UTAH DEPARTMENT OF PUBLIC SAFETY

OFFICIAL VEHICLE SAFETY INSPECTION

MANUAL FOR

TRACTORS/TRAILERS/BUSES

AND COMMERCIAL VEHICLES

10,001 GVWR OR GREATER

EFFECTIVE NOVEMBER 1, 2025 - Present

Utah Highway Patrol
Vehicle Safety Section

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REGIONAL EDUCATIONAL INSTITUTIONS

DAVIS-MORGAN REGION #5598
DAVIS TECHNICAL COLLEGE
Tracy Story
George Young, Instructor
550 East 300 South
Kaysville, Utah 84037-2699
Heavy Duty and Light Duty Courses
Continuing Education 801-593-2100

WASATCH FRONT REGION #5599/#9177
SALT LAKE COMMUNITY COLLEGE
Paul Jones, Program Operations Specialist
Lane Grange, Instructor PLT/TTB
Jeff Mulligan, Instructor TTB
Miller Campus #5599 (PLT/ATV Light Duty)
9750 South 300 West #215
Sandy, Utah 84070
Westpointe Campus #9177 (TTB/Heavy Duty)
1060 North Flyer Way
Salt Lake City, Utah 84116
Heavy Duty and Light Duty Courses
Phone 801-957-5372
Register for classes at slcc.edu/emissions

UTAH COUNTY REGION #5600
MOUNTAINLAND TECHNICAL COLLEGE
Dave Simmons,
Instructor John Hyde,
Instructor Lehi Campus
2301 West Ashton Blvd.
Lehi, Utah 84043
Light Duty Course only
Phone 801-753-6282 Then Select Student Services

CENTRAL REGION #5601
SNOW COLLEGE
Janette Wagner, Custom Fit Training
Richard Ivory, Instructor TTB
800 West 200 South
Richfield, Utah 84701
Heavy Duty and Light Duty Courses
Phone 435-893-2206 Questions only
Register for classes at snow.edu/sbdc

SOUTHEAST REGION #5602
UTAH STATE UNIVERSITY, EASTERN CAMPUS
Todd Richardson, Heavy Duty Instructor **435-630-8534**
Scott Edwards, Light Duty Instructor **435-613-5221**
451 East 400 North
Price, Utah 84501
Heavy Duty and Light Duty Courses

SOUTHEAST REGION #6846
UTAH STATE UNIVERSITY, EASTERN CAMPUS
Mikall Shumway, Custom Fit Coordinator
Craig Swensen, Instructor
Robert Burgess, Instructor
639 West 100 South
Blanding, Utah 84511
Heavy Duty and Light Duty Courses
Phone 435-678-8532

SOUTHWEST REGION #5603
SOUTHWEST TECHNICAL COLLEGE
Wade Esplin, Director
Shad Esplin, Instructor
Kaden McBride, Scheduler **Phone 435-865-3911**
510 West 800 South
Cedar City, Utah 84720
Heavy Duty and Light Duty Courses

SOUTHWEST REGION #5604
DIXIE TECHNOLOGY COLLEGE
Shawn Bain, Instructor
610 South Tech Ridge Drive
St. George, Utah 84770
Heavy Duty and Light Duty Courses (no M or ATV)
Phone 435-674-8400
Register for classes at dixietech.edu

NORTHERN REGION #5596	EASTERN REGION #5605
BRIDGERLAND TECHNICAL COLLEGE Mike Hunter, Instructor Jennifer Tenhoeve, Continuing Education Director Automotive Department, Main Building 1301 North 600 West Logan, Utah 84321 **Heavy Duty and Light Duty Courses** **Phone 435-750-3166** https://btech.edu/safety-inspection-ce/	**UINTAH BASIN TECHNICAL COLLEGE** Justin Jorgensen, Instructor TTB Tyler Mckee, Instructor PLT 450 North 2000 West Vernal, Utah 84078 **Heavy Duty and Light Duty Courses** **Phone 435-725-7100**

Revised 04/09/2025

INSPECTOR CERTIFICATION PROCEDURES

A. Inspectors seeking re-certification of his/her safety inspection authority will be required to obtain re-certification utilizing one of two available options.

   1. Option #1 – Online Safety Inspector re-certification is available at https://www.utahsafetyinspection.com/. Only persons certified during the previous year, last 365 days, will be allowed to re-certify utilizing the online certification process. All others, who have allowed their certification to lapse for more than one year (365 days), will be required to attend the full 16-hour Safety Inspection Course offered through any of the Educational Institutions for recertification.

   2. Option #2 – Attend the entire 16-hour Safety Inspection Course and pass the final test with an 80% or higher score. This course is currently available through the Regional Educational Institutions. Contact them directly for applicable fees.

B. It has long been a concern of the Utah Highway Patrol that many inspectors have been certified for several years with no follow-up training provided. This training is being made available to educate and upgrade inspectors and keep them current on new developments in the Safety Inspection Program. To maintain the integrity of the Safety Inspection Program, and to ensure that Utah citizens are receiving a proper safety inspection, this new training requirement has been implemented statewide.

C. A currently certified inspector may utilize either option #1 or #2 for recertification, no earlier than 60 days prior to the expiration of his/her certification.

EQUIPMENT AND BUILDING REQUIREMENTS

A. All Tractor/Trailer/Bus inspection stations are required to have the following tools:
   a. Heavy-Duty Jack and Jack Stands
   b. 2-piece tint meter
   c. Tread Depth Gauge
   d. Tape Measure
   e. Dial Indicator
   f. Current Safety Inspection Manual
   g. Brake Drum Gauge
   h. Rotor Gauge
   i. Bonded and Riveted Brake Gauge
   j. King Pin Gauge
   k. 5th Wheel Jaw Tester

   (Tread Depth Gauge can be used in place of a bonded or riveted depth gauge)

B. The building shall have a level concrete or asphalt floor and be able to completely house the vehicles to be inspected.

UTAH INTERACTIVE CUSTOMER SUPPORT LINE: 801-983-0275

http://highwaypatrol.utah.gov/safetyinspection/

INSPECTION PROCEDURES

A. COMPLETE THE FOLLOWING TASKS BEFORE INSPECTING THE VEHICLE

1. Collect the appropriate registration paperwork.
    a. A vehicle may be inspected without registration paperwork.
2. Verify the vehicle identification number (VIN).
3. Record the owner's full name and complete vehicle information.
4. Record the vehicle mileage.
5. Remove the old inspection sticker.
6. Enter the inspection date and inspector number if using a paper inspection certificate

B. EXAMINE THE VEHICLE'S INTERIOR BY COMPLETING THE FOLLOWING TASKS

1. Inspect the windshield.
2. Inspect the required mirrors for adequate visibility.
3. Inspect seatbelts for proper operation.
4. Inspect the steering system.
5. Inspect the brake pedal.
6. Inspect the emergency brake for proper operation.
7. Inspect the horn.
8. Inspect the windshield wiper and washer.
9. Inspect the heater and defroster.

C. EXAMINE THE VEHICLE'S EXTERIOR BY COMPLETING THE FOLLOWING TASKS

1. Inspect high and low beam headlights.
2. Inspect headlights for proper aim.
3. Inspect parking lights, taillights, signal lights, brake lights, marker lights, and reflectors.
4. Inspect the light for proper color.
5. Inspect the tires for proper inflation, wear, and damage.
6. Inspect the body, fenders, door, hood latches, and bumpers.
7. Inspect for broken glass.
8. Inspect the window tinting by measuring the light transmittance on the front side windows and windshield.

D. EXAMINE UNDER THE VEHICLE'S HOOD BY COMPLETING THE FOLLOWING TASKS

1. Inspect belts.
2. Inspect hoses.
3. Inspect power steering pump.
4. Inspect wiring.
5. Inspect the exhaust manifold.
6. Inspect the master cylinder.

7. Inspect for fuel leaks.
8. Inspect the air compressor.

E. EXAMINE THE VEHICLE'S SUSPENSION AND UNDERCARRIAGE BY COMPLETING THE FOLLOWING TAKS

1. Inspect wheel bearings.
2. Inspect ball joints.
3. Inspect tie rod ends.
4. Inspect idler arms.
5. Inspect shock absorbers.
6. Inspect springs.
7. Inspect the exhaust system.
8. Inspect floor pans.
9. Inspect fuel system lines.

F. EXAMINE THE BRAKING SYSTEM BY COMPLETING THE FOLLOWING TASKS

1. Inspect for loose or missing nuts.
2. Inspect for cracked wheels.
3. Inspect pads or shoes.
4. Inspect rotors or drums.
5. Record the brake measurements on the safety inspection sticker report.
6. Inspect for fluid leaks.
7. Inspect brake hoses.

REJECT VEHICLE PROCEDURES

A. The following procedures apply when a vehicle fails the safety inspection.

1. If all rejected items have been repaired, the verifying inspector shall sign the safety inspection certificate.
2. If no repairs are made, the inspector shall print the rejection inspection certification and give it to the customer.
3. The inspector shall not sign a rejection inspection certificate.

   A customer with a rejected vehicle has up to 15 calendar days to complete all repairs and return to any station that conducts online inspections to verify repairs at no charge. Customers may contact the Utah Highway Patrol Safety Inspection Office to request a waiver of additional fees if they exceed 15 days for circumstances beyond their control, such as back ordered parts.
4. The inspector shall document any item rejected and repaired during an inspection as repaired on the inspection certificate.
5. Any inspector at a facility may certify repairs made to rejected items. No additional charges may be added.

PASSED VEHICLE PROCEDURES

A. The following procedures apply when a vehicle passes the safety inspection.
   1. The inspector shall print the vehicle inspection certificate and give it to the customer.
   2. The inspector performing the inspection shall sign the printed inspection certificate prior to giving it to the customer.

