11.22.04.00

Title 11 DEPARTMENT OF TRANSPORTATION

Subtitle 22 MOTOR VEHICLE ADMINISTRATION — PREVENTIVE MAINTENANCE PROGRAM

Chapter 04 Preventive Maintenance Standards for Freight Trailers and Freight Semitrailers

Authority: Transportation Article, §§12-104(b) and 23-303, Annotated Code of Maryland

FREIGHT TRAILER OR FREIGHT SEMITRAILER
PREVENTIVE MAINTENANCE REPORT
(MD TR §§ 23-301 - 23-305; COMAR 11.22; FMCSR § 396.17)

Owner's Name _____ Address _____

Telephone ( ) _____ Fax ( ) _____

Make _____ Model _____ Year _____

Company Name _____ Tag Number _____

Manufacturer's Vehicle ID Number (VIN) _____

Title Number _____

COMAR 11.22.04	Components	Passed	Failed	Date Repaired*
.02	Alignment			
.03	Suspension			
.04	Brake Systems - Hydraulic/Vacuum			
.05	Brake System - Air			
.06	Tires			
.07	Wheels, Rims, Lock Rings, Studs, and Nuts			
.08	Vehicle Frame, Body, and Sheet Metal			
.09	Lighting			
.10	Electrical System			
.11	Hitches and Coupling Devices			
.12	Tanks and Pressure Vessels			

Inspected: (a) Date _____ (b) Vehicle Mileage: _____

Inspected By (Print) _____ Repaired by (Print) _____

Certified By (Print) _____ (Signature) _____
(Owner or authorized representative)

**Provide description of repairs and parts used on reverse side of this form.*

11.22.04.01

.01 Applicability.

The standards, requirements, and procedures set forth in this chapter are applicable to equipment originally installed by the manufacturer or required by federal or State law or regulation on any vehicle registered as a Class G (freight trailer) vehicle under the provisions of Transportation Article, Title 13, Annotated Code of Maryland, or any freight trailer or semitrailer owned by this State or any political subdivision of this State. Compliance with these minimum requirements may not be sufficient for the equipment to remain in compliance for 12 months or 25,000 miles, whichever occurs first. Therefore, more frequent maintenance, service, and repair as deemed necessary by the owner is permitted and recommended.

11.22.04.02

.02 Alignment.

A. Axles, beams, spindles or mountings which are broken, damaged, worn, rusted, bent, or modified may affect wheel alignment, tracking, or vehicle handling or stability.

Procedures:	*Reject Vehicle If:*
(1) Inspect axles, beams, spindles, and mountings for broken, damaged, worn, rusted, bent, or modified conditions.	(1) Any axle, beam, spindle, or mounting is broken, worn, damaged, rusted, bent, or modified and affects vehicle handling, stability, tracking, or alignment.

11.22.04.03

.03 Suspension.

A. Spring and Attachments. Unequal vehicle height, broken or damaged spring leaves, spring shackles, bushings, center bolts, U-bolts, control arms, torsion bars or equalizers can affect vehicle steering, alignment, tracking, handling, and stability. With vehicle on a level surface, inspect:

Procedures:	*Reject Vehicle If:*
(1) Vehicle height.	(1) Uneven vehicle height permits tire or wheel contact with body or suspension parts.
(2) Springs.	(2) A spring leaf is broken, damaged, or missing.
(3) Spring shackles.	(3) Spring shackle is broken, loose, cracked, worn, or damaged.
(4) Bushings.	(4) Bushings are loose or missing.
(5) Center bolts.	(5) Spring center bolt is broken or missing.
(6) U-bolts.	(6) A U-bolt is broken, loose, or missing.
(7) Control arms.	(7) A control arm is bent, missing, or has a welded repair.
(8) Torque arms.	(8) A torque arm is bent, missing, or has a welded repair.
(9) Torsion bars.	(9) Torsion bar is loose, broken, or damaged.
(10) Equalizers.	(10) An equalizer is cracked, broken, or has a welded repair.

B. Torsion Bar. All other suspension components shall be inspected the same as leaf spring suspension.

Procedures:	*Reject Vehicle If:*
(1) Apply brakes, slowly attempt to move vehicle. Observe play in torsion bar mountings.	(1) Play exceeds 1/8 inch.
(2) Place pry bar between frame and torsion bar. Observe play in rear mounting, bushing, and pin.	(2) Play exceeds 1/8 inch.

C. Coil Springs and Mountings. Visually inspect coil springs, control arms, rear torque arms, axle strut (when equipped), and front and rear stabilizer bar (when equipped).

Procedures:	*Reject Vehicle If:*
(1) Coil springs.	(1) Spring is broken or sagging and lowers a corner of the vehicle more than 2 inches.
(2) Control arms.	(2) Control arm is bent, cracked, has a welded repair, or bushings are loose.
(3) Axle struts.	(3) Axle strut is missing, bent, cracked, has a welded repair, or bushings are loose.
(4) Radius arms (if equipped).	(4) Radius arm is missing, bent, cracked, has a welded repair, or bushings are loose.
(5) Stabilizer bars (if equipped).	(5) Stabilizer bar is missing, disconnected, broken, loose, damaged, or has a welded repair.

D. Rubber Load Cushions. All other suspension components shall be inspected the same as leaf spring suspension.

Procedures:	*Reject Vehicle If:*
(1) Apply brakes, slowly move vehicle to take up the slack and inspect all attachments.	(1) Any mounting or attachment play exceeds 1/8 inch.
(2) Inspect all rubber pads and blocks.	(2) Rubber block is missing or rubber pad is split.

