>fails to</u> disengage transmission
6. Engine/Transmission Mount	Truck ✓ Trailer Bus ✓
a) condition/attachment	a) bent, <u>loose</u> or <u>missing</u> a bolt or insulator is <u>loose</u> or <u>missing</u> an insulator is broken, deteriorated or swollen abnormally a mount or part of a mount is replaced with a product or material that is <u>not</u> equivalent to <u>OEM standard</u>
	<u>Hazardous Condition(s)</u> i. <u>imminent failure of a mount or bolt appears likely</u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<u>7. Engine Shut Down</u> <i>Additional Inspection Procedure(s):</i> Test operation according to <u>manufacturer</u> service instructions.	Truck ✓ Trailer Bus ✓
a) ignition switch	a) engine <u>fails to</u> shut down when ignition switch is turned off
b) mechanical shut down	b) engine <u>fails to</u> shut down when device is actuated
<u>8. Engine Start Safety Feature</u> <i>Additional Inspection Procedure(s):</i> Test operation to confirm engine start is prevented according to <u>manufacturer</u> service instructions.	Truck ✓ Trailer Bus ✓
a) ignition interlock operation <i>Note:</i> This includes neutral and clutch safety switches. Effective May 30, 2005 <u>CMVSS</u> 102 (2) requires all vehicles (including buses) equipped with an automatic transmission to be equipped with a neutral safety switch. <u>CMVSS</u> 102 (7) requires trucks (excluding buses) with a GVWR at or below 4,536 kg to be equipped with a clutch safety switch.	a) <u>fails to</u> prevent engine start as designed
<u>9. Gear Position Indicator</u>	Truck ✓ Trailer Bus ✓
a) location	a) <u>cannot</u> be viewed by a person seated in driver position
b) operation	b) indicator fails to indicate selected gear on a vehicle equipped with an automatic transmission
c) gear shift or gear selector pattern illustration label (embossment etc.)	c) illegible or <u>missing</u>
<u>10. Engine or Accessory Drive Belt</u> <i>Note:</i> This section applies only to a drive belt directly connected to the engine.	Truck ✓ Trailer Bus ✓
a) condition	a) broken, frayed, <u>missing</u> or oil-contaminated crack exceeds <u>OEM standard</u> or <u>industry standard</u>
b) adjustment/tension <i>Additional Inspection Procedure(s):</i> Check the tension of drive belt(s) according to <u>OEM</u> service instructions, or when no particular instructions are given, as shown below. <i>Note:</i> Normal belt deflection should result in 1 mm of deflection for each 60 mm of span length, when 5 to 10 kg of force is applied to the belt.	b) belt is so loose it is likely to slip, or so tight it is likely to cause bearing damage the belt tensioner does not function as intended
c) drive belt pulley	c) bent, broken, cracked or out of alignment

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
11. Hybrid Electric Vehicle & Electric Vehicle Power Train System <i>Additional Inspection Procedure(s):</i> <u>Only a person who is trained on the operation and potential hazards of hybrid or electric vehicle systems can safely conduct an inspection of the items listed below.</u> Visually inspect all accessible parts according to the vehicle <u>manufacturer</u> service instructions.	
<i>Additional Inspection Procedure(s):</i> Disassembly of system components may be required. <i>Note:</i> Consult with the <u>manufacturer</u> service instructions and vehicle maintenance records to confirm inspection and maintenance has been performed as recommended by the <u>manufacturer</u> . No disassembly of the system is required to complete this inspection when records of recommended maintenance and inspection are provided. When any damage or abnormal condition is found, refer to the <u>manufacturer</u> service instructions to determine whether or not to reject the vehicle or identify a Hazardous Condition. When records of recommended maintenance or inspection are <u>not</u> provided, system components must be disassembled as <u>necessary by a qualified person</u> to conduct a full inspection.	
a) electrical system connections <i>Additional Inspection Procedure(s):</i> Visually inspect all accessible electrical connections using manufacturer service information as a guide.	a) connector is <u>damaged</u> or corroded in a way that exposes any conductor connector is <u>damaged</u> or <u>insecure</u> connector is unable to properly connect or lock into place
b) wiring <i>Additional Inspection Procedure(s):</i> Visually inspect all accessible electrical wiring using <u>manufacturer</u> service information as a guide.	b) corroded or <u>damaged</u> in a way that exposes any conductor insulation is chafing due to abrasive contact with any vehicle part
c) traction motor/generator <i>Additional Inspection Procedure(s):</i> Visually inspect the drive motor/generator using <u>manufacturer</u> service information as a guide.	c) <u>damaged</u> , <u>insecure</u> or <u>loose</u> indication of burning or overheating drive component abnormally worn

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
d) traction battery <i>Additional Inspection Procedure(s):</i> Visually inspect the battery using <u>manufacturer</u> service information as a guide.	d) <u>damaged</u> , <u>insecure</u> or <u>loose</u> indication of burning or overheating
e) battery storage area <i>Additional Inspection Procedure(s):</i> Visually inspect the battery storage area using <u>manufacturer</u> service information as a guide.	e) <u>damaged</u> or structurally weakened
f) self-diagnostic/status indicator <i>Additional Inspection Procedure(s):</i> Visually inspect the system indicator(s) using <u>manufacturer</u> service information as a guide.	f) there is any condition indicated by the system that is defined by the <u>manufacturer</u> as being unsafe
	<u>Hazardous Condition(s)</u> i. any sign of shorting, arcing, or hot spot, at or near, any electrical component or wiring ii. traction battery is <u>damaged</u> or leaking
<u>12. Gasoline or Diesel Fuel System</u> <i>Note:</i> This includes the fuel system for any auxiliary equipment or device.	Truck ✓ Trailer ✓ Bus ✓
a) filler cap	a) allows spillage, improper type or <u>missing</u>
b) tank, filler neck/tube and vent tube	b) cracked, <u>insecure</u> mounting or weld is broken <u>not</u> intended for the storage of automotive fuel improper vent repair to any non-metallic tank
c) tank mount and strap	c) broken, cracked, <u>loose</u> or <u>missing</u> deficient part is used that does <u>not</u> meet <u>OEM standard</u> fastener is <u>loose</u> or <u>missing</u>
d) line, hose, fitting and connection <i>Note:</i> Refer to correct type of hose or tube and the related defective condition(s) as defined in the chart in the definition section of this standard.	d) chafing, cracked or <u>insecure</u> deficient product is used that does <u>not</u> meet <u>OEM standard</u> any section of a line, hose or tube is worn or <u>damaged</u> as shown in the chart on page 55*
e) fuel pump	e) <u>damaged</u> or <u>insecure</u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
 Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) leakage	f) <u>level 1 leak</u> of gasoline anywhere in a gasoline fuel system <u>level 2 leak</u> of diesel fuel anywhere in a diesel fuel system
	<u>Hazardous Condition(s)</u> i. <u>level 1 leak</u> of gasoline in gasoline fuel system ii. <u>level 2 leak</u> of diesel fuel in diesel fuel system iii. fuel cap is <u>missing</u> iv. fuel tank is <u>insecure</u> (a tank mounted with cushioning devices will have some movement)
<u>13. Pressurized or Liquefied Fuel System (LPG, CNG and LNG)</u>	
<p><i>Additional Inspection Procedure(s):</i> Inspect pressurized fuel systems according to the items listed below <u>unless</u> additional inspection is required by the applicable requirements of the jurisdiction where the inspection is being conducted. In some jurisdictions a full inspection of a pressurized fuel system may be conducted at a different time, as part of a different inspection program, or by a person with different qualifications.</p> <p><i>Note:</i> Refer to Appendix A for detailed criteria for inspecting Liquefied Petroleum Gas (LPG or Propane), Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG). When such an inspection is conducted, follow the applicable requirements of the relevant jurisdiction, or refer to the appropriate sections in Appendix A, as required.</p>	<p><u>Hazardous Condition(s)</u></p> <p>Any cause for rejection of a LPG, CNG or LNG system, except those shown with a double asterisk, will also mean an automatic “Hazardous Condition” of that vehicle. The cause for rejection must be corrected and the vehicle “passed” before it may be operated on the highway.</p>
a) regulatory authority decal	<p>a) **decal is not displayed</p> <p>**an incorrect decal is affixed to vehicle</p> <p>**information on decal is <u>not</u> readable</p> <p>Despite the note above, the conditions listed here with a double asterisk (**) are not Hazardous Conditions</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) pressure vessel (tank or cylinder) and valves, location and mounting	<p>b) pressure vessel (tank or cylinder) is <u><i>insecure</i></u> or <u><i>loose</i></u>, or welds are broken</p> <p>welding has been done anywhere on a pressure vessel (tank or cylinder) except on saddle plates or bracket</p> <p>tank or cylinder valve and r connections are <u><i>insecure</i></u> or <u><i>loose</i></u></p> <p>tank or cylinder valve and connections are <u>not</u> protected from damage due to stationary objects, or objects from the road</p> <p>pressure vessel (tank or cylinder) is located above the vehicle or projects beyond vehicle side, ahead of front axle or behind rear bumper</p> <p>any part of exhaust system is less than 200 mm away from any part of the fuel system and is <u>not</u> protected by shields</p> <p>a heat shield is less than 25 mm away from any fuel system component</p>
<p>c) pressure vessel (tank or cylinder) ground clearance</p> <p><i>Note:</i> Includes any attached fitting or valve the appropriate sections in Appendix A, as required.</p>	<p>c) distance to ground from bottom of pressure vessel (tank or cylinder) is less than minimum ground clearance shown below</p> <p>pressure vessel (tank or cylinder) located between axles</p> <p>wheelbase of 3225 mm <u>or less</u>: minimum ground clearance = 170 mm</p> <p>wheelbase <u>over</u> 3225 mm: minimum ground clearance = 220 mm</p> <p>pressure vessel (tank or cylinder) located behind rear axle</p> <p>minimum ground clearance = 200 mm</p> <p>any portion of the tank or cylinder protrudes past the plane formed by the bottom of the rear most tires and the lowest most rearward part of the vehicle.</p>
d) pressure vessel (tank or cylinder) sub-frame	d) any modification has been made to pressure vessel (tank or cylinder) carrier or sub-frame, that <u>does not</u> meet <u><i>OEM standard</i></u> or <u><i>industry standard</i></u>
<p>e) pressure vessel (tank or cylinder) information plate and data</p> <p><i>Note:</i> Pressure vessel installed as part of an <u><i>OEM</i></u> vehicle gaseous fuels installation may not have an information plate affixed to it.</p>	<p>e) name plate is missing or illegible, or data is <u>not</u> shown on plate (see note below)</p> <p><i>Note:</i> When information plate is illegible or missing, record it on the inspection report, however do not reject the vehicle for this condition alone.</p>
f) pressure vessel (tank or cylinder) filler cap	f) protective filler cap <u>not</u> secured to filler valve or vehicle

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
g) pressure vessel (tank or cylinder) remote filler box	g) not adequately sealed to prevent vapour migration into vehicle interior (trunk etc.)
h) main shut-off valve	h) valve is <u>not</u> readily accessible (<u>cannot</u> be reached)
i) corrosion protection	i) protective coating or material is <i>damaged</i> , or is missing from externally mounted pressure vessel (tank) or attachment
j) fitting, hose, piping and tubing	j) is <i>insecure</i> , or any anchor support is <i>damaged</i> or <i>missing</i> is <u>not</u> protected against corrosion grommet is <i>damaged</i> or <i>missing</i> components in trunk area <u>not</u> protected against luggage
k) fuel system leakage	k) any fuel system leak is detected
l) pressure relief valve	l) incorrectly installed or <i>missing</i>
m) supply lock off valve (LPG)	m) does <u>not</u> operate as originally intended
n) excess flow valve (LPG) and cap	n) <i>missing</i>
o) vehicle chassis and under-body	o) a structural member has been altered in any manner that does <u>not</u> meet <i>OEM standard</i> or <i>industry standard</i>
	<p><u>Hazardous Condition(s)</u></p> <p>Any cause for rejection of a LPG, CNG or LNG system, except those shown with a double asterisk, will also mean an automatic “Hazardous Condition” of that vehicle. The cause for rejection must be corrected and the vehicle “passed” before it may be operated on the highway.</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

Section 2 – Suspension

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>1. Suspension & Frame Attachments</p> <p><i>Note:</i> This section applies to all types of suspension.</p> <p><u>Manufacturer</u> welding of components is a normal part of many manufacturing processes and is distinct from welding to modify or repair a part.</p> <p><i>Additional Inspection Procedure(s):</i> Raise the vehicle as necessary to access the suspension components.</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p>
<p>a) vehicle ride height</p> <p><i>Additional Inspection Procedure(s):</i> Check ride height while vehicle is parked on a flat level surface.</p>	<p>a) suspension is sagged so that the vehicle ride height, on a vehicle other than a bus, is more than 50 mm from manufacturer specified height when measured at the tire centreline</p> <p>one side of the vehicle is more than 50 mm, higher or lower than the other when measured at the tire centreline</p> <p>on a bus, step height at an entrance door is 25 mm above or below the range of step height specified by the <u>manufacturer</u></p>
<p>b) frame bracket, mounting bracket and hanger</p> <p><i>Note:</i> Some trailer suspension systems use a “cross tube brace”, consisting of a pipe positioned between the spring hangers on either side of the vehicle. The “cross tube brace” is used to position the suspension for shipment and installation and has no bearing on the alignment or the function of the suspension.</p>	<p>b) broken, cracked, <u>damaged</u>, <u>loose</u>, <u>missing</u>, or perforated due to corrosion or deterioration</p> <p>welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u></p>
<p>c) mounting fasteners</p>	<p>c) broken, cracked, <u>loose</u> or <u>missing</u></p>
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. an axle has shifted or is able to shift from its normal position ii. any attaching component is broken, cracked, <u>loose</u> or <u>missing</u> iii. the condition of the suspension system allows a tire to contact any part of the vehicle frame or body

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
2. Axle Attaching & Tracking Components <i>Note:</i> This section applies to all types of suspension. <i>Additional Inspection Procedure(s):</i> Raise the vehicle as per manufacturer procedures to access the suspension components. Inspect using hand pressure and suitable tools.	Truck ✓ Trailer ✓ Bus ✓
a) axle attachment, axle saddle	a) bent, broken, cracked, <u>loose</u> or <u>missing</u> axle has shifted from its normal position
b) bushing (rubber or composite material)	b) <u>loose</u> or shifted out of place, <u>missing</u> , worn beyond <u>manufacturer</u> specification wear or damage permits axle or wheel to shift out of position
c) suspension connecting component, (e.g.: arm, torque rod, radius rod, strut, track rod, control arm) <i>Note:</i> Some suspension connecting components are supplied as unfinished two-piece assemblies that require welding once the required length is established. This type of welding is not cause for rejection.	c) bent, broken, cracked, <u>loose</u> , <u>missing</u> , worn beyond <u>manufacturer</u> specifications, or perforated due to corrosion or deterioration welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> wear or damage permits axle or wheel to shift out of position
d) stabilizer/anti-sway bar or link	d) bent, broken, cracked, <u>loose</u> , <u>missing</u> or worn beyond <u>manufacturer</u> specification welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
e) equalizer or "walking" beam	e) broken, cracked or bushing mounting holes are elongated welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> wear in suspension allows tires to contact frame axles do <u>not</u> align correctly on a truck or truck-tractor, "walking" beam cross tube bushing has more than 7 mm clearance

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p data-bbox="743 205 1057 237"><u>Hazardous Condition(s)</u></p> <ul data-bbox="743 258 1442 472" style="list-style-type: none"><li data-bbox="743 258 1442 321">i. an axle has shifted or is able to shift from its normal position<li data-bbox="743 321 1442 405">ii. any attaching component is broken, cracked, <i><u>loose</u></i> or <i><u>missing</u></i><li data-bbox="743 405 1442 472">iii. the condition of the suspension system allows a tire to contact any part of the vehicle frame or body

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<u>3. Axle & Axle Assembly</u>	Truck ✓ Trailer ✓ Bus ✓
a) condition	a) axle is bent or <u>damaged</u> axle material or a weld is cracked <u>loose</u> or shifted out of normal position welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
	<u>Hazardous Condition(s)</u> i. axle has shifted or is able to shift from its normal position ii. axle material or a weld is cracked
<u>4. Spring & Spring Attachment</u>	Truck ✓ Trailer ✓ Bus ✓
a) leaf spring	a) any spring leaf is broken, cracked, <u>missing</u> , or is shifted out of place any spring leaf is worn more than 3 mm in the hanger contact area or where leaves are in contact with each other leaf is shifted and contacting another vehicle part
b) composite spring <i>Note:</i> Some change in the appearance of a composite spring, described as “fuzzing” is normal as the spring ages. A crack of a composite spring is a separation in any axis which passes completely through the spring.	b) worn more than 3 mm in load bearing area broken, crack of any length visible on both sides of a spring, splintered, delaminating or <u>not</u> the same type on each side of vehicle
c) shackle, pin, bushing <i>Additional Inspection Procedure(s):</i> Check the wear of the spring pins according to <u>manufacturer</u> service instructions.	c) broken, <u>loose</u> or <u>missing</u> shifted out of normal position fastener <u>loose</u> or <u>missing</u> vertical movement of a spring or shackle against a spring pin exceeds <u>OEM standard</u> or if <u>not</u> available; wear exceeds limit below For pin size of 12.5 mm to 25 mm: wear limit is 2.0 mm For pin size of 25 mm to 45 mm: wear limit is 3.0 mm
d) U-bolt & hardware	d) broken, cracked, <u>loose, missing</u> , or shifted out of normal position welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown **in this manner** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
e) spring contact area of hanger (slipper) <i>Note:</i> Wear plates are permitted by some manufacturers in the spring contact (slipper) area of fabricated hangers.	e) repaired by welding (except installation of wear plates) spring load bearing area is worn more than 3 mm
f) coil spring	f) broken or shifted out of normal position spacer is used between the coils of a spring
g) torsion bar	g) broken, cracked or <u>missing</u> <u>repaired by welding</u>
h) bump pad	h) <u>loose, missing</u> or split
i) rubber load cushion	i) rubber block or vertical pin is broken, <u>loose, missing</u> or split
	<u>Hazardous Condition(s)</u> i. any metal spring leaf is <u>missing</u> , or has leaves shifted out of place ii. the main leaf or more than 25% of the leaves of a metal leaf spring are cracked iii. spring leaf is shifted and in contact with a rotating part iv. a composite spring is broken, has a crack of any length intersecting with another crack, or a crack longer than $\frac{3}{4}$ the length of the spring v. torsion bar is broken or cracked vi. coil spring is broken vii. a rubber load cushion is <u>missing</u> or separated
<u>5. Air Suspension</u> <i>Note:</i> This section applies to fixed axle and liftable axle suspension systems. <i>Additional Inspection Procedure(s):</i> Check with air system at normal operating pressure, liftable suspension in lowered position, and with supports placed under the vehicle to protect against dropping of the vehicle in the event of air loss. Maintain appropriate air pressure in any liftable axle system.	Truck ✓ Trailer ✓ Bus ✓

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) ride height	a) height is 50 mm above or below <u>OEM</u> specification vehicle leans to one side or air spring pressure is unequal
b) air spring (air bag)	b) improperly seated, <u>missing</u> , patched or reinforcing ply is exposed due to damage or deterioration air leak
c) air spring base, mounting plate	c) broken, cracked or <u>missing</u> perforated by corrosion or deterioration welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
d) air system <i>Additional Inspection Procedure(s):</i> Inspect the function and operation of the air suspension system and controls in accordance with <u>manufacturer</u> service instructions.	d) pressure protection valve is <u>inoperative</u> or <u>missing</u> control, pressure regulator or gauge, is <u>inoperative</u> or <u>missing</u>
e) airline, connection and fitting <i>Note:</i> Refer to correct type of hose or tube and the related defective condition(s) as defined in the chart in the definition section of this standard.	e) fitting, line, repair method, installation or modification does <u>not</u> meet <u>OEM standard</u> tubing or hose is defective as defined in the chart on page 55 fitting or connection is broken, cracked, flattened or leaking <u>damaged</u> in a way (such as: melting, flattening, deformation or kinking) that can restrict air flow
f) height control valve	f) <u>inoperative</u> a system originally equipped with 2 valves has a valve <u>missing</u> or has been converted to a single valve a system with only one valve has the valve positioned in a location other than near the centre of an axle
g) kneeling feature <u>on a bus</u> <i>Additional Inspection Procedure(s):</i> Use the control to operate the kneeling feature. Confirm the system operates as intended.	g) <u>fails to operate as intended</u> audible or visual warning <u>fails to operate as intended</u>
	<u>Hazardous Condition(s)</u> i. an air spring (air bag) is <u>missing</u> , deflated or has an air leak

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<u>6. Self-Steer and Controlled-Steer Axle</u> <i>Note:</i> The suspension components on a self-steer or controlled steer axle must be inspected according to items 1-4 in this section. The steering components must be inspected according to Section 4.	Truck ✓ Trailer ✓ Bus ✓
<u>7. Shock Absorber/Strut Assembly</u>	Truck ✓ Trailer ✓ Bus ✓
a) condition	a) <u>damaged</u> , detached, or <u>missing</u> binding strut bearing/mount prevents free rotation of the steering wheel
b) mount & hardware	b) broken, <u>loose</u> or <u>missing</u>
c) oil leak	c) <u>level 2 leak</u> of oil
	<u>Hazardous Condition(s)</u> i. <u>a shock absorber on air ride suspension is broken, detached, or <u>missing</u></u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

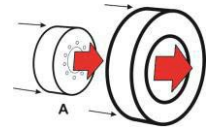
Section 3—Brake Systems

A. OPTIONS FOR INSPECTING INTERNAL BRAKE COMPONENTS OF HYDRAULIC AND AIR BRAKE SYSTEMS**1. Types of Brake Inspections**

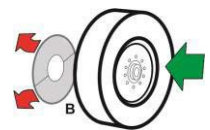
This standard supports several different types of brake inspections depending on the age of a vehicle, the type of brakes being inspected, the required cycle of inspections that applies to a vehicle, i.e.: 12 month or 6 months, and the type of inspection previously completed.

There are three types of inspection for drum brakes:

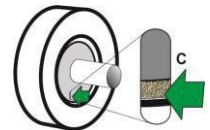
- A. Full inspection with drum removed (this is a detailed inspection of all internal components {listed in Section 3H 12 and 3A 15 & 16} and includes measuring drums and shoe lining)



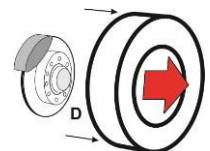
- B. Wheel-on full inspection (this is only available for cam-type drum brakes with removable dust shields and involves an inspection of the internal components {listed in Section 3A 15 & 16} with the dust shields removed, it includes measuring drums and shoe lining)



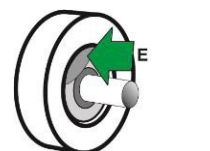
- C. Limited-inspection of drum brake (this is an inspection through inspection holes and involves a measurement of shoe lining only)

**There are two types of inspection for disc brakes**

- D. Full inspection with wheel(s) removed (this is a detailed inspection of all internal components {listed in Section 3H 13 and 3A 18} and includes measuring rotor and pad friction thickness)



- E. Limited-inspection of disc brake (this is an inspection of visually accessible components and measurement of the friction material of one brake pad)



To determine what inspection must be conducted, refer to the following instructions.

2. Disassembly of Wheels and/or Drums for Inspection

Disassembly of brakes provides access to ensure all components are fully inspected. Full inspection with either drum or wheel removal is required when any defect is suspected or found during an inspection.

Suspecting a defect of any wheel brake must be based on some visible evidence that could indicate the presence of a problem or abnormal condition. The following conditions are those that should cause a technician-inspector to suspect a brake defect:

- abnormal wear of friction material
- signs of overheating
- evidence of negative effects of corrosion ("rust-jacking", friction material lifting due to rust build-up, shoe table deformation, friction material separating from backing material)

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

- abnormal wear of the brake drum or rotor
- abnormal appearance, glazing, discolouration or contamination of brake friction material
- damage, distortion or shifting out of place of any brake component
- abnormal noise or response upon application or release of the brakes
- the age of the brake components, or the previous measurements of wear compared to current measurements, indicate that a drum or rotor, or friction material, is likely to be worn beyond the allowable limit

Note: When any of these conditions is evident or is suspected, that specific brake wheel end does not qualify for a “wheel-on full inspection” or a “limited inspection”. A “full inspection with drum removed” is required in the case of drum brakes and a “full inspection with wheel(s) removed” is required in the case of

3. Exemptions from Brake Disassembly for Drum Brakes

When a “full inspection with drum removed (‘A’)” is conducted on a truck or trailer having drum brakes, and the proper documentation is completed, the brake can qualify for a “limited inspection (‘C’)” for a period of 19 months. Buses with drum brakes, only qualify for a limited inspection for 7 months following a “full inspection with drum removed”. A “limited inspection (‘C’)” can only be conducted during the respective 7 or 19 month qualifying period after completing a “full inspection with drum removed”; but only when such inspection is properly documented.

A cam-type drum brake with removable dust cover/shields also qualifies for a “*wheel-on full inspection (‘B’)*” at each inspection. This option is only available for cam type drum brakes; but only when the dust cover/shields are left off the vehicle or are removed to facilitate the inspection.

4. Exemptions from Wheel Disassembly for Disc Brakes

Disc brakes require a “full inspection with wheel(s) removed (‘D’)” at least every 12 months. When a “full inspection with wheel(s) removed (‘D’)” is conducted on a disc brake, and the proper documentation is completed, the brake can qualify for a “*limited inspection (‘E’)*” for a period of 7 months.

5. Exemptions from Brake/Wheel Disassembly for New Vehicles

Brakes are exempt from the requirement to disassemble when vehicles are new. The exemption period depends on the type of brake used and is based on the vehicle manufacture date.. Trucks and trailers using drum brakes qualify for a “*limited inspection (‘C’)*” for a period of 19 months. Trucks and trailers with disc brakes, and all buses qualify for a “*limited inspection (‘C’)* or (‘E’)” for a period of 7 months.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

6. Summary of Inspection Requirements for Trucks and Trailers on 12-Month Inspection Cycle

INSPECTION REQUIRED FOR NEW TRUCKS AND TRAILERS on 12 month inspection cycle

Brake used	Inspection required when vehicle is		
	1 st inspection	12 mo. old	24 mo. old
Drum with <u>removable dust shields</u>	C	C	A or B
Drum with <u>rigid backing plate</u>	C	C	A
Disc	E	D	D

ONGOING BRAKE INSPECTION OPTIONS for Truck & Trailer on 12 month inspection cycle

Brake used	Type of inspection last completed (Starting Month)	Inspection required ¹	
		12 mo. later	24 mo. later
Drum with <u>removable dust shields</u>	<i>full inspection with drum removed (A)</i>	C ²	A or B
	<i>wheel-on full inspection (B)</i>	B	B
Drum with <u>rigid backing plate</u>	<i>full inspection with drum removed (A)</i>	C ²	A
Disc	<i>full inspection with wheel(s) removed (D)</i>	D	D

¹ This is the minimum inspection that is permitted. A full inspection is always permitted.

² A limited inspection is only permitted when proper documentation of a full inspection with drum or wheel(s) removed is provided.

Types of inspections

Drum	<i>full inspection with drum removed</i>	'A'
Brakes	<i>wheel-on full inspection</i>	'B'
	<i>limited-inspection of drum brake</i>	'C'
Disc	<i>full inspection with wheel(s) removed</i>	'D'
Brakes	<i>limited-inspection of Disc brake</i>	'E'

7. Summary of Inspection Requirements for Trucks on 6-Month Inspection Cycle

Note: Only applicable in YK, BC, SK & MB.

INSPECTION REQUIRED FOR NEW TRUCK on 6 month inspection cycle

Brake used	1 st inspection	Inspection required when vehicle is			
		6 mo. old	12 mo. old	18 mo. old	24 mo. old
Drum with <u>removable dust shields</u>	C	C	C	C	A or B
Drum with <u>rigid backing plate</u>	C	C	C	C	A
Disc	E	E	D	E	D

Brake used	1 st inspection	Inspection required when vehicle is			
		6 mo. old	12 mo. old	18 mo. old	24 mo. old
Drum with <u>removable dust shields</u>	C	C	C	C	A or B
Drum with <u>rigid backing plate</u>	C	C	C	C	A
Disc	E	E	D	E	D

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ONGOING BRAKE INSPECTION OPTIONS for Truck on 6 month inspection cycle

Brake used	Type of inspection last completed (Starting Month)	Inspection required ¹			
		6 mo. later	12 mo. later	18 mo. later	24 mo. later
Drum with <u>removable dust shields</u>	<i>full inspection with drum removed (A)</i>	C ²	C ²	C ²	A
	<i>wheel-on full inspection (B)</i>	B	B	B	B
Drum with <u>rigid backing plate</u>	<i>full inspection with drum removed (A)</i>	C ²	C ²	C ²	A
Disc	<i>full inspection with wheel(s) removed (D)</i>	E ²	D	E ²	D

¹ This is the minimum inspection that is permitted. A full inspection is always permitted.

² A *limited inspection* is only permitted when proper documentation of a *full inspection with drum or wheel(s) removed* is provided.

8. Summary of Inspection Requirements for Buses**INSPECTION REQUIRED FOR NEW Bus**

Brake used	Inspection required when vehicle is				
	1 st inspection	6 mo. old	12 mo. old	18 mo. old	24 mo. old
Drum with <u>removable dust shields</u>	C	A	C	A	C
	C	B	B	B	B
Drum with <u>rigid backing plate</u>	C	A	C	A	C
Disc	E	D	E	D	E

ONGOING BRAKE INSPECTION OPTIONS for Buses

Brake used	Type of inspection last completed (Starting Month)	Inspection required ¹			
		6 mo. later	12 mo. later	18 mo. later	24 mo. later
Drum with <u>removable dust shields</u>	<i>full inspection with drum removed (A)</i>	C ²	A	C ²	A
	<i>wheel-on full inspection (B)</i>	B	B	B	B
Drum with <u>rigid backing plate</u>	<i>full inspection with drum removed (A)</i>	C ²	A	C ²	A
Disc	<i>full inspection with wheel(s) removed (D)</i>	E ²	D	E ²	D

¹ This is the minimum inspection that is permitted. A full inspection is always permitted.

² A *limited inspection* is only permitted when proper documentation of a *full inspection with drum or wheel(s) removed* is provided.

Types of inspections

Drum	<i>full inspection with drum removed</i>	'A'
Brakes	<i>wheel-on full inspection</i>	'B'
	<i>limited-inspection of drum brake</i>	'C'
Disc	<i>full inspection with wheel(s) removed</i>	'D'
Brakes	<i>limited-inspection of Disc brake</i>	'E'

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

B. REQUIRED MEASUREMENT OF BRAKE COMPONENTS

Brake inspections require certain components to be measured and these measurements are required to be recorded on a record/report of the inspection. The items that must be measured for each type of brake are as follows:

1. Drum Brake Systems

For drum brakes, the brake shoe lining thickness and brake drum diameter must be measured during every “full inspection with drum removed (‘A’)” and every “wheel-on full inspection (‘B’)”.

When a “limited-inspection (‘C’)” of drum brakes is conducted, the lining thickness of one brake shoe must be recorded. The measurement must be taken of the thinnest accessible portion of the thinnest brake shoe lining for each wheel brake assembly.

2. Disc Brake Systems

For disc brakes, the rotor thickness and pad friction material thickness of the inner and outer brake pad must be measured and recorded at every inspection, unless the brake qualifies for a “limited-inspection (‘E’)”.

When a “limited-inspection (‘E’)” of disc brakes is conducted, the thickness of the friction material of one of the pads must be recorded for each wheel brake assembly. Normally this will be the inner pad.

Friction material thickness can be determined by measuring the friction material itself or by measuring the combined thickness of the friction material and pad backing plate, then deducting the thickness of the backing plate. Always record the thickness of the friction material only.

C. DOCUMENTS REQUIRED FOR QUALIFYING A PRIOR INSPECTION OF INTERNAL BRAKE COMPONENTS

- Qualifying a prior inspection with respect to wheel brake ends requires a document containing the information listed below to be submitted to the inspecting technician and inspection facility conducting a current inspection.
- A legible copy of the document must also be submitted to the inspection facility for attachment to the inspection report.
- The technician-inspector and inspection facility must be satisfied with the documentation provided.

Information to be Included on the Proof of Brake Inspection Document:

The documentation used to prove a prior inspection must include the following information:

1. Common Information (all brakes)

- Date of inspection
- Odometer reading (Optional for trailers.)
- VIN
- Authorized technician/inspector’s name and/or number and signature or Journeyman’s name and Journeyman’s Certificate number (based on jurisdictional requirements) in written or electronic form.
- Inspection station name and number, or name and location of repair facility (based on jurisdictional requirements) in written or electronic form.

2. Supplemental Information Required for Drum Brakes (NO BRAKE JOB HAS BEEN PERFORMED IN-BETWEEN INSPECTIONS)

- Internal diameter of the brake drum.
 - Thickness of the thinnest brake shoe lining taken at the edge of the lining near the center of
- Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

the brake shoe.

- The document must state that the ('A') inspection was the previous inspection conducted

2.1 Supplemental Information Required for Drum Brakes **(BRAKE JOB HAS BEEN PERFORMED IN-BETWEEN INSPECTIONS)**

- Documentation must show that ALL new brake shoe linings and brake drums were installed, and must be supported by purchase invoices, work orders, etc. to qualify for the "C" inspection

3. Supplemental Information Required for Disc Brakes **(NO BRAKE JOB HAS BEEN PERFORMED IN-BETWEEN INSPECTIONS)**

- Thickness of rotor
- Thickness of thinnest pad friction material
- The document must state that the ('D') inspection was the previous inspection conducted

3.1 Supplemental Information Required for Disc Brakes

Documentation must show that ALL new brake pad linings and brake rotors were installed, and must be supported by purchase invoices, work orders, etc. to qualify for the "E" inspection.

Additional Information Required for Disc Brakes

- If new brake pads and/or rotor were installed, the document must show them as 'new' and be supported by documentation, such as purchase invoice, work order, etc.
- Thickness of the rotor.
- Thickness of the thinnest pad friction material.
- Brake pad friction material measurements must be taken at the thinnest point of the material.
- The document must include a declaration stating that the wheel(s) was/were removed and a "full inspection with wheel(s) removed ('D') was conducted, and that no defective component was present at the completion of the inspection.