$14.00	Motorcycles and ATV's.
$30.00	Passenger vehicles, trucks, full size ATV's (up to 26,000 lbs. GVWR or less).
$30.00	Trailer
$40.00	For four-wheel drive, split axle, heavy-duty trucks, buses, and any vehicle requiring disassembly of the front hub or removal for the rear axle for inspection

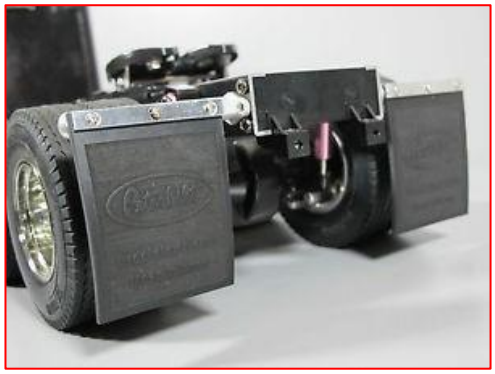
SECTION 1 – REGISTRATION

1) **When reviewing vehicle registration papers, the inspector shall:**
   a) Check the vehicle registration certificate, identification number on the vehicle, license plates, and vehicle description for agreement.
   b) Enter the manufacturer's Vehicle Identification Number and license plate number into the online program or record on the safety inspection certificate if not using the online program.
   c) **Advise** when:
      i) Paperwork disagreements are accidental or clerical in nature.
   d) **Reject** when:
      i) The registration certificate, vehicle identification number, license plate, and vehicle description are not in agreement.
      ii) The vehicle identification number is missing or obscured.
   e) Verify the vehicle identification number on all inspections.

2) **The inspector shall examine the vehicle's license plates and comply with the following requirements:**
   a) If the vehicle is registered, verify the license plates are securely mounted and clearly visible.
   b) Check to ensure the Utah Apportioned plate is properly mounted.
   c) **Advise** when:
      i) A license plate is not securely fastened, is obscured, or cannot be clearly identified.

SECTION 2 – TIRES AND WHEELS

3) **When examining the tire and wheels of a vehicle, the inspector shall:**
   a) Check the vehicle for proper mudguard protection, which must be at least as wide as the tire it is protecting, be directly in line with the tire, and maintain a ground clearance of not more than 50% of the diameter of a rear axle wheel under any conditions.
      i) **Reject** when:
         (1) Tire tread is not fully covered by the body, trailer, or fender.
         (2) Rear tires do not have the top 50% of the tire covered by mud flaps.
         (3) Rear mud flaps are not as wide as the tire.
         (4) Installation of **speed- restricted tires** unless specifically designated by the motor carrier.
      ii) Wheel covers, mudguards, flaps, or splash aprons are not required if the motor vehicle, trailer, or semi-trailer is designed and constructed to meet the above requirements.



   b) Check for proper tire width, size, and load rating.
      i) **Reject** when:
         (1) A tire width is beyond the outside of the vehicle body.
         (2) A tire is not of proper size and load rating per axle as determined by OEM specifications.
   c) Check valve stems for damage or cracks.
      i) **Reject** when:

(1) A valve stem is cracked, damaged, or shows evidence of wear.

d) Check the rims.

i) **Reject** when:

(1) Rims and rings are mismatched.
(2) A ring shows evidence of slippage, rust, or damage.
(3) A Rim or ring is bent, sprung, cracked, improperly sealed, or otherwise damaged.
(4) There is slippage on Louisville or Dayton type wheels.
(5) Wheel nuts, studs, or clamps are loose, broken, damaged, missing, mis- matched, cracked, stripped, or otherwise ineffective at securing a tire.
(6) Wheel rings, disc, spoke, or rim type wheels show any evidence of having been repaired or re-welded.
(7) Stud holes are out of round or elongated.
(8) There are cracks between the hand holes or the stud holes in the disc.
(9) Wheel casting is cracked or there is evidence of wear in the clamping area.

e) Check the wheel welds.

i) **Reject** when:

(1) There are any cracks in welds attaching wheel disc to rim.
(2) There are any cracks in welds attaching tubeless demountable rim to the adapter.
(3) There are any welded repairs on any aluminum wheels.
(4) There are any welded repairs other than disc to rim attachment on steel disc wheels mounted on the steering axle.

4) When examining the front steering axle tires of a vehicle, the inspector shall:

a) Check tire tread depth, which may not be measured on the tread wear bar.

i) **Reject** when:

(1) Tread depth is less than 4/32 inch on steering axle tires when measured at any point on a major tread groove.

b) Check tire condition and inflation.

i) **Reject** when:

(1) A tire is cut or otherwise damaged, exposing body ply or belt material through the tread or sidewall.
(2) A tire has any tread or sidewall separation.
(3) A tire is labeled for other than highway use or displaying other markings that would exclude use on a steering axle.
(4) A tire is a tube-type radial tire without radial tube stem markings, which includes a red band around the tube stem, the word "radial" embossed in metal stems, or the word "radial" molded in rubber stems.
(5) There is mixing of bias and radial tires on the same axle.
(6) A tire flap protrudes through the valve slot in rim and touches the stem.
(7) There are re-grooved tires on the steering axle.
(8) A tire has a boot, blowout patch, or other ply repairs.
(9) The weight carried exceeds the tire load limit, including an overloaded tire resulting from low air pressure.
(10) A tire is flat, has noticeable leak, or is inflated to less than 50% of the vehicle manufacturer's recommended tire pressure.
(11) A tire is mounted or inflated so that it comes in contact with any part of the vehicle.

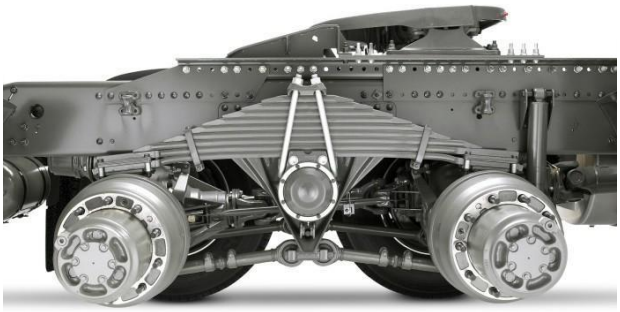
(12)A tire is over inflated.

(13)A tire is worn to the extent secondary rubber is exposed in the tread or sidewall area.

(14)If the vehicle is a bus and is equipped with a re-capped or re-treaded tire.

5) **When examining tires other than the front steering axle tires of a vehicle, the inspector shall:**
   a) Check tire tread depth, which may not be measured on the tread wear bar.
      i) **Reject** when:
         (1) Tread depth is less than 2/32 inch at any point on a tire.
   b) Check the tire condition and inflation.
      i) **Reject** when:
         (1) The weight carried exceeds the tire load limit, including an overloaded tire resulting from low air pressure.
         (2) A tire is flat, has noticeable leak, or is inflated to less than 50% of the vehicle manufacturer's recommended tire pressure.
         (3) A tire is cut or otherwise damaged, exposing body ply or belt material through the tread or sidewall.
         (4) A tire has any tread or sidewall separation.
         (5) A tire is mounted or inflated so that it comes in contact with any part of the vehicle, including a tire that contacts its mate.
         (6) A tire is labeled for other than highway use or displays other markings that would exclude its use.
         (7) A tire is worn to the extent secondary rubber is exposed in the tread or sidewall area.
6) **When examining the dual tires of a vehicle, if equipped, the inspector shall:**
   a) Check for mismatching tire construction (radial and bias), sizes, and wear on any set of duals.
      i) **Reject** when:
         (1) The tire diameter of one of the duals is not within 1/4 inch of the other on 8.25-20 and smaller, or 1/2 inch on 9.00-20 and larger.
         (2) The dual tires are in contact with any part of vehicle body or adjacent tire.
         (3) A tire has a boot, blowout patch, or other ply repairs that are sub-standard and not identified by a triangular label in the immediate vicinity.

SECTION 3 – STEERING ALIGNMENT AND SUSPENSION



7) When examining the steering system of a vehicle, the inspector shall:

a) Check the steering wheel for excessive play, which must be checked with the engine running on vehicles with power steering.

i) **Reject** when:

(1) Steering wheel lash on a 16-inch diameter steering wheel exceeds 2 inches for manual steering or 4- 1/2 inches for power steering.

(2) The steering wheel lash on an 18-inch diameter steering wheel exceeds 2- 1/4 inches for manual steering or 4-3/4 inches for power steering.

(3) The steering wheel lash on a 19-inch diameter steering wheel exceeds 2- 3/8 inches for manual steering or 5 inches for power steering.

(4) The steering wheel lash on a 20-inch diameter steering wheel exceeds 2- 1/2 inches for manual steering or 5-1/4 inches for power steering.

(5) The Steering wheel lash on a 21-inch diameter steering wheel exceeds 2-5/8 inches for manual steering or 5-1/2 inches for power steering.

(6) The steering wheel lash on a 22-inch diameter steering wheel exceeds 2- 3/4 inches for manual steering or 5-3/4 inches for power steering.

b) Check the steering column for proper functioning.

c) Check flexible coupling in the steering column, if equipped, for misalignment and tightness of the adjusting screw or nut.

d) Check for absence or looseness of U-bolts or positioning parts.

e) Check for worn, faulty, or welded repairs of universal joints.

f) Check for a loose or improperly secured steering wheel.

i) **Reject** when:

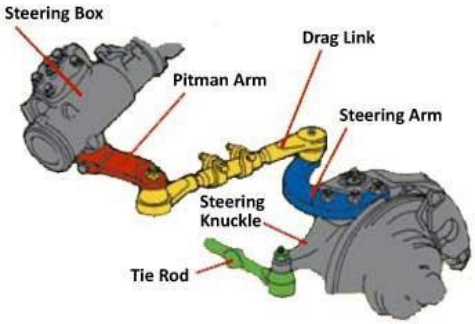
(1) Flexible coupling is obviously misaligned.

(2) A clamp bolt nut is loose or missing.

(3) There is separation of the shear capsule from bracket and general "looseness" of wheel and column, or if the wheel and column can be moved as a unit.

(4) An adjustable steering wheel or tilt steering cannot be secured in a safe operating position, or if there is 3/4 inch or more movement at the center of the steering wheel when locked in the operating position.

(5) There is any absence or looseness of a U-bolt or positioning part.



