11.14.02 Vehicle Equipment Inspection Standards

Authority: Transportation Article, §12-104(b), §22-104, §23-101-23-105, §24-106.1, and §25-110,

Annotated Code of Maryland

.01 Applicability.

A. The standards, requirements, and procedures outlined in this chapter are applicable to regulated equipment required by federal and state regulations on vehicles registered or to be registered by the administration for on-road use that are subject to a vehicle safety inspection. Equipment not designed for on-road vehicle operation shall not be approved for use during on-road vehicle operation. Equipment installed for off-road operation shall not be in use while the vehicle is operated on-road. Any questions regarding these standards, requirements, or procedures shall be referred to the Automotive Safety Enforcement Division (ASED) of the State Police. Any person constructing or reconstructing a vehicle shall ensure the vehicle meets or exceeds all applicable Federal and State safety standards.

B. Commercial vehicles may have other specific regulations due to the nature of their intended use and Federal Motor Carrier Safety Administration (FMCSA) regulations contained in 49 CFR §393. The FMCSA requirements are not fully provided by the regulations contained in this chapter and may place additional requirements for vehicle inspections by enforcement agencies during the operation of commercial vehicles.

C. Damage, deterioration, wear, modification, or missing vehicle equipment that adversely impacts the proper operation and function of the equipment shall be cause for rejection of the equipment or component. Conditions that do not adversely impact the function of the equipment are not cause for rejection of the equipment or component provided documented support from the manufacturer is referenced.

D. A vehicle not manufactured or constructed as a complete vehicle by a generally recognized vehicle manufacturer (specially constructed vehicle) shall be required to meet or exceed all applicable established minimum standards for a vehicle of the same model year in which the vehicle was constructed and titled as established in COMAR 11.14.

E. A motor vehicle modified to enable a person with a disability to operate, or ride in as a passenger is exempted from the "make inoperative" prohibition of 49 U.S.C. §30122 to the extent that those modifications do not affect the motor vehicle's compliance with the Federal Motor Vehicle Safety Standards (FMVSS) or portions thereof specified in 49 CFR §595.7. Modifications that would take a vehicle out of compliance with any other FMVSS, or portions thereof, are not covered by this exemption.

(1) A motor vehicle that has been modified for operation by persons with a physical disability under the authority of 49 CFR §595.7 must be equipped with the permanent label affixed to the vehicle by the modifier which contains the statement, "This vehicle has been modified in accordance with 49 CFR §595.7 and may no longer comply with all FMVSS in effect at the time of its original manufacture." The modifier is required to supply documentation to the vehicle owner which shall:

(a) Identify the vehicle that has been modified;

(b) Contain a list of the FMVSS which the vehicle is no longer in compliance with;

(c) Indicate any reduction in the load-carrying capacity of the vehicle of more than 100 kg (220 lb.) after the modifications are completed; and

(d) State whether the weight of a user's wheelchair is included in the available load capacity.

(2) Upon the request of a vehicle owner with a physical disability, ASED personnel shall examine the documentation and the vehicle VIN to determine compliance with 49 CFR §595.7.

(a) If the documentation and the vehicle label properly identify the vehicle safety equipment that was decertified under 49 CFR §595.7 and matches the VIN of the vehicle presented, ASED personnel shall complete the form, Physical Disability Medical Exemption for Vehicle Equipment.

(b) The form shall be delivered to the vehicle owner for presentation at a licensed inspection station, to authorize an inspector to perform a modified vehicle safety inspection of the vehicle with the decertified equipment on the form exempt from compliance with the specified regulations. The Division shall retain a copy of the form.

(3) A vehicle that has been properly equipped to allow operation by persons with a physical disability and presented with a Physical Disability Medical Exemption for Vehicle Equipment form, issued by ASED personnel, will have all regulated equipment as required by the regulations contained in COMAR 11.14. The decertified equipment which has been identified by the label and documentation described in this regulation are still subject to inspection for broken, missing, or otherwise unsafe conditions.

F. A vehicle specially constructed as a replica of a previously manufactured vehicle does not qualify as a historic vehicle or a vehicle of unique interest as defined by the Motor Vehicle Administration for registration. A vehicle as described in this regulation shall meet all applicable established minimum standards for a vehicle of the same model year in which the replica vehicle was actually constructed and titled with the following exceptions.

(1) Regulation .23§C(1) of this Chapter. If the original counterpart of the specially constructed vehicle was manufactured without side marker lamps, side marker lamps are not required on the replica.

(2) Regulation .12B of this Chapter. If the original counterpart of the specially constructed vehicle was manufactured without fenders or with fenders that do not meet current established minimum standards, the specially constructed vehicle need only conform to the exact design of its original counterpart to meet the requirements for fenders.

(3) Regulation .13 of this Chapter. If the original counterpart of the specially constructed vehicle was manufactured without bumpers, with concealed bumpers, or with bumpers that do not meet current established minimum standards, the specially constructed vehicle need only conform to the exact design of its original counterpart to meet the requirements for bumpers.

(4) Regulation .23§A(13) of this Chapter. If the original counterpart of the specially constructed vehicle was manufactured without a center high mounted stop lamp. A center high mounted stop lamp is not required on the replica.

G. Recommended procedures for the inspection of vehicles are provided in the Inspection Procedure Chart which is established in COMAR 11.14.01.09§H(2)(a) and issued by the Division. These procedures are guidelines rather than required order of operations, however, performing vehicle safety inspections following these procedures will help develop a logical system for consistency in the vehicle safety inspection program.

H. All motor vehicles shall be subject to a minimum of at least a one-mile road test during vehicle safety inspections, inspections due to the issuance of a SERO, or a previous rejection during an inspection as applicable. The steering, suspension, braking, and handling characteristics of motor vehicles will be inspected during this actual road operation.

I. Type 1 and Type 2 School Vehicles may have other specific regulations due to the nature of their intended use, and as required by federal and State requirements. Type I and Type II school vehicle construction standards are established by COMAR 11.19.02 and 11.19.03. Additional requirements for vehicle inspection by enforcement agencies during operation of school vehicles may be required. Any questions regarding these standards or specifications shall be referred to the School Vehicle Safety Section of the Maryland Motor Vehicle Administration.

J. Fluid leakage shall be inspected and identified by class level as listed in the following table:

Leakage	***Conditions***	***Actions***
Class-1	*Seepage of fluid, as indicated by wetness or discoloration, but does not form drops*	*No Action Required*
Class-2	*Fluid leakage forms drops but does not cause drops to fall from the item being inspected*	*Advise Owner/Agent*
Class-3	*Leakage of fluid that causes drops to fall from the item being inspected*	*Reject Equipment*

K. Threaded fasteners, shall engage the threads to ensure proper retention. This thread engagement shall be to a depth of at least:

(1) Steel fasteners – 1 to 1 ½ times the diameter of the fastener; and

(2) Aluminum fasteners – 1 ½ to 2 times the diameter of the fastener.

.02 Steering, Alignment, and Suspension.

A. Inspect the entire steering system for missing, loose, damaged, or unapproved components that may adversely affect the proper operation or function of the steering system. Consult the applicable manufacturer's procedures for the correct method of lifting all vehicles for steering and suspension inspection. Motor vehicles shall be test-driven as a part of the safety inspection to ensure that adverse or undesirable steering or handling conditions are not present.

(1) Vehicle equipment that has been decertified from compliance with all FMVSS, as authorized under 49 CFR §595.7, may be exempt from meeting the requirements of the regulations specific to that equipment, provided the proper documentation from the Division is presented with the vehicle.

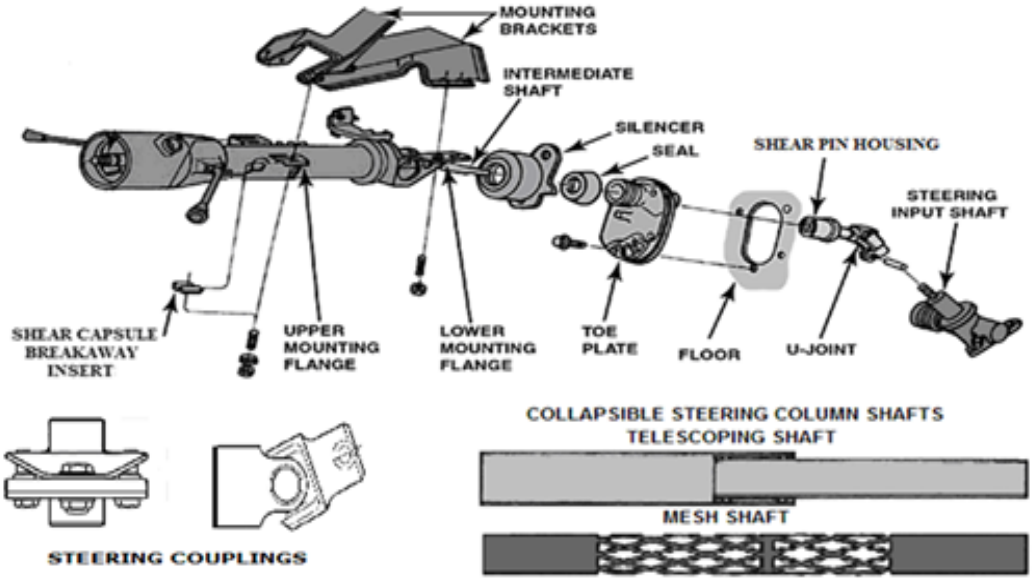
(2) Steering Wheel. The steering wheel shall be inspected to determine if it is circular (complete rim) and free of cracks, breaks, objects, or conditions that will interfere with the safe steering of the vehicle. The steering wheel shall be equivalent to original equipment in material strength and diameter but shall be no less than 13 inches in diameter under any condition.

Reject Vehicle If:
(a) The steering wheel rim is broken or altered to the point it is not continuous, or there is loose covering material.
(b) There are cracks that could catch or snag on clothing, hands, or jewelry.
(c) The steering wheel is not equivalent to original equipment in material, strength, diameter, or is less than 13 inches in diameter.
(d) The steering wheel has object attached which interferes with safe steering, except as provided for in §(3) of this regulation.

(3) Hand Controls. Hand controls or other special equipment for physical disability are acceptable provided that the requirements defined in Regulation .01E(3) of this chapter have been met. If the vehicle cannot be operated by the inspector due to authorized modifications, the owner/agent of the vehicle may operate the vehicle for the inspector. A steering knob is acceptable equipment for operation by a person with a physical disability without having to meet the requirements defined in Regulation .01E(3) of this chapter.

Reject Vehicle If:
(a) The hand controls or other special equipment for physical disability are not readily accessible to the operator or are binding, damaged, or jammed. Consult the equipment operating manual if needed during inspection.
(b) The hand controls or other special equipment interfere with the normal function of regulated vehicle equipment, and the vehicle does not meet the requirements defined in Regulation .01E of this chapter.