D. PROHIBITION ON REMOVAL OF BRAKES FROM A VEHICLE

Axles fitted with brakes by the ***manufacturer*** as original equipment must have those brakes in proper working order, and the brakes must be inspected in accordance with this standard. Brakes must not be disabled or removed from a vehicle

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

Section 3H – Hydraulic Brakes

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Hydraulic System Components	Truck ✓ Trailer ✓ Bus ✓
<p>a) metal line and fittings</p> <p><i>Additional Inspection Procedure(s):</i> Inspect lines and fittings for leaks while brakes are fully applied with heavy force on the brake pedal, (i.e.: panic stop). Operate engine if necessary to maintain power-assist.</p> <p><i>Note:</i> All connections between brake system components must be proper flared type.</p> <p><i>Note:</i> Surface rust and corrosion is normal on metal lines and fittings, and is not cause for rejection.</p>	<p>a) heavy rust, corrosion or scaling, is present on any metal line or fitting that reduces or increases the thickness, or compromises the structural integrity of the material</p> <p><u>level 1 leak</u> of brake fluid</p> <p>chafing, cracked, flattened or restricting section</p> <p><u>insecure</u> mounting causing line to shift out of its normal position</p> <p>repaired by welding or soldering</p> <p>repaired using material or method does <u>not</u> meet <u>OEM standard</u></p>
<p>b) flexible line/hose</p> <p><i>Additional Inspection Procedure(s):</i> Inspect flexible hoses while brakes are applied with heavy force on the brake pedal, (i.e.: panic stop). Operate engine if necessary to maintain power-assist.</p>	<p>b) bulged or swells under pressure, flattened, twisted, restricting section or <u>insecure</u> mounting</p> <p>outer composite material is cracked or chafed exposing an inner layer as shown in hose and tube condition chart in introduction</p> <p>deficient product is used that does <u>not</u> meet <u>OEM standard</u></p> <p><u>level 1 leak</u> of brake fluid</p>
<p>c) master cylinder</p>	<p>c) <u>damaged</u> or <u>insecure</u> mounting</p> <p>fluid is contaminated</p> <p><u>level 1 leak</u> of brake fluid</p> <p>fluid level is below indicated minimum level, or if <u>not</u> indicated, more than 13 mm from top</p> <p>filler cap is <u>damaged</u>, <u>loose</u> or <u>missing</u>, vent holes are plugged,</p> <p>or gasket is <u>missing</u> or swollen</p>
<p>d) pressure differential switch</p>	<p>d) switch or electrical connection is <u>damaged</u>, <u>insecure</u> or <u>loose</u></p> <p><u>level 1 leak</u> of brake fluid</p> <p><u>inoperative</u></p>
<p>e) variable or proportioning system</p> <p><i>Additional Inspection Procedure(s):</i> Check links for mechanical defects. Test when there is evidence of a problem. Refer to <u>manufacturer</u> service instructions and confirm that the valve is functioning properly.</p>	<p>e) link is <u>damaged</u>, <u>missing</u>, or seized</p> <p><u>inoperative</u></p> <p><u>level 1 leak</u> of brake fluid</p>

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Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) auxiliary or work brake (line-lock device) <i>Note:</i> Line-lock devices block brake fluid from returning to the master cylinder as a means of holding a vehicle stationary. Improperly installed they can interfere with normal service brake operation.	f) any device is installed that interferes with normal service brake operation
g) service brake function	g) brake does not apply or release as intended
	<u>Hazardous Condition(s)</u> i. a brake hose or line swells under pressure ii. <u>level 2 leak</u> in any part of the brake system iii. brake pedal moves downward when brakes are held applied iv. a brake hose is broken, crimped, restricted, or cracked exposing any inner layer v. master cylinder fluid level is below indicated minimum level or less than ¼ full vi. brake fluid is contaminated in a way that prevents normal brake operation vii. service brakes do not apply or release as intended
<u>2. Brake Pedal/Actuator</u>	Truck ✓ Trailer Bus ✓
a) pedal	a) broken, cracked, <u>loose</u> , <u>missing</u> or <u>abnormally worn</u> welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
b) mount	b) cracked, deteriorated, <u>insecure</u> or weakened by corrosion
c) anti-slip feature	c) ineffective, <u>loose</u> or <u>missing</u>
	<u>Hazardous Condition(s)</u> i. pedal is <u>missing</u>
<u>3. Vacuum Assist (Boost) System on Truck or Bus</u>	Truck ✓ Trailer Bus ✓
a) line, hose and clamp	a) broken, chafed, collapsed, cracked, leaking, <u>loose</u> or <u>missing</u> <u>insecure</u> mounting, incorrect type, or positioned within 50 mm of any exhaust system component and not protected by a heat shield
b) check valve	b) incorrectly installed or <u>inoperative</u> , leaking or <u>missing</u>
c) tank	c) <u>damaged</u> , structurally deteriorated from corrosion, <u>insecure</u> or <u>loose</u> , leaking or <u>missing</u>

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Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>d) operation</p> <p><i>Additional Inspection Procedure(s):</i> Test system operation as described below.</p> <p>Stage 1 – Start engine, build to full vacuum, shut engine off, make two (2) full brake applications.</p> <p>Stage 2 – With engine off, press brake pedal several more times to eliminate remaining vacuum. Apply a light force on brake pedal and then start engine.</p>	<p>d) during stage 1 - vacuum reserve is insufficient to assist two full brake applications</p> <p>during stage 2 - downward movement of brake pedal is not felt when engine is started</p>
<p>e) vacuum pump</p> <p><i>Additional Inspection Procedure(s):</i> Confirm proper operation of the vacuum pump to manufacturer specifications. When no specification is available, check with engine running at 1200 rpm using vehicle gauge, or connect external gauge.</p>	<p>e) vacuum pump does <u>not</u> operate within manufacturer specifications, or when no specification is available, is unable to achieve and maintain 4.5 kPa of vacuum</p> <p><i>Note:</i> High altitude can reduce achievable vacuum level.</p>
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. a brake hose or line swells under pressure ii. <u>level 2 leak</u> in any part of the brake system iii. applied pedal travel exceeds 80% of total pedal travel iv. power assist unit is <u>inoperative</u> v. a check valve is <u>inoperative</u> or <u>missing</u> vi. the brake pedal does not move downward when the engine is started with the brakes applied
4. Hydraulic Assist (Boost) System on Truck or Bus	Truck ✓ Trailer Bus ✓
<p>a) engine-driven pump, reservoir and belt</p> <p><i>Additional Inspection Procedure(s):</i> Check with engine stopped and with engine running.</p> <p>Inspect drive belt according to Section 1. Power Train, Item 10. Engine or Accessory Drive Belt.</p>	<p>a) <u>level 2 leak</u> of hydraulic boost fluid</p> <p>fluid level is below indicated minimum level, or if <u>not</u> indicated, more than 25 mm from top</p> <p>filler cap is <u>damaged</u>, <u>loose</u> or <u>missing</u></p>
<p>b) line and hose</p> <p><i>Additional Inspection Procedure(s):</i> Check with engine stopped and with engine running.</p>	<p>b) <u>level 2 leak</u> of hydraulic boost fluid</p> <p>broken, chafed, collapsed, cracked, <u>loose</u> or <u>missing</u></p> <p><u>insecure</u> mounting or incorrect type</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown **in this manner** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>c) operation</p> <p><i>Additional Inspection Procedure(s):</i> Confirm proper operation of the hydraulic assist (boost) system according to <u>manufacturer</u> service instructions.</p> <p>When no <u>manufacturer</u> service instructions are available, check as described below.</p> <p>Test Method 1 - <u>For a system with electrically-driven back-up pump</u>. Operate brakes with engine running and engine stopped with ignition off. Observe system operation and status of indicator lamps.</p> <p>Test Method 2 – <u>For a system with gas-accumulator back-up</u>. Stop engine and deplete pressure reserve. Then apply a moderate force on brake pedal and start engine.</p>	<p>c) hydraulic assist (boost) is <u>not</u> available or system malfunctions</p> <p>system does <u>not</u> operate as described in <u>manufacturer</u> service instructions</p> <p>warning or indicator lamp is activated, showing a system malfunction</p> <p>during Test Method 1 - system does <u>not</u> operate as described in <u>manufacturer</u> service instructions or electric driven pump <u>fails to</u> operate as intended</p> <p>during Test Method 2 - on a system with gas- accumulator back-up - pedal fails to sink down and then push back up again</p>
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. a brake hose or line swells under pressure ii. <u>level 2 leak</u> in any part of the brake system iii. applied pedal travel exceeds 80% of total pedal travel iv. power assist unit is <u>inoperative</u> v. a check valve is <u>inoperative or missing</u> vi. the brake pedal does not move downward when the engine is started with the brakes applied
<u>5. Air Assist (Boost) System on Truck or Bus</u>	Truck ✓ Trailer Bus ✓
<p>a) operation</p> <p><i>Additional Inspection Procedure(s):</i> Confirm proper operation of the air assist (boost) system according to <u>manufacturer</u> service instructions.</p> <p>When no <u>manufacturer</u> service instructions are available, check as follows: Stop engine and deplete pressure reserve. Then apply moderate force on the brake pedal and start the engine.</p>	<p>a) system does <u>not</u> operate as described in <u>manufacturer</u> service instructions</p> <p>downward movement of brake pedal is <u>not</u> felt when engine is started</p>
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. a brake hose or line swells under pressure ii. <u>level 2 leak</u> in any part of the brake system iii. applied pedal travel exceeds 80% of total pedal travel iv. power assist unit is <u>inoperative</u> v. a check valve is <u>inoperative or missing</u> vi. the brake pedal does not move downward when the engine is started with the brakes applied

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p><u>6. Air-Over-Hydraulic Brake System</u></p> <p><i>Note:</i> An Air-Over-Hydraulic Brake System is a brake system that uses compressed air to transmit force from the driver control to a hydraulic brake fluid system that actuates the service brakes. The brake pedal is connected to an air valve that delivers air pressure to hydraulic pressure converters.</p> <p><i>Note:</i> The air system of an air-over-hydraulic brake system must comply with <u>CMVSS</u>121.</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p>
<p>a) operation</p> <p><i>Additional Inspection Procedure(s):</i> Inspect system operation according to <u>manufacturer</u> service instructions.</p> <p>When no <u>manufacturer</u> service instructions are available, inspect the air supply system for compliance with the items 1–6 in Section 3A Air Brakes. Inspect the hydraulic system components for compliance with all relevant items listed in this Section.</p>	<p>a) system does <u>not</u> operate as described in manufacturer service instructions</p> <p>a vehicle manufactured after 1975 does <u>not</u> have a dual-circuit air system and two independent air-to-hydraulic pressure converters</p> <p>any system defect or malfunction is detected</p>
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. a brake hose or line swells under pressure ii. <u>level 2 leak</u> in any part of the brake system iii. applied pedal travel exceeds 80% of total pedal travel iv. power assist unit is <u>inoperative</u> v. a check valve is <u>inoperative</u> or <u>missing</u> vi. the brake pedal does not move downward when the engine is started with the brakes applied

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
7. Surge Brake Controller on Trailer	Truck Trailer ✓ Bus
a) controller operation <i>Additional Inspection Procedure(s):</i> Check the operation of the surge brake controller according to the manufacturer service instructions. Actuate the controller using suitable means and confirm brake operation at each wheel. Test operation of any backing mechanism.	a) controller is <u>damaged</u> or defective controller is seized, or fails to operate brakes when actuated manually backing/towing function fails to <u>operate as intended</u>
b) brake fluid reservoir	b) <u>insecure</u> mounting or <u>loose</u> <u>level 1 leak</u> of brake fluid brake fluid level is below 'fill' or 'min.' mark or less than 75% of capacity when reservoir is not marked reservoir filler cap <u>damaged, loose</u> or <u>missing</u>
c) break-away device <i>Note:</i> A break-away device is not required in all jurisdictions. Inspect according to the <u>applicable requirements</u> . <i>Additional Inspection Procedure(s):</i> When a break-away device is present, it must be inspected according to the service instructions provided by the <u>manufacturer</u> and it must be functional.	c) <u>missing</u> from a trailer required to have a break-away device <u>damaged</u> , improperly installed or <u>inoperative</u>
	<u>Hazardous Condition(s)</u> <i>i. brakes are <u>inoperative</u> or fail to <u>operate as intended</u></i> <i>ii. required break-away device is improperly installed, <u>inoperative</u> or <u>missing</u></i>
8. Vacuum System on Trailer	Truck Trailer ✓ Bus
<i>Additional Inspection Procedure(s):</i> When inspecting a trailer that uses vacuum to actuate or boost braking, inspect the system according to the service instructions provided by the <u>manufacturer</u> .	
a) condition and operation	a) <u>damaged</u> or fails to <u>operate as intended</u>
	<u>Hazardous Condition(s)</u> <i>i. brakes are <u>inoperative</u> or fail to <u>operate as intended</u></i>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown **in this manner** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
9. Air-Boosted Trailer Brake System <i>Additional Inspection Procedure(s):</i> When inspecting a trailer that uses an air-boosted brake system, inspect the system according to the service instructions provided by the <u>manufacturer</u> .	Truck Trailer ✓ Bus
a) condition and operation	a) <u>damaged</u> or fails to <u>operate as intended</u>
	<u>Hazardous Condition(s)</u> i. brakes are <u>inoperative</u> or fail to <u>operate as intended</u>
10. Electric Brake System on Trailer <i>Additional Inspection Procedure(s):</i> Wheels and drums must be disassembled on all electric brake systems. <i>Note:</i> Inspect the wheel-end (drum or disc) brake system components, on a trailer with electric brakes, according to the relevant requirements for drum or disc brake system as outlined in this section below.	Truck Trailer ✓ Bus
a) wheel magnet and actuator <i>Additional Inspection Procedure(s):</i> When the <u>manufacturer</u> of the brake system provides a test procedure for confirming the operation of the electromagnet used to actuate the brake, the test procedure must be conducted as part of the inspection.	a) any part is broken, <u>damaged</u> , <u>loose</u> , or <u>missing</u> magnet is <u>inoperative</u> or seized
b) wiring	b) shorted, insulation is cracked or peeled improperly spliced or connected not secured at least every 1800 mm
c) break-away device <i>Note:</i> A break-away device is not required in all jurisdictions. Inspect according to the <u>applicable requirements</u> . <i>Additional Inspection Procedure(s):</i> When a break-away device is present, it must be inspected according to the service instructions provided by the <u>manufacturer</u> and it must be functional.	c) <u>missing</u> from a trailer required to have a break-away device <u>damaged</u> or <u>inoperative</u>

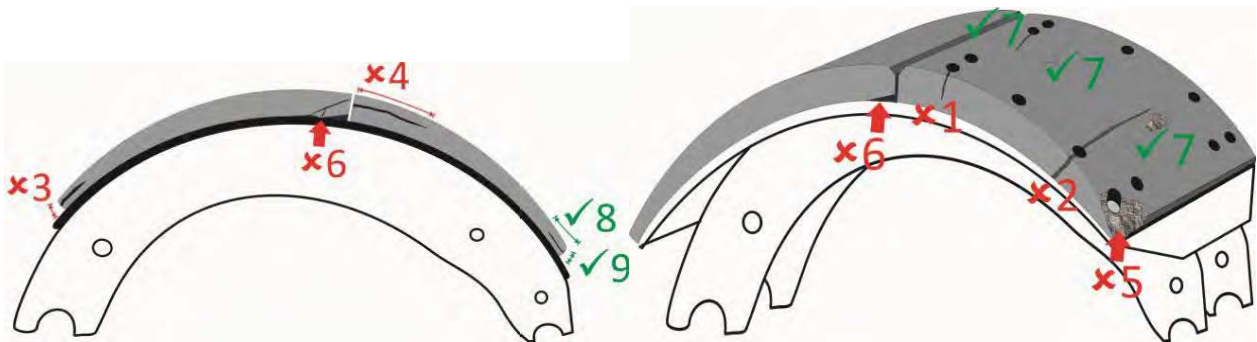
Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
d) battery and controller <i>Additional Inspection Procedure(s):</i> Test the battery and controller according to the service instructions provided by the <u>manufacturer</u> .	d) <u>damaged</u> or fails to <u>operate as intended</u>
	<u>Hazardous Condition(s)</u> <i>i. brakes are <u>inoperative</u> or fail to <u>operate as intended</u></i> <i>ii. required break-away device is <u>inoperative</u> or <u>missing</u></i>
11. Brake System Indicator Lamps	Truck ✓ Trailer Bus ✓
a) operation <i>Additional Inspection Procedure(s):</i> Confirm the location and labeling of brake indicator lamps according to <u>manufacturer</u> service instructions. Check operation of brake indicator lamps according to <u>manufacturer</u> service instructions. When no <u>manufacturer</u> service instructions are available, begin with engine stopped, then turn ignition on. Lamps must turn on when ignition is first turned on. Lamps may go out after 2 – 3 seconds or may stay on until the engine is started. <i>Note:</i> Some indicator lamps may stay on, after a repair or system malfunction, until vehicle speed reaches 8 – 16 km/h.	a) <u>missing</u> , <u>not</u> red or amber in colour does <u>not</u> operate according to <u>manufacturer</u> service instructions indicates a brake system malfunction or defect
	<u>Hazardous Condition(s)</u> <i>i. any brake indicator is <u>inoperative</u> or fails to <u>operate as intended</u></i> <i>ii. an active brake failure is indicated</i>
12. Drum Brake System Components	Truck ✓ Trailer ✓ Bus ✓
<i>Additional Inspection Procedure(s):</i> When an inspection reveals evidence of a defect or abnormal condition, drum disassembly is mandatory. Refer to the instructions in Section 3 when an inspection reveals <u>no evidence</u> of a defect or abnormal condition. The instructions indicate when disassembly of wheel(s) and drum(s) is optional, and what measurements are required to be taken and recorded.	

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 Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) brake operation	a) a required brake is <u>missing</u> a brake is <u>inoperative</u>
b) brake shoe lining condition (service brakes) <i>Note:</i> Cracks in the surface of the lining, surface erosion and minor spalling of the contact face of the lining are normal. Also inspect lining for damage caused by “rust-jacking”. This includes lining material cracking, lifting or separating from backing metal, due to rust build-up. When the lining protrudes outside of the brake drum, drum removal is necessary to obtain lining thickness.	b) a crack extending partially through, or completely through the lining from the friction surface to the metal backing, passing from any rivet hole to the edge a crack in the edge of the lining that is wider than 1 mm or longer than 38 mm a piece of the lining is broken off exposing a rivet lining is distorted or separating from shoe, (e.g.: an object 1 mm thick can be inserted more than 10 mm between the lining and the backing metal) lining is contaminated by brake fluid, oil or grease (Also see section 9 item 5 for wheel seal leaks) lining protrudes outside of drum more than 3 mm lining or any lining fastener is <u>loose</u> - shim is used between lining and shoe shoe or lining is installed incorrectly (such as primary and secondary shoes reversed)



Examples of Brake Shoe Lining Pass and Reject Conditions:

Reject condition 1 – a partial crack in the lining, extending from a rivet hole to the edge

Reject condition 2 – a crack completely through the lining, extending from a rivet hole to the edge

Reject condition 3 – a crack in the edge of the lining wider than 1 mm

Reject condition 4 – a crack in the edge of the lining longer than 38 mm

Reject condition 5 – a piece of the lining is broken off exposing a rivet

Reject condition 6 – lining is distorted or separating from shoe

Pass condition 7 – minor crack or spalling of the lining material

Pass condition 8 – crack in edge of lining shorter than 38 mm

Pass condition 9 – crack in edge of lining less than 1 mm wide

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>c) brake shoe lining thickness</p> <p><i>Additional Inspection Procedure(s):</i> Lining thickness must be measured at each inspection and the measurement must be recorded on the inspection report.</p> <p><i>Note:</i> For minimum allowable thickness, lining measurements are taken at the thinnest point of the lining.</p> <p>For the purposes of recording lining thickness on the inspection report, lining thickness measurements are taken at the edge of the lining, near the centre of the brake shoe. The measurement must be taken of the thinner brake shoe lining, when there is a difference in thickness.</p>	<p>c) <u>bonded</u> brake shoe lining thickness is less than 2 mm at any point</p> <p><u>bolted or riveted</u> brake shoe lining thickness is less than 3 mm at any point</p> <p>$2\text{ mm} = 0.08\text{ in.}$, $3\text{ mm} = 0.12\text{ in.}$</p>
<p>d) brake drum condition</p> <p><i>Note:</i> Heat checks and some surface cracks on the friction surface are normal.</p> <p>A <u>heat check</u> has a width less than 0.5 mm and a depth less than 0.5 mm.</p> <p>A surface crack is at least 0.5 mm wide and 0.5 mm deep.</p> <p>Any surface crack, groove or worn area that is deeper than the drum wear limit is a <u>structural weakness</u>.</p>	<p>d) surface crack longer than 75% of the width of the friction surface</p> <p>surface crack within 25 mm of the open edge</p> <p>surface crack, groove or worn area that is a structural weakness</p> <p>external crack</p> <p>friction surface is <u>abnormally worn</u>, or is hardened and blackened due to overheating ("martensite")</p> <p>friction surface is contaminated by grease or oil (Also see section 9 item 5 for wheel seal leaks)</p>
<p>e) brake drum diameter (wear)</p> <p><i>Additional Inspection Procedure(s):</i> Brake drum diameter must be measured unless an exemption applies, and the measurement must be recorded on the inspection report. See Introduction to Section 3 for details and exceptions.</p> <p><i>Note:</i> Drum diameter measurements must be taken using a suitable tool and with the level of accuracy defined by the measurement tolerance.</p>	<p>e) measured drum diameter exceeds limit indicated on the brake drum, <u>OEM standard</u> or <u>industry standard</u>, or if limit is not available:</p> <p>for nominal drum size of 350 mm (14 in.) or less: 2.3 mm more than original drum diameter</p> <p>for nominal drum size greater than 350 mm (14 in.): 3.0 mm more than original drum diameter</p> <p>$2.3\text{ mm} = 0.09\text{ in.}$</p> <p>$3.0\text{ mm} = 0.12\text{ in.}$</p>
<p>f) self-adjuster mechanism</p>	<p>f) <u>abnormally worn</u>, incorrect thread direction, <u>inoperative</u>, <u>missing</u> or seized</p>

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
g) anchor pin and return spring	g) <u>abnormally worn</u> , bent, broken, <u>loose</u> or <u>missing</u> spring stretched
h) backing plate	h) bent, <u>damaged</u> or <u>loose</u> shoe contact area is grooved or worn in a manner that restricts free movement of shoes
i) axle and spindle	i) cracked
j) wheel cylinder	j) <u>damaged</u> , <u>inoperative</u> or seized, <u>loose</u> or <u>insecure</u> mounting <u>level 2 leak</u> of brake fluid dust seal is cracked, <u>damaged</u> , deteriorated, <u>missing</u> , or split
k) wheel seal	k) <u>level 2 leak</u> of bearing lubricant
	<u>Hazardous Condition(s)</u> i. any part is binding, broken, <u>missing</u> , seized, or mounted incorrectly ii. a brake drum is in a condition where an imminent failure appears likely iii. <u>level 2 leak</u> of brake fluid at wheel cylinder iv. a brake is <u>inoperative</u> v. brake lining thickness is less than 2 mm vi. a piece of the lining is broken off exposing a rivet or bolt vii. a crack in the edge of the lining wider than 1 mm viii. a crack in the edge of the lining longer than 38 mm ix. broken or <u>missing</u> return spring, anchor pin, or spider x. brake lining or brake drum friction surface is contaminated by brake fluid, grease or oil Note: Also see section 9, item 5 for wheel seal leaks

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
13. Disc Brake System Components	Truck ✓ Trailer ✓ Bus ✓
<i>Additional Inspection Procedure(s):</i> When an inspection reveals evidence of a defect or abnormal condition, wheel disassembly is mandatory.	
Refer to the instructions in Section 3 and <u>manufacturer</u> service instructions when an inspection reveals <u>no evidence</u> of a defect or abnormal condition. The instructions indicate when disassembly of wheel(s) is optional and what measurements are required to be taken and recorded.	
a) brake operation	a) a required brake is <u>missing</u> a brake is <u>inoperative</u>
b) disc (rotor) condition <i>Note:</i> Heat checks and some surface cracks on the friction surface are normal. A heat check has a width less than 0.5 mm and a depth less than 1 mm. A surface crack is at least 0.5 mm wide and <u>1 mm</u> deep. <i>Note:</i> Lateral run-out and parallelism only need to be checked only where there is evidence of a problem.	b) section is broken off or <u>missing</u> crack extends from the friction surface through to the cooling vent any surface crack is longer than 75% of the radial width, within the friction surface any surface crack extends to an outer edge groove or pitted area in rotor that reduces rotor thickness below minimum allowable value contact pattern of the pad on solid rotor material (i.e.: not rusted) is less than 75% of the radial width, around the entire rotor, on one side lateral run-out or out-of-parallelism exceeds 0.3 mm friction surface of the rotor is contaminated by brake fluid, grease or oil (Also see section 9 item 5 for wheel seal leaks) 0.3 mm = 0.01 in.
c) disc (rotor) thickness <i>Additional Inspection Procedure(s):</i> Disc (rotor) thickness must be measured. Measurements must be recorded on inspection report.	c) thickness at any point across the friction surface is less than the minimum indicated on the brake rotor, <u>OEM standard</u> or <u>industry standard</u> , if limit is <u>not</u> available: less than 39.0 mm (+/- 0.05 mm)
d) caliper	d) any part is binding, broken, <u>missing</u> , seized or mounted incorrectly or not equivalent to <u>OEM standard</u> . slide pin/slider or pad slider is binding, <u>damaged</u> , seized, mounted incorrectly, or not equivalent to <u>OEM standard</u> caliper movement within the anchor plate exceeds <u>manufacturer</u> specification, guide is welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> <u>level 2 leak</u> of brake fluid pad retainer is bent, <u>damaged</u> , <u>insecure</u> or <u>missing</u> boot or bellows is cracked or deteriorated, <u>damaged</u> , or <u>missing</u>

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
e) anchor plate	e) <u>loose</u> or bolt is <u>missing</u>
f) pad condition	f) broken, cracked, <u>damaged</u> , or <u>abnormally worn</u> friction material is contaminated by brake fluid, oil or grease (Also see section 9 item 5 for wheel seal leaks) friction material <u>loose</u> on pad, pad is <u>missing</u> , or pad is installed incorrectly
g) pad (friction material) thickness <i>Additional Inspection Procedure(s):</i> Pad (friction material) thickness of both inboard and outboard pad must be measured and measurement of the thinnest pad must be recorded on the inspection report. <i>Note:</i> Pad (friction material) thickness can be determined by measuring the friction material itself or by measuring the combined thickness of the friction material and pad backing plate, then deducting the thickness of the backing plate. Record the thickness of the friction material only.	g) Pad (measured friction material) thickness is less than <u>manufacturer</u> specification, or <u>industry standard</u> , or if limit is not available: <ul style="list-style-type: none"> • bonded friction material thickness is less than 3 mm • riveted friction material thickness is less than 5 mm • difference between inboard and outboard friction material thickness is greater than <u>OEM standard</u> or <u>industry standard</u>, or if limit is <u>not</u> available: difference is greater than 3 mm <p><i>3 mm = 0.12 in., 5 mm = 0.20 in.</i></p>
h) clearance between pads and rotor (caliper adjustment)	h) does <u>not</u> meet <u>manufacturer's</u> specifications
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. any part is binding, broken, <u>missing</u>, seized or mounted incorrectly ii. a rotor (disc) friction surface shows metal to metal contact with brake pad or severe rusting iii. a rotor (disc) has a crack that extends to the hub or through to the vented section iv. caliper movement within the anchor plate exceeds 3 mm v. any brake component is in a condition where an imminent failure appears likely vi. a brake is <u>inoperative</u> vii. brake pad friction material is worn to less than 2 mm viii. friction material of the pad or friction surface of the rotor is contaminated by brake fluid, grease or oil <p><i>Note: Also see section 9 item 5 for wheel seal leaks.</i></p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
14. Mechanical Parking Brake	Truck ✓ Trailer Bus ✓
<p>a) operation</p> <p><i>Additional Inspection Procedure(s):</i> Refer to manufacturer service instructions for test procedure. When such instruction is not available, test as described below.</p> <p>With a manual transmission—Apply the parking brakes and place the transmission in the lowest gear. Engage the clutch slowly without applying the throttle. Vehicle may rock and shake, but it should not roll, and engine may stall. With an automatic transmission – Apply the parking brake and place the transmission in forward gear. Maintain the engine at idle. Vehicle may shift due to torquing of the suspension.</p> <p><i>Note:</i> Some vehicles with automatic transmissions use an interlock that prevents a vehicle from being placed into gear when the parking brake is applied. Inspect such a vehicle according to the test method provided by the manufacturer.</p>	<p>a) parking brake does not hold in forward and backward gear.</p>
b) indicator lamp	b) parking brake indicator lamp does <u>not</u> activate when control is placed in the applied position
c) control	c) binds, broken or <u>missing</u> <u>inoperative</u> or fails to lock
d) cable and/or linkage	d) broken, frayed, improperly secured, <u>missing</u> , seized or equalizer is <u>missing</u>
e) adjustment	e) any part of the system is improperly adjusted
f) friction material	<p>f) thickness is less than specified by the <u>OEM</u>, or when not specified is less than:</p> <ul style="list-style-type: none"> • 3 mm on <u>riveted lining</u> • 2 mm on <u>bonded lining</u> <p>$2\text{ mm} = 0.08\text{ in.}$, $3\text{ mm} = 0.12\text{ in.}$</p>
	<p><u>Hazardous Condition(s)</u></p> <p>i. vehicle rolls forward with parking brake applied.</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>15. Spring-Applied Air-Released (SAAR) Parking Brake</p> <p><i>Note:</i> A spring-applied air-released (SAAR) Parking Brake System uses a mechanical spring to apply the parking brake. Compressed air is used to compress the spring and release the parking brake. The parking brake control is similar to the valve used in an air brake system.</p>	<p>Truck ✓ Trailer Bus ✓ </p>
<p>a) operation</p> <p><i>Additional Inspection Procedure(s):</i> Refer to manufacturer service instructions for test procedure. When such instruction is not available, test as described below.</p> <p>With a manual transmission—Apply the parking brakes and place the transmission in the second or third lowest gear. Engage the clutch slowly without applying the throttle. Vehicle may rock and shake, but it should not roll, and engine may stall.</p> <p>With an automatic transmission—Apply the parking brake and place the transmission in forward gear. Raise engine speed to no more than 800 rpm. Vehicle may shift due to torqueing of the suspension, but it should not roll forward or backward.</p> <p><i>Note:</i> Some vehicles with automatic transmissions use an interlock that prevents a vehicle from being placed into gear when the parking brake is applied. Inspect such a vehicle according to the test method provided by the manufacturer.</p> <p><i>Note:</i> SAAR systems include a low air pressure warning and air pressure gauge. The air system components are not subject to <i>CMVSS</i> 121 and must be inspected according to <u>manufacturer</u> service instructions.</p>	<p>a) parking brake does not hold as required</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) indicator lamp	b) parking brake indicator lamp does <u>not</u> activate when control is placed in the applied position
c) airline, connection and fitting	c) fitting, line or repair method does <u>not</u> meet <u>OEM standard</u> tubing or hose is defective as defined in the chart on page 55 fitting or connection is broken, cracked, flattened or leaking <u>damaged</u> in a way (such as: melting, flattening, deformation or kinking) that can restrict air flow
d) air tank	d) tank does <u>not</u> meet <u>OEM standard</u> tank is <u>damaged</u> , <u>loose</u> , welded other than factory weld, or corroded to the extent that structural integrity is compromised
e) leakage <i>Additional Inspection Procedure(s):</i> Monitor system for leaks.	e) air leak at any location
f) friction material <i>Additional Inspection Procedure(s):</i> Inspecting the condition of the parking brake friction material is necessary in cases when shoes are visually accessible, or the brake is disassembled.	f) thickness is less than specified by the <u>OEM</u> , or when not specified is less than: • 3 mm on <u>riveted lining</u> • 2 mm on <u>bonded lining</u> $2\text{ mm} = 0.08\text{ in.}$, $3\text{ mm} = 0.12\text{ in.}$
	<u>Hazardous Condition(s)</u> i. brake is <u>inoperative</u> or fails to <u>operate as intended</u> ii. vehicle rolls forward or backward with little or no resistance when parking brake is applied
<u>16. Spring-Applied Hydraulic-Released (SAHR) Parking Brake</u> <i>Note:</i> A spring-applied hydraulic-released (SAHR) Parking Brake System uses a mechanical spring to apply the parking brake. Pressurized hydraulic fluid is used to compress the spring and release the parking brake.	Truck ✓ Trailer Bus ✓

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>a) operation</p> <ul style="list-style-type: none"> • refer to manufacturer service instructions for test procedure. When such instruction is not available, test as described below. • a manual transmission – Apply the parking brakes and place the transmission in the second or third lowest gear. Engage the clutch slowly without applying the throttle. Vehicle may rock and shake, but it should not roll, and engine may stall. • an automatic transmission – Apply the parking brake and place the transmission in forward gear. Raise engine speed to no more than 800 rpm. Vehicle may shift due to torqueing of the suspension, but it should not roll forward or backward. <p><i>Note:</i> Some vehicles with automatic transmissions use an interlock that prevents a vehicle from being placed into gear when the parking brake is applied. Inspect such a vehicle according to the test method provided by the manufacturer.</p>	<p>a) parking brake does not hold as required</p>
<p>b) indicator lamp</p>	<p>b) parking brake indicator lamp does <u>not</u> activate when control is placed in the applied position</p>
<p>c) line and hose</p> <p><i>Additional Inspection Procedure(s):</i> Check with engine stopped and with engine running.</p>	<p>c) <u>level 2 leak</u> of hydraulic fluid broken, chafed, collapsed, cracked, leaking, <u>loose</u> or <u>missing</u> <u>insecure</u> mounting or incorrect type</p>
<p>d) release canister</p>	<p>d) <u>damaged</u>, <u>inoperative</u>, <u>insecure</u>, or <u>loose</u> <u>level 2 leak</u> of hydraulic fluid</p>
<p>e) friction material</p> <p><i>Additional Inspection Procedure(s):</i> Inspecting the condition of the parking brake friction material is necessary in cases when shoes are visually accessible, or the brake is disassembled.</p>	<p>e) thickness is less than specified by the <u>OEM</u>, or when not specified is less than:</p> <ul style="list-style-type: none"> • 3 mm on <u>riveted lining</u> • 2 mm on <u>bonded lining</u> <p>2 mm = 0.08 in., 3 mm = 0.12 in.</p>
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. brake is <u>inoperative</u> or fails to <u>operate as intended</u> ii. vehicle rolls forward or backward with little or no resistance when parking brake is applied

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
17. Anti-Lock Brake System (ABS) on a Truck or Bus	Truck ✓ Trailer Bus ✓
<p><i>Note:</i> Every truck or bus manufactured on or after April 1, 2000, with a GVWR above 4,536 kg must be equipped with ABS.</p> <p><u>Every vehicle equipped with ABS that was not mandatory for the vehicle when it was manufactured must have ABS in good working order.</u></p>	
<p>a) indicator lamp</p> <p><i>Additional Inspection Procedure(s):</i> Cycle the ignition off and on while monitoring the ABS indicator lamp.</p>	<p>a) <u>inoperative</u> or <u>missing</u></p> <p>fails to turn on during bulb-check cycle when ignition is turned on</p> <p>indicates the presence of an active malfunction by staying on after the bulb-check cycle</p> <p>any visual evidence that the system has been tampered with or defeated</p>
b) electronic control unit (ECU)	b) <u>insecure</u> mounting, <u>missing</u> or connector corroded
<p>c) wiring</p> <p><i>Additional Inspection Procedure(s):</i> Visually inspect accessible portions of the wiring. Inspect all repairs and damaged areas.</p>	<p>c) <u>insecure</u> mounting, <u>missing</u>, or connector corroded, conductor is exposed due to damage, improper repair or other condition of wire</p> <p>connection or repair does not meet <u>OEM standard</u></p>
d) ABS modulating valve	d) <u>missing</u> , <u>insecure</u> mounting to ECU, <u>level 1 leak</u> of brake fluid or abnormal corrosion
<p>e) wheel speed sensor</p> <p><i>Note:</i> Different configurations of sensors and modulators are permitted by <u>CMVSS</u>. Be sure to confirm the <u>OEM</u> configuration of the ABS before rejecting a vehicle due to missing wheel speed sensors.</p>	e) <u>inoperative</u> , <u>insecure</u> mounting, <u>missing</u> , connectors corroded
	<p><u>Hazardous Condition(s)</u></p> <p>i. any malfunction of the ABS system that prevents normal brake operation</p>
18. Stability Control System	Truck ✓ Trailer Bus ✓
<p>a) indicator lamp/system status</p> <p><i>Additional Inspection Procedure(s):</i> Check for indication of any fault or malfunction by cycling the ignition off and on while monitoring the indicator lamp.</p>	<p>a) lamp fails to illuminate during bulb-check or lamp remains illuminated</p> <p>fault or malfunction is indicated</p> <p>any visual evidence that the system has been tampered with or defeated</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
19. Brake Performance <u>Optional Additional Inspection Procedure(s):</u> These test methods can be used when one of the following types of performance-based brake tester (PBBT) is available. Test equipment must be calibrated and used according to <u>manufacturer</u> instructions. Testing a brake with non-burnished friction material may produce inconsistent test results.	Truck ✓ Trailer ✓ Bus ✓ <u>Note:</u> Rated wheel weight = one-half of GAWR.
a) service brake force - using a roller-type performance-based brake tester (PBBT) <u>Optional Additional Inspection Procedure(s):</u> Determine the maximum service brake force at each wheel by slowly applying the service brake pedal and increasing the pedal force until the tester terminates the test, or brake force reaches its maximum value.	a) service brake fails to lock the wheel <u>and</u> the maximum service brake force is less than 40% of the rated wheel weight service brake force on one side of the axle is less than 70% of the service brake force on the other side, at the point in time just prior to first wheel lockup, or test termination, whichever occurs first
b) rolling resistance force - using a roller-type performance-based brake tester (PBBT) <u>Optional Additional Inspection Procedure(s):</u> Determine average rolling resistance force of each wheel, with the brakes fully released, for one full revolution of the wheel. Discount the initial spike at start-up of the rolls.	b) average rolling resistance force of a wheel is greater than 6% of the weight of the wheel imparted on the test device
c) required brake force or stopping distance - using a decelerometer <u>Optional Additional Inspection Procedure(s):</u> Test vehicle stopping ability in a suitable area following the instructions provided by the manufacturer/supplier of the test device.	c) deceleration is below the requirement of the relevant jurisdiction balance of brake force between left and right side fails to comply with the requirement of the relevant jurisdiction <u>Note:</u> Brake force balance (left and right) cannot be measured with all types of decelerometers.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p><i>Note:</i> Inspect Air System at Normal Operating Pressure - Unless noted otherwise below, all operational checks of air brake system components are conducted with the system at its normal operating pressure (between compressor cut-in and cut-out values).</p> <p>OEM Vehicle Gauge Accuracy - The gauges on a vehicle's instrument panel showing pressure in the air brake system are required to be accurate within plus or minus 7% of the compressor cut-out pressure.</p> <p>Use Accurate Test Gauge - When there is any doubt about any test or inspection results obtained, use of a gauge accurate to +/- 2% to confirm pressure values is recommended.</p>	
1. Air Compressor	Truck ✓ Trailer Bus ✓
a) operation	a) <i>inoperative</i>
b) belt	<p><i>Note:</i> Inspect drive belt according to Section 1. Power Train, Item 10. Engine or Accessory Drive Belt.</p>
c) mounting	c) broken, cracked, <i>loose</i> or bolts <i>missing</i>
d) air filter	d) contaminated sufficiently to restrict air flow, <i>missing</i>
e) pulley	e) bent, broken, cracked, <i>damaged</i> , <i>loose</i> , out of alignment
	<p>Hazardous Condition(s)</p> <p>i. belt or pulley is in a condition where an imminent failure appears likely</p> <p>ii. compressor mounting or mounting bolt is broken, cracked, <i>insecure</i>, or <i>loose</i>, or compressor is shifted from its normal position</p>
2. Air Supply System	Truck ✓ Trailer Bus ✓
<p><i>Additional Inspection Procedure(s):</i> Test either "a) air pressure build up time" or "b) air pressure build-up/loss rate" as described below.</p>	
a) air pressure build-up time	a) exceeds two (2) minutes