E. Tandem Axle Walking Beams.

Procedures:	*Reject Vehicle If:*
(1) Inspect rubber insert in bushings.	(1) Rubber is dispersed from bushing resulting in visible movement between the bushing insert or mounting bolts or pins. Compression of the rubber insert during vehicle movement is not cause for rejection.

F. Sliding Bogie.

Procedures:	*Reject Vehicle If:*
(1) Inspect condition of sliding bogie.	(1) Rail locking device or stop is missing, broken, cracked, or inoperable.

G. Air Suspension (All Axles). Two procedures are required to inspect air suspension systems.

Procedures:	*Reject Vehicle If:*
(1) Apply air pressure and observe air pressure in braking system when suspension begins to lift vehicle.	(1) Suspension begins to lift vehicle before air pressure in the braking system reaches 55 psi.
(2) With normal air pressure in system, inspect: (a) Bushings. (b) Pivots. (c) Lines. (d) Air bags. (e) Shock absorbers. (f) Air supply. (g) Suspension height.	(2) (a) Any bushing is loose. (b) A pivot is loose or worn. (c) Any line is cracked, broken, crushed, or leaks. (d) Air bag is cut, has an air leak, vehicle body and chassis is unsupported, any axle or body or chassis leans to one side. (e) Shock absorber, if equipped, is missing, broken, or disconnected. (f) Air supply is connected to main line or wet reservoir, or pressure protection valve is missing. (g) Suspension height does not meet manufacturer's specification.

H. Air Suspension. Inspection is conducted with normal air pressure in suspension system.

Procedures:	*Reject Vehicle If:*
(1) Operate lift control and observe response of retractable axle.	(1) Axle does not respond to lift control switch on valve.
(2) Inspect for air leaks with retractable axle in both up and down position and inspect for air pressure loss in one-way valves.	(2) Air leak is evident when axle is in up or down position or there is air pressure loss at tag suspension.

I. Shock Absorbers (if Equipped). Shock absorber inspection includes leakage, mounting, and all related attachments. When originally equipped with shock absorbers, inspect for:

Procedures:	*Reject Vehicle If:*
(1) Presence.	(1) Shock absorber is missing if originally equipped.
(2) Proper mounting.	(2) Shock absorber is not properly and adequately mounted.
(3) Leakage.	(3) There is visible leakage. Slight dampness is not cause for rejection.
(4) Condition of bushings.	(4) Any bushing is loose or missing.

J. Road Clearance.

Procedures:	*Reject Vehicle If:*
(1) Visually inspect for any suspension, frame, or body parts extending below the bottom edge of wheel rims.	(1) Any part extends below the lowest point of any wheel rim.

11.22.04.04

.04 Brake Systems — Hydraulic and Vacuum.

A. Brake Lines and Hoses. Visually inspect:

Procedures:	*Reject Vehicle If:*
(1) Lines and hoses.	(1) Any line is cracked, chafed, flattened, insecurely mounted, restricted, any repairs other than steel tubing (tubing connections shall be double flared), leaking, or welded.
(2) Master cylinder.	(2) Master cylinder leaks, is loose, or fluid level is below 1/2 inch of top.
(3) Cap.	(3) Cap is missing, vent holes are plugged, or gasket missing or damaged.

B. Vacuum System.

Procedures:	*Reject Vehicle If:*
(1) Visually inspect lines, hoses, clamps, and connections.	(1) There are any missing, broken, collapsed, chafed lines, hoses, clamps, or connections.
(2) Visually inspect vacuum tank.	(2) Tank is leaking, loose, or damaged.
(3) Clamps.	(3) Any clamp is loose, missing, or broken.

C. Drum Brakes—Hydraulic.

Procedures:	*Reject Vehicle If:*
(1) Apply a moderate force to the brake pedal for 1 minute. Then check all brake drum and backing plate exterior edges for evidence of brake fluid, oil, or grease leakage.	(1) Brake fluid, oil, or grease is evident at exterior edge of any backing plate or brake drum.
(2) If the backing plate or brake drum has inspection holes, visually inspect thickness of brake lining.	(2) The brake lining thickness appears to be 1/16 inch or less.
(3) Visually inspect exterior surfaces of backing plates for damage.	(3) Any backing plate is bent or damaged.
(4) Visually inspect brake drums for cracks.	(4) Any brake drum is cracked.
(5) Removal of all wheels and brake drums on an axle is only required when a rejection occurs under §C(2). Otherwise only remove the wheel and brake drum for the wheel where the defect is suspected. When wheels and brake drums are removed, perform the inspections specified in §C(6)—(10).	(5) (Rejection not applicable in this step)
(6) Bonded Lining. (a) Measure thickness of lining at thinnest point. (b) Inspect lining condition.	(6) (a) Thinnest point of remaining bonded lining is 1/16 inch or less. (b) Bonded lining is broken, cracked, loose, missing, wear is extremely uneven, or lining is contaminated with oil, grease, or brake fluid.
(7) Riveted Lining. (a) Measure thickness of lining at thinnest point above rivet head. (b) Inspect lining condition.	(7) (a) Thinnest point of remaining lining above a rivet head is 1/16 inch or less. (b) Lining or rivet is broken, cracked, loose, missing, wear is extremely uneven, or lining is contaminated with oil, grease, or brake fluid.