(4) Energy Absorbing Steering Column and Steering Coupling. Passenger cars, multipurpose passenger vehicles, trucks, and buses up to 10,000 pounds (4,536 kg) GVWR built on or after January 1, 1968, are required to be equipped with energy absorption systems, and some vehicles over 10,000 pounds (4,536 kg) GVWR may also be equipped with these systems. If so equipped, the column shall be inspected for objects attached that would prevent collapse under impact, and for indications of improper column mounting or defective shear capsule. Disassembly of the vehicle dash for inspection of this equipment is not required unless there are indications of improper column mounting or a defective shear capsule. An under-hood inspection of the collapsible steering shaft, shear pins, or mesh-type material shall be performed. Steering couplings shall be inspected for any unsafe condition. Modifications to the energy absorbing steering column shall not be permitted.



STEERING COLUMN ASSEMBLY (Design varies by manufacturer)

Reject Vehicle If:
(a) Inside passenger compartment:
(i) Objects (tachometer, etc.) are mounted on steering column equipped with an energy absorption system; or
(ii) The column is improperly mounted, shear capsule is separated from bracket, or wheel and column are not properly secured or mounted.
(b) Under Hood/Vehicle Exterior:
(i) The shear pins or other collapsible components of the column assembly are damaged, loose, missing, modified, or otherwise not as originally designed and adversely affect the operation of the vehicle; or
(ii) The steering coupling component is damaged, loose, missing, modified, or otherwise not as originally designed.

(5) Steering Lash. Inspect the steering system lash to determine whether any condition exists that would adversely affect the steering of the vehicle. The vehicle shall be on a dry surface. Inspect with the front wheels in the straight-ahead position. Steering lash on a vehicle equipped with a steering box is inspected based on the diameter of the steering wheel. Turn the steering wheel until the turning motion can be observed at the road wheels and note the steering wheel position. Next, turn the steering wheel in the opposite direction until the turning motion can be observed at the road wheels and note the second position of the steering wheel. Measure the distance between the noted positions of the steering wheel and use the steering wheel diameter if applicable to determine the maximum allowable lash of the steering (unless the manufacturer specifies less movement allowed) as listed in this regulation.

Reject Vehicle If:
(a) A vehicle equipped with a steering box:
(i) The steering lash measured on a steering wheel diameter up to 16 inches exceeds 2 inches;
(ii) The steering lash measured on a steering wheel diameter up to 18 inches exceeds 2 ¼ inches;
(iii) The steering lash measured on a steering wheel diameter up to 20 inches exceeds 2 ½ inches; or
(iv) The steering lash measured on a steering wheel diameter up to 22 inches exceeds 2 ¾ inches.
(b) A vehicle equipped with rack and pinion steering has steering lash measured on a steering wheel that exceeds 0.4 inches (10mm).

(6) Steering Travel. Inspect the steering system travel by turning the steering wheel through a full right and a full left turn. There shall be no binding, jamming, inconsistent steering effort, excessive play, or other condition that adversely affect steering operation during this inspection.

Reject Vehicle If:
Any roughness, jamming, binding, inconsistent steering effort, excessive play, or other condition which adversely affect steering operation is present when turning the wheels from full right to full left.

(7) Steering Linkage. Lift the vehicle according to the manufacturer's procedure and grasp the front and rear of the tire and attempt to move the assembly, feel and observe for excessive movement. Grasp the steering linkage components by hand to detect any physical or visual looseness in ball and socket joints or misalignment of steering linkage. Misalignment of steering linkage that results in alignment angles that cannot move in the same "arc" of movement up and down as the suspension may cause binding or unacceptable steering and handling. Inspect the steering box or the rack and pinion assembly, as applicable.

Reject Vehicle If:
(a) Movement is in excess of the manufacturer's recommendation;
(b) There is any looseness that can be felt by hand in tie rod or drag link balls and sockets;
(c) A ball and socket joint has missing or torn boot;

(d) A joint is not secured with cotter pins or other locking devices;
(e) The steering stops allow tire to rub frame, metal, or other chassis parts;
(f) The tie rods, tie rod ends, center link, drag link, pitman arm, or idler arm are misaligned;
(g) Linkage movement is restricted or impeded by any condition; or
(h) Steering linkage angles have been altered to the extent that component function is adversely affected.

(8) Manual Steering. Manual steering units contain fluid for internal lubrication. Inspect the steering box or rack and pinion, as applicable, for proper mounting, damage, leakage, and proper function. Rack and pinion steering is equipped with bellows covering the ends of the rack to prevent debris from contaminating the rack and pinion teeth and damaging the fluid seals. Fluid visible in or from the bellows indicates fluid seal failure.

Reject Vehicle If:
(a) The steering box or steering rack is not properly mounted;
(b) The steering box or steering rack is damaged to adversely affect function;
(c) The steering box or steering rack has Class-3 leakage;
(d) The manual steering box or rack and pinion assembly, as applicable, is damaged, loose, leaking, or proper steering movement is restricted or impeded by any condition;
(e) A steering rack bellows are missing, damaged, or not secured to prevent the bellows from shifting position; or
(f) Fluid is present or leaking from rack and pinion bellows indicating a fluid seal leak is active.

(9) Power Steering. Inspect the operation and condition of the power steering. Integral power steering systems are lubricated by the power steering fluid rather than having a separate lubrication fluid. Inspect the fluid reservoir and reservoir cap condition, fluid level, component mounting, belt condition, or the condition of electrical components for electrical power steering. Surface corrosion on metal components is not a cause for rejection. Visual indications of system leakage shall be confirmed by inspection with the engine running. Power steering systems that function properly and are filled to the manufacturer's recommended fluid levels that do not have visual indications of leakage are not required to be inspected for leakage with the engine running. Rubber power steering hoses shall be inspected to ensure they are firm but flexible, not hard and brittle, or soft and spongy.

Reject Vehicle If:
(a) The power steering does not function properly;
(b) The steering component has Class-3 leakage;
(c) The fluid level is less than the manufacturer's recommendation, or is contaminated;
(d) The belts are frayed, loose, missing, or damaged;
(e) The fluid reservoir or cap is damaged, loose, or missing;
(f) A hose, tubing, fitting, or connection has been chafed or rubbed by moving parts, rubber is cracked to expose cords, are not secured against damage, are leaking, cracked, chafed, bulging, flattened, restricted, or are rusted to a point of flaking or pitting. Surface rust is not a cause for rejection;
(g) A rubber power steering hose is hard and brittle, or soft and spongy indicating severe deterioration;
(h) Electrical components are disconnected, missing, damaged, or not secured against damage;
(i) A mount or parts are missing, loose, or broken;
(j) The steering rack bellows are damaged, or not secured to prevent the bellows from shifting position; or
(k) The power steering box or rack and pinion assembly, as applicable, is damaged, loose, leaking, or proper steering movement is restricted or impeded by any condition.
(l) Fluid is present or leaking from rack and pinion bellows indicating a fluid seal leak is active.

Agency Note: *Bellows protect the rack and the fluid seals. Fluid visible in or from the bellows indicates fluid seal failure.*

(10) Motorcycle Steering Head, and Handlebars. With the front end of the motorcycle raised, grasp both fork legs and apply forward and backward force to inspect for loose adjustment or play in steering head bearings or bushings. Turn handlebars from side to side and inspect for roughness in bearings or bushings. Inspect for the presence of stops to prevent the handlebars, forks, or triple tree from contacting other parts of the vehicle. Inspect handlebars for cracks, deformation, proper alignment, mounting height, width, and hand grips. Apply upward and downward force to handlebars to inspect for excessive flexing.

Reject Vehicle If:
(a) There is noticeable play or roughness in the steering head bearings or bushings, or there is obstructed rotation to the left and the right. Drag from a steering damper is not cause for rejection;
(b) Stops are missing or do not prevent contact of the handlebars, forks, or triple tree with the fuel tank or other equipment;
(c) The handlebars are cracked, deformed, improperly aligned, not constructed of adequate material, or show excessive flexure other than flexure from rubber mounts;
(d) Handlebars are less than 18 inches in overall width at the handgrips;
(e) Handgrips are missing or loose; or
(f) Handgrips are positioned more than 20 inches above the lowest portion of the operator's seat position.

B. Electronic Stability Control (ESC).

(1) Beginning on or after September 1, 2008, a certain percentage of passenger cars, multipurpose passenger vehicles, trucks, and buses with a GVWR of 10,000 pounds (4,536 kg) or less, are required to be equipped with ESC according to the phase-in schedule specified in of 49 CFR §571.126.S8. All such vehicles manufactured on or after September 1, 2011, must comply with this standard. The system may include an "ESC Off" or other control that places the system in "default" mode, or normal steering.

(2) All buses with a GVWR greater the 33,000 pounds (14,969 kilograms) manufactured on or after June 24, 2018, and all buses manufactured on or after August 1, 2019, are required to be equipped with ESC according to the 49 CFR §571.136.S8.

(3) ESC systems use computer-controlled augmentations to enhance vehicle directional stability by applying and adjusting the vehicle brakes and modifying engine torque to induce a correcting yaw movement to a vehicle based upon driver input. The system may include an "ESC

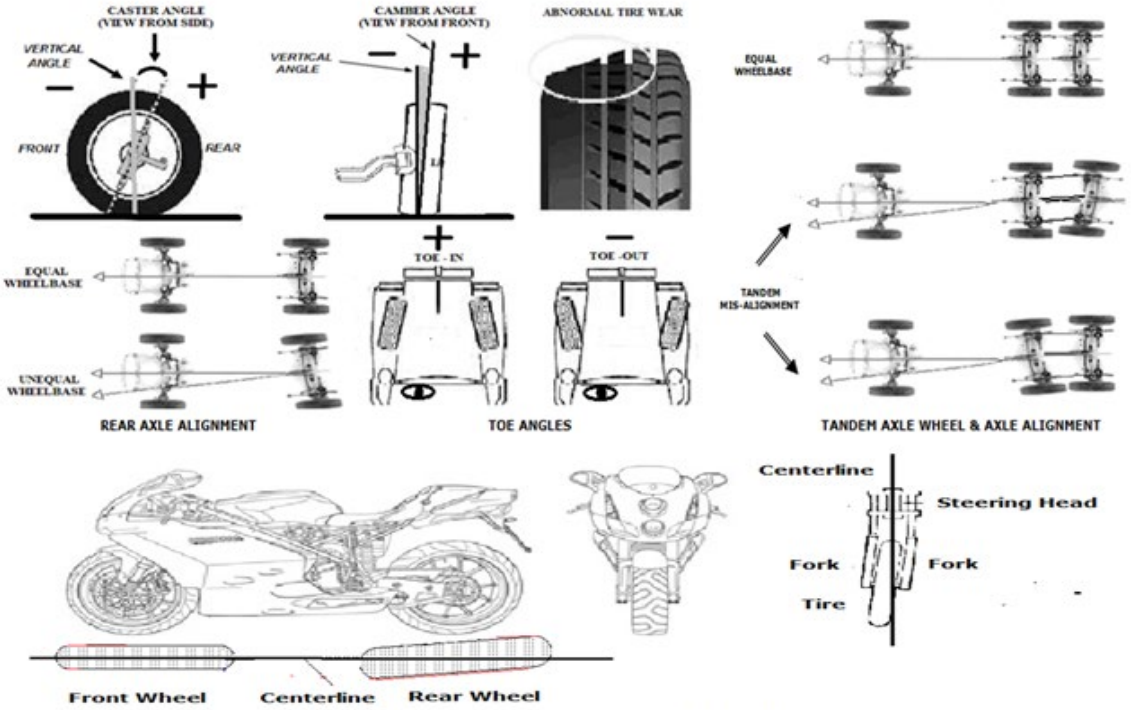
Off" or other control that places the system in "default" mode, or normal steering. A vehicle required to be equipped with ESC shall be inspected to ensure that the ESC is present and functioning as designed. Some vehicles are equipped with a Traction Control System (TCS) which utilizes the anti-lock system to control wheel spin during acceleration.