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p><i>Optional Inspection Procedure(s):</i> With spring brakes released and wheels chocked, reduce system pressure to 552 kPa (80 psi) or less. Run engine at 600-800 rpm and observe the time needed for air pressure to rise from 85 to 100 psi.</p>	
<p>b) air pressure build-up/loss rate</p> <p><i>Optional Inspection Procedure(s):</i> With air pressure at 552 kPa (80 psi) or less, spring brakes released and service brakes fully applied and released, allow the engine to run at idle speed and observe the air pressure gauge to confirm air pressure rises.</p>	<p>b) air compressor is unable to cause pressure to rise during test</p>
<p>c) governor</p> <p><i>Additional Inspection Procedure(s):</i> Determine the governor cut-in and cut-out pressure values.</p>	<p>c) <u>inoperative</u>, <u>missing</u> or <u>loose</u></p> <p>air leak evident at governor or connecting airlines</p> <p>the governor cut in pressure shall not be lower than that prescribed by the vehicle manufacturer.</p> <p>governor cut-out pressure is <u>below</u> or above that prescribed by the vehicle manufacturer and in no case shall exceed 1000 kPa (145 psi)</p>
<p>d) low pressure warning</p> <p><i>Additional Inspection Procedure(s):</i> Test the operation of the low air pressure warning device(s).</p> <p><i>Note:</i> A visible warning device is mandatory (lamp or wig-wag). An audible warning device (buzzer or alarm) is optional, but must remain functional when <u>OEM</u> installed.</p>	<p>d) visible warning is <u>inoperative</u> or <u>missing</u></p> <p>visible warning is <u>not</u> clearly identified, lamp lens is <u>missing</u></p> <p>audible warning is <u>inoperative</u> or <u>missing</u></p> <p>warning device fails to activate or operate continuously when air pressure is lowered below 414 kPa (60 psi)</p>
<p>e) air pressure gauge</p>	<p>e) gauge is <u>inoperative</u> or has inaccurate reading</p>
<p>f) pressure drop/reserve</p> <p><i>Additional Inspection Procedure(s):</i> Observe air pressure gauges while making a full service brake application.</p>	<p>f) pressure drops more than 138 kPa (20 psi) when a full service brake application is made</p>
<p>g) air leakage</p> <p><i>Additional Inspection Procedure(s):</i> Monitor the system for leaks during the inspection by listening for leaks.</p>	<p>g) pressure drops more than 7 kPa (1 psi) per minute</p> <p>detectable leak at any location</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. brake system air pressure cannot be maintained between 560 and 620 kPa (80 and 90 psi), with service brakes applied or released and engine idling, during air pressure build-up/loss rate test ii. air pressure drops more than 20 kPa (3 psi) per minute during air leakage test iii. <i>inoperative</i> or inaccurate air pressure gauge iv. low air pressure warning is <i>inoperative</i> or fails to operate continuously when ignition is on and air pressure is below 380 kPa (55 psi)
<u>3. Air System Leakage on a Trailer</u>	Truck Trailer ✓ Bus
a) air leakage <i>Additional Inspection Procedure(s):</i> Monitor the system for leaks during the inspection by listening for leaks.	a) detectable leak at any location
b) air loss rate <i>Additional Inspection Procedure(s):</i> Step 1. Fill the supply circuit to normal operating pressure. Shut off the air supply and seal the circuit while monitoring air pressure. Step 2. While keeping the supply circuit filled, also fill the service circuit to the same pressure. Shut off the air supply and seal the circuits while monitoring air pressure. Step 3. Supply air to all other air systems and/or accessory devices. Shut off the air supply and seal the circuits while monitoring air pressure.	b) trailer is attached to a towing vehicle and total leakage exceeds 28 kPa (4 psi) in one minute trailer is connected to non-vehicle air source and total leakage exceeds 20 kPa (3 psi) in one minute
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. air pressure drops more than 40 kPa +/- 5 kPa (6 psi) per minute during air leakage test
<u>4. Air Tank</u>	Truck ✓ Trailer ✓ Bus ✓
a) contamination <i>Additional Inspection Procedure(s):</i> Open the drain valve on each tank and drain all fluid.	a) the quantity of oil or sludge, (i.e.: oil and water mixture) expelled from an air tank exceeds manufacturer service recommendations **the quantity of water expelled from an air tank exceeds <u>manufacturer</u> service recommendations
	<p><i>Note:</i> **Record excessive water on the inspection report, but do not reject the vehicle for this condition alone.</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) air tank condition	b) corroded or <u>damaged</u> to the extent that structural integrity is compromised, leaking or <u>loose</u> welding other than original factory weld on air tank tank does <u>not</u> meet <u>OEM standard</u>
c) air tank bracket and/or strap	c) broken, cracked or <u>missing</u> does <u>not</u> meet <u>OEM standard</u>
d) air tank drain valve	d) <u>inoperative</u> , leaking, <u>loose</u> or <u>missing</u> does <u>not</u> meet <u>OEM standard</u>
e) moisture ejector	e) <u>inoperative</u> , leaking
	<u>Hazardous Condition(s)</u> i. air tank is <u>loose</u> , allowing movement of more than 25 mm in any direction
<u>5. Air Tank Check Valves</u> <i>Additional Inspection Procedure(s):</i> Test as outlined below, the operation of air tank check valves on each vehicle using a supply (wet) tank and primary/secondary tank arrangement. Inspect a vehicle using an integral-type air dryer (and having no supply {wet} tank) according to <u>manufacturer</u> service instructions. <i>Note:</i> A “ <u>CMVSS</u> ‘121’ system” is one with a dual circuit brake system generally manufactured after 1976. A vehicle with single circuit brake system is to be inspected according to <u>manufacturer</u> service instructions.	Truck ✓ Trailer Bus ✓
<i>Additional Inspection Procedure(s):</i> For a vehicle with a “ <u>CMVSS</u> ‘121’ system”. This inspection is to ensure proper function of the check valves which isolate the circuits and provide service and emergency braking in the case of a failure in one of the circuits. Inspect for proper operation as follows: Step 1 – Begin with air system at normal operating pressure. Open the drain valve on the supply (wet) tank.	

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) one-way check valve (between supply (wet) tank and service tanks)	a) air pressure drops in either the primary or secondary air tank
Step 2 - Open the drain valve on either the primary or secondary service tank.	
b) two-way check valve (between service tanks and brake system control valves)	b) air pressure drops on both the primary and secondary air tanks
Step 3 - Close all drain valves and increase air system to normal operating pressure. Open the drain valve on the remaining service tank (primary or secondary) that was not drained in Step 2.	
c) two-way check valve (between service tanks and brake system control valves)	c) air pressure drops on both the primary and secondary air tanks
	<u>Hazardous Condition(s)</u>
	i. air tank check-valve is <i>inoperative</i> or <i>missing</i>
<u>6. Brake Pedal/Actuator</u>	Truck ✓ Trailer Bus ✓
a) pedal	a) broken, cracked, <i>loose</i> , <i>missing</i> or <i>abnormally worn</i> welded or repaired in a way that does <u>not</u> meet <i>OEM standard</i>
b) mount	b) deteriorated or weakened by corrosion, or <i>insecure</i>
c) anti-slip feature	c) ineffective, <i>loose</i> or <i>missing</i>
	<u>Hazardous Condition(s)</u>
	ii. pedal is <i>loose</i> or <i>missing</i> , or an imminent failure appears likely
<u>7. Treadle Valve and Trailer Hand Valve</u>	Truck ✓ Trailer Bus ✓
a) operation <i>Additional Inspection Procedure(s):</i> Test the operation of the treadle valve and trailer hand valve by fully applying and then releasing the service brakes.	a) <i>inoperative</i> pivot or plunger is binding or seized (fails to fully release brakes)
b) condition	b) cracked, <i>insecure</i> or <i>loose</i> mounting, mounting bracket or mounting fastener <i>damaged</i> , <i>missing</i> or stripped

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
8. Brake Valves & Controls	Truck ✓ Trailer ✓ Bus ✓
a) operation <i>Additional Inspection Procedure(s):</i> Test the operation of all valves and controls.	a) any valve is <u>inoperative</u>
b) condition <i>Additional Inspection Procedure(s):</i> Check the condition and security of all air brake system components.	b) broken, <u>damaged</u> , repaired in a way that does <u>not</u> meet <u>OEM standard</u> <u>loose, insecure</u> mounting, mounting bracket or mounting fastener <u>damaged</u> , stripped or <u>missing</u>
c) quick release valve, relay valve <i>Note:</i> It is important that any repair or replacement of a brake valve retains brake functionality according to original <u>OEM</u> design. <i>Additional Inspection Procedure(s):</i> Apply and release the service brakes and check system operation. Check for signs of improper installation or replacement of the wrong type of valve. <i>Note:</i> It is important that the inspector be familiar with the design and operating requirements of the vehicle being inspected. This is a visual inspection only.	c) <u>inoperative</u> , air is not released quickly through exhaust port when brakes are released air leaks from valve back into the system an improper valve is visually identified
d) air system or accessory device, (e.g.: suspension, tire inflation system, pintle hook damper, tail gate, landing gear, tarp system, etc.) <i>Note:</i> The pressure protection valve must be installed so that it prevents a failure in such a system or accessory from depleting all of the pressure from the brake system.	d) any system or accessory device that draws air from the air brake system is not equipped with a functioning pressure protection valve
	<u>Hazardous Condition(s)</u> i. quick release valve or relay valve is <u>inoperative</u> or <u>missing</u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
9. Proportioning, Inversion or Modulating Valve	Truck ✓ Trailer Bus ✓
a) type of limiting or proportioning valve	a) improper valve is used for vehicle type <i>Note:</i> For example: a tractor converted to a straight truck or vice versa, is <u>not</u> properly configured for current vehicle use.
b) operation	b) <i>inoperative</i> or <i>missing</i>
c) mounting	c) broken bracket, <i>insecure</i> or <i>loose</i>
	Hazardous Condition(s) i. improper valve is used for vehicle type, (e.g.: bobtail system is used on a straight truck ii. required valve is <i>inoperative</i> or <i>missing</i>
10. Towing Vehicle (Tractor) Protection System	Truck ✓ Trailer Bus ✓
a) towing vehicle (tractor) protection valve operation <i>Additional Inspection Procedure(s):</i> Ensure that the trailer supply valve is closed (pulled out). Place the trailer service line where it can be observed. Make a service brake application and inspect for air exhausting out of the trailer service line.	a) air flows out of the trailer service line during the test
b) trailer supply valve operation <i>Additional Inspection Procedure(s):</i> Stage 1 - Connect trailer supply line to suitable closure, open (push in) the trailer supply valve and make a service brake application. Air will exhaust rapidly out of the trailer service line and air pressure will drop. Monitor the air pressure gauges and note the pressure when the trailer supply valve automatically closes. Stage 2 - Increase air system to normal operating pressure, open (push in) the trailer supply valve and allow air to vent quickly from trailer supply line by removing it from the closure. Monitor the air pressure gauges and note the pressure when the trailer supply valve automatically closes.	b) both air pressure gauges are <u>not</u> between 140 and 300 kPa (20 and 45 psi) when the trailer supply valve closes during Stage 1 <i>Note:</i> In a case where the trailer supply valve closes with pressure above 300 kPa (45 psi), record it on the inspection report, but do not reject the vehicle for this condition alone. the trailer supply valve fails to close automatically during <u>Stage 2</u> <i>Note:</i> Most valves will close with only a small drop in pressure during Stage 2. Others may allow pressure to drop to around 414 kPa (60 psi) before closing. Check <i>manufacturer</i> specifications if pressure drops below 414 kPa 60 psi.
	Hazardous Condition(s) i. towing vehicle (tractor) protection system is <i>missing</i> or fails to <i>operate as intended</i>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
11. Parking Brake and Emergency Application on Truck or Bus	Truck ✓ Trailer Bus ✓
a) parking brake application <i>Additional Inspection Procedure(s):</i> Actuate the parking brake control as necessary. Check parking brake function at each wheel.	a) brake does <u>not</u> apply on any wheel required to have parking brake
b) parking brake release	b) parking brake releases slowly, hangs or drags
c) manual application <i>Additional Inspection Procedure(s):</i> Apply the parking (spring) brakes by closing the parking (spring) brake control valve.	c) parking (spring) brakes do <u>not</u> immediately apply automatically
	<u>Hazardous Condition(s)</u> i. parking brake does not <u>operate as intended</u>
12. Parking Brake and Emergency Application on Trailer	Truck Trailer ✓ Bus
a) parking brake application <i>Additional Inspection Procedure(s):</i> Actuate the parking brake control as required. Check parking brake function at each wheel.	a) brake does <u>not</u> apply on any wheel required to have parking brake
b) parking brake release	b) parking brake releases slowly, hangs or drags
c) emergency application <i>Additional Inspection Procedure(s):</i> Actuate emergency application of the parking brakes by exhausting the trailer supply/emergency line, using the trailer supply valve, by removing the gladhand, or by using a suitable test device.	c) parking brakes do not immediately apply automatically time required for air pressure in the chambers to fall to atmospheric pressure is more than 3 seconds <i>Note:</i> For this test, atmospheric pressure is considered 21 kPa (3 psi) or less.
	<u>Hazardous Condition(s)</u> i. parking brake does not <u>operate as intended</u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
13. Air System Components	Truck ✓ Trailer ✓ Bus ✓
a) gladhand	a) corroded or <u>insecure</u> mounting, cracked or <u>damaged</u> seal <u>damaged</u> or <u>missing</u>
b) gladhand screen <i>Note:</i> Gladhand screens are required on certain trailers in certain jurisdictions. Inspect according to the <u>applicable requirements</u> .	b) <u>on a trailer</u> , required screens are <u>missing</u> plugged or ruptured
c) air line, connection and fitting <i>Note:</i> Improper installation, repairs and modifications can negatively affect brake operation, and particularly brake timing. Improper use of fittings, additional elbows, and replacing an air line with one that is too small, are examples of improper procedures. <i>Additional Inspection Procedure(s):</i> Check for improper installations, modifications or repairs.	c) fitting, line, repair method, installation or modification does <u>not</u> meet <u>industry standard</u> or <u>OEM standard</u> tubing or hose is defective as defined in the chart on page 55 fitting or connection is broken, cracked, flattened or leaking <u>damaged</u> in a way (such as: melting, flattening, deformation or kinking) that can restrict air flow
d) air system or accessory device, (e.g. suspension, tire inflation system, pintle hook damper, tail gate, landing gear, tarp system) <i>Additional Inspection Procedure(s):</i> Visually inspect for presence of correct type of valve.	d) any system or accessory device that draws air from the air brake system is <u>not</u> equipped with a functioning pressure protection valve
e) leakage <i>Additional Inspection Procedure(s):</i> Monitor system for leaks.	e) an air leak at any location
	<u>Hazardous Condition(s)</u> i. an air line bulges under pressure ii. air line modification or repair does not meet <u>industry standard</u> or <u>OEM standard</u> iii. air line has damage extending through the outer reinforcement ply iv. an inner layer of an air line is exposed due to abrasion or rubbing v. air leak at other than a proper connection vi. air line is <u>damaged</u> by heat, broken, or crimped in such a manner as to restrict airflow

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

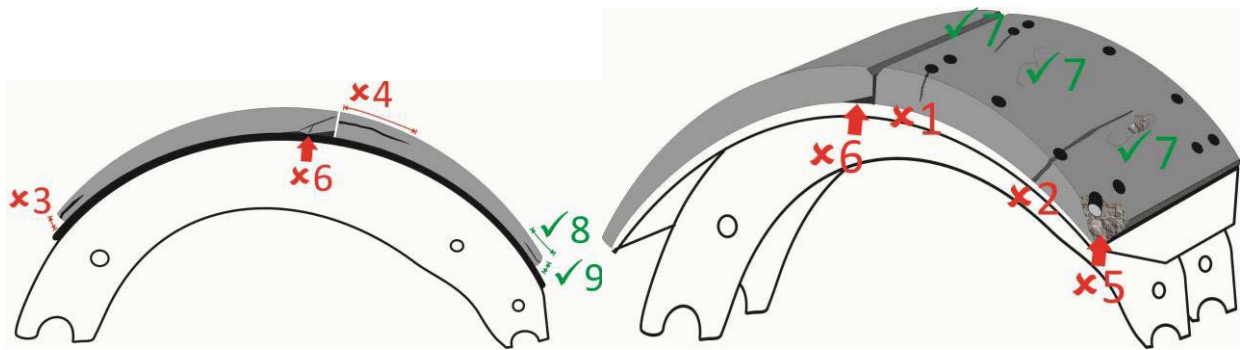
Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
14. Brake Chamber	Truck ✓ Trailer ✓ Bus ✓
a) brake chamber <i>Note:</i> Includes DD3 chamber on a bus.	a) improper type or size brake chamber is used corroded, cracked, <u>damaged</u> , <u>insecure</u> mounting, <u>loose</u> , <u>missing</u> , or leaking drain hole is <u>not</u> directed downward or is plugged mixed long-stroke and standard stroke chambers on an axle mismatched chamber size on an axle piston return spring is broken or binding
b) spring brake chamber	b) park brake-apply spring is caged by caging bolt or made <u>inoperative</u> by other mechanical means chamber caging plate is misaligned or hung up preventing installation of caging bolt park brake-apply spring is broken
c) chamber mounting bracket	c) broken, cracked, deformed, <u>loose</u> or <u>missing</u>
d) type DD3 chamber <i>Additional Inspection Procedure(s):</i> Apply the parking brake and deplete system pressure starting with the supply (wet) tank.	d) brake <u>fails to</u> remain fully applied at any wheel with Type DD3 chamber
	<u>Hazardous Condition(s)</u> i. air leak at a chamber ii. caging plate in a chamber is out of position or 'hung up' iii. non-manufactured hole or crack in a chamber iv. <u>insecure</u> , <u>loose</u> or <u>missing</u> chamber v. mismatched chamber type or size on active or passive steer axle vi. improper type or size brake chamber is used on a steer axle
15. Drum Brake System Components	Truck ✓ Trailer ✓ Bus ✓
<i>Additional Inspection Procedure(s):</i> When an inspection reveals evidence of a defect or abnormal condition, disassembly of wheel(s) and drum(s) is mandatory. Refer to the instructions in Section 3 when an inspection reveals <u>no evidence</u> of a defect or abnormal condition. The instructions indicate when disassembly of wheel(s) and drum(s) is optional, and what measurements are required to be taken and recorded.	

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown **in this manner** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) brake operation	a) a required brake is <u>missing</u> a brake is <u>inoperative</u>
b) brake shoe lining condition (service brakes) <i>Note:</i> Cracks in the surface of the lining, surface erosion and minor spalling of the contact face of the lining are normal. Also inspect lining for damage caused by “rust-jacking”. This includes lining material cracking, lifting or separating from backing metal, due to rust build-up. When the lining protrudes outside of the brake drum, drum removal is necessary to obtain lining thickness.	b) a crack extending partially through, or completely through the lining from the friction surface to the metal backing, passing from any rivet hole to the edge a crack in the edge of the lining that is wider than 1 mm or longer than 38 mm a piece of the lining is broken off exposing a rivet or bolt lining is distorted or separating from shoe, (e.g.: an object 1 mm thick can be inserted more than 10 mm between the lining and the backing metal) lining is contaminated by oil or grease (Also see section 9 item 5 for wheel seal leaks) lining protrudes outside of drum more than 3 mm lining or any lining fastener is <u>loose</u> shim is used between lining and shoe shoe or lining is installed incorrectly (such as primary and secondary shoes reversed)



Examples of Brake Shoe Lining Pass and Reject Conditions:

Reject condition 1 – a partial crack in the lining, extending from a rivet hole to the edge

Reject condition 2 – a crack completely through the lining, extending from a rivet hole to the edge

Reject condition 3 – a crack in the edge of the lining wider than 1 mm

Reject condition 4 – a crack in the edge of the lining longer than 38 mm

Reject condition 5 – a piece of the lining is broken off exposing a rivet

Reject condition 6 – lining is distorted or separating from shoe

Pass condition 7 – minor crack or spalling of the lining material

Pass condition 8 – crack in edge of lining shorter than 38 mm

Pass condition 9 – crack in edge of lining less than 1 mm wide

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>c) brake shoe lining thickness</p> <p><i>Additional Inspection Procedure(s):</i> Lining thickness must be measured at each inspection and the measurement must be recorded on the inspection report.</p> <p><i>Note:</i> For minimum allowable thickness, lining measurements are taken at the thinnest point of the lining.</p> <p>For the purposes of recording lining thickness on the inspection report, lining thickness measurements are taken at the edge of the lining, near the centre of the brake shoe. The measurement must be taken of the thinner brake shoe lining, when there is a difference in thickness.</p>	<p>c) bonded or riveted <u>continuous strip</u> brake shoe lining thickness is less than 5 mm at any point</p> <p>bolted or riveted <u>block type</u> brake shoe lining thickness is less than 8 mm at any point 8 mm = 0.3 (5/16) in., 5 mm = 0.2 (3/16) in.</p>
<p>d) brake drum condition</p> <p><i>Note:</i> Heat checks and some surface cracks on the friction surface are normal.</p> <p>A <u>heat check</u> has a width less than 0.5 mm and a depth less than 0.5 mm.</p> <p>A <u>surface crack</u> is at least 0.5 mm wide and 0.5 mm deep.</p> <p>Any surface crack, groove or worn area that is deeper than the drum wear limit is a <u>structural weakness</u>.</p>	<p>d) surface crack longer than 75% of the width of the friction surface</p> <p>surface crack within 25 mm of the open edge</p> <p>surface crack, groove or worn area that is a structural weakness</p> <p>external crack</p> <p>friction surface is <u>abnormally worn</u>, or is hardened and blackened due to overheating ("martensite")</p> <p>friction surface is contaminated by grease or oil (Also see section 9 item 5 for wheel seal leaks)</p>
<p>e) brake drum diameter (wear)</p> <p><i>Additional Inspection Procedure(s):</i> Brake drum diameter must be measured at most inspections and the measurement must be recorded on the inspection report. See Introduction to Section 3A for details and exceptions.</p> <p><i>Note:</i> Drum diameter measurements must be taken using a suitable tool and with the level of accuracy defined by the measurement tolerance.</p>	<p>e) measured drum diameter exceeds limit indicated on the brake drum, <i>OEM standard</i> or <i>industry standard</i>, or if limit is not available:</p> <ul style="list-style-type: none"> • for nominal drum size of 350 mm (14 in) or less: 2.3 mm more than original drum diameter • for nominal drum size greater than 350 mm (14 in): 3.0 mm more than original drum diameter 2.3 mm = 0.09 in., 3 mm = 0.12 in.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) wheel seal	f) <u>level 2 leak</u> of bearing lubricant
g) return spring	g) <u>missing</u> , broken or stretched (fails to hold both rollers against cam)
h) spider	h) bent, broken, <u>loose</u> , welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> mounting bolt <u>missing</u>
	<u>Hazardous Condition(s)</u> i. any part is binding, broken, <u>missing</u> , seized, or mounted incorrectly ii. a brake drum is in a condition where an imminent failure appears likely iii. a brake is <u>inoperative</u> iv. bonded or riveted <u>continuous strip</u> brake shoe lining thickness is less than 5 mm at centre of shoe v. bolted or riveted <u>block type</u> brake shoe lining thickness is less than 7 mm, at centre of shoe vi. brake shoe lining is less than 1 mm at any point vii. a piece of the lining is broken off exposing a rivet or bolt viii. a crack in the edge of the lining wider than 1 mm ix. a crack in the edge of the lining longer than 38 mm x. broken or missing return spring, anchor pin, or spider xi. brake lining or drum friction surface is contaminated by grease or oil <i>Note: Also see section 9 item 5 for wheel seal leaks</i> 5 mm = 0.2 (3/16) in., 7 mm = 0.25 in. (1/4) in.
<u>16. S-Cam Drum Brake System</u> <i>Note:</i> Also applies to T-Cam brake system.	Truck ✓ Trailer ✓ Bus ✓
a) camshaft condition <i>Additional Inspection Procedure(s):</i> Check the condition and mounting of each brake camshaft, and check for movement in the bushings.	a) camshaft is bent, twisted, repaired by welding, incorrectly installed or incorrect type movement of camshaft in bushing exceeds 2.0 mm or O.E.M. standard

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) camshaft mounting	b) mounting bracket broken or <u>loose</u>
c) pushrod, clevis yoke, clevis pin and locking device <i>Note:</i> Brake pushrod stroke indicators are required by CMVSS 121 on vehicles manufactured on and after May 31, 1996. These indicators normally consist of markings on the brake chamber pushrod, but can also be mounted on, or adjacent to, the brake linkage. They must be capable of showing an over- stroke condition.	c) bent, binding, broken, cracked, <u>missing</u> , welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> clevis yoke lock nut is <u>loose</u> linkage is misaligned to slack adjuster or brake chamber does <u>not</u> form correct angle with slack adjuster when brakes are applied brake stroke indicator is <u>missing</u>
d) brake adjuster <i>Note:</i> Self-adjusting brake adjusters are required by <u>CMVSS</u> 121 on vehicles manufactured on and after May 31, 1996. They cannot be replaced with manual brake adjusters.	d) <u>not</u> equipped with self-adjuster as required adjuster is <u>inoperative</u> or improperly installed improper type or size brake adjuster is used any part is bent, broken or <u>abnormally worn</u> the self-locking sleeve on a manual slack adjuster is seized or fails to lock
e) slack adjuster effective length	e) the distance from the centre of a camshaft to the centre of the clevis pin is <u>not</u> the same on all brakes of an axle
f) brake shoe roller	f) flat spots, <u>missing</u> , wrong size
g) brake shoe anchor pin	g) <u>missing</u> , wear allows the lining to protrude beyond outside edge of brake drum
h) brake stroke <i>Additional Inspection Procedure(s):</i> Measure and record the applied push rod stroke of each brake with 620 to 690 kPa (90 to 100 psi) in the air tanks, the spring brakes released, the engine shut off and service brakes fully applied. <i>Note:</i> The stroke measurements of all brakes are to be recorded on the inspection report. When the stroke of a self-adjusting brake adjuster is found to be at or beyond the stroke limit, the brake requires repairs. A manual adjustment will not correct the problem.	h) stroke is at or beyond the limit of the brake chamber as shown in the chart below difference between stroke measurements is greater than 6 mm on an axle

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:	
	<u>Hazardous Condition(s)</u> i. camshaft is incorrectly installed, incorrect type, or mounting is <i>insecure</i> ii. improper type or size camshaft roller is used iii. impropertype or size brake adjuster is used on a steer axle iv. broken or missing cam roller, camshaft, pushrod, yoke, clevis pin, clevis pin retainer, (e.g., cotter pin), v. stroke of any brake is beyond the limit of the brake chamber as shown in the chart below	
<u>Brake Stroke Limits for Clamp-Type Brake Chambers</u>		
<i>Note:</i> Measurement tolerance is +/- 1 mm		
Chamber Type (Size)	Stroke Limit (mm)	Stroke Limit (in.) +/- 1/32 in.
6	32 mm	1- 1/4 in.
9	35 mm	1 -3/8 in.
12	35 mm	1 -3/8 in.
12 LS	44 mm	1 -3/4 in.
16	44 mm	1- 3/4 in.
16 LS	51 mm	2 in.
20	44 mm	1-3/4 in.
20 LS	51 mm	2 in.
24	44 mm	1-3/4 in.
24 LS	51 mm	2 in.
30	51 mm	2 in.
30 LS	64 mm	2-1/2 in.
30 DD3	57 mm	2-1/4 in.
36	57 mm	2-1/2 in.
<u>17. Brake Shoe Travel (Wedge Brakes)</u>	Truck ✓ Trailer ✓ Bus ✓ 	
a) brake shoe movement <i>Additional Inspection Procedure(s):</i> Inspect wedge brakes according to item 15 above and then check brake operation and measure shoe movement. Brake shoe movement must be measured and measurements must be recorded on the inspection report.	a) brakes fail to operate, shoes do <u>not</u> move or shoe movement exceeds 2 mm	

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<u>Hazardous Condition(s)</u> i. shoe movement is greater than 2 mm ii. any wedge brake is <i>inoperative</i>
<u>18. Disc Brake System Components</u> <i>Additional Inspection Procedure(s):</i> When an inspection reveals evidence of a defect or abnormal condition, wheel disassembly is mandatory. Refer to the instructions in Section 3 and <u>manufacturer</u> service instructions when an inspection reveals <u>no evidence</u> of a defect or abnormal condition. The instructions indicate when disassembly of wheel(s) is optional and what measurements are required to be taken and recorded.	Truck ✓ Trailer ✓ Bus ✓
a) brake operation	a) a required brake is <i>missing</i> a brake is <i>inoperative</i>
b) disc (rotor) condition <i>Note:</i> Heat checks and some surface cracks on the friction surface are normal. A heat check has a width less than 0.5 mm and a depth less than 1 mm. A surface cracks is at least 0.5 mm wide <u>and</u> 1 mm deep. <i>Note:</i> Lateral run-out and parallelism only need to be checked only where there is evidence of a problem.	b) section is broken off or missing crack extends from the friction surface through to the cooling vent any surface crack is longer than 75% of the radial width, within the friction surface any surface crack extends to an outer edge groove or pitted area in rotor that reduces rotor thickness below minimum allowable value contact pattern of the pad on solid rotor material, (i.e.: not rusted) is less than 75% of the radial width, around the entire rotor, on one side lateral run-out or out-of-parallelism exceeds 0.3 mm friction surface of the rotor is contaminated by grease or oil (Also see section 9 item 5 for wheel seal leaks) 0.3 mm = 0.01 in.
c) disc (rotor) thickness <i>Additional Inspection Procedure(s):</i> Disc (rotor) thickness must be measured. Measurements must be recorded on inspection report.	c) thickness at any point across the friction surface is less than the minimum indicated on the brake rotor, or <u>manufacturer</u> specification, or equivalent industry standard, if limit is <u>not</u> available: less than 39.0 mm (+/- 0.05 mm)

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
d) caliper	<p>d) any part is binding, broken, seized, missing, or mounted incorrectly or not equivalent to <u>OEM standard</u>.</p> <p>slide pin/slider or pad slider is binding, <u>damaged</u>, seized, mounted insecurely, or not equivalent to <u>OEM standard</u>.</p> <p>caliper movement within the anchor plate exceeds <u>manufacturer</u> specification, guide is welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u></p> <p>pad retainer is bent, <u>damaged</u>, <u>insecure</u> or <u>missing</u></p> <p>boot or bellows is cracked or deteriorated, <u>damaged</u>, or <u>missing</u></p>
e) anchor plate	e) <u>loose</u> or bolt is <u>missing</u>
f) pad condition	<p>f) broken, cracked, <u>damaged</u>, or <u>abnormally worn</u></p> <p>friction material is contaminated by oil or grease (Also see section 9 item 5 for wheel seal leaks)</p> <p>rivet <u>loose</u> on pad, pad <u>loose</u> on bonded lining, pad is <u>missing</u>, or pad is installed incorrectly</p>
<p>g) pad (friction material) thickness</p> <p><i>Additional Inspection Procedure(s):</i> Pad (friction material) thickness of both inboard and outboard pad must be measured and measurement of the thinnest pad must be recorded on the inspection report.</p> <p><i>Note:</i> Pad (friction material) thickness can be determined by measuring the friction material itself or by measuring the combined thickness of the friction material and pad backing plate, then deducting the thickness of the backing plate. Always record the thickness of the friction material only.</p>	<p>g) measured friction material thickness is less than <u>OEM standard</u> or <u>industry standard</u>, or if limit is not available:</p> <p>bonded friction material thickness is less than 3 mm</p> <p>riveted friction material thickness is less than 5 mm</p> <p>difference between inboard and outboard friction material thickness is greater than amount indicated in <u>manufacturer</u> service instruction or equivalent industry standard, or if limit is not available: difference is greater than 3 mm 3 mm = 0.12 (1/8) in., 5 mm = 0.20 (3/16) in.</p>
h) clearance between pads and rotor (caliper adjustment)	h) does <u>not</u> meet <u>manufacturer</u> specifications

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown **in this manner** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. any part is binding, broken, <i>missing</i>, seized, or mounted incorrectly ii. a rotor (disc) friction surface shows metal to metal contact with brake pad or severe rusting iii. a rotor (disc) has a crack that extends to the hub or through to the vented section iv. caliper movement within the anchor plate exceeds 3 mm v. any brake component is in a condition where an imminent failure appears likely vi. a brake is <i>inoperative</i> vii. brake pad friction material worn to less than 2 mm or a portion of the friction material is <i>missing</i> viii. <i>loose</i> or <i>missing</i> brake chamber or caliper mounting bolt ix. friction material of the pad or friction surface of the rotor is contaminated by grease or oil <p>Note: Also see section 9 item 5 for wheel seal leaks 2 mm = 0.08 in., 3 mm = 0.12 (1/8) in.</p>
<p><u>19. Anti-Lock Brake System (ABS) on Truck and Bus</u></p> <p><i>Note:</i> Every truck and truck-tractor with air brakes manufactured on or after April 1, 2000 must be equipped with ABS.</p> <p>Every towing vehicle with air brakes manufactured on or after March 1, 2001 must be capable of PLC communication with any towed trailer.</p> <p>Every vehicle equipped with ABS that was not mandatory for the vehicle when it was manufactured must have ABS in good working order.</p>	<p>Truck ✓ Trailer Bus ✓ </p>
<p>a) indicator lamp</p> <p><i>Additional Inspection Procedure(s):</i> Cycle the ignition off and on while monitoring the ABS indicator lamp.</p>	<p>a) <i>inoperative</i> or <i>missing</i></p> <p>fails to turn on during bulb-check cycle when ignition is turned on</p> <p>indicates the presence of an active malfunction by staying on after the bulb-check cycle</p> <p>any visual evidence that the system has been tampered with or defeated</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) wiring <i>Additional Inspection Procedure(s):</i> Visually inspect accessible portions of the wiring. Inspect all repairs and damaged areas. <i>Note:</i> Also see requirement for towing vehicle to supply constant power to trailer for trailer ABS. See Section 7 item 3.	b) <u><i>insecure</i></u> mounting, <u><i>missing</i></u> , or connector corroded <ul style="list-style-type: none"> • conductor is exposed due to damage, improper repair or other condition of wire • connection or repair does not meet <u><i>OEM standard</i></u>
c) electronic control unit (ECU)	c) <u><i>missing</i></u> , <u><i>insecure</i></u> mounting, connectors corroded
d) relay/ABS modulating valve	d) <u><i>missing</i></u> , leaking, <u><i>insecure</i></u> mounting to ECU, abnormal corrosion
e) wheel speed sensor <i>Note:</i> Different configurations of sensors and modulators are permitted by <u><i>CMVSS</i></u> . Be sure to confirm the <u><i>OEM</i></u> configuration of the ABS before rejecting a vehicle due to missing wheel speed sensors.	e) <u><i>missing</i></u> , <u><i>insecure</i></u> mounting, <u><i>inoperative</i></u> , connectors corroded
f) PLC communication <i>Additional Inspection Procedure(s):</i> Connect the vehicle to a suitable test device or a trailer that has an active ABS malfunction to confirm PLC communication.	f) PLC signal from trailer or test device fails to activate the trailer ABS indicator lamp on instrument panel
g) operation	<u>g) missing on vehicles manufactured on or after April 1, 2000.</u>
	<u>Hazardous Condition(s)</u> i. any malfunction of the ABS system that prevents normal brake operation
<u>20. Anti-Lock Brake System (ABS) on Trailer</u> <i>Note:</i> Every trailer with air brakes manufactured on or after April 1, 2000 must be equipped with ABS. *(see exceptions below) Every vehicle equipped with ABS that was not mandatory for the vehicle when it was manufactured including those listed in the exceptions below must have ABS in good working order.	Truck Trailer ✓ Bus