(6) There are worn, faulty, or welded repairs to universal joints.
(7) The steering wheel is not properly secured or has spokes cracked through or missing.

g) Check the size of steering wheel.
   i) **Reject** when:
      (1) The steering wheel is less than 13 inches in outside diameter or is not a full circular construction.

h) Check the front axle beam for defects, cracks, and welded repairs.
   i) **Reject** when:
      (1) A kingpin is worn and shows excessive movement.
      (2) There are cracks, welds, or any bends.
      (3) A positioning part is loose such as a U-bolt or spring hanger.

i) Check the steering gear box for proper functioning, including loose or missing mounting bolts and any cracks in the gearbox or mounting brackets.
   i) **Reject** when:
      (1) A bolt is loose or missing at the frame or mounting brackets.
      (2) There are cracks in the gear box or mounting brackets.
      (3) Fasteners are missing.

j) Check the pitman arm.
   i) **Reject** when:
      (1) There is any looseness of the pitman arm on the steering gear output shaft.
      (2) There are any welded repairs.

k) Check the auxiliary power assist cylinder for looseness, if the vehicle is equipped with power steering.

l) Check the power steering belts for proper condition and tension, if the vehicle is equipped with power steering.

m) Inspect power steering system, including gear, hoses, hose connections, cylinders, valves, pump, and pump mounting for condition, rubbing, and leaks, if the vehicle is equipped with power steering.

n) Inspect power steering reservoir for fluid level below OEM specifications, if the vehicle is equipped with power steering.
   i) **Reject** when:
      (1) The auxiliary power assist cylinder is loose, a power steering belt is frayed or cracked, and tension is not maintained.
      (2) A Hose or hose connection has been rubbed by moving parts or is leaking.
      (3) Any cylinder, valve, or pump shows evidence of leakage.
      (4) A pump mounting part is loose or broken.
      (5) The power steering system is inoperative, if the vehicle is equipped with power steering.
      (6) The power steering fluid level is below OEM specifications.

o) Check for any movement under the steering load of a stud nut.

p) Check for any motion, other than rotational, between any linkage member and its attachment point of more than 1/8 inch.
   i) **Reject** when:
      (1) There is any movement under steering load of a stud nut.
      (2) There is any motion, other than rotational,

between any linkage member and its attachment point of more than 1/8 inch measured with hand pressure only.

q) Check tie rods and drag links for a loose clamp or clamp bolt.

r) Check for loose or missing nuts on tie rods, pitman arm, drag link, steering arm, or tie rod arm.

i) **Advise** when:

(1) Tie rod grease seals are cut, torn, or otherwise damaged to the extent that lubricant will not be retained.

ii) **Reject** when:

(1) There is a loose or missing clamp or bolt.

(2) There are worn tie rod ends.

(3) There are loose or missing nuts on tie rods, pitman arm, drag link, steering arm or tie rod arm.

(4) Looseness is detected in a threaded joint.

s) Check for any modifications or other conditions that may interfere with free movement of any steering component.

i) **Reject** when:

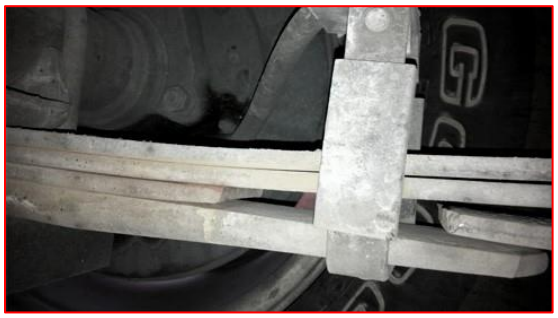
(1) Any modification or other condition interferes with free movement of any steering component.

8) When examining a vehicle's leaf spring suspensions, the inspector shall:

a) Check for cracks, broken, loose, missing, or sagging suspension springs.

b) Check spring shackles, spring center bolts, U-bolts, clips, and other attaching parts.

c) Check for any U-bolts, spring hangers, or other axle positioning parts that are cracked, broken, loose, or missing.



i) **Reject** when:

(1) Springs are cracked, broken, loose, missing, separated, or sagging.

(2) Spring attaching parts are cracked, broken, loosely connected, missing, worn, or sagging.

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

(4) An improper spring size and rating is utilized and does not meet or exceed OEM specifications.

(5) U-bolts, spring hangers, or other axle positioning parts are cracked, broken, loose, or missing.

9) When examining all other suspensions of the vehicle, the inspector shall:

a) Check shock absorbers.

b) Check for broken coil springs.

c) Check for broken torsion bar spring in a torsion bar suspension.

d) Check for deflated air suspension such as system failure and leaks.

i) **Reject** when:

(1) Rubber bushings are destroyed or missing.

(2) A mounting is loose, broken, or missing.

(3) Shock absorbers are missing or disconnected.

(4) Shock absorbers are leaking.

(5) Coil springs are broken or missing.

(6) Torsion bar spring is broken.
(7) Air suspension is deflated, indicating a system failure.
(8) Any component is the improper size or rating.
(9) Any component is leaking, cracked, misaligned or broken.

10) When examining the following items related to the vehicle's torque, radius, and tracking components, the inspector shall:

a) Check all torque, radius, and tracking components for proper operation
   i) **Reject** when:
      (1) Any part of a torque, radius, or tracking component assembly, or any part used for attaching the same to the vehicle frame or axle is cracked, loose, broken, or missing, except when it is a loose bushing in the torque or track rods.

11) When examining a vehicle's wheel tracking, the inspector shall:

a) Check wheel tracking with the front wheels in a straight-ahead position, measure the distance between the center of the front wheels to the center of the rear wheels, and compare the dimensions on the right side against the dimensions on the left side.
   (1) **Reject** when:
   (2) The dimensions between wheel centers on one side differ from the dimensions on the other side by more than one inch.

SECTION 4 – COUPLING DEVICES

12) **When examining a fifth wheel coupling device, the inspector shall**:

a) Check the mounting to frame.
   i) **Reject** when:
      (1) A fastener is missing or ineffective.
      (2) Any movement between mounting components is detected.
      (3) A mounting angle iron is cracked or broken.
b) Check mounting plates and pivot brackets.
   i) **Reject** when:
      (1) A fastener is missing or ineffective.
      (2) Any cracks in welds or parent metal are detected.
      (3) More than 3/8-inch horizontal movement between the pivot bracket pin and bracket exists.
      (4) A pivot bracket pin is missing or not secured.
c) Check sliders.
   i) **Reject** when:
      (1) A latching fastener is missing or ineffective.
      (2) A fore or aft stop is missing or is not securely attached.
      (3) There is any movement more than 3/8 inch between the slider bracket and slider base.
      (4) A slider component is cracked in the parent metal or weld.
d) Check the lower coupler.
   i) **Reject** when:
      (1) Horizontal movement between the upper and lower fifth wheel halves exceed 1/2 inch.
      (2) The operating handle is not in a closed or locked position.

(3) The kingpin is not properly engaged.
(4) Separation between upper and lower coupler allows light to show through from side to side.
(5) A crack is detected in the fifth wheel plate, unless it is a crack in the fifth wheel approach ramps or a casting shrinkage crack in the ribs of the body of a cast fifth wheel.
(6) A locking mechanism part is missing, broken, or deformed to the extent the kingpin is not securely held.

13) When examining a pintle hooks coupling device, the inspector shall: Check the pintle hooks for proper mounting to the frame.

i) **Reject** when:
(1) There is a missing or ineffective fastener.
(2) Mounting surface cracks extend from point of attachment.
(3) Pintle hook is loosely mounted, except a fastener is not considered missing if there is an empty hole in the device but no corresponding hole in the frame or vice versa.
(4) The frame cross member providing the pintle hook attachment is cracked.
(5) Cracks are discovered anywhere in the pintle hook assembly.
(6) Any welded repairs have been made to the pintle hook.
(7) Any part of the horn section has been reduced by more than 20%.

14) When examining a drawbar or tow-bar eye coupling device, the inspector shall:

a) Check the drawbar or tow-bar eye for proper mounting.
i) **Reject** when:
(1) A crack in an attachment weld is discovered.
(2) A missing or ineffective fastener is discovered.
(3) Any cracks are discovered.
(4) Any part of the eye is reduced by more than 20%.
(5) The pintle hook latch is not secure.

15) When examining a drawbar or tow-bar tongue coupling device, the inspector shall:

a) Check the drawbar or tow-bar tongue on a power or manual slider for proper operation.
i) **Reject** when:
(1) The latching mechanism is ineffective or disconnected.
(2) A stop is missing or ineffective.
(3) There is movement of more than 1/4 inch between the slider and housing.
(4) There is a leak, other than normal oil weeping around the hydraulic seals, including air, hydraulic cylinders, hoses, or chambers.

b) Check for cracks and movement of 1/4 inch between the slider and housing.
i) **Reject** when:
(1) A crack is discovered.
(2) There is movement of 1/4 inch or more between sub-frame and drawbar at point of attachment.

16) When examining all coupling safety devices, the inspector shall:

a) Check for missing safety devices such as chains, metal wire, and rope.

b) Check for safety devices that are unattached or incapable of secure attachment.
c) Check for worn chains and hooks.
d) Check for kinked or broken cable strands and improper clamps or clamping.
   i) **Reject** when:
      (1) A safety device is missing.
      (2) A safety device is unattached. A safety device is incapable of secure attachment.
      (3) A chain and hook are worn to the extent of a measurable reduction in link cross section.
      (4) Improper repairs are evident such as welding, wire, small bolts, rope, or tape.
      (5) A cable is kinked or has broken cable strands.
      (6) A cable has improper clamps or clamping.
e) Check the saddle-mounts for the method of attachment.
   i) **Reject** when:
      (1) A fastener is missing or ineffective.
      (2) A mounting is loose.
      (3) A stress or load bearing member is cracked or broken.
      (4) Horizontal movement between upper and lower saddle-mounts exceed 1/4 inch.

SECTION 5 – BRAKES

17) When examining the brake system of a vehicle, the inspector shall:

a) Check the service brakes for proper operation and for missing required brakes.
b) Check for broken, missing, or loose components, brake lining air leaks in the brake chambers, brake readjustment limits, mismatch across the steering axle of air chamber sizes, and slack adjuster length.
   i) **Reject** when:
      (1) There is absence of any braking action on any axle required to have brakes upon application of the service brakes such as missing brakes or brake shoes, failing to move upon application of a wedge, S-cam, cam, or disc brake.
      (2) There are missing or broken mechanical components such as shoes, linings, pads, springs, anchor pins, spiders, cam rollers, push rods, or air chamber mounting bolts.
      (3) A brake lining is contaminated with oil, grease, or brake fluid.
      (4) A brake lining is broken, has a crack that exceeds 1-1/2 inch in length, has a crack or void that exceeds 1/16-inch observable from the edge of the lining, or a pad or lining is not firmly attached to the shoe.
      (5) There are loose brake components such as air chambers, spiders, and cam shaft support brackets.