Reject Vehicle If:
(a) The electronic stability control system warning light does not self-check;
(b) The electronic stability control system warning light remains lit indicating a possible system fault or failure;
(c) The electronic stability control system warning light activates during normal operation of the vehicle;
(d) The electronic stability control system malfunction adversely affects vehicle's normal operation;
(e) The electronic stability control system has missing, loose, damaged, worn, or improperly mounted components; or
(f) The electronic stability control system is disconnected, disabled, or removed.

C. Wheel Alignment. Wheel alignment settings are adjusted in degrees or fractions of an inch and cannot be properly adjusted visibly, and require specific alignment equipment to correct a misalignment. Wheel misalignment severe enough that it can be detected visibly requires special attention. Undesirable steering or handling conditions during a required test drive are indications of a misalignment condition. The use of alignment equipment for the inspection of wheel alignment during any inspection may not impose a fee without prior approval from the owner/agent of the vehicle.

(1) Abnormal tire wear may also indicate misalignment. Abnormal tire wear shall be determined by a comparison of the tread depth measurements taken in the outermost major tread groove and the innermost major tread groove of each tire being inspected. Tread depth measurements that result in a difference of 4/32 of an inch or more shall indicate wheel misalignment.

(2) Motorcycle alignment includes inspection of the steering fork tubes and front tire alignment and rear suspension systems alignment to the vehicle. Move the vehicle at least the length of the wheelbase and observe if the rear tire follows in a straight line with the front tire.



Examples of Alignment Angles and Misaligned Angles

Reject Vehicle If:
(a) Excessive alignment angles are measured or observed during the inspection;
(b) Abnormal tire wear indicates misalignment as described in this regulation;
(c) Adverse steering or handling conditions are evident during the test drive; or
(d) Rear wheel alignment has any of the following:
(i) Rear wheel track does not follow the front wheel track in "straight-ahead" operation;
(ii) The left-side wheelbase is more than one inch in difference from the right-side wheelbase unless specified by the manufacturer to indicate otherwise;
(iii) The front tire is not properly aligned to the forks or tubes of the steering head assembly; or
(iv) The swingarm or rear tire/wheel assembly is not properly aligned to the vehicle, or front to rear wheel alignment exceeds one inch of misalignment.

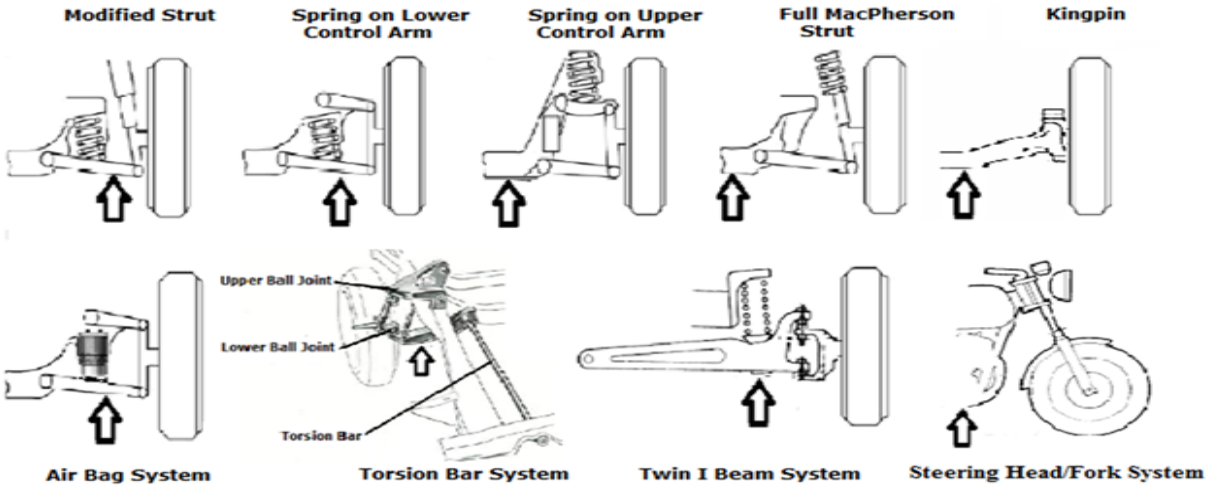
D. Suspension. Inspect the suspension system for missing, damaged, worn, corroded, or modified equipment components that would adversely affect vehicle stability. Movement observed in ball joints, kingpins, or other suspension joints designed to allow articulation or turning motion in the suspension, found to have movement shall be measured, recorded, and rejected for excessive movement as required. It is not required to measure the amount of observed movement of ball joints or other components specified by the manufacturer for rejection.

Ball joints, kingpins, and other articulating suspension joints specified for no observed play allowed shall be recorded as "0" for specification and measurement of ball joints.

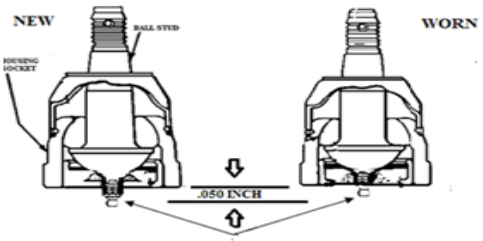
(1) Front Axle Ball Joints (Without Wear Indicators). Inspect ball joints per the manufacturer's procedures and specifications. If the vehicle manufacturer specifies ball joint inspection for vertical movement, only use moderate force to exert upward pressure during the inspection. Excessive force may falsely generate excessive movement. Ball joint boots that are damaged or missing shall be rejected. Ball joints shall be rejected if the ball joints do not turn freely. Unless specified otherwise, a ball joint is normally unloaded by lifting the vehicle to remove the weight and tension from the ball joint.

Reject Vehicle If:
(a) The ball joint movement is in excess of the manufacturer's specifications;
(b) The ball joint movement is restricted or impeded by any condition;
(c) The ball joint is equipped with a tightener or repair kit. Ball joint alignment or control bushings are not to be considered repair kits or tighteners;
(d) The ball joint has been repaired by heating or bending the socket assembly to eliminate excessive movement;
(e) The ball and socket joint has missing or torn boot; or
(f) The joints are not secured with cotter pins or other locking devices.

(2) Front Axle Ball Joints (With Wear-Indicators). Wear-indicating ball joints shall be inspected per the manufacturer's procedures and specifications. Ball joint boots that are damaged or missing shall be rejected. Ball joints shall be rejected if the ball joints do not turn freely.



GENERIC LIFTING LOCATIONS TO "UNLOAD" SUSPENSIONS FOR INSPECTION

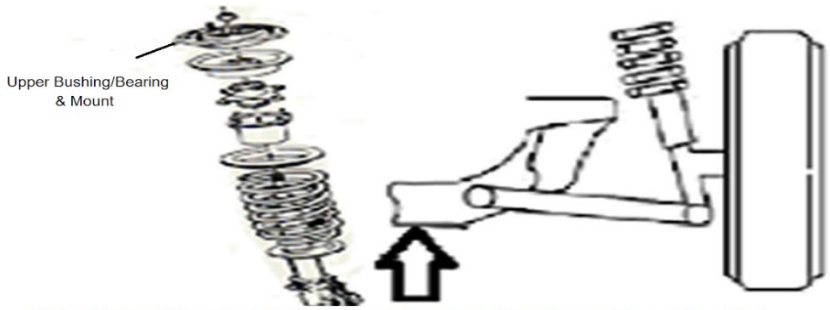


VISUAL INSPECTION OF "BOSS' PROTRUSION STYLE
WEAR INDICATING BALL JOINT

PHYSICAL INSPECTION OF "MOVEMENT" STYLE
WEAR INDICATING BALL JOINT

Reject Vehicle If:
(a) The ball joint manufacturer's wear indicator does not meet the manufacturer's specifications;
(b) The ball joint movement is in excess of the manufacturer's specifications;
(c) The ball joint movement is restricted or impeded by any condition;
(d) The ball joint is equipped with a tightener or repair kit. Ball joint alignment or control bushings are not to be considered repair kits or tighteners;
(e) The ball joint has been repaired by heating or bending the socket assembly to eliminate excessive movement;
(f) The ball and socket joint has missing or torn boot; or
(g) The joints are not secured with cotter pins or other locking devices.

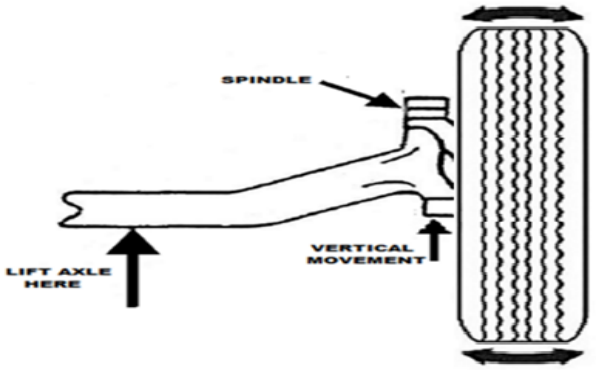
(3) MacPherson Strut Upper Bushing or Bearing. The upper bushing or bearing (as equipped), is the load-carrying component of a steerable (front axle) MacPherson Strut suspension system and shall be inspected unloaded for missing, frozen, damaged, worn, corroded, or modified conditions.



Lift to "Unload" the Bushing/Bearing at the Top of the Assembly as Specified By the Manufacturer. If a Location is not Specified, Lift at the Frame, Cradle, or Other Location Which Will Allow the Assembly to Hang Free Without Load

Reject Vehicle If:
(a) The strut upper bushing or bearing has excessive movement;
(b) The strut movement is restricted or impeded by any condition; or
(c) The strut mount has any damaged, worn, rusted, modified condition, or missing parts.

(4) Kingpins. Inspect kingpins to determine if there are any missing, rusted, broken, or worn parts that may adversely affect the steering or suspension of the vehicle. Hoist the vehicle under the axle or control arm and grasp the top and bottom of the tire and attempt to move the assembly in and out to inspect for horizontal movement. Lift the tire/wheel assembly to inspect for vertical movement using a pry bar or other means to overcome the weight of the wheel assembly during the inspection. Record any horizontal movement measured, or vertical movement measured at the spindle. Kingpins shall be rejected if the kingpins do not turn freely.