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>a) indicator lamp (trailer-mounted)</p> <p><i>Additional Inspection Procedure(s):</i> Proper operation of the ABS must be confirmed using one of the methods listed below:</p> <p>Test Method #1. Connect to towing vehicle manufactured after March 1, 2001 that has been verified to have a properly functioning ABS.</p> <p>Test Method #2. Using suitable test equipment, confirm that trailer ABS control module sends required signal to operate dash mounted ABS lamp in towing vehicle.</p> <p><i>* Exceptions for ABS</i> ABS is not required by <u>CMVSS</u> 121 for: trailers with width greater than 2.6 m, any vehicle equipped with an axle that has a GAWR greater than 13,154 kg; GVWR greater than 54,332 kg – “heavy hauler trailer”; and any load divider dolly.</p>	<p>a) <u>missing</u>, not amber in colour</p> <p>is <u>not</u> marked “ABS” on the lamp itself, or not marked “ABS” within 150 mm of the lamp</p> <p>is <u>not</u> between 150 mm and 600 mm away from the left rear red side marker lamp</p> <p>fails to turn on during bulb-check cycle when power is supplied to auxiliary circuit (centre pin, blue wire)</p> <p>indicates the presence of an active malfunction by staying on after the bulb-check cycle</p> <p>any visual evidence that the system has been tampered with or defeated</p>
<p>b) wiring</p> <p><i>Additional Inspection Procedure(s):</i> Visually inspect accessible portions of the wiring. Inspect all repairs and damaged areas.</p>	<p>b) <u>insecure</u> mounting, <u>missing</u>, or connector corroded</p> <p>conductor is exposed due to damage, improper repair or other condition of wire</p> <p>connection or repair does not meet <u>OEM standard</u></p>
<p>c) electronic control unit (ECU)</p>	<p>c) <u>missing</u>, <u>insecure</u> mounting, connectors corroded</p>
<p>d) relay/ABS modulating valve</p>	<p>d) <u>missing</u>, leaking, <u>insecure</u> mounting to ECU, abnormal corrosion</p>
<p>e) wheel speed sensor</p> <p><i>Note:</i> Different configurations of sensors and modulators are permitted by <u>CMVSS</u>. Be sure to confirm the <u>OEM</u> configuration of the ABS before rejecting a vehicle due to missing wheel speed sensors.</p>	<p>e) <u>missing</u>, <u>insecure</u> mounting, <u>inoperative</u>, connectors corroded</p>
<p>f) PLC Signal to towing vehicle</p> <p><i>Note:</i> Power Line Carrier (PLC) communication is required for all trailers built on or after March 1, 2001.</p>	<p>f) PLC signal is <u>not</u> transmitted by trailer ABS</p> <p><i>Note:</i> When using Test Method 1 for the indicator lamp (trailer-mounted) above, PLC communication from the trailer is verified when the dash-mounted trailer ABS lamp in the towing vehicle turns on during bulb-check, and then turns off or stays on, to show the presence of a malfunction in conjunction with the trailer-mounted indicator lamp.</p> <p>(A malfunction may be described as a Fault, Diagnostic Fault Code, or Diagnostic Trouble Code.)</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
g) operation	<u>g) missing on vehicles manufactured on or after April 1, 2000.</u>
	<u>Hazardous Condition(s)</u> i. any malfunction of the ABS system that prevents normal brake operation
<u>21. Stability Control System on Truck or Bus</u> <i>Additional Inspection Procedure(s):</i> Check the ECU for indication of any fault or malfunction.	Truck ✓ Trailer Bus ✓
a) indicator lamp	a) **fails to illuminate or lamp remains illuminated **fault or malfunction is indicated
<i>Additional Inspection Procedure(s):</i> Cycle the ignition off and on while monitoring the indicator lamp.	<i>Note:</i> Each of the conditions above marked with a double asterisk (**) are to be recorded on the inspection report, however a vehicle is not rejected for this condition alone.
b) operation	b) any visual evidence that the system has been tampered with or defeated (see note below) <i>Note:</i> The condition above is to be recorded on the inspection report, however a vehicle is not rejected for this condition alone.
<u>22. Stability Control System (Electronic Stability Control [ESC] or Roll Stability System [RSS]) on Trailer</u> <i>Additional Inspection Procedure(s):</i> Check the ECU for indication of any fault or malfunction in conjunction with inspection of the ABS as described in item 20 above.	Truck Trailer ✓ Bus
a) operation	a) **there is evidence that the system has been tampered with or defeated **the system has an active fault (light or indicator) <i>Note:</i> Each of the conditions above marked with a double asterisk (**) are to be recorded on the inspection report, however a vehicle is not rejected for this condition alone.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>23. Brake Performance</p> <p><i>Optional Additional Inspection Procedure(s):</i> These test methods can be used when one of the following types of performance-based brake tester (PBBT) is available. Test equipment must be calibrated and used according to <u>manufacturer</u> instructions.</p> <p>Testing a brake with non-burnished friction material may produce inconsistent test results.</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p> <p><i>Note:</i> Rated wheel weight = one-half of GAWR.</p>
<p>a) service brake force - using a roller-type performance-based brake tester (PBBT)</p> <p><i>Optional Additional Inspection Procedure(s):</i> Determine the maximum service brake force at each wheel by slowly applying the service brake pedal and increasing the pedal force until the tester terminates the test, or brake force reaches its maximum value.</p>	<p>a) service brake fails to lock the wheel <u>and</u> the maximum service brake force is less than 40% of the rated wheel weight</p> <p>service brake force on one side of the axle is less than 70% of the service brake force on the other side, at the point in time just prior to first wheel lockup, or test termination, whichever occurs first</p>
<p>b) parking brake output force - using a roller-type brake tester</p> <p><i>Optional Additional Inspection Procedure(s):</i> <u>For wheels equipped with spring-brake type chambers used for parking.</u> Determine the maximum parking force at each wheel by fully applying the parking brake control until the tester terminates the test, or parking brake force reaches its maximum value.</p>	<p>b) parking brake fails to lock the wheel and the maximum parking brake force is less than 20% of rated wheel weight</p> <p>parking brake force on one side of the axle is less than 50% of the force on the other side, at the point in time just prior to first wheel lockup, or test termination, whichever occurs first</p>
<p>c) rolling resistance force - using a roller-type performance-based brake tester (PBBT)</p> <p><i>Optional Additional Inspection Procedure(s):</i> Determine average rolling resistance force of each wheel, with the brakes fully released, for one full revolution of the wheel. Discount the initial spike at start-up of the rolls.</p>	<p>c) average rolling resistance force of a wheel is greater than 6% of the weight of the wheel imparted on the test device</p>
<p>d) required brake force or stopping distance - using a decelerometer</p> <p><i>Optional Additional Inspection Procedure(s):</i> Test vehicle stopping ability in a suitable area following the instructions provided by the manufacturer/supplier of the test device.</p>	<p>d) deceleration is below the requirement of the relevant jurisdiction</p> <p>balance of brake force between left and right side fails to comply with the requirement of the relevant jurisdiction</p> <p><i>Note:</i> Brake force balance (left and right) cannot be measured with all types of decelerometers.</p>

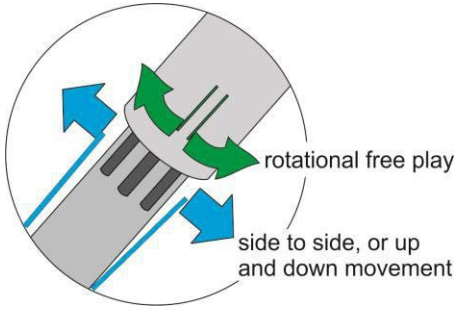
Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

Section 4 – Steering

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Steering Control and Linkage <i>Additional Inspection Procedure(s):</i> Check the steering components listed below using tools and methods according to <u>manufacturer</u> service instructions.	Truck ✓ Trailer ✓ Bus ✓
a) steering box or rack and pinion unit	a) <u>loose</u> or <u>insecure</u> mounting, mounting bolt <u>loose</u> or <u>missing</u> housing broken, cracked, or <u>level 2 leak</u> of oil or fluid
b) bellow, clamp and boot	b) <u>insecure</u> , <u>missing</u> , split or torn clamp <u>missing</u>
c) tie rod	c) bent, broken, cracked or welded, or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
d) tie rod end, drag link and ball and socket joint	d) bent, <u>insecure</u> , <u>loose</u> or worn threads stripped or repaired a ball and socket joint is worn beyond <u>manufacturer</u> specifications <u>damaged</u> , welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> part is used that does <u>not</u> meet <u>OEM standard</u>
e) pitman arm	e) bent, <u>damaged</u> , <u>insecure</u> or <u>loose</u> on spline <u>repaired by welding</u>
f) ball-joint in upper or lower control arm	f) <u>loose</u> in knuckle or control arm wear exceeds limit shown by wear-indicator, <u>OEM standard</u> limit or <u>industry standard</u> limit, or is injected with repair material <u>insecure</u> or <u>loose</u> improper or <u>loose</u> retainer
g) cotter pin or similar retaining device	g) <u>missing</u> , or deficient part is used that does <u>not</u> meet <u>OEM standard</u>
h) steering dampener	h) <u>inoperative</u> or <u>missing</u> <u>level 2 leak</u> of dampener fluid

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
 Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
i) steering column	i) <u><i>insecure</i></u> mounting or <u><i>loose</i></u> mounting fastener <u><i>loose</i></u> or <u><i>missing</i></u>
j) telescopic/tilt steering <i>Additional Inspection Procedure(s):</i> Check the operation of locking device(s). With unit locked, grasp the steering column and attempt to move it horizontally and vertically on its mounts.	j) movement exceeds <u><i>manufacturer</i></u> specification, or when specification is <u><i>not</i></u> available, is greater than 6 mm
k) steering shaft universal joint and yoke	k) binding, <u><i>loose</i></u> , seized, welded or repaired in a way that does <u><i>not</i></u> meet <u><i>OEM standard</i></u> horizontal or vertical movement within the universal joint can be detected by hand clamp bolt <u><i>loose</i></u> or <u><i>missing</i></u> , or spline <u><i>loose</i></u> or stripped
l) steering column slip joint <i>Additional Inspection Procedure(s):</i> Grasp the sections of the slip joint and check rotational free play by twisting in opposite directions. Then check the total side to side, or up and down movement of the slip joint perpendicular to the line of rotation.	l) rotational free play between splines exceeds 1.0 mm total side to side, or up and down movement exceeds 6 mm  <p>The diagram shows a cross-section of a steering column slip joint. A green arrow indicates rotational free play. Blue arrows indicate side-to-side, or up and down movement.</p>
m) adjusting sleeve	m) bent, <u><i>loose</i></u> or welded or repaired in a way that does <u><i>not</i></u> meet <u><i>OEM standard</i></u> tightening bolt is in a position that interferes with normal steering
n) remote (right hand) steering control	<i>Note:</i> Inspect as described in Section 5 - Instruments and Auxiliary Equipment

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p><u>Hazardous Condition(s)</u></p> <p>i. any crack, modification or other condition that interferes with free movement of any steering component, or repair that does <u>not</u> meet <i>OEM standard</i></p> <p><u>Steering Box or Rack & Pinion Unit</u></p> <p>ii. cracked, <i>loose</i> or <i>insecure</i> mounting, mounting bolt <i>loose</i> or <i>missing</i> or has been repaired in way, (e.g.: welded) that does <u>not</u> meet <i>OEM standard</i></p> <p><u>Steering Linkage</u></p> <p>iii. any ball and socket joint has looseness in line with the shank or neck of the ball greater than <i>manufacturer</i> specification, or when specification is not available, greater than 3.0 mm</p> <p>iv. the socket of a ball and socket joint is injected with any repair material, or a ball and socket joint has been repaired in way, (e.g.: welded) that does <u>not</u> meet <i>OEM standard</i></p> <p>v. pitman arm is <i>loose</i> on steering gear output shaft spline or has been repaired in way, (e.g.: welded) that does <u>not</u> meet <i>OEM standard</i></p> <p>vi. any nut is <i>loose</i> or <i>missing</i></p> <p>vii. <i>loose</i> clamp, clamp bolt or nut on tie rod, drag link, pitman arm, or steering arm</p> <p>viii. any looseness in any threaded joint</p> <p><u>Steering Column and Related Parts</u></p> <p>ix. adjusting sleeve is <i>loose</i> or <i>insecure</i></p> <p>x. <i>loose</i> or <i>insecure</i> mounting, mounting bolt <i>loose</i> or <i>missing</i></p> <p>xi. column fails to lock into position</p> <p>xii. a universal joint has been repaired in way, (e.g.: welded) that does <u>not</u> meet <i>OEM standard</i></p> <p>xiii. any looseness of the yoke-coupling at the steering gear input shaft</p>
<p><u>2. Power Steering System (Hydraulic and Electric)</u></p> <p><i>Additional Inspection Procedure(s):</i> Inspect the power steering components with the engine stopped. Then with engine running, turn wheels fully to the left and right and check system operation.</p>	<p>Truck ✓ Trailer Bus ✓ </p>
a) fluid	a) below indicated minimum level or fluid is contaminated

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) belt	<i>Note:</i> Inspect drive belt according to Section 1. Power Train, Item 10. Engine or Accessory Drive Belt.
c) hose	c) cracked, worn by or is in contact with moving parts distance to exhaust system component is less than 25 mm <u>level 2 leak</u> of power steering fluid
d) pump	d) <u>inoperative</u> , <u>insecure</u> mounting, or <u>loose</u> <u>level 2 leak</u> of power steering fluid
e) cylinder	e) <u>inoperative</u> , <u>insecure</u> mounting, <u>loose, or missing</u> <u>level 2 leak</u> of power steering fluid
f) mounting bracket	f) broken, cracked or <u>loose</u> bolt <u>loose</u> or <u>missing</u>
g) assist	g) does not <u>operate as intended</u> (i.e.: power-assist provided is noticeably reduced requiring more than normal steering effort to turn the wheels left or right)
	<u>Hazardous Condition(s)</u> i. power steering does not <u>operate as intended</u> ii. any steering component is in a condition where imminent failure appears likely iii. <u>level 3 leak</u> of power steering fluid iv. auxiliary power assist cylinder is <u>loose</u>
<u>3. Steering Operation (Active Steer Axle)</u>	Truck ✓ Trailer Bus ✓
<i>Note:</i> An active steer axle is one that is directly controlled by the steering wheel. Check steering operation <u>after</u> inspecting steering control and linkage, and checking power steering as described above.	
a) steering wheel	a) broken, <u>damaged</u> , <u>loose</u> on spline or modified diameter is <u>not OEM</u> or equivalent
b) rotation and travel	b) binds or jams during rotation number of rotations from centre to full left does <u>not</u> equal the number of rotations from centre to full right, +/- ½ turn
<i>Additional Inspection Procedure(s):</i> Turn wheels fully to the left and right and check system operation.	

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>c) steering lash or free-play</p> <p><i>Additional Inspection Procedure(s):</i> Check vehicle having power steering with engine running.</p> <p>Measure lash or free-play beginning with wheels in straight-ahead position. Then turn steering wheel just until turning motion can be observed at the front wheels. Mark rim of steering wheel and turn the steering wheel in the opposite direction until motion can just be observed. Measure the distance of steering wheel rotation that does <u>not</u> cause turning of the wheels.</p>	<p>c) steering lash or free-play is greater than the distance shown below</p> <p>Maximum permissible lash (free play) for power steering system</p> <p>steering wheel diameter of 500 mm <u>& less</u>: 75 mm steering wheel diameter <u>over</u> 500 mm: 87 mm</p> <p>Maximum permissible lash (free play) for manual steering system</p> <p>steering wheel diameter of 500 mm & less: 87 mm steering wheel diameter over 500 mm: 100 mm</p>
<p>d) tire clearance</p>	<p>d) space between tire and frame, fender or other vehicle part is less than 25 mm at any point in turn</p>
<p>e) steering stop</p>	<p>e) improperly adjusted or <i>missing</i></p>
	<p><u>Hazardous Condition(s)</u></p> <p>i. steering binds or jams during rotation</p> <p>ii. steering lash or free-play is greater than the distance shown below:</p> <p><u>power steering system</u> steering wheel diameter of 500 mm <u>& less</u>: 87 mm steering wheel diameter <u>over</u> 500 mm: 100 mm</p> <p><u>manual steering system</u> steering wheel diameter of 500 mm & less: 140 mm steering wheel diameter over 500 mm: 196 mm</p>
<p><u>4. Kingpin</u></p> <p><i>Additional Inspection Procedure(s):</i> Raise the axle to unload the kingpin. Turn the wheels through a full right and left turn.</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p>
<p>a) lateral movement</p> <p><i>Additional Inspection Procedure(s):</i> Rock the wheel in and out, by hand or using a bar, to check for kingpin movement. Measure lateral movement at the outer edge of the tire.</p> <p>Use a dial gauge if necessary.</p>	<p>a) <u>not</u> within <i>manufacturer</i> specification or when <i>manufacturer</i> specification is <u>not</u> available:</p> <ul style="list-style-type: none"> • for wheels <u>under</u> 20 in.: lateral movement is more than 3 mm • for wheels 20 in. <u>or larger</u>: lateral movement is more than 5 mm

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) vertical movement <i>Additional Inspection Procedure(s):</i> Place a bar under the tire and check for vertical movement between spindle support and axle. Use a dial gauge if necessary.	b) <u>not</u> within <i>manufacturer</i> specification or when <i>manufacturer</i> specification is <u>not</u> available, greater than 2.5 mm
c) condition	c) binding or jamming is detected while turning wheel
	<u>Hazardous Condition(s)</u> i. binding or jamming caused by the kingpin or thrust bearings
<u>5. Self-Steer and Controlled-Steer Axle</u> <i>Note:</i> These are passive steer axles. A passive steer axle responds only to lateral force to turn wheels. The suspension components on a self-steer or controlled steer axle must be inspected according to Section 2, items 1-4. The steering components must be inspected according to items 1 & 4 above. <i>Additional inspection procedure(s):</i> Additional items may require inspection than those listed below. Refer to <i>manufacturer</i> service instructions related to the particular axle - for items in addition to those listed below - that are required to be inspected as part of a periodic safety inspection.	Truck ✓ Trailer ✓ Bus ✓
a) operation <i>Additional Inspection Procedure(s):</i> Raise the vehicle and turn the wheels through a full right and left turn.	a) binding or jamming is detected while turning wheels
b) clearance	b) there is less than 25 mm between the tire and frame, fender or other vehicle part
c) steering stop	c) <i>missing</i> or <u>not</u> adjusted properly
d) air pressure regulator	d) <i>inoperative</i> or <i>missing</i>
e) pressure gauge	e) inaccurate, <i>inoperative</i> or <i>missing</i> <u>not</u> equipped with legible instruction indicating the minimum centering force pressure requirement

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Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) operating instruction label	f) <u>not</u> equipped with legible instruction indicating safe operation (such as: stating the speed at which the axle locks)
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. cracked, <u>loose</u> or <u>insecure</u> mounting, mounting bolt <u>missing</u> or <u>loose</u>, or has been repaired in way that does <u>not</u> meet <u>OEM standard</u> ii. <u>inoperative</u> or <u>missing</u> steering lock on a C-dolly iii. steering locks in any position except centred <p><i>Note:</i> Also see Hazardous Conditions for items 1 to 4 in this section above</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

Section 5 - Instruments & Auxiliary Equipment

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Fire Extinguisher	Truck ✓ Trailer ✓ Bus ✓
a) presence and type <i>Note:</i> Fire extinguisher requirements vary by jurisdiction. Inspection must be conducted according to the <u>applicable requirements</u> . On a school bus, inspect to the applicable <u>CSA</u> D250 Standard.	a) <u>missing</u> or incorrect type not in a quick-release holder within reach of driver not F.M., U.L. or U.L.C. approved and labelled <u>missing</u> on a vehicle required to meet <u>CSA</u> B620, D409, D435 or D436 standards on a school bus, does <u>not</u> meet requirements of jurisdiction and applicable <u>CSA</u> D250 Standard
b) condition <i>Additional Inspection Procedure(s):</i> Check mounting security. Remove unit from holder and shake contents.	b) <u>insecure</u> or <u>loose</u> seal is broken or gauge shows less than minimum charge <u>no</u> movement of chemical is detected when unit is shaken nozzle or hose is clogged, defective or <u>missing</u> safety pin is <u>missing</u>
2. Hazard Warning Kit	Truck ✓ Trailer Bus ✓
<i>Note:</i> Hazard warning kit requirements vary by jurisdiction. Inspection must be conducted according to the <u>applicable requirements</u> .	
a) presence and type	a) <u>missing</u> on a vehicle wider than 2.05 m incorrect type where triangle reflectors are required; they are broken, <u>damaged</u> and <u>inoperative</u> , <u>missing</u> or <u>insecure</u> mounting
3. Horn	Truck ✓ Trailer Bus ✓
<i>Additional Inspection Procedure(s):</i> Test horn operation. <i>Note:</i> Every vehicle must have at least one operating horn.	
a) operation	a) <u>inoperative</u> or <u>not</u> clearly audible
b) control	b) <u>not</u> identified and readily accessible to the driver does <u>not</u> function as intended <u>not</u> a pressure-type switch

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
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ITEM AND METHOD OF INSPECTION:	REJECT IF:
4. Instruments and Gauges on a Bus	Truck Trailer Bus ✓
a) required gauges and/or indicators <i>Additional Inspection Procedure(s):</i> Inspect indicator lamp operation (bulb check) when ignition is on and engine stopped. <i>Note:</i> Inspect according to <u>OEM</u> vehicle design.	a) engine temperature gauge or indicator is <u>inoperative</u> oil pressure gauge or indicator is <u>inoperative</u> ammeter, voltmeter or charge indicator is <u>inoperative</u> on a school bus, fuel gauge is <u>inoperative</u> or <u>missing</u> , or fails to provide accurate information
5. Speedometer	Truck ✓ Trailer Bus ✓
a) operation	a) <u>inoperative</u> or <u>missing</u> not clearly visible from the primary driving position
6. Odometer	Truck ✓ Trailer Bus ✓
a) operation <i>Note:</i> <u>OEM</u> odometer must be operative. A functional test is not required.	a) <u>inoperative</u> or <u>missing</u>
7. Windshield Wiper/Washer	Truck ✓ Trailer Bus ✓
a) operation <i>Additional Inspection Procedure(s):</i> Confirm that the windshield wipers and control operate in all modes and positions.	a) fail to operate properly in any speed or position fail to park
b) wiper blade	b) hardened, <u>missing</u> or torn swept area is less than <u>OEM</u> wiper blades fails to contact windshield properly
c) wiper arm	c) bent, broken or <u>missing</u>
d) windshield washer <i>Additional Inspection Procedure(s):</i> Test the operation of the windshield washer and control.	d) <u>inoperative</u> or <u>missing</u> fails to direct sufficient washer fluid at correct position on windshield
	<u>Hazardous Condition(s)</u> i. wiper on the driver's side is <u>inoperative</u> , <u>missing</u> , or has damage that renders it ineffective

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
8. Heater & Windshield Defroster	Truck ✓ Trailer Bus ✓
a) operation <i>Additional Inspection Procedure(s):</i> Test the operation of the heater/defroster and control in all operating modes and positions.	a) <u>inoperative</u> at any setting low air flow or fails to deliver heated air
b) heater core	b) <u>level 2 leak</u> of coolant
9. Fuel-burning Auxiliary Heater	Truck ✓ Trailer Bus ✓
a) condition <i>Additional Inspection Procedure(s):</i> Inspect the exhaust system and fuel system, according to the appropriate type of fuel used, as described in Section 1.	a) <u>insecure</u> or <u>loose</u>
10. Chain/ "Headache" Rack	Truck ü Trailer Bus
a) condition	a) <u>insecure</u> or <u>loose</u> , mounting fastener <u>loose</u> or <u>missing</u> broken or weld cracked
11. Auxiliary Controls and Devices	Truck ✓ Trailer Bus ✓
<i>Note:</i> This includes equipment that is primarily inside a vehicle and includes controls for devices such as: PTO, wet lines, tarp systems, vehicle-mounted lifting and transporting devices, snow plow, dump box, front-mount hydraulic pump, roll-on roll-off, packer, etc.	
a) condition <i>Additional Inspection Procedure(s):</i> Check security of controls and devices visually, manually and using suitable tools as necessary. No functional test is to be conducted.	a) device is in such an unsafe condition that could be a risk to the driver or a passenger device is <u>insecure</u> or <u>loose</u> , or in danger of shifting in a way that could impede normal operation of the vehicle <u>level 2 leak</u> of oil or other operating fluid
	Hazardous Condition(s) i. control or device is in such an unsafe condition that is an imminent risk to the driver or a passenger ii. control or device is <u>insecure</u> or <u>loose</u> , or in imminent danger of shifting in a way that impedes normal operation of the vehicle

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
12. Auxiliary Drive Controls <i>Additional Inspection Procedure(s):</i> Inspect according to <u>manufacturer</u> service and safety instructions. When such instruction is not available, inspect and test auxiliary drive control devices according to the relevant steering, brake and power train items, and the relevant additional items below.	Truck ✓ Trailer Bus
a) auxiliary steering station <i>Note:</i> An auxiliary steering station normally uses a "tee type" gear box at the primary steering station and a "90-degree type" gear box at the secondary steering station(s).	a) gear box is <u>insecure</u> or <u>loose</u> connecting shaft or u-joint is <u>loose</u> , or u-joint is out of phase lash (free play) is greater at the auxiliary station than at the main steering wheel
b) auxiliary brake control	b) any service or parking brake control <u>fails to operate as intended</u> two-way check valve is leaking or <u>inoperative</u>
c) auxiliary lamp control	c) any lamp control at the auxiliary control position <u>fails to operate as intended</u> , or interferes with any other normal lamp operation
d) auxiliary throttle control	d) throttle control <u>fails to operate as intended</u>
13. On-board Auxiliary Equipment on a Bus <i>Note:</i> The requirements for the specific auxiliary equipment that must be carried on board a particular vehicle vary by jurisdiction. (For example: axe, spare tire, shovel, tools, tire chains.) Inspection must be conducted according to the <u>applicable requirements</u> .	Truck Trailer Bus ✓
a) presence and type	a) incorrect or <u>missing</u> equipment
b) securement	b) <u>insecure</u> or <u>loose</u> <u>on a school bus</u> , does <u>not</u> meet requirements of jurisdiction and applicable <u>CSA</u> D250 Standard
14. First Aid Kit on a Bus <i>Note:</i> The requirements for first aid kits vary by jurisdiction. Inspection must be conducted according to the <u>applicable requirements</u> . Inspection of contents is not required.	Truck Trailer Bus ✓
a) presence and location	a) does <u>not</u> meet requirements of jurisdiction <u>on a school bus</u> , does <u>not</u> meet <u>applicable requirements</u> and applicable <u>CSA</u> D250 Standard

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>15. Accessibility Features and Equipment on a Bus</p> <p><i>Note:</i> Accessibility features are items that are provided on “accessible vehicles” specifically designed for entry, accommodation and exiting of persons with various physical conditions that may limit their mobility. Many of these features are designed to provide access to the vehicle by means of a mobility assistive device (such as a cane, walker, wheel chair or scooter). The items listed in this section apply only to those features on this type of accessible vehicle.</p>	<p>Truck Trailer Bus ✓ </p>
<p>a) door on entrance for person with mobility assistive device</p> <p><i>Additional Inspection Procedure(s):</i> Test the operation of all accessible doors. Check that the door is held in the open position by a detent or latch. Test the operation of a power door and check the closing safety feature.</p>	<p>a) door fails to hold in open position</p> <p>power door fails to stop closing and/or reverse when stopped by an object</p>
<p>b) entrance for person with mobility assistive device (with no ramp or lift)</p>	<p>b) contrasting colour stripe on step or floor edge is worn off or not readily visible</p> <p>has <u>no</u> light above or beside each entrance door illuminating the steps and actuating automatically when the door opens</p>
<p>c) entrance/exit handle and grab bar</p>	<p>c) has <u>no</u> grab bar or handle accessible from ground level at the side of each entrance that remains inside vehicle when the door is closed</p> <p>has <u>no</u> grab bar or handle at any seat intended for accessible passenger</p> <p>handle or grab bar, located away from seat or door, is smaller than 20 mm, or larger than 50 mm when unpadded, or larger than 75 mm when padded</p>
<p>d) seat belt in location designated as an accessible seating position</p>	<p>d) any seat does <u>not</u> have a fully functioning Type 1 (lap) or Type 2 (3-point) seat belt</p>
<p>e) ramp condition</p>	<p>e) <u>not</u> fully covered in anti-skid material</p> <p>anti-skid material is not fully secured to ramp surface</p> <p><u>not</u> fitted with a raised guard (edge) on each side in a contrasting colour, or colour is worn off</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) powered ramp or lift operation <i>Additional Inspection Procedure(s):</i> Operate device into the fully deployed and stowed positions to confirm it operates as intended by the <u>manufacturer</u> .	f) any moving part of the power mechanism is <u>not</u> protected by a guard <u>inoperative</u> or <u>fails to</u> operate in the manner intended by the manufacturer device fails to operate smoothly
g) interlock and over-ride of power ramp or lift device <i>Additional Inspection Procedure(s):</i> Operate device to confirm it operates as intended by the <u>manufacturer</u> . Attempt to operate the vehicle to confirm operation is prohibited as intended.	g) <u>inoperative</u> , <u>missing</u> or <u>fails to</u> operate in the manner intended by the <u>manufacturer</u>
h) mobility assistive device securement system	h) <u>inoperative</u> , <u>missing</u> or <u>fails to</u> operate in the manner intended by the <u>manufacturer</u>
i) occupant restraint for person in mobility assistive device	i) <u>inoperative</u> , <u>missing</u> or <u>fails to</u> operate in the manner intended by the <u>manufacturer</u>
	<u>Hazardous Condition(s)</u> i. <u>fails to fully retract or store as intended by the manufacturer</u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

Section 6 – Lamps

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Required Lamps	Truck ✓ Trailer ✓ Bus ✓
<p>a) operation of all required lamps</p> <p><i>Note:</i> See (page 143 to 148) for details on CMVSS 108 requirements for lamps, lamp location and colour.</p> <p><i>Additional Inspection Procedure(s):</i> Test the operation of all required lamps, lamp switches and controls, and lamp indicators.</p>	<p>a) fails to illuminate fully and correctly in response to the switch or control</p> <p>fails to turn off in response to the switch or control</p> <p>broken, cracked, <u>insecure</u> mounting or <u>missing</u>, lens is clouded or reduces transmission of light</p> <p>is <u>not</u> clearly visible or is covered in any manner</p> <p>does <u>not</u> meet <u>CMVSS</u>, DOT or SAE standards</p> <p>25% or more of LEDs of any one lamp assembly are <u>inoperative</u></p>
<p>b) headlamp</p> <p><i>Note:</i> This applies to truck and bus only.</p> <p>“HID” = high-intensity discharge lamp</p>	<p>b) broken, cracked, <u>inoperative</u> or <u>missing</u></p> <p>moisture is present inside the lamp assembly</p> <p>headlamp beam pattern is <u>not</u> directed toward right hand side of roadway</p> <p><i>Note:</i> A crack is acceptable in a lamp assembly with a replaceable bulb if no moisture is present inside the lamp assembly.</p> <p>a non-functional diode in LED headlamp</p> <p>HID bulb is installed in an incandescent headlamp housing</p> <p>HID assembly does <u>not</u> display either HG, DC, DR or DCR codes</p> <p>headlamp switch, or beam (high and low) selector, is broken, <u>inoperative</u>, <u>missing</u>, does <u>not</u> meet <u>OEM standard</u></p> <p>high beam indicator lamp on instrument panel is <u>inoperative</u></p> <p>vehicle modification or installation of lamp causes headlamp to be higher or lower than permitted by <u>CMVSS</u> 108 (see page 143 to 148)</p> <p>the headlamps <u>fail to meet</u> any of the following requirements:</p> <ul style="list-style-type: none"> • two or four facing front as far apart as practical • white (correlated color temperature (CCT) rating of 2854K-5000K) • illuminate correctly when operated by headlamp control on high and low beam

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) tail lamp	<p>c) broken, cracked, <i>inoperative</i> or <i>missing</i></p> <p>vehicle modification or installation of lamp causes tail lamp to be higher or lower than permitted by <i>CMVSS</i> 108</p> <p>the tail lamps <u>fail to meet</u> any of the following requirements:</p> <ul style="list-style-type: none"> • minimum of two lamps facing the rear, located at rear of vehicle and as far apart as practical, red in colour • illuminate correctly when operated by headlamp control
d) stop (brake) lamp	<p>d) broken, cracked, <i>inoperative</i> or <i>missing</i></p> <p>the stop lamps <u>fail to meet</u> any of the following requirements:</p> <ul style="list-style-type: none"> • minimum of two lamps facing the rear, located at rear of vehicle and as far apart as practical, red in colour • illuminate correctly when service brakes are applied
<p>e) centre high mount stop lamp</p> <p><i>Note:</i> Required on every truck with a width under 2.05 m, and GVWR of 4,536 kg <u>and less</u>, built after January 10, 1997.</p> <p><u>Not</u> required on trailers.</p>	<p>e) broken, cracked, <i>inoperative</i> or <i>missing</i></p> <p>the centre high mount stop lamp <u>fails to meet</u> any of the following requirements:</p> <ul style="list-style-type: none"> • facing rear of vehicle • red in colour, illuminates correctly when service brakes are applied
<p>f) turn signal lamp</p> <p><i>Note:</i> Not required on front of trailers.</p>	<p>f) broken, cracked, <i>inoperative</i> or <i>missing</i></p> <p>control is broken, <i>inoperative</i> or <i>missing</i></p> <p>control <u>fails to hold</u> selected position</p> <p>on a vehicle less than 2.05 m wide, control <u>fails to cancel</u> automatically when steering returns to centre</p> <p>turn signal indicator lamp on instrument panel is <i>inoperative</i></p> <p>the turn signal lamps <u>fail to meet</u> any of the following requirements:</p> <ul style="list-style-type: none"> • minimum of two facing the front, as far apart as practical, amber in colour • minimum of two facing the rear, as far apart as practical, amber or red in colour • illuminate correctly when operated by turn signal control

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>g) hazard warning lamp</p> <p><i>Note:</i> Can operate same lamps as turn signals.</p>	<p>g) broken, cracked, <i>inoperative</i> or <i>missing</i> control is broken, <i>inoperative</i> or <i>missing</i> hazard warning indicator lamp on instrument panel is <i>inoperative</i> the hazard warning lamps fail to meet any of the following requirements:</p> <ul style="list-style-type: none"> • minimum of two facing the front, as far apart as practical, amber in colour • minimum of two facing the rear, as far apart as practical, amber or red in colour • illuminate correctly and flash simultaneously when operated by hazard warning control
<p>h) side marker lamp</p> <p><i>Note:</i> A single lamp may serve as both a side marker and a clearance lamp, provided it is clearly visible from both the side and the rear.</p> <p>Vehicles 9.1 m or more in length require amber intermediate lamps.</p> <p>Intermediate side marker lamps are <u>not</u> required on vehicles less than 9.1 m in length.</p>	<p>h) broken, cracked, <i>inoperative</i> or <i>missing</i> amber intermediate side marker lamps are <i>inoperative</i> or <i>missing</i> on a vehicle over 9.1 m in length the side marker lamps fail to meet any of the following requirements:</p> <ul style="list-style-type: none"> • minimum of four in total, two at the rear and two at the front, facing the side, • located as close to corners as practical • front are amber in colour • rear are red in colour
<p>i) clearance lamp</p> <p><i>Note:</i> Clearance lamps are required at the front and rear on all vehicles 2.05 m or more in width.</p> <p>Rear clearance lamps are <u>not</u> required on truck-tractors.</p>	<p>i) broken, cracked, <i>inoperative</i> or <i>missing</i> the clearance lamps fail to meet any of the following requirements:</p> <ul style="list-style-type: none"> • minimum of four in total, located as far apart as practical at the widest point of the vehicle • two facing the front, as high as practical, amber in colour • two facing the rear, red in colour
<p>j) identification lamp</p> <p><i>Note:</i> Identification lamps are required at the front and rear on all vehicles 2.05 m or more in width, except as noted below.</p> <p>Rear identification lamps are <u>not</u> required on truck-tractors.</p> <p>Front identification lamps are <u>not</u> required on trailers.</p>	<p>j) broken, cracked, <i>inoperative</i> or <i>missing</i> the identification lamps fail to meet any of the following requirements:</p> <ul style="list-style-type: none"> • minimum of six in total • three facing the front, amber in colour • three facing the rear, red in colour