(8) Mechanical Components. (a) Visually inspect self-adjusters. (b) Visually inspect self-adjuster cables or mechanisms. (c) Anchor pins and hold-down springs. (d) Visually inspect backing plate.	(8) (a) Self-adjuster is missing, seized, inoperable, not for proper side of vehicle, or extremely worn. (b) Cable or mechanism is missing, broken, loose, or inoperable. (c) Any pin or spring is missing, broken, loose, or extremely worn. (d) Backing plate is worn, bent, or damaged to prevent free movement of brake shoes.
(9) Wheel Cylinders. (a) Inspect for operation. (b) Inspect for leaks. (c) Inspect dust seals.	(9) (a) Any wheel cylinder fails to operate. (b) Any cylinder leaks. (c) Any dust seal is missing, damaged, or deteriorated.
(10) Brake Drums. (a) Visually inspect for damage and cracks. (b) Measure inside diameter of drum for wear and remachining.	(10) (a) Any drum contains cracks in the friction surface which extend to the outer edge of the bore, or any drum contains any external cracks. (b) Any combination of wear and remachining exceeds the brake drum manufacturer's limits. If a limit is not available, the maximum combination of wear and remachining may not exceed 0.090 inch greater than the original inside diameter of the drum if the original diameter of the drum is 11 inches or less. For drums greater than 11 inches inside diameter, the maximum wear and remachining may not exceed 0.120 greater than the original inside diameter.

D. Disc Brakes—Hydraulic.

Procedures:	*Reject Vehicle If:*
(1) Apply a moderate force to the brake pedal for 1 minute. Then check all calipers and rotor (disc) surfaces for evidence of brake fluid, oil, or grease leakage.	(1) Brake fluid, oil, or grease is evident or visible on accessible surfaces of any caliper or rotor (disc).
(2) If brake linings are visible, visually inspect thickness of lining.	(2) Brake lining thickness appears to be 1/16 inch or less.
(3) If rotors (discs) are visible, or visually inspect for cracks damage.	(3) Any rotor (disc) is cracked or damaged.
(4) Removal of all wheels on an axle is only required when a rejection occurs under §D(2). Otherwise remove only the wheel where the defect is suspected. When wheels are removed, perform the inspections specified in §D(5)—(8).	(4) (Rejection not applicable in this step)
(5) Bonded Linings. (a) Measure thickness of lining at thinnest point. (b) Inspect lining condition.	(5) (a) Thinnest point of remaining lining is 1/16 inch or less. (b) Bonded lining is broken, cracked, loose, missing, wear is extremely uneven, or lining is contaminated with oil, grease, or brake fluid.
(6) Riveted Lining. (a) Measure thickness of lining at thinnest point above rivet head. (b) Inspect lining condition.	(6) (a) Thinnest point of remaining lining above a rivet head is 1/16 inch or less. (b) Lining or rivet is broken, cracked, loose, missing, wear is extremely uneven, or lining is contaminated with oil, grease, or brake fluid.
(7) Calipers. Visually inspect leaks, operation, and operate, anti-vibration components.	(7) Caliper is leaking, fails to or piston is seized.
(8) Rotors (Discs). (a) Visually inspect for damage and cracks. (b) Measure thickness of rotor for wear and remachining.	(8) (a) Any rotor is broken, cracked into the hub, or friction surface cracks extend to the periphery of the rotor. (b) Any combination of wear and remachining reduces the

	thickness of the rotor to less than the minimum thickness established by the manufacturer or that stamped on the rotor.

E. Brake Lines and Hoses—Hydraulic.

Procedures:	*Reject Vehicle If:*
(1) Visually inspect lines and hoses for condition, mounting, restrictions, and proper material and repair.	(1) Any line or hose is leaking, cracked, chafed, flattened, restricted, welded, insecurely mounted, replaced with other than steel tubing, or connections are not connections are not double flared.

11.22.04.05

.05 Brake System — Air.

A. Air Leakage. Inspection for leakage shall be conducted with a fully charged system and brakes fully applied.

Procedures:	*Reject Vehicle If:*
(1) Single Vehicle. With a fully charged system, stop engine and observe pressure drop in 1 minute.	(1) Air pressure drop is greater than 3 psi in 1 minute.

B. Air Reservoir and Valves.

Procedures:	*Reject Vehicle If:*
(1) Air Reservoir. With system fully charged, open primary (wet) tank drain valve and observe operation of check valve. Then open drain valve on secondary (dry) tank.	(1) Check valve does not close and air is retained in the secondary (dry) tank or tanks.
(2) Contamination. Observe any oil or water expelled from all tanks.	(2) Any deposits of oil or water cannot be expelled.
(3) Quick Release Valves. Apply and release air in the system.	(3) Air is not quickly exhausted through exhaust port when brakes are released.
(4) Relay Valves. Apply and release brakes and observe function of proper brake chambers.	(4) Air is not directed to proper brake chamber when brakes are applied or air is not quickly exhausted when brakes are released.

C. Parking and Emergency Brake Application. Vehicles with original equipment air-operated parking brakes are permissible. There are different systems designed for automatic or manual operation of the system as the design allows (check automatic application of brakes when air tanks are being drained).

Procedures:	*Reject Vehicle If:*
(1) Using park brake control valve, release air pressure from brakes.	(1) Push rods are extended and vehicle can be moved.
(2) Observe if mechanism releases brakes when control valve is operated.	(2) Brakes do not fully release.