LIFTING LOCATION FOR SOLID AXLE KINGPIN, WHEEL BEARING, AND STEERING LINKAGE INSPECTION

Reject Vehicle If:
(a) Movement exceeds the manufacturer's specification, or when manufacturer specification is not available, movement measured at the sidewall of the tire based upon wheel diameter exceeds:
(i) Wheels under 20 inch, lateral movement is more than 1/8 inch or 3 mm; or
(ii) Wheels 20 inches, or larger, lateral movement is more than 3/16 inch or 5 mm;
(b) Kingpin vertical movement exceeds 3/32 inch or 2.5 mm; or
(c) Kingpin movement is restricted or impeded by any condition.

(5) Control Arms, Locator Bars, Stabilizer Bars, Track Bars, Rear Axle Ball Joints, and Rear Axle Linkage. These components and their associated mounting hardware and bushings shall be inspected for loose, damaged, missing, corrosion, deterioration, modifications, or other conditions that could adversely affect the safe operation of the vehicle. Autocycles may be equipped with "motorcycle type" swingarm rear suspension systems which must be properly inspected for operation and condition.

Reject Vehicle If:
(a) A control arm, locator arm/bar, stabilizer bar, track bar, or other suspension control component is loose, broken, missing, rusted, deteriorated, modified, or has any other condition which could adversely affect the operation of the vehicle;
(b) A control arm, locator arm/bar, stabilizer bar, track bar, or other suspension bushing is damaged, deteriorated, oil-soaked, heat damaged, or dry rotted to a point that the bushing is loose, frozen, or will not move as designed;
(c) A rear axle ball joint is loose, frozen, or will not move as designed;
(d) A rear axle linkage is loose, frozen, or will not move as designed; or
(e) Swingarm does not articulate as designed to allow suspension movement, has excessive lateral movement, excessive wear or deterioration is present in the bushings, or bearings as equipped.

(6) Wheel Bearings. Wheel bearings shall be inspected on all wheel positions for looseness, damage, leaking seals, or any condition that could adversely affect the safe operation of the vehicle. Wheel bearing noise detected during a road test requires a physical inspection to properly identify the defective wheel bearing. With the vehicle lifted, grasp the top and bottom of the tire and rock it in and out. Measure

any movement and compare it to the manufacturer's specifications. Rotate the tire and inspect for rough, galled, or otherwise defective bearings. To determine if excess movement observed is wheel bearing movement or ball joint movement, it may be necessary to lift the vehicle to loadthe ball joints, if applicable.

Reject Vehicle If:
(a) Wheel bearing noise detected during a road test;
(b) Wheel bearing movement exceeds the manufacturer's specifications;
(c) Wheel bearings are rough, galled, missing parts, or otherwise defective; or
(d) Wheel bearings are not properly lubricated, or wheel seals have Class-3 leakage.

(7) Suspension Ride Height Control Equipment. The different suspension systems may be composed of equipment such as springs, torsion bars, airbags, electronic ride control, hydraulic ride control, or a combination of components that properly support the vehicle weight, control ride height, and cushion the ride of a vehicle. Observe the ride height of the vehicle for unlevel conditions, and measure at the corners of the vehicle if necessary. Ride control systems shall be inspected for damaged, missing, improperly installed components, or equipment not designed for on-road operation. All related mounting and hardware associated with suspension equipment components shall be inspected for excessively worn or deteriorated conditions, corrosion, suspension modifications, or having other conditions that could adversely affect the safe operation of the vehicle.

Reject Vehicle If:
(a) Springs, torsion bars, airbags, electronic ride control devices, hydraulic ride control devices, or other ride control components are loose, damaged, modified, or has any other condition that adversely affects the safe operation of the vehicle;
(b) Spring shackles, bushings, fasteners, insulators, cushions, or other mounting components for ride control devices are loose, damaged, modified, or has any other condition which could adversely affect the safe operation of the vehicle;
(c) Air or electronic suspension control system module, line, wiring, or other component is missing, not functioning, is damaged or deteriorated to affect proper function;
(d) U-bolts are loose, damaged, or not of sufficient length to fully engage the threads of the fasteners;
(e) Lift kits, lift blocks, or other modifications to the suspension system components are loose, sagging, damaged, or use multiple lift blocks;
(f) Spacers are installed within the coils of a coil spring; components do not align the suspension system properly, or for other condition which adversely affects the safe operation of the vehicle;
(g) Any object or equipment extends below the bottom edge of any wheel rim;
(h) Vehicle ride height when measured on the left and the right side exceeds:
(i) One-inch difference on a vehicle up to 10,000 pounds (4,536 kg) GVWR; or
(ii) Two inches difference on a vehicle over 10,000 pounds (4,536 kg) GVWR;
(i) Ride height allows tire to contact vehicle;
(j) Ride height allows the suspension to contact suspension bump stops or bottom out during normal vehicle operation; or
(k) Air leaks from anywhere in an air suspension system.

(8) Lift Axle. Vehicles equipped with axles that can be raised and lowered while in motion as needed to support additional weight shall be inspected for function and condition. The steering and suspension shall be inspected using the manufacturer's procedures and specifications.

Reject Vehicle If:
(a) Toe is not within the manufacturer's specifications, or plus or minus 1/16, whichever is the least;
(b) Ball joint or kingpin movement is restricted or impeded by any condition;
(c) Ball joint or kingpin movement is in excess of manufacturer's specifications;
(d) Suspension bushings, bearings, mounts, control arms, or other mounting components are improperly installed, damaged, or do not function as designed;
(e) Axle fails to respond properly to the axle lift control switch;
(f) Axle engages before the axle is fully down; or
(g) Axle air pressure indicated on the axle air pressure gauge does not measure equal to, or greater than the psi indicated on the manufacturer's certification when the axle is deployed.

(9) Shock Absorbers, Struts, and Front Forks. Shock absorbers, strut cartridges, and front forks may be gas-charged, oil-filled, air-charged, electronically controlled, hydraulic controlled, or use a combination of designs to dampen the spring rebound of the suspension. These components shall be inspected for condition, mounting, and function. The vehicle shall be inspected for insufficient dampening action during a road test. Free rocking motion for more than two cycles while driving, the front end diving excessively during braking, or rises excessively under acceleration during a road test indicates defective equipment. Inspect shock absorbers, struts, or front forks for wear, damage, or leakage that could adversely affect vehicle stability.

Reject Vehicle If:
(a) Vehicle continues free rocking motion for more than two cycles during operation, the front-end dives excessively during braking or rises excessively under acceleration, or otherwise does not function as designed;
(b) Mounting bolts, bushings, or mounts are missing, damaged, or deteriorated to a point that adversely affects the function of the component;
(c) Class-3 leakage is present on hydraulic or gas-filled shocks, struts, or front forks if equipped;
(d) Air leaks from anywhere in an air suspension system;
(e) Lines or tubing are leaking, improperly routed or mounted, or are not protected from damage;
(f) Electrical components or wiring is improperly routed or mounted, or are not protected from damage; or
(g) Front fork tubes are damaged preventing full travel, or free action of front forks.

.03 Vehicle Frame and Unibody Construction.

A. Full Frame. The vehicle frame, body to frame mounting points, and mounting points for suspension equipment components shall be inspected for corroded, damaged, or modified conditions that could adversely affect the safe operation of the vehicle. Body mounts shall not be stacked (multiple blocks or bushings). The frame shall be inspected for improper materials or improper repairs. Frame side rail height (excluding arches or kick-up areas at vehicle axles) shall be measured at the highest portion of the frame. School vehicle frame alterations shall be designed and guaranteed by the original chassis manufacturer or the body manufacturer, and shall not extend the wheelbase. Type I School Vehicle frame alterations may only be made behind the rear spring hangers. Type II School Vehicle frame alterations may only be made behind the rear spring hangers or in front of the front spring.

Reject Vehicle If:
(1) Frame is corroded, damaged, or modified to adversely affect the safe operation of the vehicle;
(2) Frame body mounting points or mounting points for suspension or drivetrain components are corroded, damaged, or modified and adversely affect the safe operation of the vehicle;
(3) Body mount bushings or other attachment devices are missing, damaged, modified, stacked, or loose and adversely affect the safe operation of the vehicle;
(4) Frame has been improperly repaired or cannot properly support attached components; or
(5) Frame side rail height at the side or rear is higher than:
(a) 20 inches on a passenger vehicle;
(b) 28 inches on an MPV, SUV, or pickup truck up to 10,000 pounds (4,536 kg) GVWR; or
(c) 30 inches on a vehicle except for a trailer, between 10,001 – 18,000 pounds GVWR.

B. Unitized Body. The strength of unibody construction is dependent upon the thickness, type, and shape of the material used in the construction of body components. Therefore, any damage, improper repair, or modification that decreases the strength by altering the thickness, type, or shape of the body construction material shall be rejected during the inspection. Unibody vehicles shall be inspected for corroded, damaged, improperly repaired, or modified conditions that could adversely affect the safe operation of the vehicle. Body to subframe, cradle mounting points, and mounting points for suspension components shall be inspected for corroded, broken, damaged, or modified conditions that could adversely affect the safe operation of the vehicle.

Reject Vehicle If:
(1) Unibody or subframe is corroded, damaged, or modified to adversely affect the safe operation of the vehicle;
(2) Unibody or subframe is constructed of improper materials, has been improperly repaired, or repaired using improper material;
(3) Subframe, cradle mounting points, or mounting points for suspension components are corroded, damaged, or modified and adversely affect the safe operation of the vehicle;
(4) Subframe, cradle mount bushings, or other attachment devices are missing, damaged, modified, or loose and adversely affect the safe operation of the vehicle; or
(5) Subframe or unibody main support side rail height is higher than:
(a) 20 inches on a passenger vehicle; or
(b) 28 inches on an MPV, SUV, or pickup truck up to 10,000 pounds (4,536 kg) GVWR.

C. Motorcycle and Autocycle Frame. The frames of motorcycle and autocycle vehicles are often constructed with a central tubular frame to which the steering, suspension, and drivetrain components are attached. The frame shall be inspected for corroded, damaged, or modified conditions that could adversely affect the safe operation of the vehicle. Mounting points for steering, suspension, and drivetrain components shall be inspected for corroded, broken, damaged, or modified conditions that could adversely affect the safe operation of the vehicle.

Reject Vehicle If:
(1) Frame is corroded, damaged, or modified and adversely affects the safe operation of the vehicle;
(2) Frame has been improperly repaired, or repaired using improper material;
(3) Frame has cracks, improper welds, fatigue points or work hardening, or other structural damage;
(4) Frame has flexure or is bent to cause wheel misalignment; or
(5) Engine mounting area or brackets are damaged.

.04 Tow Vehicle Hitches and Coupling Devices.

A. Hitch Mounts and Receivers. Inspect for damage or deterioration of the hitch structure, which would adversely affect the safe towing capability of the vehicle. Inspect the hitch attachment to the vehicle, and the vehicle attachment area for missing or loose fasteners, cracks, improper welds, or inadequate or improper materials.

***Agency Note:** Hitches and Coupling Devices are not required equipment for motor vehicles other than truck tractors, therefore they may be removed if rejected and are not required to be replaced on vehicles other than fifth wheels on truck tractors.*

Reject Vehicle If:
(1) Hitch is damaged or deteriorated and is unsafe for operation;
(2) Hitch attachment has missing or loose fasteners, cracks, or improper welds; or
(3) Hitch is constructed or repaired using improper materials.