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>k) back up lamp</p> <p><i>Note:</i> Back up lamps are required on all trucks, truck-tractors and buses manufactured after January 1, 1971.</p> <p>Back up lamps are <u>not</u> required on trailers.</p>	<p>k) broken, cracked, <i>inoperative</i> or <i>missing</i> <u>not</u> white in colour or <u>not</u> located at rear fail to illuminate with engine running and transmission in reverse gear</p>
<p>l) licence plate lamp</p> <p><i>Note:</i> A licence lamp may not be required in cases where no licence plate is required to be displayed.</p>	<p>l) broken, cracked, <i>inoperative</i> or <i>missing</i> <u>not</u> white, fails to illuminate licence plate</p>
<p>m) daytime running lamp</p> <p><i>Note:</i> Required on all trucks and buses manufactured after December 1, 1989.</p>	<p>m) broken, cracked, <i>inoperative</i> or <i>missing</i> the daytime running lamps <u>fail to meet</u> any of the following requirements:</p> <ul style="list-style-type: none"> • located on front of vehicle • white or yellow in colour • operate continually when engine is operating and master lighting switch is <u>not</u> in the “ON” position
<p>n) fog lamp</p> <p><i>Note:</i> These are <u>not required</u> lamps, unless specifically required by a particular jurisdiction.</p> <p>Fog lamps must comply with these requirements if the lamps are operational.</p>	<p>n) the fog lamps <u>fail to meet</u> any of the following requirements:</p> <ul style="list-style-type: none"> • lens designation is “F” • located on front and/or rear of vehicle • white or amber in colour on front, red in colour on rear • illuminate correctly and only when headlamp control is switched to low beam
<p>o) high beam driving lamp</p> <p><i>Note:</i> These are <u>not required</u> lamps, unless specifically required by a particular jurisdiction.</p> <p>Driving lamps must comply with these requirements if the lamps are operational.</p>	<p>o) the high beam driving lamps <u>fail to meet</u> any of the following requirements:</p> <ul style="list-style-type: none"> • lens designation “Y” • located on front of vehicle • white in colour • illuminate correctly and only when headlamp control is switched to high beam

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>p) low beam driving lamp</p> <p><i>Note:</i> These are <u>not required</u> lamps, unless specifically required by a particular jurisdiction.</p> <p>Driving lamps must comply with these requirements if the lamps are operational.</p>	<p>p) the low beam driving lamps <u>fail to meet</u> any of the following requirements:</p> <ul style="list-style-type: none"> • lens designation “Y” • located on front of vehicle • white in colour • illuminate correctly and only when headlamp control is switched to low beam
<p>q) special equipment lamp</p> <p><i>Note:</i> Some jurisdictions require or prohibit certain lamps in certain operations. Inspector must be familiar with the <u>applicable requirements</u>.</p>	<p>q) a lamp required for vocational or specialized operation is <u>inoperative</u> or <u>missing</u></p> <p>a lamp that is prohibited by the <u>applicable requirements</u> installed</p> <p>a lamp that is required to be covered when not in use, has no cover</p>
	<p><u>Hazardous Condition(s)</u></p> <p>i. <u>not at least one head lamp</u> is operative on a power unit</p> <p>ii. <u>not at least one tail lamp</u> is operative on the rear visible from 150 m</p> <p>iii. <u>not at least one stop lamp</u> is operative on the vehicle visible from 150 m</p> <p>iv. <u>not at least one turn signal lamp</u> is operative on each side at the rear, visible from 150 m</p> <p>v. <u>not at least one turn signal lamp</u> is operative on each side at the front, visible from 150 m</p> <p>vi. any required lamp is <u>inoperative</u> or obstructed during times when the lamp is required</p>
<p><u>2. Reflex Reflector</u></p> <p><i>Note:</i> A lamp's lens may also function as a reflex reflector.</p>	
<p>a) required reflectors</p> <p><i>Note:</i> See (page 143 to 148) for details on <u>CMVSS</u> 108 requirements for reflex reflector location and colour.</p>	<p>a) any required reflex reflector, or part of a reflex reflector, is broken, <u>missing</u>, obscured or <u>not</u> clearly visible</p> <p><u>not</u> labelled to show compliance with <u>CMVSS</u>, DOT or SAE standards</p>
<p>b) rear reflector</p>	<p>b) rear reflectors <u>fail to meet</u> any of the following requirements:</p> <p>minimum of two, located as far apart as practical, red in colour, between 380 and 1530 mm from centre of reflector to the ground</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>c) front and rear side, and intermediate reflex reflector</p> <p><i>Note:</i> Amber intermediate reflectors are required on all vehicles over 9.1 m in length.</p>	<p>c) amber intermediate reflex reflector is <u>missing</u> on a vehicle over 9.1 m in length</p> <p>front and rear reflex reflectors <u>fail to meet</u> any of the following requirements:</p> <ul style="list-style-type: none"> • minimum of four in total, located as far apart as practical, between 380 and 1530 mm from centre of reflector to the ground • two at the front, amber in colour • two at the rear, red in colour
<p><u>3. Retro-Reflective Marking</u></p> <p><i>Note:</i> Required on all truck-tractors manufactured after November 19, 2001.</p> <p>Required on all trailers manufactured after January 10, 1997.</p> <p>In some jurisdictions applies retroactively to all trailers with a width of 2.05 m or more, and GVWR of 4,536 kg or more, regardless of manufacture date. Inspector must be familiar with the <u>applicable requirements</u>.</p> <p>See (page 143 to 148) for details on <u>CMVSS</u> 108 requirements for retro-reflective markings.</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p>
<p>a) presence</p>	<p>a) any required section is <u>missing</u></p>
<p>b) type/markings</p>	<p>b) consist of <u>anything other than</u> alternating red and white retro-reflective sheeting that is marked DOT-C2 (50 mm wide), DOT-C3 (75 mm wide) or DOT-C4 (100 mm wide)</p> <p>for the purpose of school buses, consists of anything other than conspicuity markings as specified in the applicable CSA D250 standard</p>
<p>c) condition</p>	<p>c) peeling off or reflective properties are compromised on an area exceeding 77 cm² (12 in.2) of the entire surface of the required reflective material</p> <p><i>Note:</i> On 50 mm wide material, this means a total length of 15 cm having some loss of reflective property.</p>
<p>d) location and type</p>	<p>d) retro-reflective markings <u>fail to meet</u> the requirements of <u>CMVSS</u> 108 as shown on page 143 to 148.</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>e) location of retro-reflective material <u>voluntarily applied</u> to straight truck</p> <p><i>Note:</i> Having the retro-reflective material too close to a lamp makes it more difficult to see the lamp.</p>	<p>e) red coloured retro-reflective marking is located <u>closer</u> than 75 mm to the edge of the lens of any amber lamp</p> <p>white coloured retro-reflective marking is located <u>closer</u> than 75 mm to the edge of the lens of any lamp</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<u>Hazardous Condition(s)</u> i. more than 50% of retro-reflective material of any required section is compromised or <i>missing</i>
<u>4. Instrument Panel Lamp</u>	Truck ✓ Trailer Bus ✓
a) operation <i>Note:</i> Inspect according to <i>OEM</i> vehicle design. Minor loss of illumination of some parts of the instrument panel is not cause for rejecting a vehicle. Illumination is required on the speedometer, and the vehicle operating status gauges required by this standard, and originally illuminated by the <i>OEM</i> .	a) <i>inoperative</i> or <i>no</i> illumination is provided on required instrument or gauge
<u>5. Headlamp Aim</u>	Truck ✓ Trailer Bus ✓
a) aim <i>Additional Inspection Procedure(s):</i> Check headlamp aim using an aiming screen or using equipment specifically designed for such use, following the equipment <i>manufacturer</i> instructions. <i>Note:</i> Headlamp aim must be checked when vehicle is unloaded.	a) <i>not</i> within <i>manufacturer</i> specification, or when specification is not available, when positioned 7.6 m from aiming screen does <i>not</i> comply with the requirements below for low beam lens marked as type 2: <ul style="list-style-type: none"> • left edge of beam must be within 100 mm left or right of straight ahead • top edge of beam must not be above, and no more than 100 mm below the horizontal line for high beam lens marked as type 1 and any unmarked lens: <ul style="list-style-type: none"> • centre of beam must not be above, and no more than 100 mm below the horizontal line • centre of beam must be no more than 100 mm left or right of straight ahead
b) headlamp aim adjusters	b) broken, <i>inoperative</i> , <i>insecure</i> mounting or <i>missing</i>
Visual Screen Method of Headlamp Aiming–Setting Up an Aiming Screen A. Aiming Area Required It is desirable to have a specific aiming area in a darkened location. This should be sufficient for the vehicle plus an additional 7.6 m measured from face of lamps to the front of the visual screen. The floor on which the motor vehicle rests must be flat and level with the bottom of the screen.	

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>B. Aiming Screen</p> <p>If a regular commercial aiming screen is not available, the screen may consist of a vertical wall having a clear uninterrupted area approximately 1.8 m high and 3.6 m wide.</p> <p>The surface should be finished with washable non-gloss white paint. Adjustable black tapes should be provided for use as guidelines.</p> <p>After the aiming screen has been set up in its permanent location, it is necessary to paint a reference line on the floor directly under the lens of the lamps to indicate the proper location of the headlamps when they are being aimed. This reference line should be parallel to the aiming screen and exactly 7.6 m from it.</p>	
	<p><u>Hazardous Condition(s)</u></p> <p>i. aiming of headlamp is so severely out of alignment that it is likely to impair the vision of the driver or other motorists</p>
<p><u>6. Interior Lamps on a Bus</u></p> <p><i>Note:</i> Inspection must be conducted according to the requirements of the relevant jurisdiction and applicable CSA D250, D409, D435 & D436 Standard. Inspector must be familiar with the <u>applicable requirements</u>.</p> <p><i>Additional Inspection Procedure(s):</i> Activate interior lamps, then operate each entrance door. Emergency exit doors are excluded.</p>	<p>Truck Trailer Bus ✓ </p>
<p>a) step well lamp</p>	<p>a) <u>not</u> white in colour, <u>inoperative</u> or <u>missing</u> <u>fails to</u> illuminate step well area stays on when door is closed</p>
<p>b) aisle and overhead lamps</p>	<p>b) more than 10% of the lamps on any lamp circuit are <u>inoperative</u></p>
<p>c) accessible vehicle lighting</p>	<p>c) lamp installed for accessibility device (such as a ramp or lift) is <u>inoperative</u> or <u>missing</u></p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown **in this manner** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<u>7. School Bus Additional Lamps</u> <i>Note:</i> Applies to <u>school bus only</u> . Inspection must be conducted according to the requirements of the relevant jurisdiction and applicable <u>CSA D250 Standard</u> . Inspector must be familiar with the <u>applicable requirements</u> .	Truck Trailer Bus ✓
a) alternating warning lamps <i>Additional Inspection Procedure(s):</i> Activate warning system in pre-stop phase (stop arm not deployed) and then with warning system in full stop phase (stop arm deployed). “LED” = light emitting diode	a) <u>not</u> equipped, or do not operate as required by the relevant jurisdiction and applicable <u>CSA D250 Standard</u> b) 25% or more of LEDs of any lamp assembly are <u>inoperative</u> . c) alternating warning lamp indicator on instrument panel or switch is <u>inoperative</u> or <u>missing</u>
b) strobe lamp	b) <u>inoperative</u> where required by jurisdiction strobe lamp indicator on instrument panel or switch is <u>inoperative</u> or <u>missing</u>
c) service door exterior lamp <i>Additional Inspection Procedure(s):</i> Open and close service door as required to test operation of exit lamp.	c) <u>not</u> equipped, or does <u>not</u> operate as required by the relevant jurisdiction and applicable <u>CSA D250 Standard</u>
	<u>Hazardous Condition(s)</u> i. <u>on a school bus</u> , alternating overhead warning lamps are <u>inoperative</u> or obstructed

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

IMPORTANT NOTE: Every lamp, reflex reflector, and conspicuity treatment must be permanently attached in the location specified below and must comply with all applicable requirements prescribed for it by FMVSS/CMVSS 108. The face of any device on the front/rear and sides should be, respectively perpendicular and parallel to the vehicle's centerline, unless it is photometrically certified at installation angle. No part of the vehicle shall prevent any device from meeting its prescribed requirements unless an auxiliary device meeting all prescribed requirements is installed.

IN CANADA: Manufacturers and importers of vehicles must have the proper certification test records demonstrating compliance of lighting components with all prescribed requirements.

BASIC EQUIPMENT REQUIRED ON ALL TRUCKS, BUSES & MPVs

DESCRIPTION				MANDATORY REQUIREMENTS			
Area	Equipment	SAE Lens Coding	Functional Purpose	Quantity	Color	Location	Height mm(in.) from the ground
1	Headlamps - Lower Beam	(H, HF)	Forward road illumination	Minimum 2	White	On the front - symmetrical as far apart as practicable	560-1370 (22-54)
	US requires "DOT" lettering on lens USA/Canada - light source code required on lens					If 4 lamp system - outboard or above upper beams	
	Headlamps - Upper Beam	(H, HF)	Forward road illumination	Minimum 2	White	On the front - symmetrical	560-1370 (22-54)
	US requires "DOT" lettering on lens USA/Canada - light source code required on lens					If 4 lamp system - inboard or below lower beams	
	Parking Lamps	(P)	Indicate parked vehicle	Minimum 2	White or amber	On the front - symmetrical as far apart as practicable	380-1830 (15-72)
	Vehicles less than 2032mm wide						
	Daytime Running Lamps (DRL)	(Y2)	Indicate in use vehicle	Minimum 2	White or amber	On the front - symmetrical as far apart as practicable	380 (15) min. Max. depends on type of DRL
	Canada - required / US - option US requires "DRL" lettering on lens if not headlamp						
	Front Turn Signal/Hazard Warning Lamps	(I)	Indicate direction of turn/identify disabled vehicle	Minimum 2	Amber	On the front - symmetrical as far apart as practicable	380-2110 (15-83)
2	Front Clearance Lamps	(P2, PC* or P3, PC2*)	Show vehicle's width	Minimum 2	Amber	At widest point - symmetrical on the front or near the front facing forward	As high as practicable
	Vehicles 2032mm wide or wider *photometrically certified at installation angle						
3	Front Identification Lamps (ID)	(P2 or P3)	Indicate presence of a wide vehicle	Exactly 3	Amber	On the front - center horizontally spaced 150 mm (6 in.) to 300 mm (12 in.) apart	As high as practicable or on top of the cab
	Vehicles 2032mm wide or wider						
4	a Front Side Marker Lamps	(P2, PC* P3, PC2*)	Front and rear side marker lamps / side reflex reflectors indicate vehicle's presence and length	Minimum 2	Amber	Each side at front as far forward as practicable	380 (15) minimum
	*photometrically certified at installation angle						
	b Front Side Reflex Reflectors	(A)		Minimum 2	Amber	Each side at front as far forward as practicable facing sideward	380-1530 (15-60)
5	a Rear Side Marker Lamps **	(P2, PC* or P3, PC2*)	Rear and rear side marker lamps / side reflex reflectors indicate vehicle's presence and length	Minimum 2	Red	Each side at rear as far back as practicable	380 (15) minimum
	*photometrically certified at installation angle						
	b Rear Side Reflex Reflectors **	(A)		Minimum 2	Red	Each side at rear as far back as practicable facing sideward	380-1530 (15-60)
	**not required on Truck Tractors						
6	Rear Clearance Lamps	(P2, PC* or P3, PC2*)	Show vehicle's width MAY NOT be combined with tail lamps	Minimum 2	Red	At widest point - symmetrical on the rear or near the rear facing rearward	As high as practicable may be lower only if rear ID lamps are at the top
	Vehicles 2032mm wide or wider Not required on Truck Tractors *photometrically certified at installation angle						
7	Rear Identification (ID) Lamps	(P2 or P3)	Indicate presence of a wide vehicle	Exactly 3	Red	On the rear - center horizontally spaced 150mm (6 in.) to 300mm (12 in.) apart facing rearward	At the top may be lower if door header narrower than 25mm
	Vehicles 2032mm wide or wider Not required on Truck Tractors						
8	Tail Lamps	(T)	Indicate vehicle's presence and width	Minimum 2	Red	On the rear - symmetrical as far apart as practicable	380-1830 (15-72)
	Stop Lamps	(S)	Indicate braking	Minimum 2	Red	On the rear - symmetrical as far apart as practicable	380-1830 (15-72)
	Rear Turn Signal/Hazard Warning Lamps	(I)	Indicate direction of turn/identify disabled vehicle	Minimum 2	Red or amber	On the rear - symmetrical as far apart as practicable	380-2110 (15-83)
	Rear Reflex Reflectors	(A)	Show vehicle's presence and width	Minimum 2	Red	On the rear - symmetrical as far apart as practicable	380-1530 (15-60)
9	Backup Lamp	(R)	Illuminates ground behind the vehicle and alert road users	Minimum 1	White	Rear	No requirement
10	License Plate Lamp(s)	(L)	Illuminates license plate	Minimum 1	White	On the rear - above or at the sides of license plate	No requirement
11	Center High Mounted Stop Lamp	(U3)	Indicates braking	1	Red	On the rear - centerline of the vehicle	860 (34) minimum
	Vehicles less than 2032mm wide and 4536kg						

ADDITIONAL EQUIPMENT FOR SPECIFIC VEHICLES VEHICLES 9.1m (30 ft.) LONG OR LONGER

DESCRIPTION				MANDATORY REQUIREMENTS			
Area	Equipment	SAE Lens Coding	Functional Purpose	Quantity	Color	Location	Height mm(in.) from the ground
12	a Intermediate Side Marker Lamps	(P2 or P3)	Indicate presence of a long vehicle	Minimum 2	Amber	Each side near center	380 (15) minimum
	b Intermediate Side Reflex Reflectors	(A)	Indicate presence of a long vehicle	Minimum 2	Amber	Each side near center facing sideward	380-1530 (15-60)

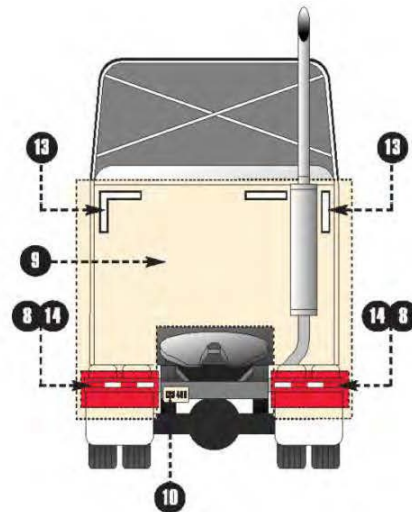
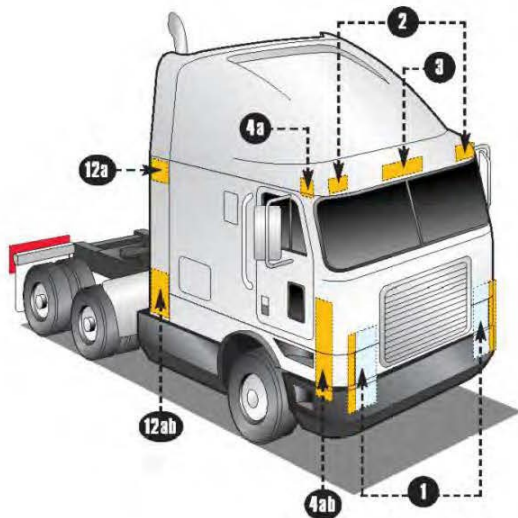
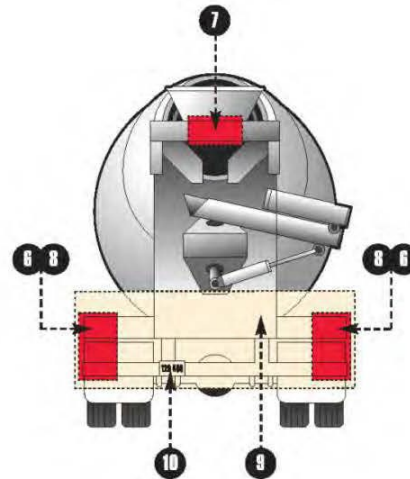
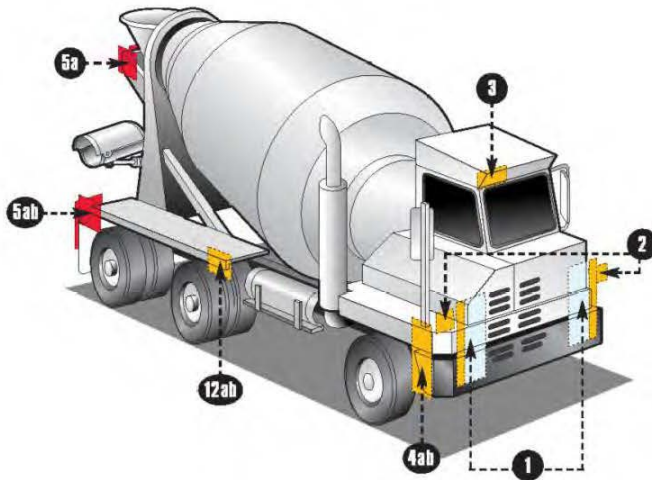
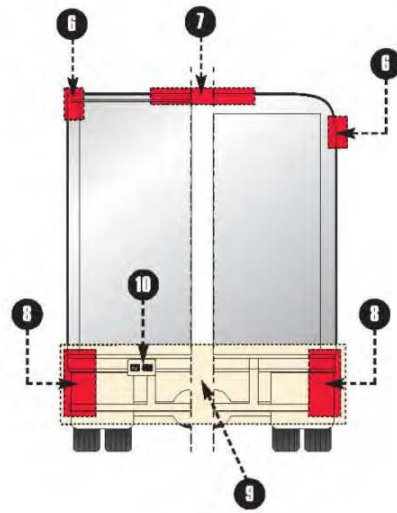
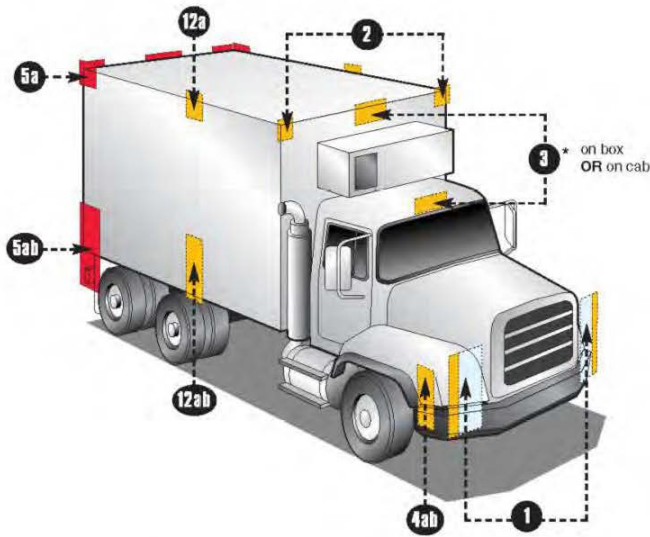
Truck Tractors

DESCRIPTION		MANDATORY REQUIREMENTS					
Area	Conspicuity Treatment	DOT Coding	Quantity	Color	Location	Height	Options
13	Rear Upper Body Markings	DOT-C DOT-C2 DOT-C3 DOT-C4	Exactly 2 pairs of 300mm long strips	White	Rear upper corners of cab facing rearward	As high as practicable excluding fairings	
14	Rear Marking		Exactly 2 sections of min. 600mm each	Red/White	Rear - facing rearward - on fenders, on mud flap brackets, or within 300mm below the top of mud flaps	As horizontal as practicable and not higher than 1525mm from the ground	If mud flaps not used - on the cab or frame mounted brackets

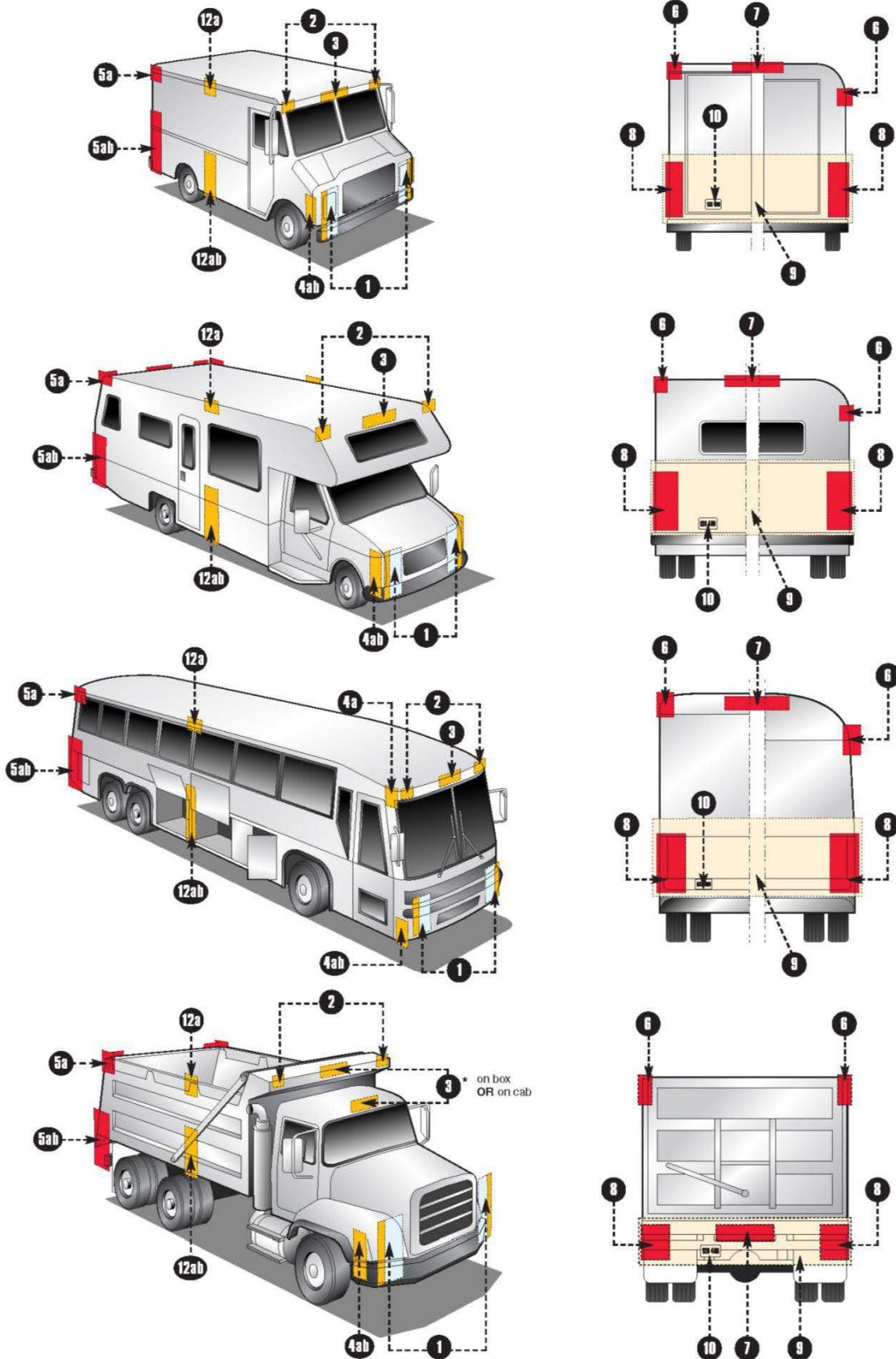
NOTE: The edge of red conspicuity tape shall not be closer than 75 mm to the edge of any amber lamp and the edge of white conspicuity tape shall not be closer than 75 mm to the edge of any lamp

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.



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IMPORTANT NOTE: Every lamp, reflex reflector, and conspicuity treatment must be permanently attached in the location specified below and must comply with all applicable requirements prescribed for it by FMVSS/CMVSS 108. The face of any device on the front/rear and sides should be, respectively perpendicular and parallel to the vehicle's centerline, unless it is photometrically certified at installation angle. No part of the vehicle shall prevent any device from meeting its prescribed requirements unless an auxiliary device meeting all prescribed requirements is installed.

IN CANADA: Manufacturers and importers of vehicles must have the proper certification test records demonstrating compliance of lighting components with all prescribed requirements.

BASIC EQUIPMENT REQUIRED ON ALL TRAILERS

DESCRIPTION				MANDATORY REQUIREMENTS			
Area	Equipment	SAE Lens Coding	Functional Purpose	Quantity	Color	Location	Height mm(in.) from the ground
1	Tail Lamps	(T)	Indicate vehicle's presence and width	Minimum 2	Red	On the rear - symmetrical as far apart as practicable	380-1830 (15-72)
	Stop Lamps	(S)	Indicate braking	Minimum 2	Red	On the rear - symmetrical as far apart as practicable	380-1830 (15-72)
	Rear Turn Signal Lamps	(I)	Indicate direction of turn	Minimum 2	Red or Amber	On the rear - symmetrical as far apart as practicable	380-2110 (15-83)
	Rear Reflex Reflectors	(A)	Indicate vehicle's presence and width	Minimum 2	Red	On the rear - symmetrical as far apart as practicable facing rearward	380-1530 (15-60)
2	License Plate Lamp(s)	(L)	Illuminates license plate	Minimum 1	White	On the rear - above or at the sides of license plate	No requirement
3	Rear Side Marker Lamps <small>*photometrically certified at installation angle</small>	(P2, PC* or P3, PC2*)	Front and rear side marker lamps / side reflex reflectors indicate vehicle's presence and length	Minimum 2	Red	Each side at rear as far back as practicable	380-1530 (15-60) no max. for veh. under 2032mm (80") wide
	Rear Side Reflex Reflectors	(A)		Minimum 2	Red	Each side at rear as far back as practicable facing sideward	380-1530 (15-60)
4	Front Side Marker Lamps <small>*photometrically certified at installation angle</small>	(P2, PC* or P3, PC2*)		Minimum 2	Amber	Each side at front as far forward as practicable	380 (15) minimum
	Front Side Reflex Reflectors	(A)		Minimum 2	Amber	Each side at front as far forward as practicable facing sideward	380-1530 (15-60)

ADDITIONAL EQUIPMENT FOR TRAILERS EXCEEDING THE FOLLOWING PARAMETERS

Length 9.1m (30 ft.) or longer

DESCRIPTION				MANDATORY REQUIREMENTS			
Area	Equipment	SAE Lens Coding	Functional Purpose	Quantity	Color	Location	Height mm(in.) from the ground
5	Intermediate Side Marker Lamps <small>*photometrically certified at installation angle</small>	(P2, P3, PC* or PC2*)	Indicate presence of a long vehicle	Minimum 2	Amber	Each side near center facing sideward	380 (15) minimum
	Intermediate Side Reflex Reflectors	(A)	Indicate presence of a long vehicle	Minimum 2	Amber	Each side near center facing sideward	380-1530 (15-60)

Width 2032mm (80 in.) or wider

DESCRIPTION				MANDATORY REQUIREMENTS			
Area	Equipment	SAE Lens Coding	Functional Purpose	Quantity	Color	Location	Height
6	Rear Clearance Lamps <small>*photometrically certified at installation angle</small>	(P2, PC* or P3, PC2*)	Show vehicle's width MAY NOT be combined with tail lamps	Minimum 2	Red	At widest point - symmetrical on the rear or near the rear facing rearward	As high as practicable may be lower only if ID lamps are at the top
7	Rear Identification (ID) Lamps	(P2 or P3)	Indicate presence of a wide vehicle	Exactly 3	Red	On the rear - center horizontally spaced 150mm (6 in.) to 300mm (12 in.) apart facing rearward	At the top - may be lower if door header narrower than 25mm
8	Front Clearance Lamps <small>*photometrically certified at installation angle</small>	(P2, PC* or P3, PC2*)	Show vehicle's width	Minimum 2	Amber	At widest point - symmetrical on the front or near the front facing forward	As high as practicable

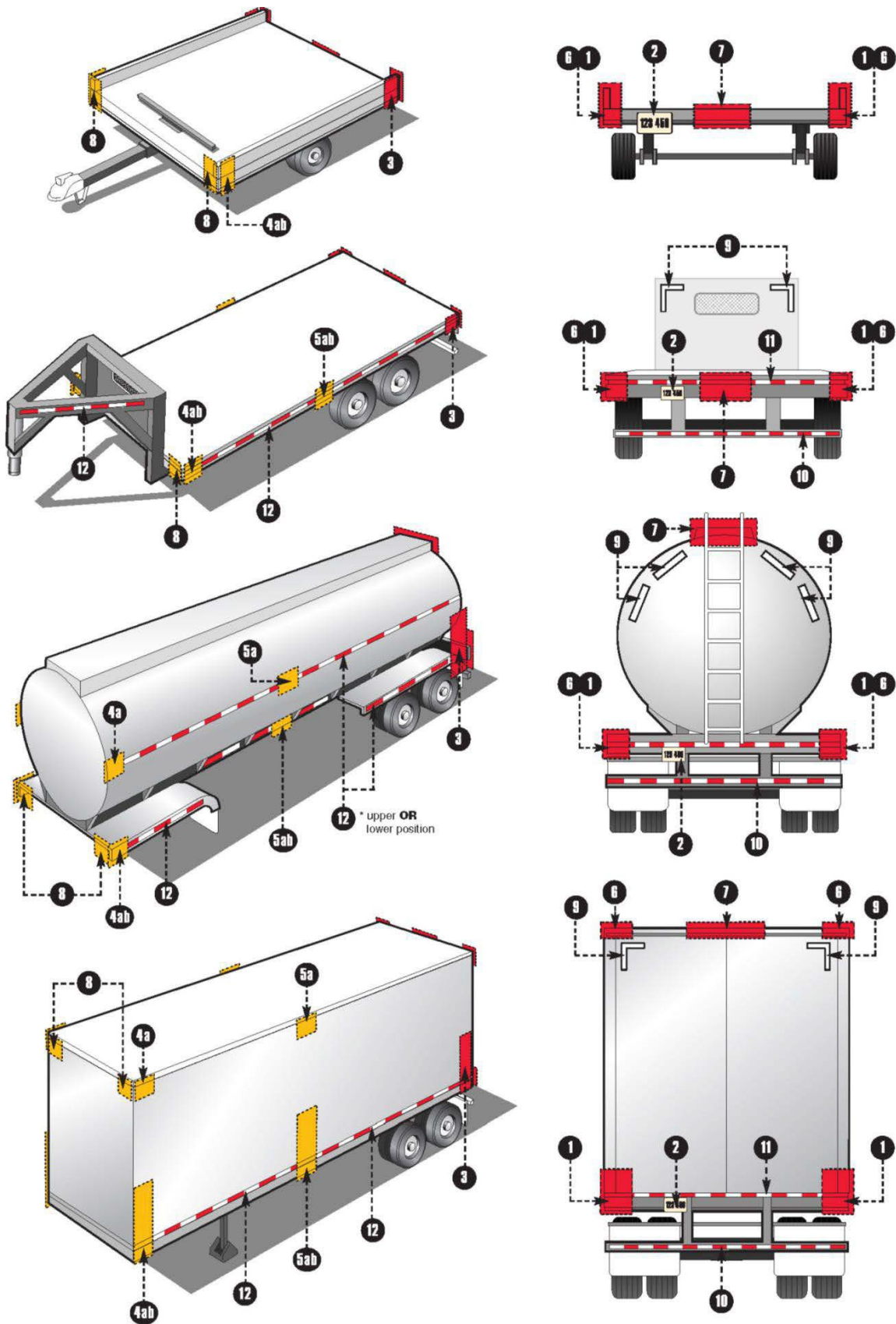
Width 2032mm (80 in.) or wider AND GVWR 4536 kg (10,000 lb.) or more

DESCRIPTION		MANDATORY REQUIREMENTS					
Area	Conspicuity Treatment	DOT Coding	Quantity	Color	Location	Height	Options
9	Rear Upper Body Markings	DOT-C DOT-C2 DOT-C3 DOT-C4	Exactly 2 pairs of 300mm long strips	White	On the rear upper corners facing rearward	At the top	Reflex reflectors may not be required if they are replaced in their required location with conspicuity treatment.
10	Bumper Bar Marking		Continuous	Red/White	On the rear bumper bar's horizontal element full width - facing rearward	No requirement	
11	Rear Lower Body Marking		Continuous	Red/White (see options)	On the rear full width of the vehicle facing rearward	As horizontal as practicable and as close as practicable to the range of 375 to 1525mm from the ground	
12	Side Marking		(see location)	Red/White (see options)	Each side - facing sideward continuous, or evenly spaced over minimum of 50% of length starts and ends as close to the front and rear of the vehicle as practicable	As horizontal as practicable and as close as practicable to the range of 375 to 1525mm from the ground	Optional in Canada: Rear lower body and side conspicuity treatment may also be solid white, solid yellow, or white and yellow.