      (6) There is an audible air leak at the brake chamber, including a ruptured diaphragm or loose chamber clamp. A brake is beyond adjustment limits on charts or instructions in the Federal Motor Carrier Safety Regulations.
      (7) The maximum pushrod stroke must not be greater than the values given in the tables in the reference charts. Any brake stroke exceeding the readjustment limit will be rejected. Stroke must be measured with engine off and reservoir

pressure of 80 to 90 psi with brakes fully applied.

(8) A brake lining has a thickness of less than 1/4 inch at the shoe center for air drum brakes, 1/16 inch or less at the shoe center for hydraulic and electric drum brakes, and less than 1/8 inch for air disc brakes on either the steering or non- steering axles.

(9) There is a mismatch across any power unit steering axle of air chamber sizes or slack adjuster length.

c) Automatic Brake Adjusters:
   i) **Reject when**:
      (1) Failure to maintain a brake within the brake stroke limit specified by the vehicle manufacturer.
      (2) Any automatic brake adjuster has been replaced with a manual adjuster.
      (3) Damaged, loose, or missing components.

d) Any brake that is found to be out of adjustment on initial inspection must be evaluated to determine why the automatic brake adjuster is not functioning properly and the problem must be corrected for the vehicle to pass the inspection. It is not acceptable to manually adjust automatic brake adjusters without first correcting the underlying problem. For example, there may be other components within the braking system that are distressed or out of specification (i.e., broken welds, loose mounting hardware, cracked brake drums, worn bushings, etc.) that would require immediate attention.

e) Anti-lock Brake System:
   i) **Reject when:**
      (1) Missing ABS malfunction indicator components (i.e., bulb, wiring, etc.).
      (2) ABS malfunction indicator does not illuminate when power is first applied to the ABS controller (ECU) during initial power up.
      (3) ABS malfunction indicator stays illuminated while power is continuously applied to the ABS controller (ECU).
      (4) ABS malfunction indicator lamp on a trailer or dolly does not cycle when electrical power is applied (a) only to the vehicle's constant ABS power circuit, or (b) only to the vehicle's stop lamp circuit.
      (5) With its brakes released and its ignition switch in the normal run position, power unit does not provide continuous electrical power to the ABS on any air-braked vehicle it is equipped to tow.
      (6) Other missing or inoperative ABS components.

18) Power units manufactured after March 1, 2001, have two ABS malfunction indicators, one for the power unit and one for the units that they tow. Both malfunction indicators are required to be fully functional.

19) Air-braked vehicles: Subsections (1)-(6) of this section are applicable to tractors with air brakes built on or after March 1, 1997, and all other vehicles with air brakes built on or after March 1, 1998.

20) ***Hydraulic-braked vehicles: Subsections (1)-(3) of this section are applicable to vehicles over 10,000 lbs. GVWR with hydraulic brakes built on or after September 1, 1999. Subsection (6) of this section is applicable to vehicles over 10,000 lbs. with hydraulic brakes built on or after March 1, 1999.***

21) **Check the parking brake system**.
   i) **Reject** when:

(1) Brakes on the vehicle or combination are not applied upon actuation of the parking brake control, including the driveline hand-controlled parking brakes.

b) Check brake drums and brake rotors for damage, wear, and contamination.

i) **Reject** when:

(1) Any portion of the brake drum or rotor has any external crack or has any crack that opens upon brake application.

(2) Any portion of the brake drum or rotor is missing or is in danger of falling away.

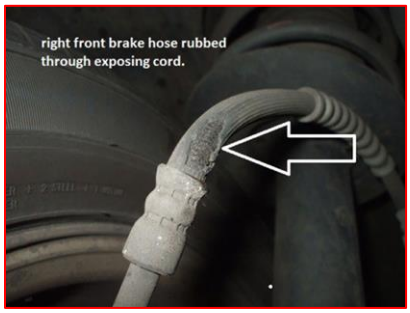
(3) There are fluids contaminating the friction surface of either the brake drum or rotor.

(4) The inside diameter of the drum measures more than the discard diameter stamped on the drum or more than OEM specifications if drum is unmarked.

(5) The thickness of a disc is less than the minimum thickness stamped on the disc.

c) Check the brake hoses for any damage, bulges or swelling, audible leaks, and proper fittings.

i) **Reject** when:



(1) A brake hose has any damage extending through the outer reinforcement ply.

(2) There is a color difference on the thermoplastic nylon hose indicating wear into the inner tube.

(3) Bulges or swelling is evident when air pressure is applied.

(4) There are any audible air leaks.

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

(6) An air hose is cracked, broken or crimped.

d) Check brake tubing for any damage, leaks, and general condition.

i) **Reject** when:

(1) There are any audible air leaks.

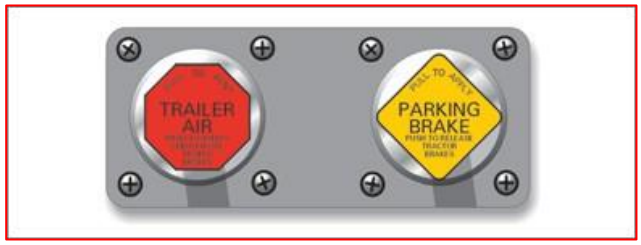
(2) Any brake tubing is cracked, damaged by heat, broken, or crimped.

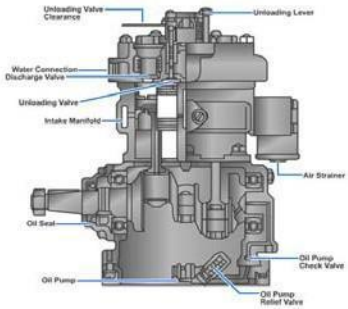
e) Check the Low-Pressure Warning Device.

i) **Reject** when:

(1) The Low-Pressure Warning device is missing, inoperative, does not operate at 55 PSI and below or 1/2 the governor cutout pressure, whichever is less, on a vehicle manufactured after March 1, 1975.

(2) The vehicle does not have a visual warning device, if manufactured after March 1, 1975.





f) Check the tractor protection valve or device on the power unit.

i) **Reject** when:
ii) The tractor protection valve or device is inoperative or missing.

g) Check air brakes and compressor for proper operation and condition.
i) **Reject** when:

h) Compressor drive belts are in a condition of impending or probable failure.

i) Compressor mounting bolts are loose.

j) Pulley is cracked, broken, or loose.

k) Mounting brackets, braces, and adapters are loose, cracked, broken, or missing.

l) Check electric brakes and breakaway braking device.
(1) **Reject** when:
(a) There is absence of braking action on any wheel required to have brakes.
(b) Breakaway braking device is missing or inoperable.

m) Check hydraulic brakes, including power assist over hydraulic and engine drive hydraulic booster for proper operation.
i) **Reject** when:

(1) The master cylinder is below the add line or less than 3/4 full.
(2) There is no pedal reserve when the engine is running except by pumping the pedal.
(3) The power assist unit fails to operate.
(4) A brake hose is seeping or swelling under application of pressure.
(5) The check valve is missing or inoperative.
(6) Hydraulic fluid is observed leaking from the brake system.
(7) A hydraulic hose is abraded (chafed) through the outer cover to the fabric layer.
(8) Fluid lines or connections are leaking, restricted, crimped, cracked, or broken.
(9) Brake failure or low fluid warning light is on or inoperative.

n) Check the Vacuum Braking System for proper operation.
i) **Reject** when:
(1) There is insufficient vacuum reserve to permit one full brake application after the engine is shut off.
(2) A vacuum hose or line is leaking, restricted, abraded (chafed) through the outer cover to the cord ply, crimped, cracked, broken, or collapsed when vacuum is applied.
(3) The low-vacuum warning device is missing or inoperative.

o) Check for leaking wheel seals.
i) **Reject** when:
(1) Issue a rejection inspection certificate when a wheel seal is leaking.

SECTION 6 – ELECTRICAL SYSTEMS

22) When examining the electrical system of a vehicle, the inspector shall:

a) Check the horn to ensure it is securely fastened and works properly.
i) **Reject** when:
(1) The horn is not securely fastened.

(2) The horn does not function properly and is not audible under normal conditions at a distance of at least 200 feet.

b) Check to ensure all switches function properly.
   i) **Advise** when:
      (1) Any original equipment switch fails to function as designed.

c) Check all wiring to make sure it is not chafed, bare, or contacting sharp objects.
   i) **Reject** when:
      (1) Wiring insulation is chafed, rubbed bare, or shows any evidence of burning or short-circuiting.

d) Check to ensure all electrical connectors are tight and secure.
   i) **Advise** when:
      (1) Connections are not tight and secure or connections are corroded.

e) On an automatic transmission, check the neutral starting switch to determine whether the starter operates only with the gear selector in "P" or "N".

f) On a manual transmission, when originally equipped with a neutral safety switch, determine if the vehicle only starts with the clutch depressed.
   i) **Reject** when:
      (1) The automatic or manual transmission safety starting switch is inoperative.

g) Check for battery securement.
   i) **Reject** when:
      (1) The battery is not properly secured.

SECTION 7 – LIGHTING SYSTEM

23) When examining the lighting system of a vehicle, the inspector shall:

a) Check all lights for secure mounting, proper location, and correct color.
   i) **Reject** when:
      (1) A light is missing, not secured, or emitting light of improper color.
      (2) A light is in wrong position or not operating.
      (3) A headlight is not the color white, not properly aimed, lacks upper and lower beams, or does not measure between 22 inches and 54 inches in height when measured from the ground to the center of the low-beam headlamp.
      (4) Fog driving lights or Auxiliary Headlights are not white or yellow in color or are not properly aimed or do not operate on a separate switch.
      (5) A taillight or stop light is not red in color, is not present on each side at the rear of the vehicle

or is not mounted between 15 inches to 72 inches in height when measured from the ground to the center of the bulb.

(6) A turn signal light is not on each side of the vehicle front and rear, is not yellow or amber in color on the front of the vehicle; is not red, yellow, or amber in color on the rear of the vehicle; or the signal switch is not capable of operation by the driver, or does not remain on without assistance when activated.

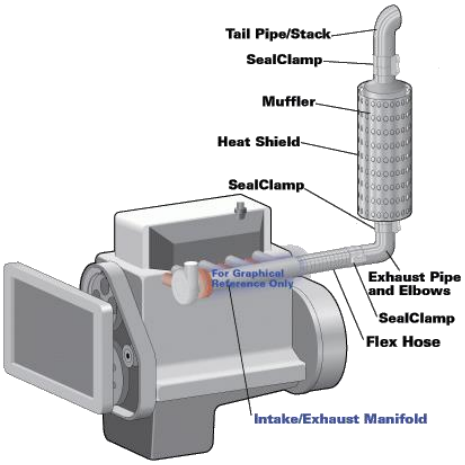
(7) The instrument panel does not illuminate whenever headlights or taillights are activated; the high beam indicator does not indicate when high beam lights are on; or a turn signal indicator does not indicate when turn signals are in operation.