D. Gladhands and Air System.

Procedures:	*Reject Vehicle If:*
(1) Visually inspect gladhands for condition and mounting.	(1) Gladhands are damaged, have damaged seals, or are insecurely mounted.
(2) Visually inspect lines and hoses for: (a) Type. (b) Condition. (c) Mounting.	(2) (a) Not an approved type. (b) Broken, cracked, chafed, abraded, or kinked. (c) Insecurely mounted or contacting the exhaust system or any moving part.
(3) Inspect air tanks for: (a) Presence and connection. (b) Condition. (c) Leaks. (d) Mounting.	(3) (a) Tank is missing or not connected. (b) Tank is cracked, damaged, or field repaired. (c) Tank or connections leak. (d) Tank, mounting brackets, or springs are missing, broken, cracked, or loose.
(4) Inspect drain cocks and moisture ejectors (if equipped) for:	(4) (a) Drain cock is missing, broken, damaged, or is inoperable. (b) Drain cock or moisture ejector leaks air.

(a) Presence and condition. (b) Leaks.	

E. Brake Mechanical Components. Do not attempt to dismantle a double diaphragm spring brake unit while it is on the vehicle. Utilize a safety cage and remove the entire unit from the vehicle. Replace with a new or rebuilt assembly. When rebuilding or overhauling a brake chamber, strict adherence to manufacturer's procedures is required. Inspect brake chamber for:

Procedures:	*Reject Vehicle If:*
(1) Function.	(1) Brake chamber fails to function as designed.
(2) Leaks.	(2) Brake chamber leaks or diaphragm is damaged.
(3) Damage.	(3) Brake chamber is damaged so as to affect operation.
(4) Mounting.	(4) Brake chamber or mounting hardware is broken, loose, damaged, or bolts are missing.
(5) Push rods.	(5) Push rod is broken, bent, or misaligned with slack adjuster.
(6) Clevis yokes.	(6) Clevis yoke is broken, cracked, or worn.
(7) Clevis pins.	(7) Clevis pin is missing, worn, or cotter pin is missing or an improper substitute is used.
(8) Push rod clevis pin hole setting.	(8) Slack adjuster effective length is not the same on all wheels.
(9) Slack adjuster.	(9) Slack adjuster is inoperative, broken, bent, extremely worn, or does not function as designed.
(10) Slack adjuster nut self-locking sleeve.	(10) Adjusting nut self-locking sleeve does not function.

F. Slack Adjuster (Push Rod) Travel. With the assistance of a second party, apply 85 psi in system and note rod travel.

Procedures:	*Reject Vehicle If:*
(1) With brakes released, inspect angle of push rod and slack adjuster arm.	(1) Push rod and slack adjuster arm is less than 90 degrees when brakes are released.
(2) Measure push rod travel from limits in fully released to fully applied positions.	(2) Push rod travel exceeds limits in Table 1.

TABLE 1
S-CAM BRAKES—PUSH ROD TRAVEL LIMITS
(*Dimensions in Inches*)

Type	*Effective Area (Sq. In.)*	*Outside Diameter* (Inches)*	*Maximum Stroke (Inches)*
BOLT TYPE BRAKE CHAMBER DATA			
A	12	6-15/16	1-3/8
B	24	9-3/16	1-3/4
C	16	8-1/16	1-3/4
D	6	5-1/4	1-1/4
E	9	6-3/16	1-3/8
F	36	11	2-1/4
G	30	9-7/8	2
ROTOCHAMBER DATA			
9	9	4-9/32	1-1/2
12	12	4-13/16	1-1/2
16	16	5-13/32	2
20	20	5-15/16	2
24	24	6-13/32	2

30	30	7-1/16	2-1/4
36	36	7-5/8	2-3/4
50	50	8-7/8	3
CLAMP TYPE BRAKE CHAMBER DATA			
6	6	4-1/2	1-1/4
9	9	5-1/4	1-3/8
12	12	5-11/16	1-3/8
16	16	6-3/8	1-3/4
20	20	6-25/32	1-3/4
24	24	7-7/32	1-3/4**
30	30	8-3/32	2
36	36	9	2-1/4
*Dimensions listed do not include cap screw head projections for rotochambers and bolt clamp projections for clamp type brake chambers. **2 inches for long stroke design.			
BENDIX WESTINGHOUSE			
DD2			2
DD3			2

G. Wedge Brake. With the assistance of a second party, make a full brake application.

Procedures:	*Reject Vehicle If:*
(1) Measure total shoe movement from fully released to fully applied position.	(1) Brake shoe movement on wedge brakes exceeds 1/16 inch.

H. Brake Camshafts.

Procedures:	*Reject Vehicle If:*
(1) Inspect operation of brakes.	(1) Brake camshaft condition renders any brake inoperable.
(2) Inspect travel of brake cams.	(2) Any cam is on end or turns over when brakes are applied.
(3) Inspect for camshaft and bushing wear.	(3) There is more than 1/8 inch wear between camshaft and bushings.

I. Brake Linings—Air Brakes. Visually inspect brake shoes. If shoes cannot be seen, removal of the lower portion of the dust cover is required.

Procedures:	*Reject Vehicle If:*
(1) Inspect for presence and condition of lining.	(1) Any lining is missing, cracked, broken, or not securely attached to the brake shoe.
(2) Measure thickness at center of shoe. It may be necessary to back off slack adjusters to make an accurate measurement.	(2) Brake lining thickness is worn to 1/4 inch or less at center of shoe.
(3) Visually inspect for contamination.	(3) Lining is contaminated with oil or grease.