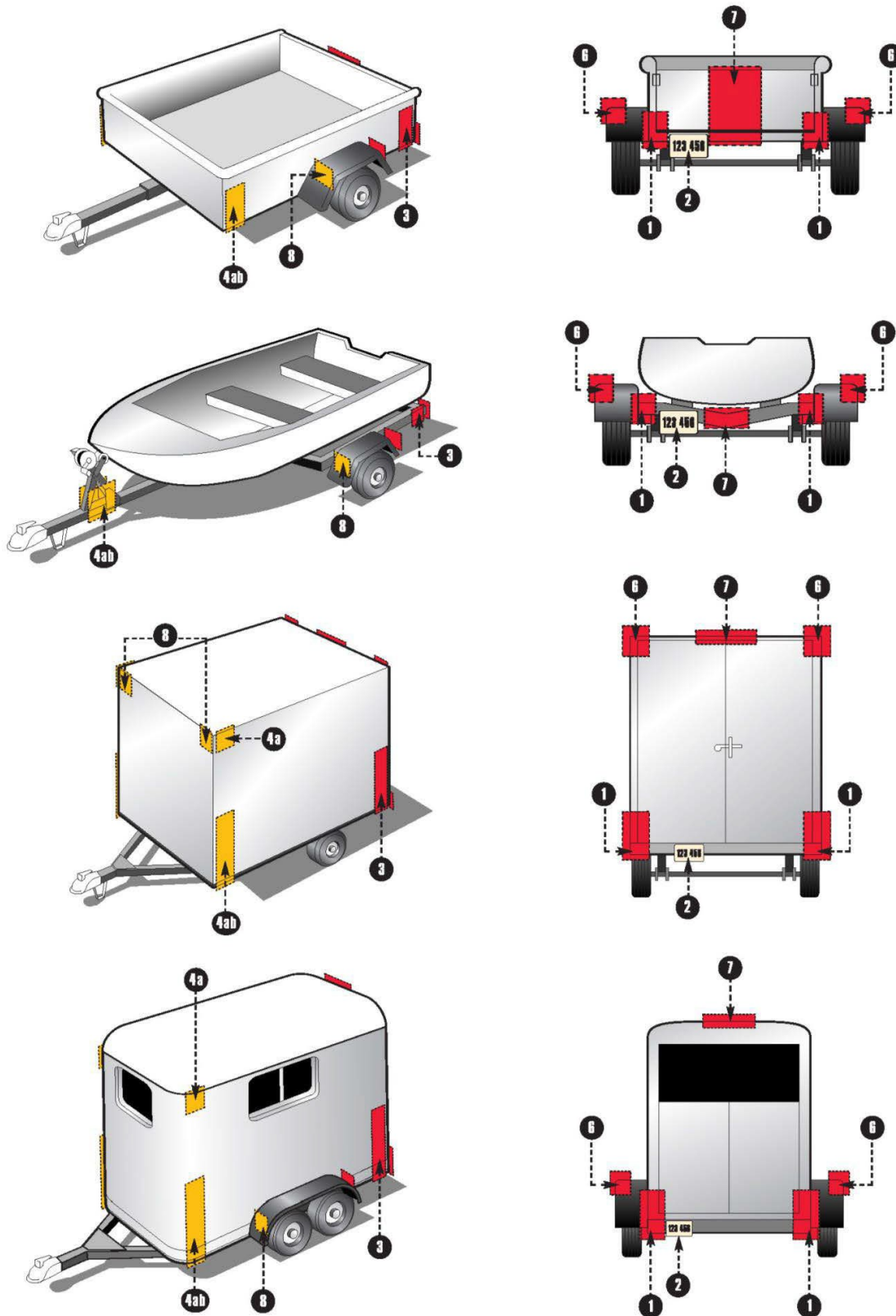
NOTE: The edge of red conspicuity tape shall not be closer than 75 mm to the edge of any amber lamp and the edge of white conspicuity tape shall not be closer than 75 mm to the edge of any lamp

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

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Section 7 – Electrical System

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Wiring <i>Additional Inspection Procedure(s):</i> Inspect wiring, harnesses and connections that are accessible and visible. Pay particular attention to battery, starter and charging system circuits.	Truck ✓ Trailer ✓ Bus ✓
a) security	a) <u>loose</u> or improperly supported, and able to contact moving parts chafed section resulting from contact with vehicle parts <u>not</u> secured at least every 1800 mm
b) insulation	b) conductor is exposed, other than at a proper connector
c) condition	c) cut, shorted or deteriorated connection is <u>loose</u> , abnormally corroded, burnt
d) circuit loading <i>Note:</i> Circuit protection requirements are based on <u>manufacturer</u> design and specifications. Circuit testing is not required. Inspection is visual and based on knowledge of the normal design and specifications.	d) circuit load protection is <u>missing</u> or bypassed circuit is overloaded beyond normal circuit capacity circuit protection device (fuse, circuit breaker or fusible link) exceeds circuit capacity circuit is improperly grounded
	<u>Hazardous Conditions</u> i. any electrical component or wiring shows signs of shorting, arcing, or a hot spot <u>In the engine compartments of a bus:</u> ii. electrical cable insulation is burnt, chafed, <u>damaged</u> , or frayed, exposing the conductor iii. protective grommet insulating an electrical cable through metal is <u>damaged</u> or <u>missing</u> iv. electrical component is broken or mounting is <u>insecure</u> v. electrical cable is unsupported, or a clamp is <u>missing</u> , causing chafing or fraying vi. lubricating oil is leaking from an electrical component such as the alternator or auxiliary heater

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<u>2. Battery</u>	Truck ✓ Trailer ✓ Bus ✓
a) posts and connections	a) corrosion or deterioration is present that prevents proper electrical contact, <u>loose</u> or burnt
b) mount	b) cracked or <u>missing</u> , perforated or weakened due to corrosion
c) cover and hold down	c) <u>insecure</u> , <u>missing</u> , does <u>not</u> meet <u>OEM standard</u> battery is not secured in place
d) condition	d) <u>level 2 leak</u> of battery fluid
	<u>Hazardous Conditions</u> i. any electrical component or wiring shows signs of shorting, arcing, or a hot spot <u>In the battery compartments of a bus:</u> ii. electrical cable insulation is burnt, chafed, <u>damaged</u> , or frayed, exposing the conductor iii. protective grommet insulating an electrical cable through metal is <u>damaged</u> or <u>missing</u> iv. electrical component is broken or mounting is <u>insecure</u> v. electrical cable is unsupported, or a clamp is <u>missing</u> , causing chafing or fraying
<u>3. Trailer Cord (output to towed vehicle)</u>	Truck ✓ Trailer ✓ Bus ✓
a) insulation	a) cut, cracked, deteriorated or melted through to wire conductor
b) connection <i>Note:</i> A trailer cord must be repaired only by using <u>industry standard</u> methods.	b) cracked, ends split, improper repair or connection
c) constant ABS power on auxiliary circuit <i>Note:</i> Also refer to Section 3A, Item 19 f) PLC communication). Every vehicle equipped for towing another vehicle with air brakes, manufactured after April 1, 2000, must supply constant power to the trailer auxiliary circuit (center pin, blue wire) while the ignition is in the “on” position. <i>Additional Inspection Procedures(s):</i> Confirm that voltage is present at the auxiliary pin in the trailer cord when the ignition is ‘on’ by one of the following methods: Option 1 – Test with a voltmeter. Option 2 – Connect to a test device.	c) power is <u>not</u> continuously supplied to the auxiliary circuit when ignition is “on” a switch is installed that can interrupt power to the auxiliary circuit voltage is below required minimum when circuit is loaded to <u>industry standard</u> value

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p><u>4. Alternator Output on a School Bus</u></p> <p><i>Note:</i> <u>Applies to school bus only.</u> Inspection must be conducted according to the requirements of the relevant jurisdiction and applicable <u>CSA D250</u> Standard.</p>	
<p>a) output rate</p> <p><i>Additional Inspection Procedure(s):</i> Test alternator output using test method #1 <u>or</u> test method #2.</p> <p>Test method #1 – Test alternator using a load test device.</p> <p>Test Method #2 - Test the output of the charging system with all lamps, heaters, defrosters, and other electrical accessories on at highest settings, with engine operating at 1500 rpm.</p>	<p>a) during test method #1, fails to produce 70 amps at idle or fails to produce 130 amps at 1500 rpm</p> <p>during test method #2, voltage drops below 12.4 volts, or charge indicator shows a discharge condition</p> <p>charge indicator is <i><u>inoperative</u></i></p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

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Section 8 – Body

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Hood or Engine Enclosure <i>Additional Inspection Procedure(s):</i> Test the operation of the hood or engine enclosure doors, attachment, latches and safety devices.	Truck ✓ Trailer Bus ✓
a) condition	a) <u>damaged</u> , <u>insecure</u> , or deteriorated in a manner that it is likely to become detached or <u>missing</u>
b) latch (primary or secondary)	b) broken, <u>inoperative</u> , <u>insecure</u> mounting, <u>missing</u> or seized effectiveness is compromised due to deteriorated condition, (e.g.: rubber or similar type of latch) fails to open or close normally welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
c) safety cable, assist spring, support/dampener	c) broken, insecurely attached or <u>missing</u>
d) hinge and support spring	d) hinge or hinge part is broken, cracked, <u>missing</u> , seized or <u>abnormally worn</u>
	<u>Hazardous Condition(s)</u> i. both primary and secondary latch are <u>inoperative</u>
2. Tilt Cab <i>Additional Inspection Procedure(s):</i> Test the operation of the tilt cab operation, its attachment, latches and safety devices.	Truck ✓ Trailer Bus
a) latch (primary or secondary)	a) broken, <u>insecure</u> mounting, <u>missing</u> or seized fails to open or close normally welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
b) hinge	b) hinge or hinge part is broken, cracked, <u>missing</u> , seized or <u>abnormally worn</u> parts do <u>not</u> align correctly

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<u>Hazardous Condition(s)</u> i. latch fails to secure the cab (latch is incapable of holding cab from moving forward)
<u>3. Air-Suspended Cab</u> <i>Additional Inspection Procedure(s):</i> Check the cab with air system at normal operating pressure.	Truck ✓ Trailer Bus
a) air bag	a) leaking, cracked to reinforcing layer, <u>damaged</u> or patched <u>not</u> properly inflating or cab tilts to one side
b) air line, connection and fitting	b) fitting, line or repair method does <u>not</u> meet <u>OEM</u> or <u>industry standard</u> , tubing or hose is defective as defined in the chart on page 55 fitting or connection is broken, cracked, flattened or leaking <u>damaged</u> in a way (such as: melting, flattening, deformation or kinking) that can restrict air flow
c) mount, rod and attachment	c) bent, broken, <u>loose</u> or welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
d) pressure protection valve	d) <u>missing</u> or improper type
e) height control valve	e) <u>inoperative</u> (as indicated by cab height being above or below its normal position) equipped with a single valve which is <u>not</u> in <u>OEM</u> location, or <u>not</u> near centre of cab
f) shock absorber	f) broken, <u>damaged</u> , disconnected, <u>loose</u> or <u>missing</u> <u>level 2 leak</u> of oil
	<u>Hazardous Condition(s)</u> i. any component is so <u>insecure</u> or <u>loose</u> that it is an imminent hazard or it could become detached from vehicle

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown **in this manner** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
4. Cab and Passenger-Vehicle Body	Truck ✓ Trailer Bus ✓
a) condition	<p>a) any section is in a condition that could be hazardous to driver, passenger, pedestrian or cyclist due to being: loose, protruding, torn or having an exposed sharp edge</p> <p>corroded or torn in a manner that reduces structural integrity of a panel or floor, or allows exhaust gases to enter the occupant compartment</p> <p>modified in a manner that may reduce structural integrity (unless the condition or the repair is approved by the <u>OEM</u>, <u>manufacturer</u> or an engineer)</p> <p>body component integrity is reduced due to a <u>loose</u> body component, broken weld, missing fastener or failed adhesive</p> <p>hole is present in panel or floor</p> <p>body panel or floor is welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u></p>
b) body mount/support	<p>b) allows abnormal amount of movement</p> <p>broken, cracked, <u>loose</u> or <u>missing</u> parts</p> <p>improper mount used</p> <p>support cracked, broken or bulging</p> <p>welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u></p>
c) body moulding or trim	c) Is in a condition that could be hazardous to driver, passenger, pedestrian, or cyclist due to being: loose, protruding, torn or having an exposed sharp edge
d) fender	<p>d) <u>missing</u>, <u>damaged</u> so that road spray is <u>not</u> controlled</p> <p>corroded or <u>damaged</u> in a manner that <u>OEM</u> type lamps <u>cannot</u> be properly secured</p> <p><u>not</u> the full width of the tire(s)</p>
	<p><u>Hazardous Condition(s)</u></p> <p>i. any component is so <u>insecure</u> or <u>loose</u> that it is an imminent hazard or it could become detached from vehicle</p> <p>ii. any section has exposed sharp edge, is torn or protrudes out in a manner that is hazardous to driver, passenger, pedestrian or cyclist</p> <p>iii. any body part or attachment is broken, cracked perforated, or sagging, in a manner that permits the body to contact any moving part</p>

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>5. Cargo Body</p> <p><i>Additional Inspection Procedure(s):</i> Where any sheet metal, structural item or fastener is suspected of being <u>loose</u> or perforated, determine the integrity of the suspect item or area by lightly tapping it with a hammer.</p> <p><i>Note:</i> Minor surface rust and corrosion is normal.</p>	<p>Truck ✓ Trailer ✓ Bus </p>
a) sheet metal	<p>a) any section has exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to driver, passenger, pedestrian or cyclist</p> <p>panel is <u>insecure</u>, <u>loose</u> or corroded through</p> <p>rivet is <u>loose</u>, <u>missing</u></p> <p>welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u></p>
b) floor & deck	<p>b) has any condition that allows a person or cargo to fall through</p> <p>has a hole larger than 200 mm across the longest dimension</p> <p>welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u></p>
c) frame & sub-frame	<p>c) bulge caused by corrosion resulting in distortion of 10 mm or more (unless the condition or the repair is approved by the <u>OEM</u>, <u>manufacturer</u> or an engineer)</p> <p>stress crack at side rail or rub-rail</p> <p>rivet is <u>loose</u>, <u>missing</u>, dimpled by corrosion</p> <p>bent, broken, cracked or <u>insecure</u></p> <p>welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u></p>
d) cross-member	<p>d) bent, broken, collapsed, cracked or <u>missing</u></p> <p>perforated or weakened by corrosion</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
e) inner or outer side rail and body-long sills	e) bulge caused by corrosion resulting in distortion of 10 mm or more (unless the condition or the repair is approved by the <u>OEM</u> , <u>manufacturer</u> or an engineer) rivet is <u>loose</u> , <u>missing</u> bent, broken, cracked or <u>insecure</u> welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
f) stake pocket/tiedown, cargo securing point or cargo securing device (including portable anchors)	f) broken, cracked or <u>insecure</u> elongated or distorted.
g) tailgate, hopper, or end-dump door	g) broken, or cracked hinge is broken, cracked or <u>missing</u> , or pin lock is <u>missing</u> <u>insecure</u> , or will <u>not</u> close and latch properly any gap exists that would allow leakage, loss or spillage of cargo welded or repaired in a way that does <u>not</u> meet <u>manufacturer standard</u>
h) body to frame attachment <i>Note:</i> Includes body to frame attachment device such as 'U-bolt', pivot hinge, cheek plate mount, flex-mount hardware, body clamp and 'J-Bar'.	h) bent, broken, cracked, <u>loose</u> or <u>missing</u> spring is broken spacer or insulator is abnormally worn, crushed, dislodged or missing
i) body rail and structural member	i) upper or lower cargo body rail is bent, buckled, has a crack longer than 25 mm, or has a fastener <u>loose</u> or <u>missing</u> floor cross member is bent, <u>loose</u> or sagging roof support is bent, <u>loose</u> or sagging
j) body panel	j) any section has exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to driver, passenger, pedestrian or cyclist panel or panel fastener is <u>insecure</u> , <u>loose</u> , <u>missing</u> , or corroded through rivet is <u>loose</u> repaired in a way that does <u>not</u> meet <u>OEM standard</u> any gap exists that would allow leakage, loss or spillage of cargo

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. any component is so <u>insecure</u> or <u>loose</u> that it is an imminent hazard or it could become detached from vehicle ii. any section has exposed sharp edge, is torn or protrudes out in a manner that is hazardous to driver, passenger, pedestrian or cyclist iii. any body part or attachment is broken, cracked perforated, or sagging, in a manner that permits the body to contact any moving part, or imminent collapse appears likely iv. any gap exists allowing leakage, loss or spillage of cargo v. a cargo body upper or lower rail is buckled, bowed, cracked through, sagging or has two or more adjacent <u>loose</u> or missing fasteners vi. two or more adjacent floor cross members are bent, <u>loose</u> or sagging vii. two or more adjacent roof supports are bent, <u>loose</u> or sagging
<u>6. Frame, Rails & Mounts</u>	Truck ✓ Trailer ✓ Bus ✓
<p>a) condition</p> <p><i>Note:</i> Some rust and corrosion on the outer surface of exposed metal parts is normal. When a high amount of rust or corrosion is present and visibly reduces the thickness of the material, structural deterioration is possible.</p>	<p>a) welded, modified or repaired in a way that does <u>not</u> meet <u>OEM standard</u></p> <p>bent, broken or cracked</p> <p>perforated or separated due to corrosion between mount and frame member</p> <p>rusty, worn or corroded to a depth sufficient to become weakened</p> <p>bulge caused by corrosion resulting in distortion of 10 mm or more (unless the condition or the repair is approved by the <u>OEM, manufacturer</u> or an engineer)</p> <p>any condition of the frame assembly allows a frame component, or a part of the body or power train, to be more than 25 mm out of its normal position, or to contact a moving part</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) frame fastener	b) ineffective, <u>loose</u> or <u>missing</u>
c) cross-member	<p>c) bent, broken, cracked, <u>loose</u> or <u>missing</u></p> <p>cut, notched, rusted or corroded to a depth sufficient to cause weakness</p> <p>repaired using material or method, that does <u>not</u> meet <u>OEM standard</u> or <u>industry standard</u></p> <p>any condition of a cross member allows a frame component, or a part of the body or power train, to be more than 25 mm out of its normal position, or to contact a moving part</p>
<p>d) sub-frame assembly</p> <p><i>Note:</i> This only applies to a structural frame assembly that is not part of the main frame assembly, and carries a load or provides strength to the vehicle structure, i.e.: engine cradle, or suspension sub-frame.</p>	<p>d) bent, broken, cracked, <u>loose</u> or <u>missing</u></p> <p>cut, notched, rusted or corroded to a depth sufficient to cause weakness</p> <p>repaired using material or method that does <u>not</u> meet OEM standard or industry standard</p> <p>any condition of the sub-frame assembly allows a frame component, or a part of the body or power train, to be more than 25 mm out of its normal position, or to contact a moving part</p>
	<p><u>Hazardous Condition(s)</u></p> <p>i. any frame side-rail or cross-member is cracked as follows:</p> <ul style="list-style-type: none"> • longer than 38 mm • longer than 25 mm in the bottom flange • from the web extending around the radius and into the bottom flange <p>ii. any condition of the frame allows a frame component, or a part of the body or powertrain, to be more than 38 mm out of its normal position, or to contact a moving part</p> <p>iii. imminent failure appears likely due to a frame member that is <u>damaged</u> or deteriorated, or has been repaired using material or method, that does <u>not</u> meet <u>OEM standard</u> or <u>industry standard</u></p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
7. Unitized Body Elements	Truck ✓ Trailer ✓ Bus ✓
a) load carrying panel, bulkhead, structural element and mounts <i>Note:</i> Some rust and corrosion on the outer surface of exposed metal parts is normal. When a high amount of rust or corrosion is present and visibly reduces the thickness of the material, structural deterioration is possible.	a) bent, broken, cracked, <u>loose</u> or <u>missing</u> cut or notched more than 25 mm, or rusted or corroded to a depth sufficient to cause weakness welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> any rivet is <u>loose</u> or <u>missing</u> any condition of the unitized body allows a part of the body or powertrain, to be more than 25 mm out of its normal position, or to contact a moving part
	<u>Hazardous Condition(s)</u> i. any component is so <u>insecure</u> or <u>loose</u> that it could become detached from the vehicle ii. structural body component has a crack, cut or notch longer than 38 mm iii. any condition of a unitized body component allows a part of the body or powertrain to be more than 38 mm out of its normal position, or to contact a moving part iv. imminent failure appears likely due to a body component that is <u>damaged</u> or deteriorated, or has been repaired using material or method, that does <u>not</u> meet <u>OEM standard</u> or <u>industry standard</u>
8. Cab or Cargo Door	Truck ✓ Trailer ✓ Bus
a) condition and operation <i>Additional Inspection Procedure(s):</i> Test the operation of each door. <i>Note:</i> This includes a partition door between the occupant and cargo area.	a) binds or <u>fails to</u> lock securely <u>insecure</u> mounting to hinge, <u>insecure</u> hinge or severely corroded in hinge area panel is corroded through welded or repaired in a way that does not meet OEM standard door fails to operate or latch on both primary and secondary latches gap exists that may allow exhaust gases to enter cab, passenger compartment, and/or sleeper seal is out of position, <u>damaged</u> or <u>missing</u> , and is able to allow exhaust gases to enter cab, passenger compartment, and/or sleeper any gap exists that would allow leakage, loss or spillage of cargo

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) door openers and handles	b) broken, <i>inoperative</i> or <i>missing</i> catch or latch is broken, <i>loose</i> or <i>missing</i>
	<u>Hazardous Condition(s)</u> i. cab door fails to latch on both primary and secondary latches ii. cargo door fails to latch iii. gap exists and exhaust gases are entering cab, passenger compartment or sleeper iv. any gap exists allowing leakage, loss or spillage of cargo
<u>9. Cargo Tank or Vessel</u> <i>Note:</i> Code, (e.g.: dangerous goods <u>CSA</u> B620, edible product, dry bulk) cargo tanks are frequently subject to additional inspection requirements. Inspections conducted in accordance with this standard address only a limited portion of the compliance requirements. This inspection does not include any procedure that requires operation of any valve, hatch or product handling item. Technician-inspector must take precautions to avoid exposure to any cargo or residual material.	Truck ✓ Trailer ✓ Bus
a) condition	a) welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> <u>loose</u> on mounts <u>level 2 leak</u> of any liquid transported by the tank or vessel crack or broken weld in tank, frame or support movement, bulge or weakness caused by corrosion between tank and frame
b) valve	b) cap <i>loose</i> or <i>missing</i> <u>level 2 leak</u> of any liquid transported by the tank or vessel
c) hose	c) <i>loose</i> or improperly secured
d) hatch	d) <i>insecure</i> , <i>loose</i> or <i>missing</i> latch <i>inoperative</i> hinge, broken or <i>inoperative</i>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p>Hazardous Condition(s)</p> <ul style="list-style-type: none"> i. any component is so <i>insecure</i> or <i>loose</i> that it could become detached from vehicle ii. required internal valve is <i>missing</i> iii. internal valve remains open when it is required to be closed iv. access/fill/inspection opening cover is improperly secured or <i>missing</i> v. required venting device, emergency device, or discharge valve, is <i>missing</i>
<p>10. Body, Device or Equipment Attached or Mounted to the Vehicle</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p>
<p><i>Note:</i> This section applies primarily to external devices or equipment attached to a vehicle. Examples include a crane, cargo lifting and transporting machine, load covering equipment, cargo dispensing equipment, APU, refrigeration-heater (reefer) unit, generator, ready-mix unit, sander body, feed & grain body, snow plow, service/utility body, vacuum tank, flatbed, roll-on/roll-off, lugger, ISO container chassis, etc.</p> <p>The criteria in this section only apply to a mounted body, device or equipment to the extent that the condition could affect the safe operation of the vehicle on the highway. The functionality of the mounted equipment does not need to be tested or inspected.</p>	
<p>a) security and condition</p> <p><i>Additional Inspection Procedure(s):</i> Check security of attached body, device or equipment visually, manually and using suitable tools as necessary. No functional test is to be conducted.</p>	<p>a) equipment or device is in such an unsafe condition that is a risk to other motorists, the driver, a passenger, pedestrian or cyclist</p> <p>equipment or device is <i>insecure</i> or <i>loose</i>, or in danger of shifting in a way that could impede normal operation of the vehicle</p> <p>any section has an exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist</p> <p><i>level 3 leak</i> of any oil, hydraulic fluid or liquid product</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. any article, component or device is so <i>insecure</i> or <i>loose</i> that it could become detached from vehicle ii. equipment or device is in such an unsafe condition that is a risk to other motorists, the driver, a passenger, pedestrian or cyclist iii. any section has an exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist
<p>11. Refrigeration/Heater Unit System (Reefer or Auxiliary Power Unit [APU])</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p>
<p>a) security and condition</p> <p><i>Note:</i></p> <p><i>Additional Inspection Procedure(s):</i> Check security of attached body, device or equipment visually, manually and using suitable tools as necessary. No functional test is to be conducted.</p> <p>Inspect the exhaust system and fuel system, according to the appropriate type of fuel used, as described in Section 1 – Power Train.</p>	<p>a) equipment or device is in such an unsafe condition that is a risk to other motorists, the driver, a passenger, pedestrian or cyclist</p> <p>equipment or device is <i>insecure</i> or <i>loose</i>, or in danger of shifting in a way that could impede normal operation of the vehicle</p> <p>any section has an exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist</p> <p><i>level 3 leak</i> of any oil, hydraulic fluid or liquid product</p> <p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. any article, component or device is so <i>insecure</i> or <i>loose</i> that it could become detached from vehicle ii. equipment or device is in such an unsafe condition that is a risk to other motorists, the driver, a passenger, pedestrian or cyclist iii. any section has an exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist
<p>12. Bumper</p>	<p>Truck ✓ Trailer Bus ✓ </p>
<p><i>Note:</i> Applies only to the front bumper on a truck or truck- tractor.</p> <p>Applies to the <u>front and rear</u> bumper on a bus.</p>	
<p>a) condition</p>	<p>a) broken, <i>loose</i> or <i>missing</i></p> <p>any section has exposed sharp edge, is torn or protrudes in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) design	b) replacement part does <u>not</u> meet <u><i>OEM standard</i></u> , or is weaker than <u><i>OEM</i></u> design solid portion <u>does not</u> extend from one frame rail to the other (except for a unitized body design)
	<u>Hazardous Condition(s)</u> i. imminent failure appears likely ii. any section has exposed sharp edge, is torn or protrudes in a manner that could be hazardous to the driver, a passenger, pedestrian or cyclist

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
e) tinting <i>Note:</i> OEM tinting does not block more than 30% of light. This is rated and expressed as minimum 70% light transmittance. “AS” = American National Safety Standard and (ANSI/SAE Z26.1)	e) any after-market tint is applied driver’s normal vision is materially impaired tint or sunscreen other than that allowed by ANSI/SAE Z26.1 standards tinting extends more than 75 mm from top of windshield, or beyond AS line
f) material type	f) is <u>not</u> marked as type AS-1 or AS-10
g) condition	g) <u>missing</u> vision is obscured or limited due to surface condition
	<u>Hazardous Condition(s)</u> i. windshield is missing ii. windshield is <u>damaged</u> or deteriorated in such a way that driver’s normal vision is materially impaired in the area swept by <u>OEM</u> windshield wipers
<u>14. Side Windows</u>	Truck ✓ Trailer Bus ✓
a) operation <i>Additional Inspection Procedure(s):</i> Test the operation of the driver’s (left) side window.	a) fails to open or close normally
b) condition <i>Note:</i> Applies to any window forward of the driver’s seat back.	b) clouded, <u>damaged</u> or deteriorated in such a way that normal driver vision is materially impaired window has an exposed sharp edge, is broken or part of window is missing window originally fitted with metal banding has any <u>damaged</u> or missing banding
c) material type <i>Note:</i> Applies to every side window.	c) is <u>not</u> marked as type AS-1, AS-2, *AS-3, AS-10 or AS-11 *AS-3 is only acceptable for side windows to the rear of the driver location.
d) tinting (<u>where tinting is prohibited by the jurisdiction</u>) <i>Note:</i> Applies to any window forward of the driver’s seat back.	d) any after-market tint is applied

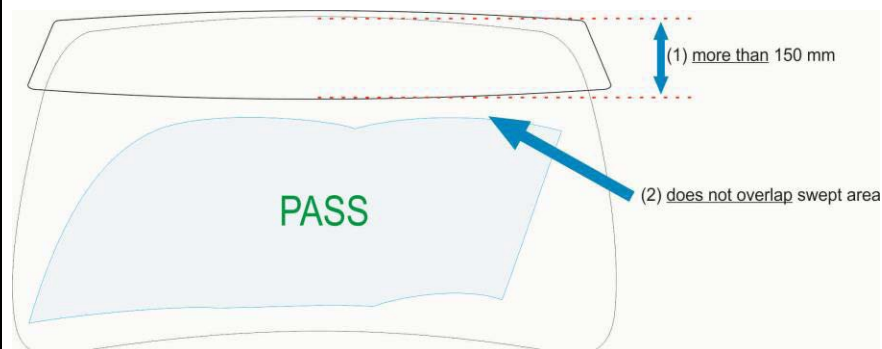
Note: All inspection procedures are visual unless additional inspection procedures are indicated.
 Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>e) tinting (<u>where tinting is permitted by the jurisdiction</u>)</p> <p><i>Optional Additional Inspection Procedure</i> Where aftermarket tinting is applied to any side window forward of the driver's seat back, test the light transmittance using a suitable test device.</p>	<p>e) light transmittance value is less than 70% (more than 30% of light is blocked)</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
15. Rear Window	Truck ✓ Trailer Bus ✓
a) condition	a) broken or exposed sharp edge
b) material type <i>Note:</i> Rigid material may be used in place of glass or rigid plastic, when the vehicle is equipped with an outside rear-view mirror on each side.	b) is <u>not</u> marked as glass type AS-1, AS-2, AS-10 or AS- 11, or rigid plastic AS-4 or AS-5
16. Interior Sun Visor	Truck ✓ Trailer Bus ✓
a) location	a) <u>missing</u> on driver's side
b) attaching parts	b) bent, broken, <u>loose</u> or <u>missing</u>
c) adjustment	c) <u>cannot</u> be maintained in a set position
d) modified or non- <u>OEM</u> sun visor on a school bus	d) does not meet <u>applicable standard</u>
17. Exterior Windshield Sun Visor	Truck ✓ Trailer Bus ✓
a) obstructed view	a) any part of an exterior visor, at any point: <ol style="list-style-type: none"> 1. extends more than 150 mm below the upper edge of the windshield; <u>and</u> 2. overlaps the portion of the windshield swept by the <u>OEM</u> wiper arm and wiper blade

Fig 1.



Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:

REJECT IF:

Fig 2.

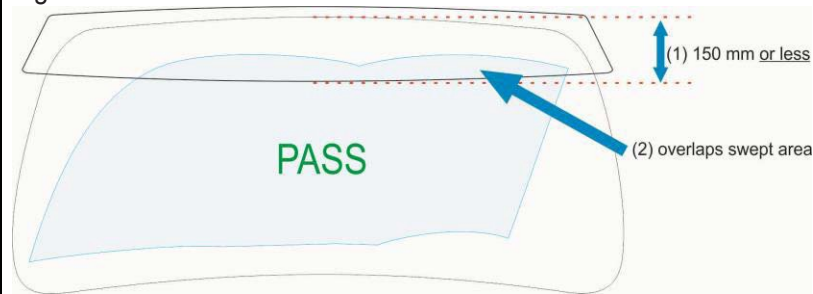


Fig 3.

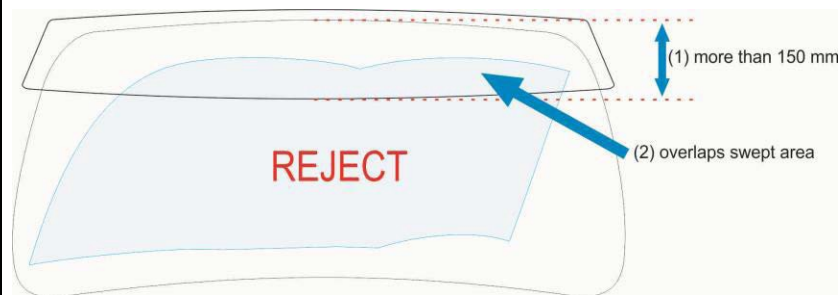
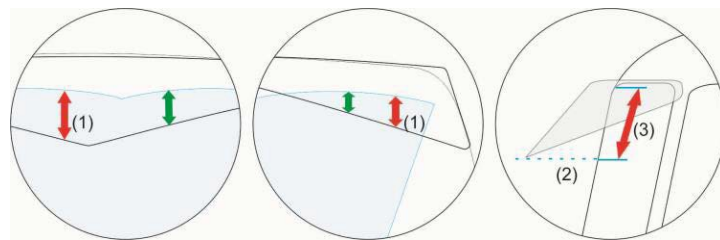


Fig 4.

*Sun Visor Measurement Location and Method:*

1. Identify the location where the sun visor vertically overlaps furthest over the swept area of the wiper.
2. Extend a level line to the surface of the windshield from the location identified in step (1).
3. Measure upwards along the surface of the windshield. Reject if measurement is greater than 150 mm.

Note:

"Swept area" means the portion of the windshield swept by an OEM wiper blade attached to an OEM wiper arm.