(8) The back-up lights on trailers, when present, are not white or are on when the vehicle is moving forward.

(9) Any required light, reflector, or retro reflective sheeting is not present, does not light properly, is not the proper height, is not the proper color, or is not in the proper location as listed in the Motor Carrier Safety Regulations (FMCSR) 393.

(10) These requirements can be found on the U.S. Government Publishing Office website. See Reference Charts or visit EFCR Lighting Chart online.

SECTION 8 – EXHAUST SYSTEM



24) When examining the exhaust system of a vehicle, the inspector shall:

a) Check the exhaust system to determine if there is any leaking at a point forward of or directly below the driver or sleeper compartment.

b) Check the bus exhaust system to determine if there is any leaking or improper discharge.

i) **Reject** when:

(1) A bus exhaust system is leaking or discharging to the atmosphere.

(2) There is a leak at any location more than six inches forward of the rearmost part of the bus, if the bus is gasoline powered.

(3) There is a leak at any location more than 15 inches forward of the rearmost part of the bus, if the bus is powered by anything other than gasoline.

(4) There is any leak forward of a door or window designed to be opened, except for emergency exits, if the vehicle is powered by anything other than gasoline.

c) Check the exhaust system for the correct location.

(1) **Reject** when:

(2) The system will burn, char, or damage any electrical wiring, the fuel supply, or any combustible part of the motor vehicle.

(3) The vehicle has no muffler.

(4) There are loose or leaking joints.

(5) There are leaks, excluding drain holes installed by the manufacturer, of any kind on any part of the system, at a point forward of or directly below the driver or sleeper compartment.

(6) The tailpipe is pinched.

(7) Any element of exhaust system is not securely fastened or is secured in a manner that is likely to fail, such as securing the tail pipe with rope.
(8) The vehicle is installed with a muffler cutout or similar device.
(9) Exhaust stacks are located in a position in which an individual may be burned upon entering or leaving the vehicle, or in a location likely to cause damage to any electrical wiring, fuel supply, or any combustible part of the motor vehicle.
(10) Any part of the exhaust system passes through the occupant compartment.
(11) A tail pipe does not extend to or beyond the rear of the cab or passenger area or is severely bent or broken.
(12) A tail pipe does not extend to outer periphery of a motor home or van.

SECTION 9 – FUEL SYSTEM

25) If the fuel system uses diesel or gasoline, the inspector shall:

a) Check the fuel tank, fuel tank support straps, filler tube, tube clamps, fuel tank vent hoses or tubes, filler housing drain, overflow tube, and fuel filler.
   i) **Reject** when:
      (1) There is fuel leakage at any point or there are escaping gases detected in the system.
      (2) The fuel tank filler cap is missing.
      (3) Any part of the system is not securely fastened or supported.
      (4) There is physical damage to any fuel system component.
      (5) The crossover line is not protected and drops more than two inches below fuel tanks.

26) If the fuel system uses liquid propane gas, the inspector shall:

a) Check the fuel tank, fuel tank support straps, filler tube, tube clamps, fuel tank vent hoses or tubes, filler housing drain, overflow tube, fuel filler cap, and conversion kit installations.
b) Check for leaks by using the soap test with antifreeze.
c) Check that the fuel container is installed in a way to prevent it from jarring loose, slipping, or rotating.
d) Check that containers are located to minimize the possibility of damage to the container and its fittings.
e) Check that containers located less than 18 inches from the exhaust system, the transmission, or a heat-producing component of the internal combustion engine are shielded by a vehicle frame member or by a noncombustible baffle with an air space on both sides of the frame member or baffle.
f) Check that the piping system is installed, supported, and secured in such a manner as to minimize damage due to expansion, contraction, vibration, strains, and wear. Protection to the piping system may be achieved by parts of the vehicle furnishing the necessary protection, a fitting guard furnished by the manufacturer of the container, or by other means to provide equivalent protection.
g) Check that container valves, appurtenances, and connections are protected to prevent damage from accidental contact with stationary objects or from stones, mud, ice, and from damage from the vehicle's overturn or similar accident.
h) For a tank installed inside a passenger compartment, check that it is installed in an enclosure that is securely mounted to the vehicle, such as a trunk which is gas-tight with respect to the passenger compartment and is vented to the outside of the vehicle.

i) Check that manual shutoff valves provide positive closure under service conditions, are equipped with an internal excess-flow check valve designed to close automatically at the rated flows of vapor, stop all flow to and from the container when put in the closed position, and are readily accessible without the use of tools or other equipment. A check valve will not meet this requirement.

j) **Reject** when:
   i) There is fuel leakage at any point or there are escaping gases detected in the system.
   ii) The fuel tank filler cap is missing, which is the cap over the fueling receptacle, not the door to the receptacle.
   iii) Any part of the system is not securely fastened, supported, or the tank valve is not shielded.
   iv) There is physical damage, such as excessive denting, corrosion, bulging, or gouging to any fuel system component.
   v) The fuel lines have any corrosion.
   vi) Welding is present, with the exception of being on saddle plates, lugs, pads or brackets that are attached to the container by the container manufacturer.
   vii) Excessive surface rust on the tank or tank paint coating is in poor condition.
   viii) There is any installation hazard present that may cause a potential hazard during a collision.
   ix) A container is mounted directly on roofs or ahead of the front axle or beyond the rear bumper of a vehicle.
   x) A container or its appurtenance protrudes beyond the sides or top of the vehicle.
   xi) The vehicle does not have a weather-resistant, diamond shaped label located on the right rear of the vehicle identifying the vehicle as a 'PROPANE' fueled vehicle.
   xii) A data plate (saddle plate) is not present or is not legible on a propane tank.
   xiii) Any aftermarket data plates are welded on the tank.

k) A check valve is used for a manual shutoff valve.

l) ASME (American Society of Mechanical Engineers) containers are installed permanently to vehicles and are not subject to the DOT inspection requirements.

m) All liquefied propane gas containers fabricated to earlier editions of regulations, rules, or codes listed in NFPA 5.2.1.1 and of the Interstate Commerce Commission (ICC) Rules for Construction of Unified Pressure Vessels, prior to April 1, 1967, shall be permitted to continue to be used in accordance with Section 1.4 of NFPA.

n) Containers that have been involved in a fire and show no distortion shall be re-qualified by a manufacturer of that type of cylinder or by a repair facility approved by DOT, before being used or reinstalled.

27) When inspecting a fuel system that uses either CNG or liquefied natural gas, the inspector shall:

a) Check the fuel tank, fuel tank support straps, filler tube, tube clamps, fuel tank vent hoses or tubes, filler housing drain, overflow tube, fuel filler cap, and conversion kit installations.

b) Check the tank to verify it is protected from physical damage using the vehicle structure, valve protectors or a suitable plastic or metal shield.

c) Check that fuel tank shields do not have direct contact with fuel tanks and prevent trapping of materials that could damage the tanks or its coatings.

d) For fuel tanks installed above, below, or within the passenger compartment, check to verify connections are external or sealed and vented from the compartment.

e) For fuel tanks installed within the passenger compartment, check to verify tanks are vented to the outside of the vehicle with a boot or heavy plastic bag and shall not exit into a wheel well.

f) Check tanks and fuel lines to verify mounting and bracing is away from the exhaust system and supported to minimize vibration and to protect against damage, corrosion, or breakage.

g) Check for identification with a weather-resistant, diamond-shaped label located on an exterior vertical surface or near-vertical surface on the lower right rear of the vehicle, excluding the bumper,

inboard from any other markings. The label shall be a minimum of 4.72 inches long by 3.27 inches high.

h) Check that when a manual valve is used, the valve location is accessible, indicated with the words "MANUAL SHUTOFF VALVE".

i) Check that the vehicle bears in the engine compartment a label readily visible identification as a CNG-fueled vehicle, system service pressure, installer's name or company, container retest dates or expiration date, and the total container water volume in gallons.

j) Check for a label located at the fueling connection receptacle with identification as a CNG-fueled vehicle, system working pressure, and container retest dates or expiration date.

k) Check that CNG fuel containers are permanently labeled. Disassembly of the tanks protective shield is not required to verify the label on the tank; it is the vehicle owner's responsibility to provide documentation for a current CNG tank Inspection from a CNG certified inspector. The documentation must identify the vehicle and list the CNG tank certification number.

l) Visually inspect CNG fuel containers for damage and deterioration.

i) **Reject** when:

(1) There is fuel leakage at any point or escaping gases are detected in the system (odor will be present).

(2) The fuel tank filler cap or cover is missing.

(3) Any part of the system is not securely fastened, supported, or shielded to prevent damage from road hazards, slippage, loosening, or rotation.

(4) Fuel tank is exposed or unprotected.

(5) Tanks that are installed under a vehicle are mounted ahead of the front axle or behind the point of attachment of the rear bumper.

(6) There is any physical damage to a fuel system component.

(7) There is any installation hazard present that may cause a potential hazard during a collision.

(8) Any part of the fuel tank or its appurtenances protrudes beyond the sides or top of any vehicle where the tanks can be struck or punctured.

(9) The vehicle is not labeled as described in Subsection C of this section or in accordance with National Fire Protection Association Pamphlet 52.

(10) A CNG fuel container is not current with its certification in accordance with Federal Motor Vehicle Safety Standards.

SAFETY ALERT: Use caution when working around the vehicle's high voltage wiring. High voltage storage cells can reach up 800 volts. EV's also have specific lifting locations for safe operation. For safety data go to https://www.nhtsa.gov/emergency-response-guides/

28) When inspecting hybrid or Electric Vehicles, the inspector should use caution around the high voltage system. The high voltage systems can have up to 800 volts. Generally, high voltage wiring is orange and will have warning labels on the vehicle. If there are any questions about high voltage systems, it is recommended to contact the manufacturer.

29) **Inspectors shall**:

a) Inspect the high voltage wiring for damage, securement, and proper connections.

b) Inspect the battery fuel cells for damage or leakage.

c) Inspect high volage components for damage

i) **Reject when:**

(1) High voltage wiring is damaged, unsecure, or the connections are loose.