B. Hitch Ball, and Pintle Hook. Inspect the hitch ball or pintle hook for flat spots, pits, or cracks. Inspect the hitch ball for wear exceeding 1/8 inch or 3.0 mm from its original dimension. Inspect the pintle hook horn section for wear exceeding 20 percent. The latch on a pintle hook shall latch and unlatch as designed. Weld repairs to a hitch ball or pintle hook shall not be permitted. Mounting fasteners or welds shall be inspected for proper integrity.

Reject Vehicle If:
(1) Hitch ball has flat spots, pits, or cracks;
(2) Hitch ball is worn more than 1/8 inch or 3.0 mm from original dimension;
(3) Pintle hook assembly has cracks;

(4) Pintle hook horn has wear exceeding 20 percent;
(5) Pintle hook latch does not function as designed;
(6) Hitch ball or pintle hook has been repaired by welding; or
(7) Mounting fasteners are missing, loose, damaged, or have improper welds.

C. Fifth Wheels. Inspect the fifth wheel for proper alignment, distortion, deformation, cracks, or missing parts.

Reject Vehicle If:
(1) Any frame mounting fastener is missing or ineffective;
(2) Any movement between mounting components;
(3) Mounting plate or pivot bracket fastener is missing or ineffective;
(4) Mounting plate or pivot bracket weld or metal is cracked, or any mounting angle iron is cracked or broken;
(5) Pivot bracket pin is missing or unsecured, or horizontal movement of pivot pin exceeds ⅜ inch;
(6) Horizontal movement between the upper and lower fifth wheel halves exceeds ½ inch;
(7) Fifth wheel slider has missing or ineffective latching fasteners, or fifth wheel slider stops missing or unsecured;
(8) Movement between slider bracket and slider base exceeds ⅜ inch;
(9) Any slider component cracked in parent metal or weld;
(10) Cracks in the fifth wheel plate contact area; (Not applicable to cracks in approach ramps and casting shrinkage cracks in the ribs of the body of a cast fifth wheel.)
(11) Operating handle does not function as designed;
(12) Locking mechanism part is missing, broken, or deformed to the extent the kingpin is not securely held; or
(13) Fifth wheel has been removed from a truck tractor.

.05 Trailer Towing Attachment Devices.

A. Trailer Kingpin. Inspect for wear or damage that would adversely affect the proper coupling to a fifth wheel.

Reject Vehicle If:
(1) Kingpin is excessively worn, bent, or not securely attached;
(2) Kingpin bearing plate is damaged, distorted, or not securely attached to the trailer; or
(3) Kingpin collar is damaged or excessively worn.

B. Drawbars, Tongues, and Hitches. Inspect for missing parts, improper alignment, damage, deformation, deterioration, or constructed with inadequate materials or welding.

Agency Note: *Drawbars, Tongues, and Hitches are required equipment on trailers, therefore, if rejected, shall be properly repaired or replaced before certification of the vehicle may be completed.*

Reject Vehicle If:
(1) Parts are missing, or constructed with inadequate materials or welding;
(2) Drawbar, tongue, or hitch is improperly aligned to the vehicle, damaged, deformed, or deteriorated and adversely affects safe operation; or
(3) Coupler has cracks or deformations, or the inside of the coupler has worn spots or pits.

C. Safety Chains and Cables. Trailers equipped for ball and hitch, pintle hook, or drawbar for towing are required to be equipped with at least two safety chains or cables of sufficient strength to support the loaded capacity of the trailer in the event of separation from the towing unit.

Reject Vehicle If:
(1) Safety chains or cables are not present on vehicles equipped for ball and hitch, pintle hook, or drawbar for towing;
(2) Safety chains or cables are not of sufficient strength to support the trailer in the event of separation from the towing unit; or
(3) Safety chains or cables are missing when required, broken, or excessively worn.

D. Landing Gear, Trailer Jack, Trailer Drop Leg. Equipment used to support the trailer for coupling and uncoupling from the towing vehicle shall be inspected for missing parts, deterioration, damage, or construction with inadequate materials or welded repairs to components.

Reject Vehicle If:
(1) Parts are missing, constructed with inadequate materials, or repaired by welding;
(2) Landing gear, trailer jack, or trailer drop leg is damaged, deformed, or corroded that will adversely affect safe operation; or
(3) Landing gear, trailer jack, or trailer drop leg will not properly deploy to support the vehicle or will not properly stow away to allow vehicle operation.

.06 Brake Systems.

A. Service Brake Performance Tests. The service brake is the primary driver input used for slowing, stopping, and controlling the vehicle under normal operating conditions. The stopping ability of the vehicle shall be tested at a speed of 20 mph by applying the service brakes firmly. This test may be performed during the vehicle road test required for the steering and suspension inspection. The service brake performance test shall be conducted on a hard, smooth surface road or area that is free from loose material, oil, standing water, ice, snow, or grease. While maintaining firm control of the steering wheel, observe whether the vehicle comes to a smooth stop, without pulling to the right or left, within the distance prescribed in this regulation. Brake pull or vibration that adversely affects proper brake action during any operation of the vehicle, shall be rejected. These procedures are also applicable to vehicles equipped with hand controls for the physically disabled. A vehicle modified for physically disabled operation, which does not allow conventional operation, may require the owner/agent to drive the vehicle into the inspection area and demonstrate the braking application to the satisfaction of the inspection mechanic. A vehicle built to meet the standards for a motorcycle may have both a hand-operated lever and foot-operated pedal for the application of the service

brakes on both wheel positions. Motorcycles manufactured before January 1, 1974, were not required to be equipped with brakes on all wheels.

Reject Vehicle If:
(1) The vehicle does not come to a smooth stop from a speed of 20 mph within the distance established by the type of vehicle:
(a) 20 feet – Motorcycle;
(b) 25 feet – Passenger vehicles seating 10 persons or less with a GVWR of 10,000 lbs. or less;
(c) 30 feet– Light trucks, vans, and multipurpose passenger vehicles;
(d) 35 feet – Single unit vehicles with a GVWR of more than 10,000 lbs. except truck tractors; or
(e) 40 feet – Truck tractors.
(2) There is obvious vibration caused by a warped brake rotor or an out-of-round brake drum;
(3) Vehicle pulls to the right or left upon brake application; or
(4) There is inadequate brake action on any wheel.

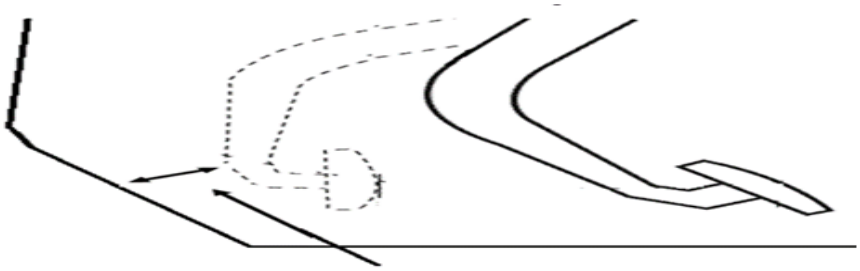
B. Hydraulic Brake Application Systems.

(1) Inspect hydraulic brake systems for function, condition, leakage, and proper installation. Any hydraulic brake fluid leakage is cause for rejection of the brake equipment. Brake components designed and intended for non-street applications such as "racing" or other "off-road use only" shall not be allowed. Split service brake systems consist of two or more subsystems actuated by a single control, designed so that a single failure in any subsystem does not impair the operation of any other subsystem. A motorcycle split service brake system may consist of a single split brake service system actuated by a single control, or two separate brake systems with separate controls, one of which may be a parking brake system. Inspect brake systems equipped with a "RED" warning light which illuminates if a malfunction exists that is related to fluid pressure, reservoir fluid level, or fluid pressure imbalance to ensure that the warning light is operating properly. Inspect split service brake systems for function of the "RED" brake warning light, and illumination of the warning light during operation. Do not remove or pull back wheel cylinder or caliper dust boots during the inspection. Inspect hydraulic hoses and brake lines for leaks, cracks, chafing, restrictions, improper installation, or support. Inspect metal lines or fittings for corrosion with obvious pitting that reduces the wall thickness, or for improper material not intended for vehicle brake systems. Copper/nickel hydraulic brake line that is manufactured for use with automotive hydraulic brake systems is acceptable material. Rubber brake hoses shall be inspected to ensure that they are firm but flexible and shall not be hard and brittle, or soft and spongy. Inspect master cylinder fluid level and all brake valves for leakage. Inspect the brake warning light for presence and function.

***Agency Note:** Vehicles with hydraulic brake application systems on which the wheel/tire assembly mounts over the brake assembly shall have all wheels removed to inspect all brake components. Conventional motorcycle disc brake equipment is accessible for inspection without wheel removal.*

Reject Vehicle If:
(a) Service brake pedal, lever, or other brake input device is improperly positioned or misaligned, or there is excessive friction present;
(b) Red brake warning light function and operation:
(i) Fails to perform self-check when the ignition system is activated; or
(ii) Comes on when the brake pedal or hand lever is depressed, or at any time while the vehicle is in operation, indicating a hydraulic brake defect or low fluid level.
(c) Wheel cylinder or brake caliper fails to operate, leaks, or is not properly installed;
(d) Wheel cylinder or caliper dust boots are missing or damaged;
(e) Brake line has been repaired or replaced with tubing or material that is not designed for vehicle hydraulic brake systems;
(f) Brake hose or line is improperly supported, or not mounted to prevent contact with wheels or body during steering or suspension movement;
(g) Brake hose, rubber line, or fitting, is cracked to expose cords, leaking, chafed, flattened, bulging, restricted, or metal line is rusted to a point of flaking, bulging, or pitting, or has re-welded sections. Surface rust is not a cause for rejection;
(h) Rubber brake hose is hard and brittle, or soft and spongy;
(i) Master cylinder leaks, or is not securely mounted;
(j) Master cylinder reservoir fluid level is not within the manufacturer's range, or any section is less than 1/2 full if range is not specified;
(k) Brake fluid is of the incorrect type or is contaminated;
(l) Master cylinder reservoir cap or cover is missing or leaking; or
(m) A motorcycle manufactured after January 1, 1974, is not equipped with brakes on all wheels.

(2) Hydraulic System Leakage Test and Brake Pedal or Hand Lever Reserve. The engine shall be running when checking vehicles with power-assisted brake systems. While the vehicle is stopped, activate the service brake pedal, lever, or other brake input device under moderate force. The service brake applied position shall remain constant for 1 minute to ensure that there is no hydraulic external or internal leakage. Brake pedal or lever travel reserve shall be no less than 1/3 of the total travel. An inability to maintain a consistent brake application position indicates a hydraulic pressure loss. A low reserve capability indicates improper brake adjustment or a mechanical failure in the brake system.