Hazardous Condition(s)

- i. any part of an exterior visor, at any point:
 - extends more than 150 mm below the upper edge of the windshield; and
 - overlaps the portion of the windshield swept by the OEM wiper arm and wiper blade

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
18. Rear-view Mirror	Truck ✓ Trailer Bus ✓
a) location <i>Note:</i> Every vehicle requires an external rear-view mirror on the left side. When a vehicle does not have an interior rear-view mirror that provides an unobstructed view through a rear window, an external mirror is also required on the right side.	a) required rear-view mirror is <u>missing</u>
b) view	b) view to the rear is obstructed on a required mirror
c) mount	c) broken, <u>insecure</u> or <u>loose</u> fails to hold mirror in correct position
d) glass condition	d) cracked vision is obscured due to condition of glass or reflective surface, over 5% of total surface area of mirror
e) surface area of external mirror <i>Note:</i> <u>OEM</u> mirrors are required to meet these same area requirements as per <u>CMVSS</u> 111. When a convex mirror is installed onto a rear-view mirror, its area is included.	e) when non-<u>OEM</u> mirror is used, surface area of mirror is less than: for a vehicle with GVWR of 4536 kg or less: 125 cm ² for a vehicle with GVWR of more than 4536 kg: 325 cm ²
	<u>Hazardous Condition(s)</u> i. an external rear view mirror is <u>missing</u> , obscured, <u>insecure</u> or adjustment is seized
19. Seat	Truck ✓ Trailer Bus ✓
<i>Note:</i> Excludes passenger seats on a bus. (See item 32 below for bus passenger seat requirements.)	
a) condition <i>Additional Inspection Procedure(s):</i> Test the operation of the driver seat position controls.	a) <u>loose</u> or <u>insecure</u> mounting frame broken covering material torn and exposing a metal component or spring driver seat cannot be adjusted forward or backward driver seat back recline mechanism fails to adjust - driver seat pedestal removed or seat assembly does <u>not</u> meet <u>OEM standard</u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) seat position lock <i>Additional Inspection Procedure(s):</i> Test the operation of the driver seat position locking function.	b) driver seat adjustment fails to lock into position
	<u>Hazardous Condition(s)</u> i. driver's seat <u>loose</u> , insecure or fails to lock into position
<u>20. Seat Belt/Occupant Restraint</u> <i>Additional Inspection Procedure(s):</i> Confirm the operation of each seat belt latch and retractor.	Truck ✓ Trailer Bus ✓
a) type and condition	a) <u>missing</u> or <u>not</u> equipped at each seating position as originally required to meet applicable <u>CMVSS</u> webbing material is broken, cut frayed or torn air ride, hydraulic or spring seat <u>does not</u> have lap belts attached to the seat, or is <u>not</u> equipped with a secondary belt from the seat to the floor
b) anchor	b) broken, <u>insecure</u> mounting or <u>missing</u>
c) retractor	c) broken, <u>insecure</u> mounting or <u>missing</u> <u>fails to</u> allow belt to extend to its maximum length or <u>fails to</u> retract properly
d) belt release and buckle <i>Additional Inspection Procedure(s):</i> Buckle each seat belt assembly and extend the belt to test the belt retractor.	d) broken, <u>insecure</u> mounting or <u>missing</u> any part is <u>not</u> properly attached to the belt material latch <u>fails to</u> lock in position or fails to release easily when belt is under tension
e) supplemental restraint system (SRS) <i>Additional Inspection Procedure(s):</i> Cycle the ignition off and on and check the status of the SRS indicator lamps.	e) an air bag is disconnected, <u>inoperative</u> , <u>missing</u> or <u>not</u> re-installed to <u>OEM</u> service instructions the air bag indicator (SRS) lamp indicates a malfunction or fails to operate according to <u>OEM</u> service instructions air bag has been deactivated permanently without a provision to turn off and on by a key lock, or does <u>not</u> have an illuminated message to indicate when the air bag has been switched off air bag cover <u>damaged</u>
f) pre-tensioner and load limiter	f) pre-tensioner has been activated and system not repaired or replaced to meet <u>OEM standard</u> load limiter has been activated and system not repaired or replaced to meet <u>OEM standard</u>

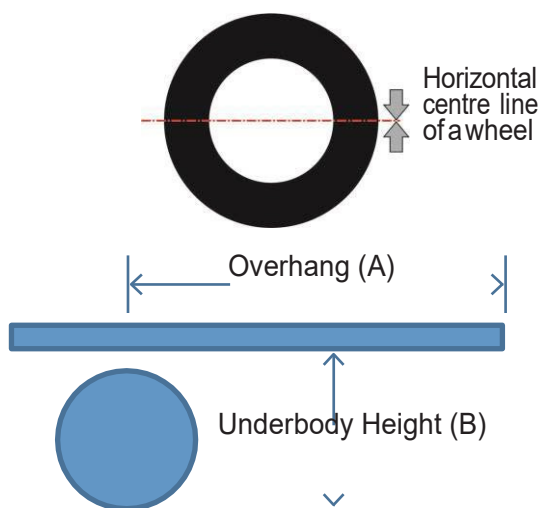
Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p data-bbox="743 201 1057 237"><u>Hazardous Condition(s)</u></p> <p data-bbox="743 254 1333 289">i. a required seat belt is <i><u>inoperative</u></i> or <i><u>missing</u></i></p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
21. Fender/Mud Flap	Truck ✓ Trailer ✓ Bus ✓
<p><i>Note:</i> A mud flap is required behind every wheel or axle group, where the full width of the tire is not enclosed by a body element, such as a fender, down at least as far as the wheel's horizontal centre line. Unless exempt as noted below, the mud flap must meet the following dimensions.</p> <p>Mud flap width - at least as wide as the tires.</p> <p>Bottom of mud flap - no more than 210 mm from the ground.</p> <p>Top of mud flap - must extend upward at least as high as the top of the tire(s), or up to a body element that extends below the top of the tire.</p> <p>Mud flap exemptions:</p> <p>A mud flap is not required where the body overhang is more than three times the underbody height.</p> <p><i>Overhang</i> = (A) the distance from the vertical centre line of the tire to the end of the body</p> <p><i>Underbody height</i> = (B) the distance from the bottom of the body overhang to the ground</p> <p>Mud flap location and dimensions may vary on a vocational vehicle or highway tractor, where the mud flap will interfere with vehicle operation, and on a vehicle with movable suspension, where there is inadequate room for a full size mud flap.</p> <p>Vocational vehicle: Vocational truck means a truck chassis with permanently mounted equipment or body features intended to perform or support a specific job or group of related jobs and includes dump trucks, garbage trucks, concrete mixers, snow plows, and hydrovacs but does not include trucks solely intended to tow other vehicles such as a truck tractor or only intended to carry or transport goods such as van body or flat deck type trucks.</p>	

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) condition and location	<p>a) fender or mud flap is broken, has <u><i>insecure</i></u> mounting, is <u><i>loose</i></u> or <u><i>missing</i></u></p> <p>fender or mud flap has a tear or wear hole exists that is larger than 100 mm across the longest dimension, or the aggregated longest dimensions of multiple holes in a single mud flap equal more than 100 mm</p> <p>the distance from the bottom of the mud flap to the ground exceeds 210 mm</p> <p>the mud flap does not cover the full tread width of the tire(s)</p> <p>the top of the mud flap does not reach up to the top of the tires or a body element</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<u>Hazardous Condition(s)</u> i. required mud flap is missing
<u>22. Landing Gear on Trailer</u>	Truck Trailer ✓ Bus
a) operation <i>Additional Inspection Procedure(s):</i> Test the operation of the landing gear in all speed settings.	a) binding, <i>inoperative</i> or seized
b) condition	b) landing gear or brace is bent, broken or cracked <i>insecure</i> mounting pad broken, <i>insecure</i> or <i>loose</i> , or <i>missing</i>
c) crank handle	c) <u>cannot</u> be stowed or secured so that it remains within the outer dimensions of the vehicle
	<u>Hazardous Condition(s)</u> i. any part of the landing gear is <i>insecure</i> or <i>loose</i> or so as to become detached from vehicle
<u>23. Sliding Axle Assembly (Sliding Bogie) on Trailer</u>	Truck Trailer ✓ Bus
a) frame and sub-frame rail	a) welded or repaired in a way that does <u>not</u> meet <i>OEM standard</i> bent, broken or cracked any attaching weld is broken or cracked perforated or separated due to corrosion between mount and frame member rusted or corroded to a depth sufficient to become weakened
b) slider-guide/hold-down bracket & locking device	b) cracked or <i>missing</i> <i>inoperative</i> or <u>fails to</u> lock securely any lock pin is broken, cracked, disengaged or <i>missing</i> locking device (pin) is worn causing 25% or greater reduction in diameter locking-pin hole measures more than 25 mm larger than its original size

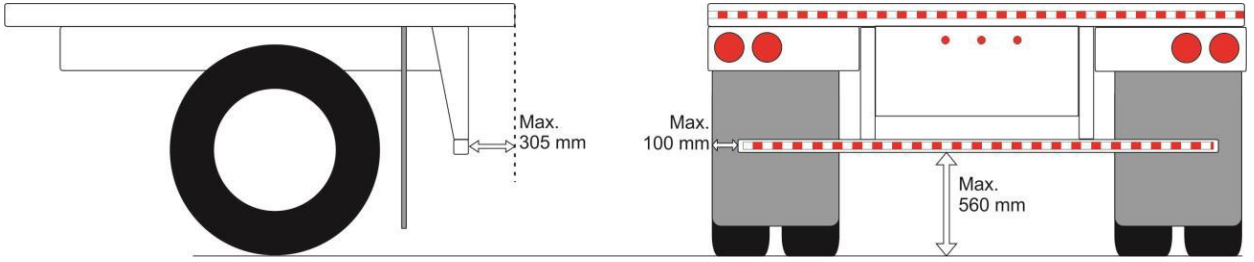
Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) stop	c) bent, cracked, <i>loose</i> or <i>missing</i>
	<u>Hazardous Condition(s)</u> <ul style="list-style-type: none"> i. more than one-fourth of the slider locking pins or locking pin holes that are in use have any one of the following conditions: <ul style="list-style-type: none"> • locking pin is missing or not engaged • locking-pin hole measures more than 25 mm larger than its original size • the material from the hole in use to an adjacent hole, or the material from the hole in use to the edge of the rail, is torn or split ii. more than one-fourth of the slider-guide/hold-down brackets are missing or disengaged iii. the sliding suspension attachment member (undercarriage body rail) on either side has a crack of any length in more than 50 percent of its attachment welds iv. a sliding suspension member's (undercarriage body rail) attachment welds are cracked completely through along a 1.2 m continuous length of the body rail v. a sliding suspension attachment member (undercarriage body rail) is cracked completely through along a 1.2 m continuous length
<u>24. Aerodynamic Device and Attachment</u>	Truck ✓ Trailer ✓ Bus ✓
a) condition and security	a) <i>insecure</i> or <i>loose</i> any section has exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to driver, passenger, pedestrian or cyclist
	<u>Hazardous Condition(s)</u> <ul style="list-style-type: none"> i. aerodynamic device is so <i>insecure</i> or <i>loose</i> it is likely to become detached from the vehicle ii. any section has exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to driver, passenger, pedestrian or cyclist

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
25. Rear Impact Guard (RIG) on Trailer	Truck Trailer ✓ Bus
<p><i>Note:</i> Every trailer with a GVWR of 4,536 kg or greater manufactured on or after September 23, 2007, except as noted below, must be fitted with a rear impact guard (RIG) that meets the requirements of <u>CMVSS</u> 223.</p> <p>Trailers not required by <u>CMVSS</u> to have RIG include:</p> <ul style="list-style-type: none"> • pole trailer • pulpwood trailer • wheels-back trailer • trailer designed to be used as temporary living quarters • low chassis trailer • trailer designed to interact with, or having, work performing equipment located in or moving through the area that would be occupied by a RIG 	
<p>a) dimensions</p> <p><i>Note:</i> All RIG dimensions are based on the trailer being in an unloaded condition, suspension at normal ride height and tires properly inflated.</p>	<p>a) RIG does not conform to dimensions shown in figure 1 below (based on <u>industry standard</u> - TMC RP 732)</p>
<p>b) condition</p> <p><i>Note:</i> Multiple bends are permitted.</p> <p>When there is visible damage to the RIG, also carefully inspect the trailer frame and floor for structural damage.</p>	<p>b) broken, <u>loose</u> or <u>missing</u></p> <p>has cracked welds in the horizontal or vertical member or in the supporting structure or any attachment to vehicle structure</p> <p>the horizontal member is bent inward, downward, upward or outward, beyond 75 mm as shown in figure 2 below</p> <p>the vertical supports and/or supporting structure are weakened, bent or distorted (See figure 3 below)</p>
<p>Figure 1 – Rear Impact Guard Dimensions</p> 	

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:

REJECT IF:

Figure 2 – Limits of Damage to Horizontal RIG Member

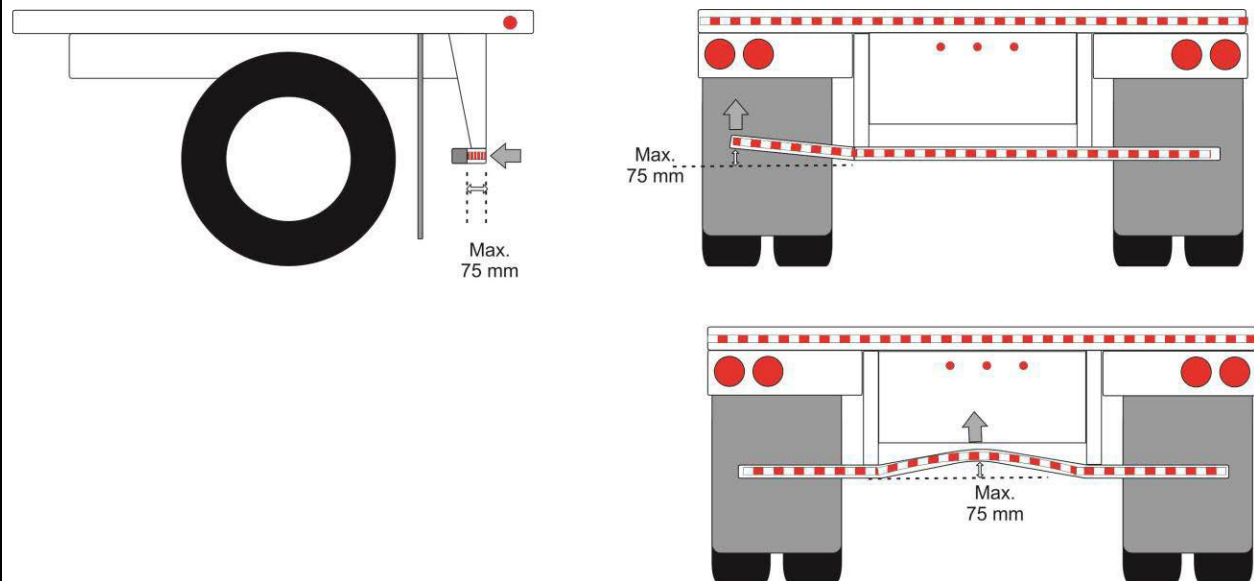
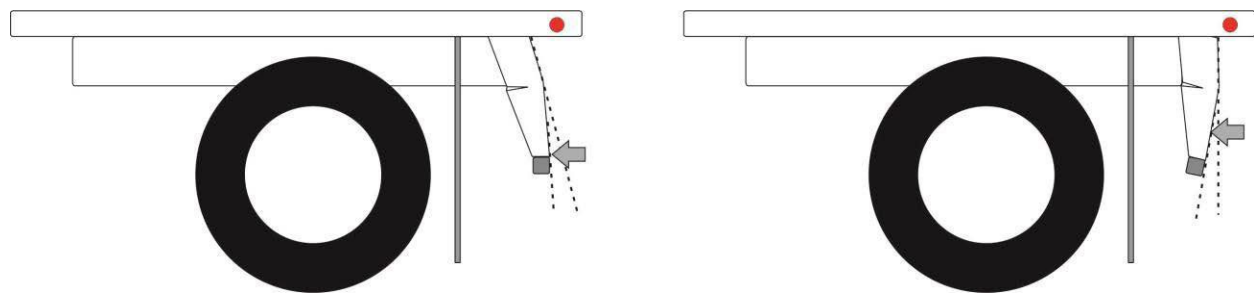


Figure 3 – Example of Damaged Vertical RIG member

**Hazardous Condition(s)**

- i. any part of the RIG is so *insecure* or *loose* it is likely to become detached from the vehicle

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Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
26. Floor Pan/Baggage Floor/Step Well on a Bus	Truck Trailer Bus ✓
a) floor condition	<p>a) bent or deformed in a way that causes unevenness in any aisle, improper attachment of any seat or interferes with any system or control</p> <p>cracked, split or has any non-manufactured hole that is not properly patched rusted or corroded sufficiently to result in structural weakness</p> <p>allows exhaust gases to enter occupant compartment</p> <p>any rivet is <u>loose</u> or <u>missing</u></p>
b) floor covering <i>Note:</i> Slip resistant covering is required on the passenger compartment floors and aisles of all buses. Floor covering is <u>not</u> required in baggage areas.	<p>b) cracked, torn or worn through, or <u>not</u> sealed at seams</p> <p><u>loose</u> or curled and posing a tripping hazard</p> <p>missing or improper type</p> <p><u>not</u> a smooth surface material under the seats</p> <p>on a school bus, <u>not</u> a ribbed surface material in the aisle, or required ribbed surface of floor covering is worn smooth</p>
c) step well condition <i>Note:</i> Slip resistant covering is required on all step tread surfaces.	<p>c) bent or deformed in a way that causes unevenness on any step surface</p> <p>cracked, split or has any non-manufactured hole that is <u>not</u> properly patched</p> <p>rusted or corroded sufficiently to result in structural weakness</p> <p>nose of tread does <u>not</u> have band of contrasting colour (only applicable where a contrasting colour was originally equipped by <u>OEM</u>)</p>
27. Interior Body and Fixtures on a Bus	Truck Trailer Bus ✓
a) stanchion and guard rail	<p>a) <u>OEM</u> equipped stanchion is <u>missing</u></p> <p><u>loose</u>, support or fastener <u>missing</u></p> <p>energy absorbing material is <u>missing</u> and exposing any area of metal with the longest dimension greater than 25 mm</p> <p>energy-absorbing material deeper than 6 mm, is <u>missing</u> on any one element, on one or more sections that equal more than 100 mm, when the longest dimension of all such areas are added together</p>
b) grab handle	<p>b) <u>OEM</u> equipped grab handle is <u>missing</u></p> <p>broken or <u>loose</u></p> <p>on a school bus, drawstring block or security block (that prevents draw strings from being caught) is <u>missing</u></p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) retainer barrier on a school bus <i>Note:</i> A school bus must be equipped with a seat or retainer barrier forward of each passenger seat. A seat acts as a retainer barrier to the seat immediately behind it.	c) <u>missing</u> , not located forward of any seat any part is <u>not</u> padded on the rear face on the upper 300 mm
d) metal condition	d) any metal is torn in a way that could be hazardous to a person
28. Service and Exit Door on a Bus	Truck Trailer Bus ✓
a) condition and operation <i>Additional Inspection Procedure(s):</i> Test the operation of each door.	a) binds or <u>fails to</u> lock securely <u>insecure</u> mounting, or severely corroded in hinge area panel is corroded through welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> door <u>fails to</u> operate or <u>fails to</u> latch on both primary and secondary latches gap exists that allows exhaust gases to enter occupant compartment
b) door openers and handles	b) broken, <u>inoperative</u> or <u>missing</u> catch or latch is broken, <u>loose</u> or <u>missing</u>
c) remote door operator	c) <u>inoperative</u> , <u>missing</u> or <u>not</u> equipped binds, jams or malfunctions manual override device on power operated door is <u>inoperative</u> or <u>missing</u> control is <u>not</u> accessible from seated driving position
d) door edge material	d) material is <u>loose</u> or torn strip seal along the bottom edge of the door is <u>missing</u> or torn <u>missing</u> or improper type of material
e) window of school bus door <i>Note:</i> Applies to <u>school bus only</u> .	e) has fog or visible moisture between panes <u>fails to</u> meet any of the following requirements: OEM type and size double paned or equipped with a means of keeping glass clear of frost marked as type AS-1, AS-2, AS-10 or AS-11
	<u>Hazardous Condition(s)</u> i. door is <u>inoperative</u> or <u>fails to</u> remain in the closed position

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<u>29. Emergency Exit (Door, Window and Roof Hatch) on a Bus</u> <i>Note:</i> Inspection must be conducted according to the <u>applicable requirements</u> .	Truck Trailer Bus ✓
a) condition and operation <i>Additional Inspection Procedure(s):</i> Confirm that each exit (door, window and roof hatch) opens, closes and latches as intended.	a) passage to any door is blocked release or latch <u>fails to</u> operate normally from the inside or outside hinge fails to operate normally <u>fails to</u> open fully and smoothly
b) label and signage <i>Note:</i> Inspection must be conducted according to the <u>applicable requirements</u> .	b) fails to display required label or sign identifying emergency exit fails to display required label or sign displaying operating instructions
c) emergency door and roof hatch	c) interlock system on emergency door or roof hatch <u>fails to operate as intended</u>
d) emergency exit window warning on a school bus	d) warning device <u>inoperative</u> or <u>missing</u> on emergency window
	<u>Hazardous Condition(s)</u> i. required and or marked emergency exits are <u>inoperative</u> , <u>missing</u> , or obstructed ii. vehicle operates with emergency door locked
<u>30. Passenger Compartment Window on a Bus (Except Emergency Exit Window)</u> <i>Note:</i> Items a), b) & c) below apply to all passenger compartment side windows.	Truck Trailer Bus ✓
a) operation <i>Additional Inspection Procedure(s):</i> Test the operation of each opening side window.	a) fails to open, close or latch as intended

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) condition	b) broken, exposed sharp edge, single pane glass is cracked or dual pane window is cracked on inside exposed edge is not banded on a school bus, double-paned windows or windows equipped with frost shields, are <u>not</u> fitted where required by the <u>applicable requirements</u>
c) material type	c) <u>not</u> marked as one of the two material listed below: <ul style="list-style-type: none"> • glass type AS-1, AS-2, AS-3, AS-10 or AS-11 • rigid plastic type AS-4, AS-5 or AS-12
d) window tint <i>Note:</i> This item applies only to the windows directly to the left and right of the driver.	d) aftermarket tint or sun screen is applied to the windows directly to the left and right of the driver (including windows in doors)
e) window tint on a school bus	e) aftermarket tint or sun screen is applied to any window that is required to be double-paned by the <u>applicable requirements</u>
<u>31. School Bus Exterior Mirror (Except Standard Left and Right Side Mirror)</u> <i>Note:</i> Applies to school bus only.	Truck Trailer Bus ✓
a) left and right side convex rear-view mirror	a) required convex mirror is broken, <u>insecure</u> , <u>loose</u> , <u>missing</u> , or fails to meet any applicable requirement of the relevant jurisdiction
b) cross-over convex mirror <i>Note:</i> A school bus manufactured after Nov. 29, 1997 requires two cross-over mirrors.	b) not equipped with required one, or two, fender-mounted <u>OEM</u> or equivalent, cross-over mirrors mirrors <u>fail to</u> provide the driver with the required view of the front, and front-left and front-right sides of the school bus mirror, or mirror mounting, is <u>insecure</u> or <u>loose</u> , or fails to maintain adjustment power operated mirror <u>fails to operate as intended</u> mirror is broken, cracked or pitted, on an aggregated area larger than 5% of the mirror surface, has any condition that deteriorates, or interferes with, the normal view from the mirror
c) mirror heating and controls	c) does not function as intended

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p><i>Additional Inspection Procedure(s):</i> Test the operation of exterior mirror heaters.</p> <p><i>Note:</i> Confirm compliance based on vehicle age with the <u>applicable requirements</u>. Any amount of heat produced by the mirror is sufficient to indicate functionality.</p>	
	<p><u>Hazardous Condition(s)</u></p> <p>i. mirror is <u>insecure</u>, <u>loose</u> or <u>missing</u></p>
<p><u>32. Passenger Seat on a Bus</u></p> <p><i>Additional Inspection Procedure(s):</i> Manually check the condition and security of each passenger seat.</p>	<p>Truck Trailer Bus ✓ </p>
<p>a) frame and mounting</p>	<p>a) broken, <u>loose</u> or <u>not</u> securely attached to the floor or wall as required</p>
<p>b) seating surface</p>	<p>b) covering material is torn, exposing the seat base or springs</p> <p>padding or energy absorbing material thickness is reduced by more than 25%, over an aggregated area greater than 10% of the seating surface</p> <p>a tear in the covering is longer than 75 mm</p> <p>covering has a hole, or covering is <u>missing</u>, where the longest measurement across the area is more than 100 mm</p> <p>on a school bus, seat bottom is not secured to the frame</p>
<p>c) seat back and barrier surface</p>	<p>c) <u>loose</u> or <u>missing</u></p> <p>a tear in the covering is longer than 75 mm</p> <p>covering has a hole, or covering is <u>missing</u>, where the longest measurement across the area is more than 50 mm</p> <p>energy-absorbing material is reduced in thickness by more than 25%, where the longest measurement across the area is more than 75 mm</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
33. School Bus Body Exterior	Truck Trailer Bus ✓
<i>Note:</i> Applies to school bus only.	
a) paint	a) body is <u>not</u> the required colour hood is <u>not</u> the required colour bumper is <u>not</u> the required colour
b) rub rail	b) broken, corroded, cracked, <u>loose</u> or torn sections, <u>missing</u> or removed any rivet is <u>loose</u> or <u>missing</u> bent and protruding from the side of the bus
c) signs	c) any required sign is <u>missing</u> , not clearly visible and legible, <u>damaged</u> , or fails to comply with an applicable requirement of the relevant jurisdiction
d) stop arm and control <i>Additional Inspection Procedure(s):</i> Actuate the stop arm control to confirm it operates in the manner intended by the <u>manufacturer</u> .	d) <u>fails to</u> operate in the intended manner red paint has faded to less than 70% of original intensity (minimum intensity is equivalent to Pantone® PMS 7607U) <i>Note:</i> Use an industry standard colour-reference chart as necessary.
e) stop arm lamp <i>Additional Inspection Procedure(s):</i> Check in conjunction with stop arm.	e) <u>inoperative</u> or <u>fails to</u> comply with an applicable requirement of the relevant jurisdiction
f) pedestrian crossing arm <i>Additional Inspection Procedure(s):</i> Actuate the pedestrian crossing arm to confirm it operates in the manner intended by the <u>manufacturer</u> .	f) bent, broken or <u>inoperative</u> incorrect length
	<u>Hazardous Condition(s)</u> i. rub rail is protruding from the side of the bus ii. any section has exposed sharp edge, is torn or protrudes out in a manner that could be hazardous to driver, passenger, pedestrian or cyclist

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
34. Auxiliary Compartment on a Bus	Truck Trailer Bus ✓
a) access and baggage doors <i>Additional Inspection Procedure(s):</i> Operate all baggage compartment doors.	a) <u>fails to</u> open or close normally latch <u>fails to</u> hold hinge is broken, <i>inoperative</i> , <i>missing</i> or seized hinge mounting area is <i>insecure</i> counter balance cable is frayed or will <u>not</u> maintain open position
b) passenger compartment baggage area partition	b) does <u>not</u> have a securely attached barrier, separating baggage from occupant seating area
c) overhead shelf/parcel rack	c) <i>insecure</i> or <i>loose</i> mounting fastener is broken, <i>insecure</i> or <i>missing</i> has <u>no</u> means of preventing articles from unintentionally falling out
	<u>Hazardous Condition(s)</u> i. access or baggage door latch fails to hold door in closed position

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

Section 9 – Tires and Wheels

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>1. Tire Tread Depth</p> <p><i>Additional Inspection Procedure(s):</i> Inspect the tire tread to locate the area where the tread depth is lowest. Measure the tread depth at a major tread groove using a suitable tread depth gauge. <u>Do not</u> measure tread depth on a wear bar.</p> <p>Tread depth measurements are to be recorded on an inspection report. The tread depth that is recorded must reflect the lowest tread depth measurement used to determine pass/fail condition.</p> <p><i>Note:</i> When any tire is replaced after a failed-inspection, the tread depth of both the original ('before') and replacement ('after') tire(s) are to be recorded.</p> <p>A "major tread groove" is one of several of the deepest moulded grooves around a tire through the full thickness of tread rubber that include wear bars.</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p>
a) tires on any active steering axel(s) of a motor vehicle	a) tread depth is less than 3 mm
<p>b) all other tires</p> <p><i>Note:</i> Some jurisdictions require tread depth on certain vehicles to be at least 3 mm on all tires. Inspect according to <u>applicable requirements</u>.</p>	b) tread depth is less than 2 mm
	<p><u>Hazardous Condition(s)</u></p> <p>i. tread depth is less than 2 mm on a front tire</p> <p>ii. tread depth is less than 1 mm on a rear tire</p>
<p>2. Tire Tread Condition</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p>
<p>a) retread (re-capped or rebuilt tire) installation</p> <p><i>Note:</i> An active steering axle is one that is directly controlled by the steering wheel. A passive steering axle responds to lateral force to turn wheels.</p> <p>Retreaded tires are permitted on a tag axle of a <u>bus</u> having either active or passive steering.</p>	a) retreaded tire is installed on an active steering axle
b) retread condition	b) retread material is <u>loose, missing</u> , or separated at the interface where the retread is bonded to the tire casing

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) tread condition	c) crack or cut, that is greater than 25 mm long, that extends deeper than a major tread groove crack or cut, extends into body cord, or any body cord is exposed any piece of original tire tread is <i>missing</i> and the longest dimension across the missing section is greater than 25 mm
d) regrooving	d) regrooving has been performed on a tire <u>not</u> marked "Regroovable"
	<u>Hazardous Condition(s)</u> i. any part of a belt, breaker strip or casing ply is visible in the tread area ii. visible bump or bulge in the tread area indicating tread separation iii. regrooved, recapped, or retreaded tire on front steering axle of any bus iv. retread material is <i>loose</i> , <i>missing</i> , or separated at the interface where the retread is bonded to the tire casing and the longest dimension across the section is greater than 50% of the tread width v. any piece of tire tread is <i>missing</i> and the longest dimension across the missing section is greater than 50 mm vi. tire contacts any part of the vehicle
<u>3. Tire Sidewall and Manufacturer Markings</u>	Truck ✓ Trailer ✓ Bus ✓
a) matching and application <i>Note:</i> <u>Nominal</u> tire size is based on the size designation and marking provided by the tire <i>manufacturer</i> . <u>Tire diameter</u> is determined by measuring the tire.	a) nominal tire size difference on an axle is greater than 25 mm dual-mounted tire diameters differ by more than 13 mm wheel/rim size does not match tire size required tire is <i>missing</i> radial tire is mixed with non-radial on an axle any tire is labelled "Not for Highway Use" or in any way that indicates the tire is <u>not</u> intended for on-road use

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>b) condition</p> <p><i>Note:</i> A bulge of up to 9 mm in height, due to a sidewall repair, is acceptable. This bulge may sometimes be identified by a blue triangular label in the immediate vicinity.</p>	<p>b) ply separation is evident or body cords are exposed</p> <p>tire has a bump or bulge caused by tread or sidewall separation</p> <p>casing is broken or distorted</p> <p>presence of plug-type repair, or rubber coated or cured rubber plug is used in the sidewall</p> <p>UV degradation damage more than 3 mm deep</p>
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. sidewall is cut or <i>damaged</i> exposing the cord ii. bias and radial tires are used on the same axle iii. visible bump or bulge in the sidewall area greater than 9 mm in height iv. dual tires make contact or any tire makes contact with any vehicle component v. rubber coated or cured rubber plugs are used in the sidewall vi. tire contact with any part of the vehicle vii. any tire is labelled «Not for Highway Use» or in any way that indicates the tire is <u>not</u> intended for on-road use
<p><u>4. Tire Inflation Pressure</u></p> <p><i>Additional Inspection Procedure(s):</i> Measure tire inflation pressure using a suitable gauge. Record pressure values on the inspection report.</p> <p><i>Note:</i> If a tire fails inspection due to over/under inflation condition, it is acceptable to remove/add air prior to completing the inspection. When inflation pressure is corrected, record found ('before') and adjusted ('after') pressure values on the inspection report.</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p>
<p>a) inflation pressure</p> <p><i>Note:</i> Recommended tire inflation pressure is based on data provided by the vehicle <u>manufacturer</u>, or tire <u>manufacturer</u> relevant to tire application and load.</p>	<p>a) more than 10% above or below recommended pressure</p> <p>difference between dual-mounted tires is more than 10%</p> <p>leaking or inflation cannot be maintained within recommended pressure</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) valve stem	b) cracked, <u>damaged</u> or inaccessible preventing gauging of pressure or re-inflation, or leaking valve stem cap is <u>damaged</u> or <u>missing</u>
c) tire inflation system	c) is in a condition that any part of it could be hazardous to a person, or is in danger of falling off leaking air
	<u>Hazardous Condition(s)</u> i. any tire is inflated to 50% or less of the maximum inflation pressure marked on the sidewall ii. tire is leaking iii. tire inflation system is in a condition that any part of it is hazardous to a person, or is in danger of falling off
<u>5. Wheel Hub</u>	Truck ✓ Trailer ✓ Bus ✓
a) condition <i>Note:</i> Bearing fit in the hub is checked only when disassembled.	a) repaired by welding bent, broken, cracked, <u>damaged</u> or distorted bearing cup is loose in hub bore
b) stud/bolt hole	b) any stud/bolt hole is enlarged or <u>damaged</u> in a way that prevents proper fitting and retention of studs
c) wheel seal	c) <u>level 2 leak</u> of bearing lubricant from oil lubricated hub seal is allowing grease to be lost from hub seal is out of position
d) lubricant (oil lubricated) <i>Note:</i> Some hub/wheel-end assemblies use pre-set, unitized or extended service bearings, with sealed hubs. When contaminated lubricant is suspected, refer to the service literature provided by the <u>manufacturer</u> . Confirm that a proper diagnosis is carried out before rejecting the vehicle, opening or disassembling this type of hub/wheel-end assembly.	d) lubricant level is below indicated minimum lubricant is contaminated with moisture or metal fragments <u>level 2 leak</u> of bearing lubricant from hub or hub cap
e) lubricant (grease lubricated)	e) grease is leaking from hub hub cap is cracked, <u>loose</u> or <u>missing</u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p><u>Hazardous Condition(s)</u></p> <ul style="list-style-type: none"> i. any condition that exposes the internal components ii. any evidence of overheating of the hub or lubricant iii. lubricant not visible or measurable in hub iv. wheel seal is leaking and contaminating the tire or the brake friction material or surface
<p><u>6. Wheel Bearing</u></p> <p><i>Additional Inspection Procedure(s):</i> Check wheel bearing with axle raised sufficiently to rotate the wheel and hub assembly.</p> <p>Rotate the wheel by hand through several full revolutions to check for bearing roughness or binding.</p> <p>Check wheel bearing end-play/adjustment by pushing wheel assembly or hub inward and outward parallel to axle centreline.</p> <p><i>Note:</i> Checking in this manner may reveal movement in the hub and bearing that is additional to the bearing axial end play, e.g. a radial play between the bearings and spindle components may also be felt.</p> <p>Confirm bearing axial end-play/adjustment on a non-sealed type hub with dial gauge if necessary. For pre-set, unitized or extended service bearings see additional note.</p> <p><i>Note:</i> Some hub/wheel-end assemblies use pre-set, unitized or extended service bearings, with sealed hubs. When there is evidence of bearing damage, excessive wear, or excessive bearing end play, refer to the service literature provided by the <u>manufacturer</u>. Confirm that a proper diagnosis is carried out before rejecting the vehicle, opening or disassembling this type of hub/wheel-end assembly.</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p>
a) axial end play/adjustment	<p>a) does <u>not</u> meet <u>OEM standard</u> or <u>industry standard</u>, or when specification is not provided, is less than 0.02 mm, or more than 0.13 mm</p> <p>0.02 mm = 0.001 in., 0.13 mm = 0.005 in.</p>
b) condition	b) binding or roughness is detected while rotating the bearing

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
c) locking device <i>Optional Inspection Procedure(s):</i> Must be inspected when the locking device is visually accessible at the time of inspection.	c) bearing adjustment locking device is <u>missing</u> , <u>not</u> engaged or non-functional
d) damage <i>Optional Inspection Procedure(s):</i> Must be inspected when the bearing is disassembled at the time of inspection.	d) race or roller is <u>damaged</u> or shows evidence of overheating
e) spindle or axle stub <i>Optional Inspection Procedure(s):</i> Must be inspected when the bearing is disassembled at the time of inspection. <i>Note:</i> Spindle or axle stub cracks or damage may involve non-destructive test/inspection to detect.	e) bearing fit onto spindle or axle stub does <u>not</u> meet OEM standard or industry standard spindle or axle stub is cracked, or <u>damaged</u> in a way that does <u>not</u> meet <u>OEM standard</u> or <u>industry standard</u> bearing condition or fit of the bearing onto the spindle prevents proper end play or adjustment from being maintained
	<u>Hazardous Condition(s)</u> i. axial end play is so excessive that imminent failure seems likely ii. any evidence of overheating iii. lubricant not visible or measurable in hub iv. binding or roughness is detected while rotating the bearing
7. Wheel/Rim (Applies to all wheel types)	Truck ✓ Trailer ✓ Bus ✓
a) condition	a) wheel/rim is bent, broken, cracked, <u>damaged</u> or distorted wheel/rim has been welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> wheel/rim is <u>damaged</u> or discoloured as a result of heating
b) matching	b) wheel/rim size does <u>not</u> match tire size
	<u>Hazardous Condition(s)</u> i. wheel/rim, or any weld, is broken or cracked ii. any welded repair on an aluminum wheel iii. wheel/rim has been welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
8. Multi-Piece Wheel/Rim	Truck ✓ Trailer ✓ Bus ✓
a) condition	a) a component is bent, cracked, <u>damaged</u> , distorted, improperly assembled or shifted out of position, severely corroded or pitted <u>damaged</u> due to heating any component has been <u>repaired by welding</u>
b) lock ring	b) there is less than 3 mm clearance between butt ends of the lock ring
c) matching	c) mismatched wheel/rim component
	<u>Hazardous Condition(s)</u> i. a lock ring is bent, broken, cracked, sprung, mismatched or improperly seated ii. wheel/rim, or any weld, is broken or cracked iii. wheel/rim has been welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
9. Spoke Wheel/Demountable Rim System	Truck ✓ Trailer ✓ Bus ✓
a) condition <i>Additional Inspection Procedure(s):</i> Elevate the axle so that the tire(s) are clear of the floor and rotate the wheel(s) to check alignment.	a) there is damage in the 28° mounting area resulting from rim slippage, wear, corrosion or pitting there is evidence of rim slippage or incorrect positioning of rim on spokes lateral run-out exceeds 6 mm at sidewall of tire
b) rim clamp	b) any rim clamp is broken, cracked, <u>missing</u> , repaired by welding, mismatched, twisted or worn out in the 28° mounting area any heelless clamp is bottomed or gap between clamp and spoke is more than 10 mm gap between clamp and spoke of a heel type clamp is more than 6 mm
c) spacer band	c) any spacer is collapsed, cracked, distorted, <u>missing</u> , the incorrect size or type, welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
	<u>Hazardous Condition(s)</u> i. wheel/rim, or any weld, is broken or cracked ii. any welded repair on an aluminum wheel iii. wheel/rim has been welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
10. Disc Wheel System	Truck ✓ Trailer ✓ Bus ✓
a) installation	a) incompatible wheel or component is used on a wheel system wheel is incorrectly installed
b) condition	b) there is evidence of a <u>loose</u> or ineffective fastener there is evidence of damage or deterioration, foreign material, excessive or uncured paint on a hub, drum or wheel mounting face bolt/stud hole is elongated
	<u>Hazardous Condition(s)</u> i. bolt/stud hole is elongated ii. wheel/rim, or any weld, is broken or cracked iii. any welded repair on an aluminum wheel iv. wheel/rim has been welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
11. Wheel Fasteners (Nuts, Bolts and Studs)	Truck ✓ Trailer ✓ Bus ✓
a) installation	a) incorrect fastener type, thread direction or style is installed any nut is <u>not</u> fully engaged with the stud or bolt
b) condition	b) any fastener is bent, broken, <u>damaged</u> or <u>missing</u>
c) fastener security <i>Additional Inspection Procedure(s):</i> Using a torque wrench set to the torque value specified by <u>OEM</u> or <u>industry standard</u> , attempt to rotate each wheel nut to the set value. <i>Note:</i> A fastener that requires <u>less</u> than 1/6-turn to reach the specified torque value should be considered <u>slightly loose</u> . A fastener that requires <u>more</u> than 1/6- turn to reach the specified torque value should be considered <u>very loose</u> . Wheels should be disassembled for a full inspection when: <ul style="list-style-type: none"> any fastener is <u>very loose</u> two adjacent wheel fasteners are <u>slightly loose</u> three wheel fasteners on a single wheel are <u>slightly loose</u> 	c) any fastener rotates before the torque value specified by <u>OEM standard</u> or <u>industry standard</u> is applied