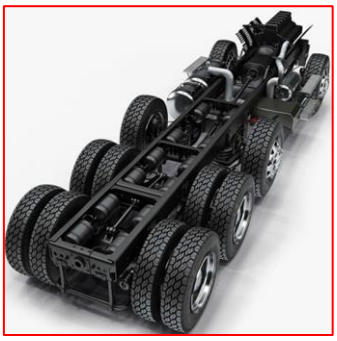
(2) High voltage connections show evidence or arcing
(3) Battery fuel cells show evidence of physical damage or are leaking fluid
(4) Dash warning lights are active, indicating a high voltage fault.

SECTION 10 – VEHICLE INTERIOR

30) When examining the interior of a vehicle, the inspector shall:

a) Check seats for proper operation of the adjusting mechanism and ensure the seats are securely anchored to the floor.
   i) **Reject** when:
      (1) Seats are not securely anchored to the floor.
      (2) A seat adjusting mechanism slips out of set position.
      (3) A seat back is broken or disconnected from the seat base so that it will not support a person's full weight.
      (4) A seat belt, per OEM specifications, is missing or ineffective.
      (5) A seat belt is cut, torn, frayed, or otherwise damaged.

b) Motorcoach Seats:
   i) Reject when:
      (1) Any passenger seat that is not securely fastened to the vehicle structure.



c) Check the floor pan in both occupant compartments and sleeper berths for rusted-out areas or holes that could permit entry of exhaust gases or would not support occupants adequately.
   i) **Reject** when:
      (1) The front or rear of the floor pan is rusted through sufficiently to cause a hazard to an occupant or that exhaust gases could enter the occupant area of the vehicle.

d) Check the frame and ensure that any repairs meet OEM Specifications and FMCSA Regulation 396.17.
   i) **Reject** when:
      (1) There are any broken, rusted through, cracked, loose, or sagging frame components.
      (2) The frame has been cut, or portions of the frame have been removed, affecting the strength or integrity of the frame.
      (3) There is any condition, including loading, that causes the body or frame to be in contact with a tire or any part of the wheel assemblies.
      (4) Adjustable axle assemblies (sliding sub-frame) with locking pins are missing or not

engaged.

e) Check the frame for any loose, broken, or missing fasteners, including fasteners that attach functional components such as the engine, transmission, steering gear, suspension, body parts and fifth wheel.
   i) **Reject** when:
      (1) The frame has evidence of loose, broken, or missing fasteners, including fasteners that attach functional components such as the engine, transmission, steering gear, suspension, body parts and fifth wheel.

f) Check windshield wipers for proper operation and for damaged, torn, or hardened rubber elements and metal parts of wiper blades or arms.
   i) **Reject** when:
      (1) A wiper fails to function properly.
      (2) A wiper blade smears or streaks the windshield.
      (3) A wiper blade shows signs of physical breakdown of the rubber wiping element.
      (4) A part of the wiper blade or arm is missing or damaged.

g) Check the windshield washer system for proper operation of hand or foot control and that an effective amount of fluid is delivered to the outside of the windshield.
   i) **Reject** when:
      (1) The windshield washer system fails to function properly, such as cracked hoses, broken hoses, or if the fluid reservoir is unable to hold fluid.

h) Check the defroster for proper operation.
   i) **Reject** when:
      (1) The defroster fan fails to function as designed.

i) Check the vehicle to ensure that it is equipped with a properly functioning speedometer and odometer.
   i) **Advise** when:
      (1) Speedometer or odometer is not functional or disconnected.

SECTION 11 – VEHICLE EXTERIOR

31) When examining the exterior of a vehicle, the inspector shall:

a) Check the exterior for torn metal parts, moldings, or any body parts that may protrude from the vehicle.
   i) **Reject** when:
      (1) Metal, molding, or other loose or dislocated parts protrude from the surface of the vehicle causing a safety hazard.

b) Check parts and accessories for proper securement.
   i) **Reject** when:
      (1) Parts or accessories are not properly secured.

c) Check the condition of front and rear bumpers.
   i) **Reject** when:
      (1) The front bumper is missing, misplaced, loosely

attached, broken, or torn so that a portion is protruding creating a hazard.

(2) Rear impact guards are missing.

d) Check front fenders.

i) **Reject** when:

(1) Any fender has been removed or altered to such extent that it does not cover the entire width of the tire and wheel.

e) Check door latches, locks, hinges, and handles for proper operation, improper adjustment, and broken or missing components.

i) **Reject** when:

(1) A door is broken, or hinges are sagging so that the door cannot be tightly closed.

(2) A door does not open properly or close tightly.

(3) Any door part is missing, broken, or sagging to the extent that the door cannot be opened and closed properly.

f) Check the hood and hood latch for proper operation.

i) **Reject** when:

(1) The hood is missing, the hood latch does not securely hold the hood in its proper fully closed position, or the secondary safety catch does not function properly.

(2) The latch release mechanism or its parts are broken, missing, or badly adjusted so that the hood cannot be opened and closed properly.

g) Check the exterior rearview mirrors.

i) **Reject** when:

(1) The right or left exterior mirror is loose or missing.

(2) A mirror is difficult to adjust or cannot maintain a set adjustment.

(3) A mirror extends beyond the vehicle width limit of 102 inches.

(4) A mirror is cracked, has sharp edges, or is pitted or clouded to the extent that rear vision is obscured.

h) Check all motor and transmission mount components.

i) **Advise** when:

(1) Any heat cracks are present.

ii) **Reject** when:

(1) A mount bolt or nut is broken, loose, or missing.

(2) The rubber cushion is separated from the metal plate of the mount.

(3) There is a split through the rubber cushion.

(4) The engine or transmission is sagging to the point where the mount bottoms out or engine misalignment to the point of drive train component compromise.

(5) Fluid filled mounts are leaking, which are verified from the mount.

SECTION 12 – WINDOWS AND GLAZING

32) When examining the windshield of a vehicle, the inspector shall:

a) Check the windshield for unauthorized tinting, signs, posters, or other non-transparent materials.

b) Check the windshield for appropriate "AS" certification.

i) **Reject** when:

(1) There is outright breakage, which includes shattered glass either on the inside or outside

surface, or any glass is broken, leaving sharp or jagged edges.

(2) There are sandpits or discoloration that interferes with the driver's vision.

(3) The windshield is missing.

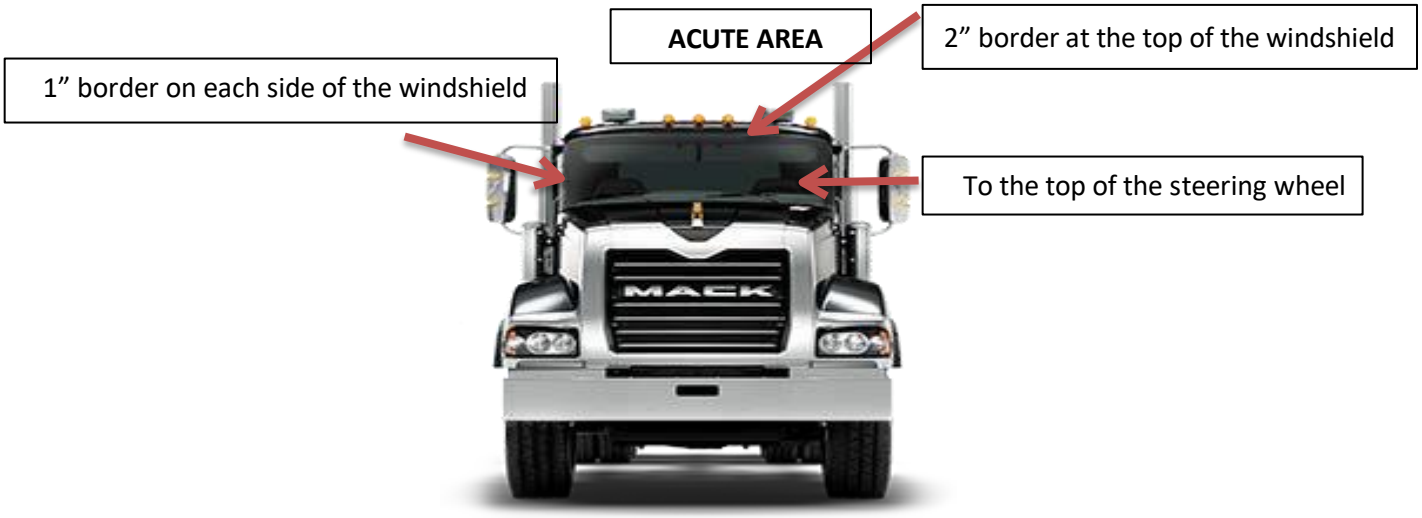
(4) Any crack intersects with another crack within the acute area which means the area extending upward from the height of the top of the steering wheel, excluding a 2-inch border at the top of the windshield, and a 1-inch border at each side of the windshield or windshield panel.

(5) There is any damage within the acute area that cannot be covered by a disc 3/4 inch in diameter.

(6) There is any damage in the acute area that is within three inches of any other damage in the acute area.

(7) The windshield does not have a marking of AS-1, AS-10, or AS-14.

(8) "Acute area" means the area extending upward from the height of the top of the steering wheel, excluding a 2-inch border at the top of the windshield, and a 1-inch border at each side of the windshield or windshield panel.



33) When examining the windows of a vehicle, the inspector shall:

a) Check all glass for unauthorized materials or conditions that obscure the driver's vision.

b) Check all vehicle glass for proper AS approval marking.

i) **Reject** when:

(1) Any tint or other non-transparent material has been added to the windshield below the horizontal line four inches from the top of the windshield and allows less than 70% light transmittance below the AS-1 mark on the upper corner of windshield.

(2) Any tint is present and allows less than 70% light transmittance, or other non-transparent material has been added to the windows to the immediate left or right of the driver's seat.

(3) Any windows are covered by or treated with a material that presents a metallic or mirrored appearance when viewed from the outside of the vehicle.

c) Check the operation of the driver-side window.

i) **Reject** when:
   (1) The driver-side window cannot be readily opened to permit arm signals.
   (2) The driver-side window is broken, shattered, or jagged.

SECTION 13 – SAFE LOADING

34) When examining the loading equipment of a vehicle, the inspector shall:

a) Check the load securement.
   i) **Reject** when:
      (1) Any part of a vehicle or condition of loading is not properly secured such that the spare tire or any part of the load or dunnage can fall onto the roadway.
      (2) Container securement devices on intermodal equipment is cracked, broken, loose, or missing.
      (3) The vehicle does not have a front-end structure or equivalent device as required, to protect against shifting cargo.