⅓ TRAVEL REMAINING

Reject Vehicle If:
(a) The service brake pressure, brake pedal, or hand lever position cannot be maintained for at least 1 minute while the service brake is applied; or
(b) Less than 1/3 of the total pedal or hand lever travel reserve remains while the vehicle is stopped and the service brake pedal or lever is depressed with moderate force.

(3) Power Assist Brake Units. Inspect power assist brake systems for reserve assist with the engine off, and for power assist with the engine running for vehicles that use engine-driven sources of power. Electrically powered systems may require different inspection procedures. Follow the manufacturer's recommendations for the procedures for inspection of electrically powered systems.

(a) Vacuum Brake Assist Unit. Stop the engine and apply service brake several times to deplete all vacuum in system. Depress the brake pedal with approximately 50 pounds of force and while maintaining that force, start the engine. If the brake pedal does not move slightly when the engine starts, there is a malfunction in the power assist unit. The vacuum brake assist unit shall demonstrate integrity as indicated by a decrease in pedal height when the engine is started and force is maintained on the pedal. The vacuum brake system shall provide sufficient vacuum reserve to permit one service brake application with a brake pedal force of approximately 50 pounds after the engine is turned off without actuating the low vacuum indicator.

Reject Vehicle If:
(i) System reserve does not retain vacuum with the engine off;
(ii) Brake pedal does not move slightly under force when the engine starts with all vacuum reserve depleted;
(iii) Vacuum reserve is not sufficient to permit at least one service brake application with the engine off without actuating the low vacuum warning indicator;
(iv) Brake booster hose or line is improperly supported, or not mounted to prevent contact with wheels or body during steering or suspension movement; or
(v) Brake booster hose, rubber line, or fitting, is cracked to expose cords, leaking, chafed, flattened, bulging, restricted, or metal line is rusted to a point of flaking, bulging, or pitting, or has re-welded sections. Surface rust is not a cause for rejection.

(b) Hydraulic Brake Assist Unit. Stop the engine and apply service brake several times to deplete all hydraulic reserve pressure in system. Depress the brake pedal with approximately 50 pounds of force and while maintaining that force, start the engine. If the brake pedal does not move slightly when the engine starts, there is a malfunction in the power assist unit. The hydraulic brake assist unit shall demonstrate integrity as indicated by a decrease in pedal height when the engine is started while approximately 50 pounds of force is maintained on the pedal. The hydraulic brake system shall provide sufficient hydraulic reserve to permit at least one service brake application with a brake pedal force of approximately 50 pounds after the engine is turned off.

Reject Vehicle If:
(i) System reserve does not retain hydraulic reserve pressure with the engine off;
(ii) Brake pedal does not move slightly under force when the engine starts with all hydraulic reserve pressure depleted;
(iii) Hydraulic reserve pressure is not sufficient to permit one service brake application with the engine off;
(iv) Class-3 Leakage of Hydraulic fluid leakage is present;
(v) Brake booster hose or line is improperly supported, or not mounted to prevent contact with wheels or body during steering or suspension movement; or
(vi) Brake booster hose, rubber line, or fitting, is cracked to expose cords, leaking, chafed, flattened, bulging, restricted, or metal line is rusted to a point of flaking, bulging, or pitting, or has re-welded sections. Surface rust is not a cause for rejection.

(c) Electrically Powered Brake Assist System. Some vehicles may be equipped with electric-powered systems to develop vacuum or pressure for power assist brake systems. Some systems use electrically powered sources to develop vacuum or pressure rather than engine sources for power and are subject to inspection for condition and function.

Reject Vehicle If:
(i) Electrical power is not being supplied to the system when the service brake is applied;
(ii) Power assist brake fails to apply when the proper voltage is applied or fails to release when the voltage is removed from the system; or
(iii) Electrical wiring, terminal, plug, or connection has a loose connection, excessive corrosion, damage, is improperly supported, or is exposed to damage.

C. Air Brake Application Systems. Inspect Air Brake Systems for function, condition, and leakage.

(1) Air Brake System Function Compressor, Governor, Low Air Warning Indicator. With the air system at zero pressure, run engine at fast idle and note the time required to build air pressure from 50 – 90 psi. Continue building air pressure and note pressure at which governor cut-out occurs. Make a series of brake applications until governor cuts in and note pressure. Continue lowering air pressure until the low air warning activates and note the pressure when the warning activates.

(2) Air Activated (Air Over Hydraulic) Brake Systems. A brake system in which the operator's braking effort is reduced utilizing compressed air acting on the hydraulic system which actuates the wheel brakes. These systems use an air operated foot valve to provide operator input to the hydraulic service brakes. If an air actuated hydraulic brake system loses its air supply, the service brake will not operate. The air system components shall be inspected in the same manner as a full air brake system. The parking brake does not use air spring chambers, therefore does not function as an emergency brake system.

(3) Air Assisted Hydraulic Brake Systems (Hydraulic Over Air). A brake system in which the operator's braking effort is reduced through an air chamber booster acting on the hydraulic system which actuates the wheel brake. These systems use a hydraulic master cylinder to provide operator input to activate the hydraulic service brakes. Compressed air is used to power brake boosters to increase brake efficiency and reduce operator effort. If the system loses air pressure, the service brake system would continue to work at reduced effectiveness. The air system components shall be inspected in the same manner as a full air brake system. The parking brake does not use air spring chambers, therefore does not function as an emergency brake system.

Reject Vehicle If:
(a) Time required to build pressure from 50 – 90 psi at fast idle exceeds 2 minutes;
(b) Governor cut-out pressure is higher than 135 psi, or lower than 100 psi;
(c) Governor cut-in pressure is lower than 80 psi;
(d) Low pressure warning fails to function when pressure is lowered to 55 psi, or 1/2 the governor cut-out pressure, whichever is less;
(e) Air activated hydraulic brake system does not function as designed; or
(f) Air assisted hydraulic brake system does not function as designed.

(4) Air Brake Control Valves and Tractor Protection. Full air brake systems utilize compressed air as the sole source of energy for application of brakes at the vehicle's wheels. Air brake control valves apply and release the parking brake, and supply air for towed air brake units. The parking brake valve should not stay in the released position unless there is 60 psi in the air system, and should "pop out" before air pressure is reduced to "zero". The tractor protection valve protects the tractor from air loss associated with the trailer air supply system. To inspect the air brake control valves for proper function, release the parking brake (valve pushed in) without applying the trailer air supply valve; no air should escape from the trailer supply hose, and at this time with the service brakes applied (no air should escape from the trailer service hose.) Apply the trailer air supply (valve pushed in), air should discharge from the trailer supply hose, and at this time, application of the service brake or the hand valve should discharge air from the service brake hose. To inspect the tractor protection valve, apply the trailer supply valve with the trailer supply hose disconnected, and observe the pressure at which the trailer supply valve automatically closes to prevent total loss of brake air pressure from the tractor. Trailer air supply valve should "pop out" to protect the vehicle from total air loss between 20 – 45 psi.

Reject Vehicle If:
(a) Air is discharged from the trailer air supply or service hose with the trailer air supply valve pulled out or disengaged;
(b) Air does not discharge from the trailer air supply hose when the trailer air supply valve is pushed in or engaged;
(c) The service brake hose does not discharge air when the service brake or the trailer hand valve is applied with the trailer air supply valve button pushed in or engaged;
(d) Tractor protection valve does not close to prevent service brake air loss during an "air loss" or disconnect of the trailer supply hose; or
(e) Trailer air supply valve does not "pop out" during an "air loss" or disconnect of the trailer supply hose.

(5) Air Brake Leakage. Any audible air leak is a rejection during inspection. Air leakage shall also be inspected for inaudible leakage that exceeds the allowable pressure loss during timed inspection. The spring parking brake must be released to perform the leak-down tests required by this regulation. With a fully charged system, and the engine off, note the pressure drop in the psi per minute with park and service brakes released. Next, with a fully charged system, and the engine off apply the service brake and note the pressure drop in the psi per minute with the service brakes fully applied. Trailers (towed vehicles) receive compressed air from a towing vehicle; therefore, the air system shall be tested on the uncoupled towing vehicle before inspecting the air systems on a trailer.

Reject Vehicle If:
(a) Air loss with the park and service brakes released is:
(i) Truck or truck tractor – more than 2 psi per minute on a single unit; or
(ii) Trailer attached to towing vehicle – more than 3 psi per minute on a combination unit;
(b) Air loss with the service brakes applied is:
(i) Truck or truck tractor – more than 3 psi per minute on a single unit; or
(ii) Trailer attached to towing vehicle – more than 4 psi per minute on a combination unit.

(6) Compressed Air Reserve. The air system shall also be inspected for brake air reserve pressure. Note the full air pressure indicated on the air gauges with the engine off, make a full-service brake application and measure the drop in reservoir pressure. Inspect the air reserve function by lowering air pressure until the low air warning device is activated, with the engine off apply the service brake while observing operation of the brakes.

Reject Vehicle If:
(a) Air reserve pressure is lowered more than 20 percent of the full pressure reading when the service brake is fully applied; or
(b) Air reserve pressure with low air warning device activated is not sufficient to permit a full-service brake application.

(7) Air Brake Components, General Condition. Inspect all air brake components, air hoses, tubes, and connections for damage or deterioration that adversely affects the safe operation of the vehicle and for improper installation of components. Inspect for audible leaks, attachment of all connecting lines, and look for proper mounting and support of components. Be sure lines are free from contact with frame, axles, exhaust system, or other lines. Rubber impregnated fabric cover is not a reinforcement ply. Thermoplastic nylon may have braid reinforcement or color difference between cover and inner tube. Exposure of the second color is cause for rejection. Brake chambers and slack adjuster shall match by design or type on the same axle but may be different by axle.

Reject Vehicle If:
(a) Air compressor drive belts in a condition of impending or probable failure;
(b) Air compressor has cracked, broken, or loose pulley;
(c) Loose air compressor mounting bolts, cracked or broken mounting brackets, braces, or adapters;
(d) Air compressor inlet filter is clogged or restricted to prevent proper operation of the air compressor;
(e) Air brake valve or other air brake components is not properly and securely installed;
(f) Air pressure relief valve is rated for more than 150 psi, is not present, or is not operational;
(g) Brake tubing is not approved for on-road vehicle usage, is cracked, damaged by heat, broken or crimped;
(h) Any audible leak;
(i) Brake hose or tubing bulges or swells when air pressure is applied;
(j) Brake hose improperly joined with hose clamps over tubing;
(k) Brake hose is not approved for on-road vehicle usage, cracked to expose cords, broken, or crimped;
(l) Brake hose has any damage extending through the outer reinforcement ply;
(m) Brake chamber is a different design or type on the same axle; or
(n) Slack adjuster is a different design or length on the same axle.

(8) Air Brake Park and Emergency Brake Systems. The parking brake shall be able to hold the vehicle motionless on any grade. The emergency brake system shall be capable of stopping from 10 miles per hour in the distance, equal to that specified for service brake performance.

(a) With the air pressure in the braking system at 90 psi or more, set and release the parking brake control and observe functioning of the spring brake chamber at each wheel position equipped; and

(b) Drain the system air pressure to "zero" and attempt to move the vehicle. Vehicle should remain stationary.