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p data-bbox="743 205 1057 237"><u>Hazardous Condition(s)</u></p> <ul data-bbox="743 258 1435 352" style="list-style-type: none"><li data-bbox="743 258 964 289">i. wheel is <i>loose</i><li data-bbox="743 289 1435 352">ii. any wheel nut or stud is broken, cracked, <i>loose</i>, <i>missing</i>, or threads are stripped

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

Section 10 – Coupling Devices

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p><u>1. Hitch Assembly, Structure and Attaching Components</u></p> <p><i>Note:</i> This applies to <u>all types</u> of hitching systems and coupling devices.</p> <p>Some rust and corrosion on the outer surface of exposed metal parts is normal. When an excessive amount of rust or corrosion is present and has visibly reduced the thickness of the material, structural deterioration is possible.</p> <p><i>Additional Inspection Procedure(s):</i> Inspect using suitable tools.</p>	<p>Truck ✓ Trailer ✓ Bus ✓ </p>
<p>a) hitch assembly, receiver, drawbar or draw beam, slider, supporting structure and attachment to vehicle chassis</p>	<p>a) part is bent, broken or cracked</p> <p>weld is broken or cracked</p> <p>welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u></p> <p>fastener is ineffective, <u>loose</u> or <u>missing</u></p> <p>any part of hitch assembly is worn beyond <u>manufacturer</u> specifications, abnormally deteriorated or perforated by corrosion</p> <p>hinged drawbar bushing is worn beyond <u>manufacturer</u> specifications</p> <p>air leak, or <u>level 2 leak</u> from hydraulic components on any slider system</p> <p>any slider system has a <u>missing</u> or ineffective stop</p>
	<p><u>Hazardous Condition(s) (when in use)</u></p> <p>i. any crack, break or damage in the stress or loading area of the coupling device or structure</p> <p>ii. any component is <u>damaged</u> or worn to the degree that it is no longer effective</p> <p>iii. welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> and an imminent failure appears likely</p> <p>iv. air leak, or <u>level 2 leak</u> from hydraulic components on any slider system</p> <p>v. any slider system has a <u>missing</u> or ineffective stop</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
2. Secondary Attachment (Safety Chain or Cable)	Truck ✓ Trailer ✓ Bus ✓
a) condition	a) bent, broken, cracked, <u>missing</u> , <u>abnormally worn</u> , or worn beyond <u>manufacturer</u> specifications any part is ineffective, <u>insecure</u> , <u>loose</u> , or <u>missing</u> improper length
	<u>Hazardous Condition(s) (when in use)</u> <i>i.</i> any component is broken, cracked, or <u>missing</u> <i>ii.</i> bent, <u>damaged</u> , improperly repaired, <u>loose</u> , or worn to the degree that it is no longer effective <i>iii.</i> improper type or inadequate capacity
3. Pintle Hook, Pin Hitch, or Coupler Hitch	Truck ✓ Trailer ✓ Bus ✓
a) condition and operation <i>Additional Inspection Procedure(s):</i> Test the operation of the pintle hook and latch.	a) cracked, or fails to close or latch normally
b) mounting	b) fastener or any structural part is cracked, ineffective, <u>loose</u> or <u>missing</u> a fastener is less than SAE grade 8 or ISO class 10.9
c) cast or forged part	c) cracked, or has been repaired by welding material is worn more to beyond the OEM allowable wear specifications from original dimension
d) air chamber cushion (no-slack or snubber) <i>Additional Inspection Procedure(s):</i> Apply air pressure to air chamber and inspect according to hitch <u>manufacturer</u> service instructions and specifications.	d) <u>damaged</u> or leaking air chamber leak at air line or fitting pressure protection valve is not installed in air supply to prevent depletion of air from the brake system
e) lunette (or drawbar eye) <u>on trailer</u>	e) cracked, or is worn to beyond the OEM allowable wear specifications from original dimension
	<u>Hazardous Condition(s) (when in use)</u> <i>i.</i> wear on hitch or lunette (eye) exceeds 10 mm <i>ii.</i> any component is broken, cracked, or <u>missing</u> <i>iii.</i> bent, <u>damaged</u> , improperly repaired, <u>loose</u> , or worn to the degree that it is <u>no longer effective</u> <i>iv.</i> improper type or inadequate capacity <i>v.</i> missing or ineffective fastener <i>vi.</i> insecure latch

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
4. Ball Type Hitch	Truck ✓ Trailer ✓ Bus ✓
a) ball, neck and stem	a) bent, cracked or <u>loose</u> ball is worn more than 3.0 mm from original dimension welded, or repaired in a way that does <u>not</u> meet <u>OEM standard</u> 3.0 mm = 0.12 in.
b) ball deck area	b) part is bent, broken or cracked weld is broken or cracked welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u>
c) ball coupler	c) bent, cracked or <u>loose</u> abnormally deteriorated or perforated by corrosion
d) latch <i>Additional Inspection Procedure(s):</i> Test the operation of the latch.	d) bent, broken or cracked <u>inoperative</u> or fails to adjust properly weld is broken or cracked
	<u>Hazardous Condition(s) (when in use)</u> i. wear on ball exceeds 3.0 mm ii. any component is broken, cracked, or <u>missing</u> iii. bent, <u>damaged</u> , improperly repaired, <u>loose</u> , or worn to the degree that it is <u>no longer effective</u> iv. improper type or inadequate capacity v. missing or ineffective fastener vi. insecure latch
5. Roll-Coupling Hitch	Truck ✓ Trailer ✓ Bus ✓
a) condition	a) part is bent, broken or cracked weld is broken or cracked welded or repaired in a way that does <u>not</u> meet <u>OEM standard</u> fastener is ineffective, <u>loose</u> or <u>missing</u> any fastener is smaller than specified by the <u>manufacturer</u> or less than SAE grade 8 or ISO class 10.9 any load bearing structural part of the hitch assembly is deteriorated or perforated by corrosion

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
b) operation <i>Additional Inspection Procedure(s):</i> Test the operation of the coupling and controls according to the <u>manufacturer</u> service instructions.	b) <u>fails to</u> operate in the intended manner
	<u>Hazardous Condition(s) (when in use)</u> i. fails to operate in the intended manner ii. any component is broken, cracked, or <u>missing</u> iii. bent, <u>damaged</u>, improperly repaired, or <u>loose</u> iv. improper type or inadequate capacity v. missing or ineffective fastener
<u>6. Automated Coupling Device</u>	Truck ✓ Trailer ✓ Bus ✓
a) condition <i>Additional Inspection Procedure(s):</i> Test the operation of the coupler according to the <u>manufacturer</u> service instructions.	a) <u>inoperative</u> • welded or repaired in a way that does <u>not</u> meet manufacturer standard
	<u>Hazardous Condition(s) (when in use)</u> i. fails to operate in the intended manner ii. any component is broken, cracked, or <u>missing</u> iii. bent, <u>damaged</u>, improperly repaired, <u>loose</u>, or worn to the degree that it is no longer effective iv. improper type or inadequate capacity v. <u>missing</u> or ineffective fastener
<u>7. Fifth Wheel Coupler</u>	Truck ✓ Trailer ✓ Bus
a) upper coupler (pick up plate) <u>on trailer</u> <i>Additional Inspection Procedure(s):</i> Check the condition and flatness of the upper coupler plate using a tool specifically intended for that purpose or an equivalent measuring device.	a) cracked, <u>loose</u> , warped or worn so that the area in contact with the lower fifth wheel is less than 75% of the surface of the lower coupler bent upward or downward more than specified by <u>manufacturer</u> lubricant is contaminated with an abrasive material upper coupler's attachment or a structural member is corroded, <u>damaged</u> or in a condition that the plate or king pin is weakened mounting bolt or rivet is broken, corroded, <u>loose</u> or <u>missing</u> (also refer to Section 8, Body, item 6. Frame, Rails & Mounts) bulge is present in attaching and mating surface due to corrosion rivet is dimpled due to corrosion rivet area bulged due to corrosion

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>b) kingpin <u>on trailer</u> (or on towing vehicle)</p> <p><i>Additional Inspection Procedure(s):</i> Check the wear and condition of the kingpin using a gauge specifically intended for that purpose or an equivalent measuring device.</p> <p><i>Note:</i> In some jurisdictions remanufacturing of kingpins is permitted when the remanufacturing is done using a process certified by a professional engineer. In such a case the kingpin must be permanently marked to identify the remanufacturer and marked to indicate the date the process was completed.</p>	<p>b) bent, broken, cracked, deformed or <u>loose</u></p> <p>worn more than 3.0 mm</p> <p>repaired by welding</p> <p>length is incorrect to properly fit into fifth wheel jaws</p> <p><i>Note:</i> A fifth wheel intended for use with a material installed on the lower coupler, instead of applying grease, requires a longer king pin length.</p> <p>A king pin intended for use with a material installed on the lower coupler, instead of applying grease, <u>does not</u> properly couple with a standard fifth wheel.</p>
<p>c) lower coupler (fifth wheel) top plate</p>	<p>c) any part is broken, cracked, <u>damaged</u>, distorted, <u>missing</u> or welded, or repaired in a way that does <u>not</u> meet <u>manufacturer</u> standard</p> <p>surface is worn beyond <u>manufacturer</u> specified limit</p> <p>wear in pivot pin is beyond <u>manufacturer</u> specified limit</p> <p>lubricant is abnormally contaminated, (e.g. sand, gravel)</p> <p>not properly lubricated (unless equipped with <u>manufacturer-supplied</u> no-lube top plate coupling surface)</p>
<p>d) latching mechanism</p> <p><i>Additional Inspection Procedure(s):</i> Test the operation of the latch, and wear in the fifth wheel assembly, using a test device specifically designed for that purpose or a suitable equivalent.</p>	<p>d) broken, cracked or <u>inoperative</u></p> <p>stiffness or seizing of the latch mechanism is felt</p> <p>free-play, slack or wear is beyond manufacturer specified limit</p> <p>improperly adjusted</p> <p>modified or improperly repaired</p> <p>release handle is bent, modified or has anything attached to it</p>
<p>e) lower coupler pivot ('fifth wheel saddle')</p> <p><i>Additional Inspection Procedure(s):</i> Check for wear in the fifth wheel pivot area according to <u>manufacturer</u> service instructions.</p>	<p>e) wear exceeds <u>manufacturer</u> specification</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
f) slider assembly and locking mechanism	f) any part is bent, broken, cracked, <u><i>damaged</i></u> or <u><i>inoperative</i></u> fore/aft movement of fifth wheel in slider exceeds <u><i>manufacturer</i></u> specification fails to lock securely slider stop is <u><i>missing</i></u> or <u><i>insecure</i></u>
g) air-operated control or feature	g) does not <u><i>operate as intended</i></u> by the <u><i>manufacturer</i></u> Note: do not reject if air cylinder rendered inoperative by airline removal
h) upper and lower coupler attachment to frame	h) any part is broken, cracked, <u><i>damaged</i></u> , distorted, <u><i>missing</i></u> , or welded or repaired in a way that does <u>not</u> meet <u><i>manufacturer</i></u> standard any fastener is cracked, ineffective, <u><i>loose</i></u> or <u><i>missing</i></u> fasteners used to attach coupler assembly to frame <u>do not</u> meet the minimum requirements shown in the table below:

Minimum Number of Bolts per Side Based on Type & Size* of Bolt

Minimum trailer GVWR	ASTM A325 Type 1,2&3 (metric 5.8)		SAE J429 Grade 5 (metric 8.8)		SAE J429 Grade 8 (metric 10.9)	
	1/2" (12mm)	5/8" (16mm) or larger	1/2" (12mm)	5/8" (16mm) or larger	1/2" (12mm)	5/8" (16mm) or larger
67,999 lb (30,845 kg) or less	6	4	6	4	5	4
68,000 – 84,999 lbs (30,846 – 38,556 kg)	8	5	8	5	7	5
85,000 – 105,000 lbs (38,557 – 47,628 kg)	10	6	10	6	8	5

*Bolt size refers to the outside diameters of the thread.

- 1/2 inch bolts have 3/4 inch heads and nuts
- 5/8 inch bolts have 15/16 inch heads and nuts
- 12 mm bolts have 19 mm heads and nuts
- 16 mm bolts have 24 mm inch heads and nuts

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
	<p><u>Hazardous Condition(s) (when in use)</u></p> <ul style="list-style-type: none"> i. adjustable fifth wheel has 25% or more of the locking pins <i>missing</i> ii. any observable movement between the fifth wheel, or upper coupler, mounting components and/or the frame iii. more than 9 mm fore/aft movement of the fifth wheel in its sliding track iv. any sliding fifth wheel locking mechanism <u>does not</u> remain in the locked position v. any crack, break or damage in the stress or loading area of the coupling device vi. slider stop is <i>insecure</i> or <i>missing</i> vii. more than 25 percent of latching fasteners on either side of slider are ineffective viii. pivot bracket pin <i>missing</i> or <u>not</u> secured ix. any parent metal cracked x. any repair weld cracking, well defined (especially open) cracks in stress or load-bearing areas, cracks through 20% or more original welds or parent metal xi. operating handle <u>not</u> in closed or locked position xii. more than 20 percent of mounting fasteners on either side <i>missing</i> or ineffective xiii. locking mechanism parts broken, <i>missing</i>, or deformed to the extent that the kingpin is <u>not</u> securely held xiv. kingpin is bent, broken, cracked, deformed or <i>loose</i> xv. any trailer with a bolted upper coupler, which has fewer effective bolts than shown in table above
<p><u>8. Oscillating Fifth Wheel Coupler</u></p> <p><i>Note:</i> Inspect fifth wheel coupler parts as described above in item 6, and inspect additional oscillating items as listed below. Inspect all frame and structural elements as described above in item 1.</p>	<p>Truck ✓ Trailer ✓ Bus </p>
	<p><u>Hazardous Condition(s) (when in use)</u></p> <p>refer to hazardous conditions in item # 7 above.</p>

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) oscillating components and structure <i>Additional Inspection Procedure(s):</i> Check for wear and defects according to <u>manufacturer</u> service instructions.	a) cracked, <u>damaged</u> , defective or <u>inoperative</u> wear exceeds <u>manufacturer</u> specification
9 Ball-Bearing Type Turntable on Trailer a) condition <i>Additional Inspection Procedure(s):</i> Check for wear and defects according to <u>manufacturer</u> service instructions.	Truck Trailer ✓ Bus a) bolt <u>loose</u> or <u>missing</u> cracks in weld or parent metal wear exceeds <u>manufacturer</u> specification
	<u>Hazardous Condition(s)</u> i. top flange has less than 6 effective bolts ii. bottom flange has less than 6 effective bolts iii. twenty percent or more of original welds (or repaired original welds), or parent metal cracked iv. upper flange half touching lower flange half v. cracked flanges

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
 Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

Appendix A

ITEM AND METHOD OF INSPECTION:	REJECT IF:
1. Liquefied Petroleum Gas (LPG or Propane) Fuel System	Truck ✓ Trailer ✓ Bus ✓
<i>Note:</i> For additional compliance information, please see Canadian Gas Association Code.	Hazardous Condition Any cause for rejection of a Liquefied Petroleum Gas (LPG or Propane) system will also mean an automatic “Hazardous Condition” for that vehicle. The cause for rejection must be corrected and the vehicle “passed” before it may be operated on the highway.
a) regulatory authority decal	a) decal is <u>not</u> displayed an incorrect decal is affixed to vehicle information on decal is <u>not</u> readable
b) pressure vessel (tank) location and mounting	b) pressure vessel (tank) is <i>insecure</i> or <i>loose</i> , or welds are broken welding has been done anywhere on a pressure vessel (tank) except on saddle plates or brackets correct mounting bolts <u>not</u> used correct reinforcing plates are <u>not</u> used under mounting nuts pressure vessel (tank) is located above the vehicle or projects beyond vehicle side, ahead of front axle or behind rear bumper any part of exhaust system is closer than 200 mm to any part of the fuel system and is <u>not</u> protected by shields a heat shield is closer than 25 mm from a fuel system component
c) pressure vessel (tank) ground clearance <i>Note:</i> Includes any attached fitting.	c) distance to ground from bottom of pressure vessel (tank) is less than minimum ground clearance shown below pressure vessel (tank) located between axles wheelbase of 3220 mm <u>or less</u> : minimum ground clearance = 180 mm wheelbase <u>over</u> 3220 mm: minimum ground clearance = 230 mm pressure vessel (tank) located behind rear axle minimum ground clearance = 200 mm Any portion of the tank protrudes past the plane formed by the bottom of the rear most tires and the lowest most rearward part of the vehicle.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.
Conditions shown *in this manner* are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
d) pressure vessel (tank) information plate and data	d) name plate is <u>missing</u> , or illegible, or data is <u>not</u> shown on plate
e) pressure vessel (tank) located within the body shell of the vehicle	e) stop fill valve, remote fill, or gauging line <u>not</u> fitted
f) pressure vessel (tank) filler cap	f) protective filler cap <u>not</u> secured to filler valve or vehicle
g) pressure vessel (tank) check valve	g) double check valve on the remote fill is <u>missing</u> , or valve is <u>not</u> an approved type
h) pressure vessel (tank) interconnection	h) individual pressure vessels (tanks) are <u>not</u> protected by soft seat back-check valves
i) pressure vessel (tank) remote filler box	i) <u>not</u> adequately sealed to prevent vapour migration into vehicle interior (trunk etc.)
j) main shut-off valve	j) valve is <u>not</u> readily accessible (<u>cannot</u> be reached)
k) damage protection	k) tank valves and their connections are <u>not</u> mounted securely tank valves and their connections are <u>not</u> protected from damage due to stationary objects, or objects from the road
l) corrosion protection	l) protective coating or material is <u>damaged</u> , or is <u>missing</u> from externally mounted pressure vessel (tank) or attachment
m) fitting, hose, piping and tubing <i>Note:</i> Only the following types of piping and tubing are permitted for use in LPG fuel systems. <u>Piping</u> – must be black or galvanized steel w/ steel fittings (schedule 40 vapour and schedule 80 liquid) <u>Tubing</u> – must meet SAE J527, may be steel or copper with steel or brass fittings Minimum tubing wall thickness: ¼ in. tubing = 0.71 mm ½ in. tubing = 0.76 mm	m) improper tubing or piping is used hose assembly is <u>not</u> CGA approved and labelled supply line is <u>not</u> secure, or any anchor or support is damaged or missing any joint is not flared or compression type specifically designed for LPG use a bushing other than steel or brass is used piping and tubing is <u>not</u> protected against corrosion tubing or hose in trunk area is <u>not</u> protected against luggage piping between fuel pump and gasoline solenoid valve is non-metallic material

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
n) system leakage <i>Additional Inspection Procedure(s):</i> Check for leaks using a leak detector.	n) any system leak is detected
o) hydrostatic relief valve	o) incorrectly installed or <u>missing</u> outlet is <u>not</u> piped downward to outside of any enclosed space pipeaway is <u>not</u> secured to valve, or if installed after May 1, 1985, is aluminum or non-metallic material, or is a range connector type
p) propane supply lock off valve	p) does <u>not</u> operate as originally intended
q) excess flow valve	q) incorrectly installed or <u>missing</u>
r) vaporizer	r) is <u>not</u> mounted securely on engine, chassis, fender apron or firewall
s) vehicle chassis and under-body	s) a structural member has been altered during installation of the system in any manner that does <u>not</u> meet <u>industry standard</u> or <u>OEM standard</u>
t) pressure vessel sub-frame	t) any modification has been made to pressure vessel (tank) carrier, or sub-frame, in a manner <u>not</u> approved by pressure vessel <u>manufacturer</u>
u) air/fuel ratio feedback control system <i>Note:</i> Applies to a vehicle originally equipped with air/fuel ratio control, converted to operate on LPG on or after October 1993, as indicated on the regulatory authority decal. <i>Additional Inspection Procedure(s):</i> Connect the positive lead of a digital voltmeter to the O ₂ sensor signal wire. Connect the meter negative lead to battery ground. Start the engine and run at 2,500 RPM allowing 30 seconds to warm up the O ₂ sensor, voltage should vary rapidly between 0.3 and 0.7 volts. Each time the voltage reading crosses 0.45 volts is defined as one cross-count. On dual fuel applications this test must be performed when operating on both fuels.	u) The number of cross-counts observed during a ten-second period is less than 6

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
2. Compressed Natural Gas (CNG) Fuel System	Truck ✓ Trailer ✓ Bus ✓
<i>Note:</i> For additional compliance information, see Canadian Gas Association Code.	Hazardous Condition Any cause for rejection of a Compressed Natural Gas system will also mean an automatic "Hazardous Condition" for that vehicle. The cause for rejection must be corrected and the vehicle "passed" before it may be operated on the highway.
a) regulatory authority decal	a) decal is <u>not</u> displayed an incorrect decal is affixed to vehicle information on decal is <u>not</u> readable
b) pressure vessel (tank) location and mounting	b) pressure vessel (tank) is <i>insecure</i> or <i>loose</i> , or welds are broken welding has been done anywhere on a pressure vessel except on saddle plates or brackets correct mounting bolts <u>not</u> used (10 mm (3/8 in.) for over 100L tank capacity) correct reinforcing plates are <u>not</u> used under mounting nuts pressure vessel (tank) is located above the vehicle or projects beyond vehicle side, ahead of front axle or behind rear bumper any part of exhaust system is closer than 200 mm from any part of the fuel system and is <u>not</u> protected by shields a heat shield is closer than 25 mm from a fuel tank
c) pressure vessel (tank) ground clearance <i>Note:</i> Includes any attached fitting.	c) distance to ground from bottom of pressure vessel (tank) is less than minimum ground clearance shown below pressure vessel (tank) located <u>between axles</u> wheelbase of 3220 mm <u>or less</u> : minimum ground clearance = 180 mm wheelbase <u>over</u> 3220 mm: minimum ground clearance = 230 mm pressure vessel (tank) located <u>behind rear axle</u> distance from rear axle to pressure vessel (tank) is 1140 mm <u>or less</u> : minimum ground clearance = 200 mm distance from rear axle to pressure vessel (tank) is <u>more than</u> 1140 mm: minimum ground clearance = 0.18 x distance

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
d) pressure vessel (tank) information plate and data	d) name plate is <u>missing</u> , or illegible, or data is <u>not</u> shown on plate
e) pressure vessel (tank) located within the body shell of the vehicle	e) tank fittings <u>not</u> in a gas-tight enclosure vented to the outside of the vehicle body shell
f) relieving device	f) pressure vessel does <u>not</u> have a burst disc installed burst disc is <u>incorrectly</u> installed, or <u>not</u> the correct value burst disc is <u>not</u> vented outside the body shell
g) damage protection	g) piping or tubing is <u>not</u> of corrosion resistant material piping or tubing is <u>not</u> protected from exterior corrosion line is <u>not</u> positioned for reasonable protection or <u>not</u> shielded grommet is <u>missing</u> or <u>damaged</u>
h) corrosion protection	h) piping or tubing is <u>not</u> made of corrosion-resistant material or is not protected from exterior location
i) pressure gauge	i) <u>no</u> gauge is installed lines to gauge are within the passenger compartment
j) fitting, hose, piping and tubing Only the following types of piping and tubing are permitted for use in LPG fuel systems. <u>Piping</u> – must be black or galvanized steel w/ steel fittings (schedule 40 vapour and schedule 80 liquid) <u>Tubing</u> – must meet SAE J527, may be steel or copper with steel or brass fittings Minimum tubing wall thickness: ¼ in. tubing = 0.71 mm ½ in. tubing = 0.76 mm	j) piping upstream of a first-stage regulator is <u>not</u> rated at 4 times working pressure, or piping downstream of first-stage regulator <u>not</u> rated at 5 times the working pressure piping, tubing and hose <u>fail to</u> make adequate allowance for vibration; is <u>not</u> protected against damage or breakage due to strain or wear a fitting <u>not</u> an approved type a joint is inaccessible improper hose, tubing or piping is used

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
k) system leakage <i>Additional Inspection Procedure(s):</i> Check for leaks using a leak detector.	k) any system leak is detected
l) pressure regulator	l) regulator <u>not</u> securely mounted <u>not</u> protected as required
m) gasoline lock-off	m) where located downstream of the engine fuel pump, connection of gasoline fuel line to the inlet side of lock-off valve, or any other upstream connections, <u>not</u> made with flare-type fittings or other approved fittings slip-on clamped type hose connection is used
n) vehicle chassis and under-body	n) a structural member has been altered during installation of the system in any manner that does <u>not</u> substantially meet or exceed <i>OEM</i> strength requirements
o) pressure vessel sub-frame	o) any modification has been made to pressure vessel (tank) carrier, or sub-frame, in a manner <u>not</u> approved by pressure vessel <i>manufacturer</i>
p) air/fuel ratio feedback control system <i>Additional Inspection Procedure(s):</i> Connect the positive lead of a digital voltmeter to the O ₂ sensor signal wire. Connect the meter negative lead to battery ground. Start the engine and run at 2,500 RPM allowing 30 seconds to warm up the O ₂ sensor, voltage should vary rapidly between 0.3 and 0.7 volts. Each time the voltage reading crosses 0.45 volts is defined as one cross-count. On dual fuel applications this test must be performed when operating on both fuels.	p) the number of cross-counts observed during a ten-second period is less than 6
3. Liquefied Natural Gas (LNG) Fuel System	Truck ü Trailer ü Bus ü
<i>Note:</i> For additional compliance information, see Society of Automotive Engineers (SAE) Standard J2343 titled "Recommended Practice for LNG Medium and Heavy Duty Powered Vehicles", and the National Fire Protection Association (NFPA) Standard 52 "Vehicular Gaseous Fuel Systems Code"	Hazardous Condition Any cause for rejection of a Liquefied Natural Gas (LNG) system will also mean an automatic "Hazardous Condition" for that vehicle. The cause for rejection must be corrected and the vehicle "passed" before it may be operated on the highway.

Note: All inspection procedures are visual unless additional inspection procedures are indicated.

Conditions shown ***in this manner*** are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
a) regulatory authority decal	a) decal is <u>not</u> visible or information on decal is <u>not</u> readable incorrect decal is affixed to the vehicle or fuel is <u>not</u> correctly identified
b) supply/container marking <i>Note:</i> As required by National Fire Protection Association (NFPA) 52.	b) <u>missing</u> , <u>not</u> visible directly or by use of mirror <u>no</u> indication of set-to-discharge pressure <u>no</u> indication of working pressure of fuel supply remote filling inlets <u>not</u> visibly marked with the lowest working pressure of any fuel supply container in system
c) methane gas detection system <i>Additional Inspection Procedure(s):</i> Test the system in accordance with the <u>manufacturer</u> service instructions.	c) disconnected, <u>inoperative</u> or <u>missing</u> sensor is <u>not</u> located in engine, driver, and passenger compartment alarm is <u>not</u> visual and audible to the driver before entering the driver's compartment and while seated in the normal driving position system does not function continuously at all times
d) LNG container (all types) <i>Note:</i> No LNG container shall be repaired unless authorized by a certified inspector. The replacement of valves, fittings and accessories with compliant parts intended for the same purpose is not considered a repair.	d) <u>not</u> oriented and mounted as specified by the <u>manufacturer</u> <u>not</u> located in a protected location as designed by the vehicle <u>manufacturer</u> or as determined by a qualified professional engineer any portion of the container or container valves in communication with the liquid or vapour are <u>not</u> located behind the rear frame cross member any part of the container is welded <i>Note:</i> Only saddle plates, brackets or non-pressure components that were provided and installed by the <u>manufacturer</u> may be field welded.
e) roof-mounted LNG container <i>Note:</i> This condition applies to a roof-mounted LNG container in addition to those listed above for all types of containers.	e) vehicle was <u>not</u> manufactured or originally designed to have roof mounted containers <i>Note:</i> After-market modification of a vehicle to accept roof-mounted containers is <u>not</u> permitted.

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Conditions shown in this manner are defined conditions. The definitions can be found in the introduction section.

ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>f) LNG container on a bus or motor coach</p> <p><i>Note:</i> These conditions apply in addition to those listed above for all types of containers.</p>	<p>f) located in or above the passenger compartment</p> <p>container is installed so that gas from fuelling or gauging operation or from a relief valve can be released inside a driver, passenger or luggage compartment</p>
<p>g) service valve emergency access port</p> <p><i>Note:</i> Emergency access ports are used only on certain buses and are intended for access to the service valve in an emergency situation.</p>	<p>g) <u>not</u> located on vehicle sidewall</p> <p><u>not</u> hinged and latched</p> <p>is locked</p>
<p>h) vent line and outlet</p> <p><i>Note:</i> All safety devices that may discharge to atmosphere must be vented to the outside of the vehicle.</p>	<p>h) any safety device <u>does not</u> vent to the outside of the vehicle</p> <p>vent line is made of aluminum or copper</p> <p>discharge line port size is <u>not</u> equal or greater than the main automatic or manual shut off valve</p> <p>line installed inside a compartment does <u>not</u> extend to the outside</p> <p><u>not</u> located as far as practicable from the engine exhaust outlet</p> <p>does <u>not</u> direct escaping gas upward within 45 degrees</p> <p>escaping gas impinges fuel supply</p> <p>directed into wheel well</p> <p>directed at engine air intake inlets</p> <p>direction of escaping gas may cause a hazard to other road users</p> <p><u>not</u> at least 1.5 times the maximum allowable working pressure (MAWP) of the container they are connected to. (When discharged into a manifold or line of increased diameter, the pressure requirement of that manifold or line must be calculated by a professional engineer to determine compliance.)</p> <p>fuel exiting the vaporizer has <u>not</u> been completely converted to a gaseous state at a temperature suitable for introduction to the remainder of the fuel system as Compressed Natural Gas (CNG)</p> <p>any vent line from the LNG fuel system is combined with CNG vent line</p> <p><u>on a bus</u> the vent line from the safety relief valve is <u>not</u> located at the rear of the vehicle, directed upward and extended to the top of the vehicle roof</p>

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
<p>i) manual shut-off valve</p> <p><i>Note:</i> Valves, valve packing, gaskets and seats must be specifically designed for LNG service.</p> <p>If a manual shut-off valve <u>cannot</u> be readily installed due to the compact design of the LNG fuel container, an automatic shut-off valve meeting section j) automatic shut-off valve can be used providing it is located downstream in the CNG portion of the fuel system.</p> <p><i>Note:</i> Decals and stencils are acceptable means of marking.</p>	<p>i) <u>not</u> installed in the outlet of the manifold</p> <p><u>not</u> suitable for the maximum allowable pressure of the container</p> <p>leakage occurs at less than 1.5 times (MAWP)</p> <p><u>not</u> marked with "MANUAL SHUT-OFF VALVE"</p> <p><u>not</u> clearly marked with working pressure</p>
<p>j) automatic shut-off valve</p> <p><i>Note:</i> Decals and stencils are acceptable means of marking.</p>	<p>j) <u>not</u> installed in the outlet of the manifold</p> <p>does <u>not</u> shut off when the engine is stopped or ignition switch is in the off or at accessory positions</p> <p>low engine oil pressure is <u>not</u> sensed</p> <p>does <u>not</u> shut off when engine vacuum is <u>not</u> present</p> <p><u>not</u> suitable for the maximum allowable pressure of the container</p> <p>leakage occurs at less than 1.5 times (MAWP)</p> <p><u>not</u> marked with "AUTOMATIC SHUT-OFF VALVE"</p> <p><u>not</u> clearly marked with working pressure</p>
<p>k) pressure relief valve</p> <p><i>Note:</i> Any device used for leak testing of a LNG fuel system must have an accuracy of +/- 2% of the MAWP of the system.</p>	<p>k) leaks at pressure below highest relief valve pressure setting</p>
<p>l) automatic fuel supply shut-off valve</p>	<p>l) <u>not</u> adjacent to the manual shut-off valve</p> <p><u>not</u> protected as required</p> <p><u>not</u> activated by the absence of engine rotation or oil pressure</p>

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
m) pressure gauge	m) is <u>not</u> readily visible by the driver when the engine enclosure is removed or when standing on either side of the vehicle is <u>not</u> located outside driver or passenger compartment is <u>not</u> equipped with a limiting orifice is <u>not</u> equipped with a shatter-proof dial lens is <u>not</u> equipped with a body relief
n) pressure regulator	n) <u>not</u> securely mounted <u>not</u> protected as required to prevent malfunction from low ambient air temperatures (- 40 degrees)
o) supply line <i>Note:</i> A damaged line <u>must</u> be replaced.	o) sagging or <u>not</u> supported at least every 610 mm <u>damaged</u> or repaired
p) pipe, tubing, hose and fitting <i>Note:</i> All materials and assemblies must be designed for the widest pressure and temperature ranges to which they may be subjected with a pressure safety factor of at least four.	p) aluminum or copper is used between the container and first-stage regulator pressure safety factor of material is <u>not</u> at least four
q) piping installation	q) installed <u>without</u> adequate allowance for vibration installed <u>without</u> adequate protection against damage or breakage due to strain or wear
r) pipe thread sealant <i>Note:</i> Suitable thread sealant is required on all male pipe threads prior to assembly upon initial installation and for component repair or replacement.	r) sealant used is <u>not</u> impervious to the action of fuel sealant is <u>not</u> applied to male pipe threads prior to assembly
s) pipe and thread condition	s) threading burrs or scaling are present pipe or fitting ends are <u>not</u> reamed
t) gaseous fuel cut-off for dual fuel system <i>Note:</i> Used in applications where a small amount of diesel fuel is injected into the cylinder of the engine during pre 'ignition'.	t) no means is provided to prevent the flow of gaseous fuel to the carburetor or injector fuel rail when diesel fuel is used in pre 'ignition' when ignition switch is in the off or accessory position, or from the carburetor when engine vacuum is <u>not</u> present

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ITEM AND METHOD OF INSPECTION:	REJECT IF:
u) bypass relief device <i>Note:</i> A standalone bypass relief device is required when a vehicle is not equipped with a fuel pump containing a bypass relief device by the <u>OEM</u> or <u>manufacturer</u> .	u) does <u>not</u> function in accordance with <u>OEM</u> design is <u>not</u> located between the fuel pump and automatic shut off valve in the liquid fuel line to carburetor is <u>not</u> located between the fuel pump and automatic shut off valve in injector fuel rail on a vehicle with dual fuel system
v) vehicle fuelling connection	v) does <u>not</u> have an approved fuelling connection for each pressure-based fuel system is <u>not</u> protected from moving parts, lift-able cab enclosure, engine cover, hinge or direct side impact
w) fuel-carrying component (excluding service valves, tubing and fittings)	w) is <u>not</u> labeled or stamped to show all of the following: <ul style="list-style-type: none"> • <u>manufacturer's</u> name or symbol • model designation • maximum allowable working pressure • design temperature range • direction of flow of fuel • capacity or electrical rating as applicable • scheduled replacement date if applicable
x) road clearance	x) lowest part of any component in the system, including protective guards, is below the lowest edge of the wheel rim
y) fuel system protection	y) any system component is <u>not</u> protected from: <ul style="list-style-type: none"> • any moving part in engine compartment • lift-able cab enclosure • engine cover, hinge or support device • direct side impact

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