SECTION 14 – RECONSTRUCTED / SALVAGED VEHICLES

35) A safety inspection is required for the initial application for registration, regardless of the vehicle year for a salvaged vehicle (UCA 53-8-205). Complete a full safety inspection.

36) Check all repaired components:

   a) Reject when:
      i) Any components and repairs are not made or installed in accordance with applicable provision for the particular chassis from the original manufacturer.

SECTION 15 – SCHOOL BUS

The school bus section has been removed from the TTB manual. School bus specific equipment will be inspected at the school district level, and a school bus inspection sticker will be affixed by the education entity. Conduct an inspection as normal by checking all non-school bus specific items in the manual and affix a beehive inspection sticker.

School bus manuals can be found at

https://highwaypatrol.utah.gov/safetyinspection/safety-inspection-school-buses/

Reference Charts

Brake Adjustment Measurement Charts

CLAMP-TYPE BRAKE CHAMBERS

Type	Outside diameter	Brake readjustment limit: standard stroke chamber	Brake readjustment limit: long stroke chamber
6	4 1/2 in. (114 mm)	1 1/4 in. (31.8 mm)	
9	5 1/4 in. (133 mm)	1 3/8 in. (34.9 mm)	
12	5 11/16 in. (145 mm)	1 3/8 in. (34.9 mm)	1 3/4 in. (44.5 mm)
16	6 3/8 in. (162 mm)	1 3/4 in. (44.5 mm)	2 in. (50.8 mm)
20	6 25/32 in. (172 mm)	1 3/4 in. (44.5 mm)	2 in. (50.8 mm) 2 1/2 in. (63.5 mm)[i]
24	7 7/32 in. (184 mm)	1 3/4 in. (44.5 mm)	2 in. (50.8 mm) 2 1/2 in. (63.5 mm)[ii]
30	8 3/32 in. (206 mm)	2 in. (50.8 mm)	2 1/2 in. (63.5 mm)
36	9 in. (229 mm)	2 1/4 in. (57.2 mm)	

BENDIX DD-3 BRAKE CHAMBERS

Type	Outside diameter	Brake readjustment limit
30	8 1/8 in. (206 mm)	2 1/4 in. (57.2 mm)

BOLT-TYPE BRAKE CHAMBERS

Type	Outside diameter	Brake readjustment limit
A	6 15/16 in. (176 mm)	1 3/8 in. (34.9 mm)
B	9 3/16 in. (234 mm)	1 3/4 in. (44.5 mm)
C	8 1/16 in. (205 mm)	1 3/4 in. (44.5 mm)
D	5 1/4 in. (133 mm)	1 1/4 in. (31.8 mm)
E	6 3/16 in. (157 mm)	1 3/8 in. (34.9 mm)
F	11 in. (279 mm)	2 1/4 in. (57.2 mm)
G	9 7/8 in. (251 mm)	2 in. (50.8 mm)

ROTOCHAMBER-TYPE BRAKE CHAMBERS

Type	Outside diameter	Brake readjustment limit
9	4 9/32 in. (109 mm)	1 1/2 in. (38.1 mm)
12	4 13/16 in. (122 mm)	1 1/2 in. (38.1 mm)
16	5 13/32 in. (138 mm)	2 in. (50.8 mm)
20	5 15/16 in. (151 mm)	2 in. (50.8 mm)
24	6 13/32 in. (163 mm)	2 in. (50.8 mm)
30	7 1/16 in. (180 mm)	2 1/4 in. (57.2 mm)
36	7 5/8 in. (194 mm)	2 3/4 in. (69.9 mm)
50	8 7/8 in. (226 mm)	3 in. (76.2 mm)

[1] For type 20 chambers with a 3-inch (76 mm) rated stroke.
[1] For type 24 chambers with a 3-inch (76 mm) rated stroke.

Brake Lining Thickness Measurements

STEERING & NON-STEERING AXLES

Vehicle fails if brake linings for:	
AIR DRUM BRAKES	ARE LESS THAN 1/4 INCH
HYDRAULIC AND ELECTRIC DRUM BRAKES	ARE LESS THAN 1/16 INCH
AIR DISC BRAKES	ARE LESS THAN 1/8 INCH

Steering Wheel Lash Measurements

STEERING WHEEL DIAMTETER	MANUAL STEERING SYSTEM	POWER STEERING SYSTEM
16”	2”	4 1/2 “
18”	2 1/4”	4 3/4”
19”	2 3/8”	5”
20”	2 1/2”	5 1/4”
21”	2 5/8”	5 1/2"
22”	2 3/4"	5 3/4"

Lighting Reference Chart

393.11 FMCSA Required Lamps and Reflectors for CMVs

Item on the vehicle	Quantity	Color	Location	Position	Height above road surface	Devices required on which vehicles
Headlamps	2	White	Front	On the front at the same height as far apart as practical	Min 22” Max 54 “	A, B, C
Turn Signals See footnote #2 and #12	2	Amber	At or near the front	One on each side at the same height as far apart as practicable	Min 15” Max 83”	A, B, C
Identification Lamps See Footnote #1	3	Amber	Front	Same height as close to vertical center line spaced between 6”-12” apart	On top of the motor vehicle	B, C
Tail lamps See Footnote #5 and #11	2	Red	Rear	One lamp on each side as far as apart as practicable	Min 15” Max 72”	A, B, C, D, E, F, G

Stop Lamps See Footnote 5, and #13	2	Red	Rear	One lamp on each side as far apart as practicable	Min 15” Max 72”	A, B, C, D, E, F, G
Clearance Lamps See Footnote #8,# 9, #10, #15, #17	2	Amber	One on each front side	One on each front side of the vehicle indicating overall width	As high was practicable	B, C, D, G, H
Intermediate Reflex Reflector (Side)	2	Amber	One on each side	At or near midpoint between front and rear marker lamps on vehicles over 30 ft.	Min 15” Max 60”	A, B, D, F, G
Rear Reflex Reflector	2	Red	Rear	One on each side as far apart as practicable	Min 15” Max 60”	A, B, C, D, E F, G
License plate lamp rear See Footnote #11	1	White	Rear	At the rear license plate to illuminate the plate from top or sides	No Requirements	A, B, C, D, F, G
Front side marker lamp See Footnote #16	2	Amber	One on each side	As far to the front as practicable	Min 15”	A, B, C, D, F
Intermediate Side Marker Lamp	2	Amber	One on each side	At or near the midpoint between the front and rear marker lamps on vehicles over 30 ft.	Min 15”	A, B, D, F, G
Rear side marker lamp See footnote #4, #8	2	Red	One on each side	As far to the rear as practicable	Min 15” Max 60”	A, B, D, F, G
Identification Lamp Rear	3	Red	Rear	As close to vertical centerline spaced between 6” – 12” apart	As high as practicable	B, D, G
Vehicle hazard lamps	2	Amber	Front	One on each side as far apart as practicable	Min 15” Max 83”	A, B, C, D, E, F, G

Backup lamp See footnote #14	1 or 2	White	Rear	Rear	No requirement	A, B, C
Parking Lamp	2	Amber or White	Front	One on each side as far apart as practicable	Min 15” Max 83”	A

A. Buses and trucks less than 80” wide
B. Buses and trucks 80” or more wide
C. Truck tractors
D. Semitrailers and full trailers 80” or more in width except converter dollies
E. Converter dolly
F. Semitrailers and full trailers less than 80” wide
G. Pole trailers
H. Projecting loads

Footnotes

5. Each converter dolly when towed not part of a full trailer shall be equipped with 1 stop lamp, 1 tail lamp, and 2 rear reflectors. If dolly obstructs towed units turn signals when not part of a full trailer, it is required to have hazard warning signal flasher lamps on the rear.

11. No rear license plate lamp is required if there is no displayed rear license plate.

14. Back-up lamps are required to operate when bus, truck, or truck tractor is in reverse.

16. A trailer that is less than 6ft. in length including the tongue, need not be equipped with front side marker lamps and front side reflectors.

For more detailed information about required lighting, see https://www.ecfr.gov/current/title-49/subtitle-B/chapter-III/subchapter-B/part-393/subpart-B/section-393.11

DEFINITIONS (The following definitions are found in the Webster's H New Riverside University Dictionary)

ABSORB - To take in through or as if to soak in or up. Absorbed - Absorbing Absorbs - Absorbability.
ACCUMULATOR - An automobile storage component.
ACUTE - Extremely serious or significant.
ADAPTER - A device used to effect operative compatibility between different parts of one or more pieces of apparatus. Adapter.
ADEQUATE - Able to satisfy a requirement. Adequacy - Adequateness -Adequately.
ADJUSTMENT - To change so as to match or fit. To bring into proper relationship. Adjust - Adjusted - Adjusting - Adjusts Adjustable.
ADVISE – "To Notify" to inform customer of items in an inspection that will pass but will need to be repaired at a later date.
AFTER-MARKET -The demand for goods or services associated with the upkeep of a previous purchase.
AIR-BAG - An automotive safety device designed to inflate upon collision and prevent passengers from pitching forward. **ALTERED** - To make different to modify.
Alter - Altering.
ANCHORED - Something that provides a rigid point of support, stability, or security. Anchor - Anchoring - Anchors
ANTI-LOCK - Computerized power surging system that keeps brakes from locking into a frozen position.
APPLIED - Put into practice or a particular use.
APPROPRIATE – Suitable; fitting. **ASPIRATED** - To remove liquids or gases with an aspirator. Aspirate - Aspirates Aspirating.
ASSEMBLY - The combining of manufactured parts to make a completed product, esp. a machine.
AUTOMATIC - Acting or operating in a manner essentially independent of external influence or control. Self-regulating.
AUXILIARY - Giving or capable of giving assistance or support.
AXLE - A supporting shaft or member on which a wheel or pair of wheels revolves. **BALL BEARING** - A friction-reducing bearing consisting of a ring-shaped track containing freely revolving hard metal balls against which a rotating shaft or other part turns.
BASE - The lowest part of a structure as in foundation.
BEARING - A part supporting another machine part.
BENT - Not straight, crooked.
BINDING - To be tight and uncomfortable. To restrain
BLOCKS - To support, strengthen, or retain in place by a block.
BODY - The passenger and cargo-carrying section of an aircraft, ship or vehicle.
BOLT - A fastener having a threaded pin or rod with a head at one end, designed to be inserted through holes in assembled parts and secured by mated nut that is tightened by application of torque.
BRAKE - A device for reducing or stopping motion, as of a vehicle, esp. by contact friction.
BRAKE DRUM - A metal cylinder to which pressure is applied by a braking mechanism so as to arrest rotation of the wheel or shaft to which the cylinder is attached.
BRAKE FLUID - Liquid used in a hydraulic brake system.
BRAKE LINING - The covering of a brake shoe or pad.
BRAKE PAD - A flat block brake lining that presses against the disc of a disc brake.
BRAKE SHOE - A curved block, attached to the brake lining that presses against and reduces or stops the rotation of a wheel or shaft.