Reject Vehicle If:
(i) Spring parking/emergency brake fails to release the vehicle brakes for operation when released;
(ii) Spring parking/emergency brake fails to hold the vehicle stationary when applied;
(iii) Vehicle can be moved with "zero" air pressure in the system; or
(iv) Parking brake valve does not "pop out" before air pressure is reduced to "zero".

(9) Actuator (Pushrod Stroke) Reserve.

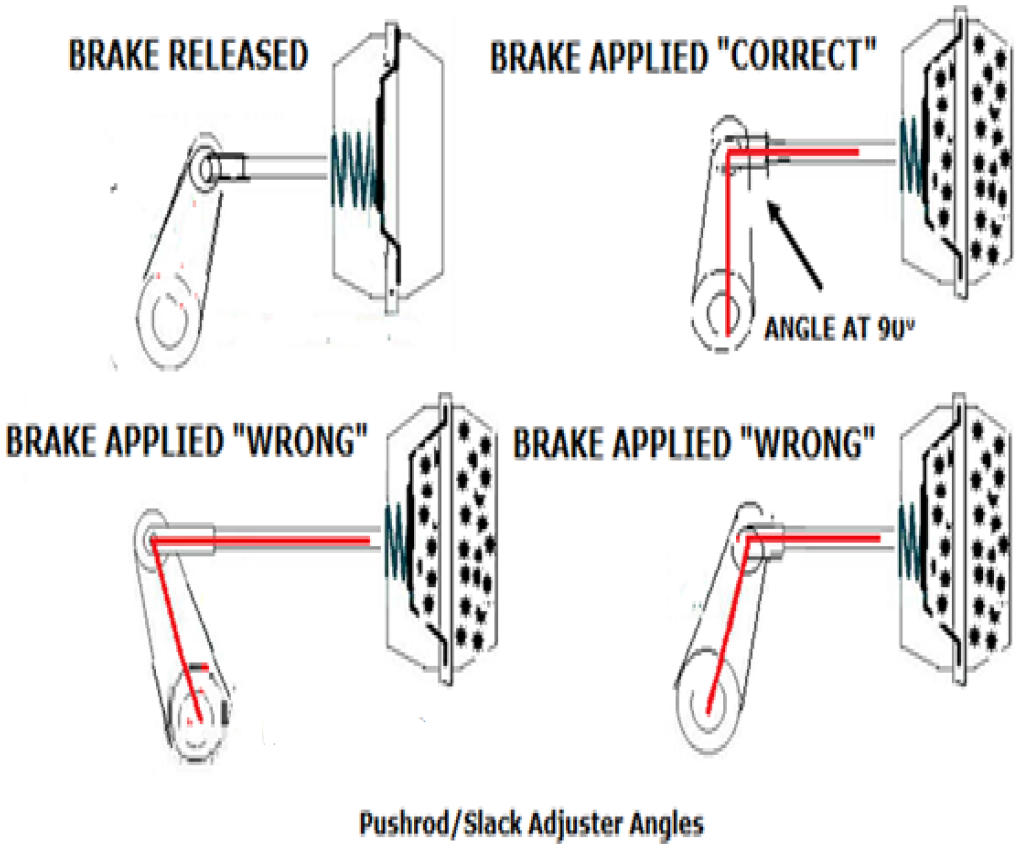
(a) The maximum pushrod stroke shall not be greater than the values given in this regulation. Any brake stroke exceeding the readjustment limit will be rejected. Stroke must be measured with engine off, parking brake released, and reservoir pressure of 80 to 90 psi with the service brakes fully applied;

(b) Pushrod/slack adjuster angle shall not be more or less than 90 degrees with the service brake applied. Commercial motor vehicles manufactured on or after October 20, 1994, with air brakes using slack adjusters shall be equipped with automatic slack adjusters;

(c) For actuator types not listed in these tables, the pushrod stroke shall not be greater than 80 percent of the rated stroke marked on the actuator by the actuator manufacturer, or greater than the readjustment limit marked on the actuator by the actuator manufacturer; and

(d) Wedge brake systems shall be inspected for brake shoe movement during service brake application.

Reject Vehicle If:
(i) Slack adjusters are not adjusted equally;
(ii) Not equipped with automatic slack adjuster when required;
(iii) Manual slack adjuster will not maintain adjustment;
(iv) Automatic slack adjuster is not functioning properly (out of adjustment);
(v) Pushrod travel on BF Goodrich Air Actuated Disc Brakes exceeds manufacturer's specification;
(vi) Pushrod/slack adjuster angle is more than 90 degrees with the service brake applied;
(vii) Brake shoe movement on wedge brake systems exceeds 1/16 inch (shoe to drum clearance); or
(viii) The pushrod stroke exceeds the limit by design and type of chamber.



Pushrod/Slack Adjuster Angles

Clamp Type Brake Chamber Pushrod Strokes						
Type	***Outside Diameter***		***Standard Chamber Stroke***		***Long Stroke Chamber Stroke***	
6	*4 1/2 in.*	*(114 mm)*	*1 1/4 in.*	*(31.8 mm)*	*Note: Long Stroke Chambers are identified by a "Square Boss" at the airline connection of the chamber.*	
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.* *2 1/2 in.*	*(50.8 mm)* *(63.5 mm) 1*
24	*7 7/32 in.*	*(184 mm)*	*1 3/4 in.*	*(44.5 mm)*	*2 in.* *2 1/2 in.*	*(50.8 mm)* *(63.5 mm) 2*
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)*		
1 For type 20 chambers 3-inch (76 mm) rated stroke.					*2 For type 24 chambers 3-inch (76 mm) rated stroke*	

Bendix DD-3 Brake Chambers Pushrod Strokes				
Type	***Outside Diameter***		***Brake Readjustment Limit***	
30	*8 1/8 in.*	*(206 mm)*	*2 ¼ in.*	*(57.2 mm)*

Bolt-Type Brake Chambers Pushrod Strokes				
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 ¼ in.*	*(57.2 mm)*
G	*9 7/8 in.*	*(251 mm)*	*2 in.*	*(50.8 mm)*

Rotochamber-Type Brake Chambers Pushrod Strokes				
Type	***Outside Diameter***		***Brake Readjustment Limit***	
9	*4 9/32 in.*	*(109 mm)*	*1 ½ in.*	*(38.1 mm)*
12	*4 13/16 in.*	*(122 mm)*	*1 ½ 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 ¼ in.*	*(57.2 mm)*
36	*7 5/8 in.*	*(194 mm)*	*2 ¾ in.*	*(69.9 mm)*
50	*8 7/8 in.*	*(226 mm)*	*3 in.*	*(76.2 mm)*
For types not listed in these tables, the pushrod stroke must not be greater than 80 percent of the rated stroke marked on the actuator by the manufacturer, or greater than the readjustment limit marked on the actuator by the manufacturer.				

D. Mechanical Brake System. Some model year vehicles used full mechanical brake systems (cables and rods) rather than hydraulic, electric, or air for brake application. Inspect Mechanical Brake Systems for function and condition. Motorcycle mechanical brake systems with external brake lining wear indicators do not require disassembly for inspection unless a defect or brake issue is discovered during road testing. Inspect all mechanical components of the brake system for high friction, wear, and broken or missing parts.

Agency Note: *Motorcycles manufactured before January 1, 1974, were not required to be equipped with brakes on all wheels.*

Reject Vehicle If:
(1) Brake system spring, retainer, linkage, rod, pivot bushing or bearing, mount, or other mechanical brake component is missing, frozen, excessively worn, broken, or corroded and adversely affects proper brake function;
(2) Pins or clevises are worn more than 25 percent of the original diameter, or cotter pins are missing;
(3) Any cables are frayed (two or more broken strands), there is any roughness, binding, or jamming in levers or pedals, or brake cable is pinched, damaged, or is routed to become so;
(4) Any brake adjustment mechanism that will not maintain an adjusted position or is adjusted to its maximum extent;
(5) Brake adjustment changes under any steering or loading conditions;
(6) Brake cam operating lever has been repositioned on the shaft as a means of avoiding replacement of worn cam, shoes, or lining;
(7) Less than 1/3 of travel remains in hand or foot brake when brakes are applied, or modifications make the pedal inaccessible for adequate leverage or operation; or
(8) A motorcycle manufactured after January 1, 1974, is not equipped with brakes on all wheels.

E. Electric Brake Application Systems. Inspect Electric Brake Systems for function, and condition.

(1) Electric brake application is a brake system that utilizes electromagnetic forces to attract the brake shoe magnet to the brake drum. The rotation of the wheel assembly then forces the arm, the magnet is attached to, to move as a lever which forces the brake shoes out against the brake drums, and is the sole source of energy for application of brakes at the vehicle's wheels. Application of the wheel brake does not occur until the wheel assembly is rotated while current is being applied to the brake magnet. Electric brake function may be inspected either by connection to a towing vehicle or an external power supply for activation. When proper voltage is applied, and the wheel assembly is rotated in either direction, the electric brakes shall apply and remain applied while rotational pressure is being applied to the assembly. Brake magnets shall be inspected for proper installation, uneven or abnormal wear, or any part of the magnet coil visible through the friction material of the magnet. The drum's armature surface, for the magnet, shall also be inspected for uneven or abnormal wear, friction, or other conditions that would adversely affect the operation of the brake system. Vehicles with electric brake application systems shall have all wheels removed for inspection.

(2) Electrical brake wiring, terminals, plugs, or connections shall be inspected for loose connections, excessive corrosion, damage, and improper support or routing.

Reject Vehicle If:
(a) Brake fails to apply when the proper voltage is applied while rotating the wheel assembly or fails to release when the voltage is removed from the wheel assembly;
(b) Brake magnet is improperly installed, worn abnormally, or magnet coil is visible through the friction surface of the magnet;
(c) The magnet armature surface on the brake drum is worn abnormally or has any other condition that adversely affects the operation of the brake system; or
(d) Electrical wiring, terminal, plug, or connection has a loose connection, excessive corrosion, damage, is improperly supported, or is exposed to damage.

F. Vacuum Brake Application Systems. A vacuum over hydraulic brake system in which the operator's braking effort is reduced through a vacuum booster acting on the hydraulic system which actuates the wheel brake.

(1) Trailer vacuum over hydraulic brake system components include a vacuum storage tank, a control valve, a vacuum chamber/master cylinder assembly, hydraulic lines, and hydraulic disc or drum brakes. The trailer brakes may be applied independently of the tow vehicle service brakes. Maximum braking effort is applied to the trailer brakes in the event the trailer becomes uncoupled from the tow vehicle. Inspect vacuum brake systems for function, condition, and leakage:

(a) The towing vehicle supplies vacuum for the trailer storage tank and a modulated control signal to operate a trailer unit through quick connects mounted on the tow vehicle and trailer. The control signal is sent from a control valve connected to the towing vehicle's

vacuum source and hydraulic brake system. When the operator applies the tow vehicle service brakes, the control valve produces a vacuum signal in direct proportion to the tow vehicle service brake pressure; and

(b) The trailer control valve receives this signal and produces a control vacuum signal that is applied to a vacuum chamber/master cylinder assembly producing a corresponding hydraulic pressure in the trailer brake system.