J. Brake Drums—Air Brakes.

Procedures:	*Reject Vehicle If:*
(1) Visually inspect for damage and cracks.	(1) Any drum contains cracks in the friction surface which extend to the outer edge of the bore or any drum contains any external cracks.
(2) Removal of any wheel and brake drum is only required when a rejection occurs under §J(1). When any wheel and brake drum is removed, perform the inspection specified in §J (3).	(2) (Rejection not applicable in this step)

(3) Measure inside diameter of drum for wear and remachining.	(3) Any combination of wear and remachining exceeds the brake drum manufacturer's limits. If a limit is not available, the maximum combination of wear and remachining may not exceed 0.090 inch greater than the original inside diameter of the drum if the original diameter of the drum is 11 inches or less. For drums greater than 11 inches inside diameter, the maximum wear and remachining may not exceed 0.120 inch greater than the original inside diameter.

K. Disc Brakes—Air.

Procedures:	*Reject Vehicle If:*
(1) Inspect all calipers and rotor (disc) surfaces for oil or grease contamination.	(1) Oil or grease is evident on accessible surfaces of any caliper or rotor (disc).
(2) If brake linings are visible, visually inspect thickness of lining.	(2) Brake lining thickness appears to be 1/8 inch or less.
(3) If rotors (discs) are visible, visually inspect for cracks or damage.	(3) Any rotor is cracked or damaged.
(4) Removal of all wheels on an axle is only required when a rejection occurs under §K(2). Otherwise remove only the wheel where the defect is suspected. When wheels are removed, perform the inspections specified in §K(5)—(8).	(4) (Rejection not applicable in this step)
(5) Bonded Linings. (a) Measure thickness of lining at thinnest point. (b) Inspect lining condition.	(5) (a) Thinnest point of remaining lining is 1/8 inch or less. (b) Bonded lining is broken, cracked, loose, missing, wear is extremely uneven, or lining is contaminated with oil, grease, or brake fluid.
(6) Riveted Lining. (a) Measure thickness of lining at thinnest point above rivet head. (b) Inspect lining condition.	(6) (a) Thinnest point of remaining lining above a rivet head is 1/8 inch or less. (b) Lining or rivet is broken, cracked, loose, missing, wear is extremely uneven, or lining is contaminated with oil, grease, or brake fluid.
(7) Calipers. Visually inspect for damage and cracks.	(7) Caliper is leaking, fails to operate, or piston is seized, or anti-vibration springs are loose or missing.
(8) Rotors (Discs). (a) Visually inspect for damage and cracks. (b) Measure thickness of rotor for wear and remachining.	(8) (a) Any rotor is broken, cracked into the hub, or friction surface cracks extend to the periphery of the rotor. (b) Any combination of wear and remachining reduces the thickness of the rotor to less than the minimum thickness established by the manufacturer or that stamped on the rotor.

L. Brakes—Electric.

Procedures:	*Reject Vehicle If:*
(1) Inspect brakes for operation.	(1) Brakes do not function when electrical current is applied to the system.
(2) Inspect for broken, loose, or corroded terminals and connections.	(2) Terminals or connections are broken, loose, or corroded.
(3) Inspect wiring for brakes, worn or frayed insulation, and proper mounting.	(3) Wire is broken or insulation is worn or frayed to expose bare wire, or wiring is not supported to prevent rubbing, chafing, or contact with moving vehicle parts.

M. Break Away (Emergency Brake).

Procedures:	*Reject Vehicle If:*

(1) Disconnect brake power from vehicle and observe brake emergency operation.	(1) Emergency brakes do not automatically apply and remain applied for at least 15 minutes when brake power is disconnected.

11.22.04.06

.06 Tires.

A. Tire Inspection—Nonsteering Axle.

Procedures:	*Reject Vehicle If:*
(1) Inspect for Tire Wear. (a) Tires without tread indicators. (b) Tires with tread wear indicators.	(1) (a) Tire is worn so that less than 2/32 inch remains when measured in any two major grooves at three equally spaced intervals around circumference of a tire. (b) Tread wear indicator contacts the road in any two adjacent major grooves at three equally spaced intervals around circumference of a tire.
(2) Inspect for tread cuts, snags, or sidewall cracks.	(2) Tire has tread cuts or snags or sidewall cracks in any direction and deep enough to expose cord fabric.
(3) Inspect for exposed cord fabric.	(3) Tire has any part of the breaker strip or casing ply exposed in tread.
(4) Inspect for bumps, bulges, or knots.	(4) Tire has visible bump, bulge, or knot related to tread or sidewall separation.
(5) Inspect for patching.	(5) Tire has a boot, blowout patch, or other temporary ply repair.
(6) Inspect for tire matching.	(6) Bias ply and radial ply tires are mixed on same axle, or tires on same axle are not equivalent to size recommended by tire or vehicle manufacturer.
(7) Inspect for restricted usage.	(7) Tire is labeled "Not for Highway Use" or other labelling which excludes use on a highway vehicle.
(8) Inspect for regrooved or recut tires.	(8) Tire is regrooved or recut and regrooving or recutting is not permitted by tire manufacturer.
(9) Inspect for proper mounting.	(9) Tire has tire flap protruding through valve stem slot in rim.
(10) Inspect valves and valve stems for leaks and mounting.	(10) Valve stem leaks, is damaged due to misalignment, or is positioned to interfere with checking tire air pressure.
(11) Inspect for wheel and tire mounting.	(11) Tire or wheel contacts vehicle chassis or body.
(12) Inspect for weight limit rating.	(12) Gross vehicle axle weight exceeds tire load rating, which includes under-inflated tires.
(13) Inspect spare tire storage (if equipped).	(13) A spare tire is not properly secured.