BROKEN - Forcibly fractured into pieces; shattered.
BULGES - A protruding part, as an outward curve or swelling.
BUMP - To cause to knock against an obstacle; displace.
BUMPER - Either of two metal structures, typically horizontal bars, attached to the front and rear of a car to absorb the impact of a collision, a protective device used to absorb shocks
BUSHING(S) - A fixed or removable lining used to constrain, guide, or reduce friction.
CALIBRATE - To check, adjust or standardize systematically the graduations of a quantitative measuring instrument.
CALIPER - An instrument composed of two curved hinged legs, used for measuring internal and external dimensions.
CERTIFICATE - A document testifying to accuracy or truth.
CHAFED - To wear away by friction or irritation.
CHASSIS - The rectangular steel frame, supported on springs and attached to the axles, that holds the body and engine of an automotive vehicle.
CIRCUMFERENCE - The boundary line of a circle.
CLAMP - A device for joining, gripping, supporting or compressing structural or mechanical parts.
CLEAR(LY) - Free from what dims, obscures or darkens: Transparent. **CLOUDED** - A dark blemish or spot, something that obscures.
COIL - A series of connecting spirals or connecting rings formed by winding or gathering.
COLLAPSE - An abrupt failure of function, strength
COMPONENT - A constituent element, as of a system, a part of a mechanical or electrical complex.
COMPUTERIZED - Of or relating to a computer or the use of a computer. **CONTAMINATED** - To make impure by mixture or contact.
CORRODE - To dissolve or eat away gradually by chemical reaction like rust. **CRACKS** - To break without dividing into parts.
CRIMPS - To press or pinch into small regular ridges or folds.
CUSTOM - Specializing in the selling of made-to-order goods.
CUTS - To separate into parts with or as if with a sharp-edged instrument; sever.
CYLINDER - The chamber in which a piston of a reciprocating engine moves.
DAMPING - The capacity built into a mechanical or electrical device to prevent excessive correction and the resulting instability or oscillatory conditions.
DAMPEN - DAMPENING - To make slightly wet, moisten.
DAMAGE - Impairment of the usefulness or value of person or property.
DEFECTS, defective - A fault or imperfection: having a defect: faulty. DEFROSTER - A heating device designed to remove ice or frost or prevent its formation.
DEPRESS - To push down.
DETERIORATED - To lower or impair in quality, or value.
DIAMETER - A straight segment passing through the center of a figure, esp. of a circle or sphere, and terminating at the periphery.
DISCONNECT - To interrupt or break the connection of or between.
DISCOLORED - To spoil or alter the proper color of stain; to become faded.
DISLOCATED - To displace from the proper or usual relation- ship with adjoining parts. **DISTORTION** - To twist out of proper shape or relation; to contort.
DRAG - To cause to move with great reluctance, weariness, or difficulty. **ELECTRICAL** - Of, relating to, or operated by electricity.
ELONGATED - To make or grow longer, extended, lengthened.

ENGINE - A machine that converts energy into mechanical motion.
ERRATIC - Lacking regularity, consistency, or uniformity.
ETCHING - To cut into the surface by the action of acid, printing designs or pictures. **EXCESS** - An amount beyond the normal, sufficient, required or appropriate. Greater or more than the requirement.
EXPOSED - To remove protection from, the act of making visible.
EXTEND - To stretch or spread out to full length.
EXTERNAL - An exterior surface or part.
FAILURE - A cessation of proper functioning, a decline in strength or effectiveness.
FENDERS - A metal guard over the wheel of an automotive vehicle.
FLEXIBLE - Capable of being bent or flexed; pliable.
FLUSH - To be cleaned by a rapid brief gush of water.
FMCSA – Federal Motor Carrier Safety Administration
FMVSS - Federal Motor Vehicle Safety Standard
FORCE - To compel through pressure or necessity; to move against resistance. **FRAME** - A skeletal structure designed to shape and support.
FRAYED - To wear away by rubbing, a frayed spot as on fabric.
FRICTION - The rubbing of one object or surface against another.
FROZEN - Rendered immobile. **FUNCTION** - Designed for or adapted to a specific function or use. To have or perform a
GASKET - A seal or packing used between matched machine parts or around pipe joints to prevent the escape of a gas or fluid.
HEAVY TRUCK- Covers vehicles from 26,001 lbs and up.
HEIGHT - The distance from the base to the top of an object.
HORIZONTAL - Parallel to or in the plane of the horizon.
HYDRAULIC - Of, involving, moved, or operated by a pressurized fluid, esp. water.
ILLEGAL - Forbidden by law, by official rules. function.
INDICATOR - An instrument as a meter or a gauge for monitoring the operation or condition of a physical system, as an engine.
INOPERATIVE- Not working or functioning.
INSTABILITY - Lack of stability.
JAGGED - Having sharp or ragged projections on a surface or edge.
JAMMING - To activate or apply suddenly, as automotive brakes. To cause to lock in inoperable position.
JOINT (S) - A point or a position at which two or more things are joined. A configuration in or by which two or more things are joined.
KINKED - A tight curl or sharp twist in a wire-like material, typically caused by the tensing of a looped section.
KNOT, knots - A compact intersection or interlaced material, as cord, ribbon, or rope. To tie in or become entangled.
LAMINATED – Made up of bonded layers.
LAMP - A device that generates, heat, light, or therapeutic radiation
LATCH, latching – To close or lock with or as if to latch.
LEAF SPRING - A composite spring used especially in automotive suspensions, consisting of several layers of metallic strips joined to function as a unit.
LEAK, leakage - To allow the passage or escape of something through a breach or flaw. A crack or opening that permits something to escape from or enter a container or conduit.
LENS - A carefully ground or molded piece of glass, plastic, or other transparent material with opposite surfaces either or both of which are curved by means of which light rays are refracted so that they converge or diverge to form an image.
LEVERAGE - The action of a lever. The mechanical advantage of a lever.

LINKAGE - A system of interconnected machine parts, as rods, springs, and pivots, for transmitting power or motion.
LOOSE - looseness - Not tight fitting, not bound, stapled, bundled or gathered together.
MALADJUSTMENT - Faulty adjustment as in a machine.
MECHANISM - Mechanical device, and arrangement of machine parts.
METALLIC - Of, relating to or having the characteristics of a metal.
MINIMUM - The least possible quantity or degree. The lowest amount or degree reached.
MIRRORED - A surface able to reflect enough undiffused light to form a virtual image of an object placed before it.
MISPLACED - To put in wrong place. **MODIFIED** - To change in form or alter. To make less extreme, severe or strong.
MOTORCYCLE - means a motor vehicle, other than a tractor, having a saddle for the use of the rider and designed to travel with not more than three wheels in contact with the ground.
MOVEMENT- A mechanism that produces or transmits motion.
MUFFLER - A device that absorbs esp. one used with an internal combustion engine.
OBSCURED - Deficient in light, dark. Lacking a clear delineation, indistinct.
OEM - Original Equipment Manufacturer.
PASSENGER VEHICLE / LIGHT TRUCK Covers vehicles up to 26,000 lbs.
PAWL - A hinged or pivoted device adapted to fit into a notch of a ratchet wheel to impart forward motion or prevent backward motion.
PERIPHERY - The outermost region or part within a precise boundary.
PIT, pitted - A natural depression or small indentation on a surface. To make cavities, depressions or scars.
PLEXIGLAS - A trademark for a light, transparent, weather-resistant thermoplastic.
PRESSURE - An application of continuous force by one body on another that it touches.
PROTRUDE - To push or thrust outward, to jut out.
PUMP, pumping - A device or machine for transferring a gas or liquid from a source or container through tubes or pipes to another container or receiver
RATCHET - A mechanism consisting of a pawl that engages the sloping teeth of a bar, or wheel, of a ratchet.
RATING - To specify performance limits.
REFLECT - To throw or bend back light.
RE-INSPECTION means an inspection of previously rejected items that is completed within fifteen days of the original inspection. **REJECT** – To deny a vehicle to pass an inspection with safety items that fail to function properly.
RESERVOIR -A receptacle for storing a fluid.
RESTRICT, restricted - To hold within limits, to confine.
RIM - The circular outer part of a wheel , furthest from the axle. A circular metal structure around which a wheel tire is fitted.
RIVET - A metal bolt or pin having a head on one end, used to fasten metal plates or other objects together by inserting the shank through a hole in each piece and hammering down the plain end so as to form a new head.
ROTOR - A rotating part of an electrical or mechanical part.
RUB/rubbing - To subject to the action of something that moves back and forth with friction and pressure.
SAGGING - To lose strength, firmness, or resilience.
SEAL/SEALED - An adhesive agent used to close or secure something or prevent seepage of moisture or air.
SECURE, secured - Not likely to fail or give way, stable, well-fastened.
SEEP, seepage - to pass slowly through small openings or pores. Something that has seeped.
SEIZE, seizing - To fuse or cohere with

another part due to high pressure or temperature, slowing or stopping further motion.
SCRATCH, scratched - To make a narrow line or mark with a sharp instrument. To scrape or strike on an abrasive surface.
SEVERE - Corresponding strictly and rigidly to established rule.
SEVERED - To become cut or broken apart.
SHACKLE - A device used to fasten or couple. (Shackles, something that restrains or confines.)
SHADE, shaded - Light reduced in intensity due to interception of the rays; partial darkness. To obscure or to darken.
SHATTER, shattered - To cause to break or burst suddenly into pieces. A fragmented or splintered condition.
SHIMMY - Abnormal vibration, as in the chassis of a motor vehicle.
SLIP, slippage - To move quietly and smoothly, glide. To cause to move in a smooth easy or sliding motion.

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