11.22.04.07

.07 Wheels, Rims, Lock Rings, Studs, and Nuts.

A. Wheels. Visually inspect:

Procedures:	*Reject Vehicle If:*
(1) Disc Wheels. (a) Inspect for condition of wheels. (b) Inspect stud holes.	(1) (a) Wheel is broken, cracked, bent, warped, welded, or loose. (b) Any stud hole is elongated.
(2) Cast Wheels. (a) Inspect for condition of wheels. (b) Inspect stud holes.	(2) (a) Wheel is broken, cracked, bent, scraped, welded, loose, or clamping area is worn. (b) Any stud hole is elongated.

B. Rims. Visually inspect for:

Procedures:	*Reject Vehicle If:*
(1) Wheel and rim matching.	(1) Wheel and rim are mismatched.
(2) Damage.	(2) Rim is broken, cracked, bent, warped, or loose.

C. Lock Rings.

Procedures:	*Reject Vehicle If:*
(1) Inspect for butted lock rings.	(1) Locking ring end clearance is less than 1/8 inch.

D. Studs, Nuts, and Clamps. Inspect for:

Procedures:	*Reject Vehicle If:*
(1) Presence and tightness.	(1) Stud, nut, or clamp is missing or loose.
(2) Thread engagement.	(2) Threads are cross-threaded or improperly engaged.
(3) Condition.	(3) Stud, nut, or clamp is broken, cracked, bent, welded, or seized.

11.22.04.08

.08 Vehicle Frame, Body, and Sheet Metal.

A. Frame.

Procedures:	*Reject Vehicle If:*
(1) Visually inspect frame for damage, deterioration, and improper welding.	(1) Frame is cracked, broken, bent, rusted to substantially weaken the frame, or frame is welded and not fishplated.
(2) On pole trucks inspect: (a) Cradle and cradle posts. (b) Nonwelded cradles. (i) Angle between cradles and cradle posts. (ii) Stake extension attachment. (iii) Gusset plate between stake and cradle. (iv) Gusset plate length. (v) All welds. (vi) Cradle welds. (vii) Stake welds. (viii) Stake and cradle hinge point. (ix) Overall cradle width. (c) Welded cradles. (i) Approval. (ii) Angle between stake and cradle is 90 degrees. (iii) All welds.	(2) (a) Cradle or cradle post is missing, broken, cracked, or extremely bent. (b) (i) Angle is greater than 90 degrees. (ii) Not securely mounted or not secured by a pin and rope wire stake line. (iii) Missing, broken, cracked, gusset plate less than 1/4 inch thickness, not inverted four section or double web design, vertical leg does not extend upwards beyond cable wrapper slot, corners of leg less than 1 inch radius, changes in sections not smooth and even, or gusset plate not overlapped on both sides of stake by at least 1 inch. (iv) Horizontal length is less than 18 inches and vertical length is less than 12 inches. (v) Not electric arc welds, inadequate root or sidewall fusion, slag included along line surface, roughness under cut, cracked, unfilled craters or porosity, or excessive reinforcement overlap. (vi) Fillet leg less than 1/4 inch. (vii) Welds present across inner face of stake at or near the gusset plate. (viii) All fraying surface between the cradle and stake (except pin) not welded, or welds have less than 3/8 inch leg. (ix) Overall width of cradle and wrapper exceeds 8 feet 6 inches. (c) (i) Design not approved by a professional engineer. (ii) Angle is greater than 90 degrees. (iii) Not electric arc welds, inadequate root or sidewall fusion, slag included along line surface, roughness under cut, cracked, unfilled craters or porosity, or excessive reinforcement overlap.
(3) On low bay trailers inspect: (a) Tie downs. (b) Loading ramp or ramps. (c) Equipment rails or pads and floor (when applicable). (d) Side rails.	(3) (a) Missing, broken, or cracked. (b) Ramp or hinges are broken or insecurely mounted. (c) Missing, broken, or loose. (d) Missing, broken, or loose.

B. Frame Cross Members.

Procedures:	*Reject Vehicle If:*
(1) Visually inspect frame cross member for condition and attachment.	(1) Frame cross member or bolt is loose, missing, or damaged.

C. Body Mounts.

Procedures:	*Reject Vehicle If:*
(1) Inspect for presence and condition of body mounts.	(1) Body mount or bolt is missing, cracked, loose, or body is not secured to the frame.

D. Floors (if Applicable).

Procedures:	*Reject Vehicle If:*
(1) Inspect floors for condition.	(1) Floor is rusted or weakened to a point it does not support persons or load or container, holes are greater than 6 square inches.

E. Doors, Handles, Latches, and Hinges.

Procedures:	*Reject Vehicle If:*
(1) Inspect doors for presence, attachment, and operation.	(1) Door is missing, loose, or does not readily open or securely close.
(2) Inspect door handles for presence and operation.	(2) Door handle is missing or does not permit opening or closing of door or tailgate.
(3) Inspect door catches for presence, condition, and operation.	(3) Door catch is missing, damaged, loose, or worn, or does not operate on primary or secondary catches.
(4) Inspect hinges for presence and condition.	(4) Hinge is missing, broken, loose, or does not permit door to properly open or close.

F. Landing Gear (if Applicable).

Procedures:	*Reject Vehicle If:*
(1) Inspect for: (a) Operation. (b) Condition.	(1) Landing gear is: (a) Inoperable, binding, or seized. (b) Broken, cracked, bent, or loose.

G. Rear Protector (Mud) Flaps. Rear protector flaps are not required on a vehicle when the construction is such that complete freedom around the wheel area is necessary to secure the designed use of the vehicle.

Procedures:	*Reject Vehicle If:*
(1) Inspect rear protector flaps for presence, condition, size, and mounting when required.	(1) Rear protector flap is missing, loose, or does not extend the full width of tires, or the distance from flap to ground is more than 1/3 the distance from the protector flap to the center of the wheel.

H. Sheet Metal.

Procedures:	*Reject Vehicle If:*
(1) Inspect body sheet metal and moldings for tears, protruding or loose parts, and deterioration.	(1) Body parts and moldings have sharp or jagged edges, protrude to be hazardous, are loose, or body panel has a missing rivet or open seam.

I. Rear Metal Frame. Each trailer and semitrailer, when operated on the highways, shall be equipped with a permanent metal frame attached to the underside of the rear of the trailer. The frame may not be wider than the width of the trailer and more than 30 inches above the highway, and shall be constructed of heavy gauge steel. The maximum The maximum transverse distance from the widest part of the vehicle at the rear to the frame may not exceed 18 inches. Any trailer or semitrailer so constructed and maintained that the body, chassis, or other parts afford the required protection is in compliance with this regulation. This regulation does not apply to pole trailers or trailers or semitrailers when the installation of the frame would prevent operation of the vehicle in fulfilling its designed use. The frame may not interfere with lights or other warning devices. Inspect rear metal frame for:

Procedures:	*Reject Vehicle If:*

(1) Presence when required.	(1) Frame is missing when required.
(2) Construction.	(2) Frame is not constructed of heavy gauge steel.
(3) Attachment.	(3) Frame is not securely attached to the underside of rear of the vehicle.
(4) Condition.	(4) Frame is broken, cracked, or damaged, and does not afford required protection.
(5) Obstruction of lights or other warning devices.	(5) Frame obstructs or interferes with lights or other warning devices.

11.22.04.09

.09 Lighting.

A. Tail Lamps. Inspect tail lamps for:

Procedures:	*Reject Vehicle If:*
(1) Presence.	(1) Not equipped with at least one tail lamp on each side to the rear, or are not mounted as far apart as practical.
(2) Condition.	(2) Tail lamp does not function, does not emit a red light, or is not visible to rear.

B. Stop Lamps. Inspect stop lamps for:

Procedures:	*Reject Vehicle If:*
(1) Presence.	(1) Not equipped with at least two red or amber stop lamps.
(2) Condition.	(2) Stop lamp does not function, does not emit a red or amber light, or is not visible to the rear.

C. Turn Signal Lamps. Inspect turn signal lamps for:

Procedures:	*Reject Vehicle If:*
(1) Presence.	(1) Not equipped with two red or amber rear signal lamps, mounted as far apart as practical.
(2) Condition.	(2) Turn signal lamp is damaged, broken, cracked, or not securely mounted.
(3) Function.	(3) Turn signal lamp does not function as designed, or does not flash between 60 and 120 cycles per minute, or is not visible to front and rear.

D. Hazard Warning Lamps. Inspect hazard warning lamps for:

Procedures:	*Reject Vehicle If:*
(1) Presence.	(1) Not equipped with hazard warning lamps emitting red or amber light to rear.
(2) Condition.	(2) Hazard warning lamp is damaged, broken, cracked, or not securely mounted.
(3) Function.	(3) Hazard warning system does not function or permit simultaneous operation of all turn signal lamps, or is not visible to rear.

E. Side Marker Lamps. Side marker lamps may function as both side marker and clearance lamps. Inspect side marker lamps for:

Procedures:	*Reject Vehicle If:*
(1) Presence.	(1) Not equipped with two amber side marker lamps on front and two red side marker lamps on rear, mounted as high and as close to front and rear of vehicle as practical, or if vehicle is longer than 30 feet and is not equipped with an intermediate side marker lamp centrally located on the vehicle.
(2) Condition.	(2) Side marker lamp is damaged, broken, cracked, or not securely mounted.

(3) Function.	(3) Side marker lamp does not function or is not visible to the side.

F. Clearance Lamps. Clearance lamps are not required on vehicles less than 80 inches in width or on rear of truck tractors. Inspect clearance lamps for:

Procedures:	*Reject Vehicle If:*
(1) Presence.	(1) When required, vehicle is not equipped with at least two amber to the front and two red to the rear, mounted as far apart as practical.
(2) Condition.	(2) Clearance lamp is damaged, broken, cracked, or not securely mounted.
(3) Function.	(3) Clearance lamp does not function or is not visible to front or rear.

G. Identification Lamps. Identification lamps are not required on vehicles less than 80 inches in width. Inspect identification lamps for:

Procedures:	*Reject Vehicle If:*
(1) Presence.	(1) When required, vehicle is not equipped with three red identification lamps on the rear.
(2) Condition.	(2) Identification lamp is damaged, broken, cracked, or not securely mounted.
(3) Function.	(3) Any identification lamp does not function or is not visible to the front and rear.

H. License Plate Lamp or Lamps. Inspect license plate lamp or lamps for:

Procedures:	*Reject Vehicle If:*
(1) Presence.	(1) Not equipped with lamp or lamps to illuminate license plate.
(2) Condition.	(2) License plate lamp is damaged, broken, cracked, or not securely mounted.
(3) Function.	(3) License plate lamp does not function, emit a white light, or illuminate license plate.

I. Additional Lamps (if Equipped).

Procedures:	*Reject Vehicle If:*
(1) Back-up lamps.	(1) Back-up lamp functions when vehicle is moving forward, is not properly directed, or is not properly and securely mounted.

J. Reflectors.

Procedures:	*Reject Vehicle If:*
(1) Rear. Visually inspect for presence and condition of reflectors.	(1) Not equipped with two red reflectors on the rear, mounted at the same height and is far apart as practical.
(2) Side Marker. Visually inspect for presence and condition of reflectors.	(2) Not equipped with one amber reflector on each side at or near the front, one red reflector on each side at or near the rear, or if vehicle is more than 30 feet long and is not equipped with an intermediate amber reflector centrally located.

11.22.04.10

.10 Electrical System.

A. Wiring. Visually inspect wiring for:

Procedures:	*Reject Vehicle If:*
(1) Condition.	(1) Insulation is broken, cracked, chafed, or connections are corroded.
(2) Mounting.	(2) Wiring is loose to permit contact with exhaust system or moving parts.

11.22.04.11

.11 Hitches and Coupling Devices.

A. Upper Fifth Wheel Plate.

Procedures:	*Reject Vehicle If:*
(1) Inspect fifth wheel plate condition for contamination and lubrication.	(1) Broken, cracked, loose, or has 1/8 inch or more wear, or coupling areas are contaminated with gravel, sand or dirt, or are not properly lubricated.

B. Kingpin.

Procedures:	*Reject Vehicle If:*
(1) Inspect kingpin condition.	(1) Kingpin is broken, cracked, loose, or deformed.
(2) Inspect kingpin wear.	(2) Kingpin is worn 1/8 inch or more.

C. No-Slack Hitch. Apply air pressure to no-slack hitch before inspecting.

Procedures:	*Reject Vehicle If:*
(1) Inspect cushion for movement and adjustment.	(1) Cushion does not move or is out of adjustment.
(2) Inspect for air leaks.	(2) There is an air leak at the chamber, a line, or connection.

D. Converter Dolly and Fifth Wheel Structure. Inspect:

Procedures:	*Reject Vehicle If:*
(1) Frame.	(1) Broken, cracked, warped, or contains broken or cracked welds or loose or missing bolts.
(2) Draw bar.	(2) Broken, cracked, deformed, or contains broken or cracked welds or loose or missing bolts.
(3) Eye or lunette.	(3) Broken, cracked, or excessively worn or repaired by welding.
(4) Fifth wheel mounting bolts.	(4) Broken, cracked, missing, or deformed.
(5) Plate.	(5) Broken, cracked, or lubrication grooves are missing.
(6) Saddle bushings.	(6) Horizontal movement exceeds 1/4 inch.
(7) Jaw and latch.	(7) Broken, cracked, seized, or wear exceeds 1/4 inch.

E. Trailer Hitches. Inspect hitch for:

Procedures:	*Reject Vehicle If:*
(1) Mounting.	(1) Hitch is not securely attached.
(2) Condition.	(2) Any part is missing, bent, seized, or worn to a point where the hitch or components may separate.
(3) Latch.	(3) Latch fails to close and latch.
(4) Repairs.	(4) A cast or forged hitch has been welded.

F. Secondary Attachments. Inspect for presence and condition of:

Procedures:	*Reject Vehicle If:*
(1) Safety chains or cables .	(1) Missing, broken, cracked, loose, attachment, or improper length.

(2) Cable clamps.	(2) Missing, broken, loose, improperly installed, or insufficient quantity.
(3) Hook.	(3) Missing, broken, cracked, or contains missing parts.
(4) Safety catches.	(4) Missing, broken, cracked, or operates improperly.

11.22.04.12

.12 Tanks and Pressure Vessels.

A. Tanks. Inspect:

Procedures:	*Reject Vehicle If:*
(1) Tank.	(1) Tank leaks, is cracked, or has broken welds.
(2) Valves.	(2) Any valve leaks, is loose, cap is missing, or emergency shutoff valve is inoperable.
(3) Hose or auxiliary attachment.	(3) Any hose or auxiliary attachment is loose or improperly mounted.
(4) Hatches.	(4) Any hatch is missing, loose, not securely attached, or latch is inoperable.
(5) Hatch hinges.	(5) Any hinge is missing, broken, seized, or otherwise inoperable.
(6) Signs and placards.	(6) Sign or placard is missing, not the required type, or is not legible.

B. Pressure Vessels. Inspect:

Procedures:	*Reject Vehicle If:*
(1) Tank.	(1) Tank leaks, is cracked, or contains a cracked or broken weld.
(2) Valves.	(2) Any valve leaks, is loose, cap is missing, or emergency shutoff valve is inoperable.
(3) Hoses.	(3) Any hose or auxiliary attachment is loose or improperly mounted.
(4) Signs and placards.	(4) Sign or placard is missing, not the required type, or is not legible.
(5) Metal certification plate.	(5) Metal certification plate is missing, illegible, or out of date.