(2) Vacuum Brake Unit Integrity. With the engine off, apply service brake several times to deplete all vacuum in system. Depress the brake pedal with approximately 50 pounds of force and while maintaining that force, start the engine. If the brake pedal does not move slightly when the engine starts, there is a malfunction in the power assist unit. The vacuum brake assist unit shall demonstrate integrity as indicated by a decrease in pedal height when the engine is started and approximately 50 pounds of force is maintained on the pedal. The vacuum brake system shall provide a vacuum reserve to permit at least one service brake application with a brake pedal force of approximately 50 pounds after the engine is turned off without actuating the low vacuum indicator. Trailer vacuum brakes shall operate in conjunction with the truck or truck tractor brake pedal.

Reject Vehicle If:
(a) Vacuum supply system does not maintain more than 8 inHg of vacuum, or the reserve does not retain vacuum with the engine off;
(b) Brake pedal does not move slightly under force when the engine starts with all vacuum reserve depleted; or
(c) Vacuum reserve is not sufficient to permit at least one service brake application with the engine off without actuating the low vacuum warning indicator.

(3) Low Vacuum Indicator. Run the engine to evacuate the system fully. Shut off the engine and slowly reduce the vacuum in the system by moderate brake applications until the vehicle vacuum gauge reads 8 inHg of vacuum and observe the functioning of the low-vacuum indicator. The indicator shall activate no lower than 8 inHg of vacuum.

Reject Vehicle If:
(a) Low vacuum warning indicator does not self-check with ignition activation or actuates while the vehicle is being operated; or
(b) Low vacuum warning indicator does not actuate with vacuum reduced to 8 inHg of vacuum.

(4) Vacuum System Hoses, Tubes, and Connections. Vacuum hoses, tubes, and connections shall be in place, properly supported, and protected from damage. Vacuum hoses shall not be collapsed, cracked, or abraded. Inspect hoses and tubes for the conditions indicated, broken or missing fasteners or clamps.

Reject Vehicle If:
(a) Vacuum hoses, tubes, or connections are not of the proper materials, or not properly supported or protected from damage; or
(b) Vacuum hose or tube is damaged or has broken, missing fasteners or clamps.

(5) Trailer Vacuum Brake Inspection. Check the trailer vacuum system by coupling trailer(s) to truck, truck tractor, or independent vacuum supply, and opening trailer shutoff valves. With adequate vacuum, at least 9 inHg of vacuum, apply and release the trailer brakes. In the case of trailer brakes equipped with brake chamber rods, observe the chamber rod movement. Reestablish maximum vacuum, then shut off the vacuum source and apply the brakes fully. Note the brake application and ensure that a low-vacuum condition (8 inHg of vacuum or less) is not present.

Reject Vehicle If:
(a) Brake does not apply and release; or
(b) System will not apply brakes or low-vacuum condition is indicated during brake application with vacuum source shut off. Will not function using reserve vacuum or will not maintain more than 8 inHg of vacuum.

G. Brake Drums and Disc Brake Rotors. Inspect for condition and for wear in excess of the manufacturer's specifications. Manufacturer's brake drum and rotor specifications shall be referenced during inspection, and these specifications and the actual measurements taken during inspection shall be recorded in MSIS. The manufacturer's specifications and procedures for brake inspection may not use physical size specifications for inspection and may specify alternative component inspection methods. A station that does not possess the test equipment to perform this inspection may direct the vehicle to an inspection station that has access to the proper equipment to inspect brake components that are not measured for size thickness or diameter. Brake equipment marked with the wear specifications shall be inspected using the marked specifications on the equipment rather than published specifications. Replacement high-performance brake equipment approved for on-road operation may have different specifications from the vehicle manufacturer's published specifications. These specifications shall be referenced during equipment inspection. Vehicles other than school vehicles, which are equipped with an air brake system with inspection ports, or without backing plates to allow measurement of brake lining and visual inspection of the friction components, may be inspected without removal of the wheels. Vehicles not so equipped shall have all wheels removed to inspect all brake components.

(1) Inspect the friction surface for cracks extending to the edge of disc or drum. Inspect the entire disc or drum for cracks that can be felt when physically touched. Short hairline heat check cracks that cannot be felt by hand shall not be considered defects. Inspect for mechanical damage or rust to the extent that pitting is present. Inspect for contaminated friction surface. Measure the disc brake rotor thickness, or brake drum diameter, and record the measured readings as required. Compare the recorded readings to the manufacturer's minimum or maximum specifications as applicable. Brake components designed and intended for non-street applications such as "racing" or "off-road use only" shall be prohibited.

(2) Air Brake Systems. Air brake systems with exposed friction components, without backing plates, or with inspection ports/slots, may be inspected without removal of the wheel assemblies. Brake adjustment slots are not to be used as inspection ports. Brake drums and brake discs without visual indications of wear or machining that would exceed manufacturer's specifications may be inspected without wheel removal for drum or disc measurement and the nominal size may be entered on the inspection report. Any defect observed shall require disassembly of the wheel/brake assembly for further inspection and measurement, and additional fees may be applied.

***Agency Note:** An excessive "lip" (area at the extreme inner or outer friction surface edge that is higher than the rest of the surface) present on a brake rotor or brake drum, is a visual indication of disc or drum wear, which would require disassembly for measurement.*

(3) Motorcycle Mechanical Type Drum Brakes. These types of brake systems are not required to be disassembled for inspection unless, during a road test, a brake malfunction is indicated. If disassembly is required, the brake systems shall be inspected utilizing the procedures required in this regulation.

Reject Vehicle If:
(a) Disc brake rotor:
(i) Has a crack on the friction surface extending to the inner or outer edge of the rotor;
(ii) Has a substantial crack anywhere on the disc that can be felt by hand when physically touched;
(iii) Has mechanical damage, or rust to the extent that pitting is present;
(iv) Friction surface is contaminated with oil, grease, brake fluid, or other friction-reducing substances;
(v) Thickness of disc is less than the manufacturer's recommended specification. If the manufacturer does not provide a "discard" specification, the "machine to" specification shall be used as the minimum thickness specification;
(vi) Disc is warped or has excessive runout causing brake pulsation;
(vii) Disc is designed for "racing", or "off-road use"; or
(viii) Has a ceramic disc brake rotor that does not meet the manufacturer's minimum specification.
(b) Brake drum:
(i) Is cracked on the friction surface extending to the inner or outer edge of the drum;
(ii) Has any external crack;
(iii) Has any substantial crack anywhere on the drum that can be felt by hand when physically touched;
(iv) Has mechanical damage or corrosion to the extent that pitting is present;
(v) Has a friction surface contaminated with oil, grease, brake fluid, or other friction-reducing substances;
(vi) Inside drum diameter is greater than the manufacturer's specifications. If the manufacturer does not provide a "discard" specification, the "machine to" specification shall be used as the maximum diameter;
(vii) Is warped or has excessive runout causing brake pulsation; or
(viii) Is designed for "racing", or "off-road use".

H. Brake Shoe and Disc Pad Lining. Inspect the condition, and measure the thickness of disc brake pad lining, or drum brake shoe at the thinnest visible area of the material. Air drum brake shoe lining is measured at the center of the brake shoe. Inspect disc pad lining or brake shoe lining material for loose attachment to the backing material. Corrosion of the backing material may cause the lining to lift away from the backing material (lining jacking), which causes the lining to not be firmly attached. Inspect for broken linings or cracks that can be felt when physically touched by hand, contamination, or visible excessive uneven lining wear. Heat cracks in bonded linings that cannot be felt when physically touched by hand are not cause for rejection if the lining is securely attached to the backing material. Inspect wire-backed lining for wire showing on the surface of the lining. School vehicle brake inspection requires that all wheels be removed for visual inspection and measurement of brake shoe linings. Vehicles that are equipped with an air brake system with inspection ports, or without backing plates to allow measurement of brake lining and visual inspection of the friction components, may be inspected without removal of the wheels. Conventional motorcycle disc brake equipment is accessible for inspection without wheel removal. Vehicles not so equipped shall have all wheels removed to inspect all brake components.

(1) Hydraulic, Electric, and Mechanical Brake Shoe and Disc Pad Lining. The manufacturer's minimum thickness shall be used if available, however, under no circumstance may a disc pad lining be less than 4/32 of an inch, or a riveted disc pad be less than 4/32 of an inch above a rivet head. A brake shoe lining shall be not less than 2/32 of an inch or less than 2/32 of an inch above a rivet head. Inspect riveted disc pad or brake shoe lining for loose or missing rivets. (Excludes motorcycle mechanical drum brakes that perform satisfactorily during performance brake test)

Reject Vehicle If:
(a) The thinnest point of a bonded disc pad lining is less than manufacturer's specification, or less than 4/32 of an inch over a rivet head of a riveted lining;
(b) The thinnest point of a bonded brake shoe lining is less than 2/32 of an inch or less than 2/32 of an inch above a rivet head on a riveted lining unless the thickness is specified as greater by the manufacturer;
(c) A rivet is loose or missing in disc pad or shoe lining material;
(d) A bonded disc pad or shoe lining material is not firmly attached to the backing material;
(e) The brake lining material is contaminated by oil, grease, brake fluid, or other friction-reducing substances;
(f) A disc brake pad or brake shoe lining is cracked and the crack can be physically felt when touched by hand; or
(g) A disc brake pad or brake shoe lining is worn excessively uneven.

(2) Air Brake Shoe and Disc Pad Lining. The minimum thickness of an air disc pad lining can be no less than 4/32 (1/8) of an inch. A steering axle air brake shoe lining with a continuous strip of lining shall be no less than 6/32 (3/16) of an inch, or a steering axle air brake shoe lining with separated lining material be no less than 8/32 (¼) of an inch at the center of the shoe. Non-steering axle air brake shoe lining with separated lining material can be no less than 8/32 (¼) of an inch at the center of the shoe.

Reject Vehicle If:
(a) The thinnest point of an air brake disc pad lining is less than 1/8 (4/32) of an inch;
(b) The thinnest point of an air brake shoe lining measured at the center of the shoe is:
(i) A steering axle air brake shoe with a continuous lining is less than 3/16 (6/32) of an inch;
(ii) A steering axle air brake shoe with separated linings is less than ¼ (8/32) of an inch; or
(iii) A non-steering axle air brake shoe is less than ¼ (8/32) of an inch;
(c) An air disc brake pad or air brake shoe lining is worn excessively uneven;
(d) An air-bonded disc pad or air shoe lining material is not firmly attached to the backing material;
(e) A rivet is loose or missing in an air brake lining material;
(f) An air disc brake pad or air brake shoe lining is cracked so that the crack can be physically felt by hand; or

(g) The air brake lining material is contaminated by oil, grease, brake fluid, or other friction-reducing substances.

(3) Motorcycle Brake Shoe and Disc Pad Lining. The manufacturer's published minimum thickness shall be used if available, however, under no circumstance may a bonded disc pad or brake shoe lining be less than 2/32 of an inch. A riveted disc pad or a riveted brake shoe lining shall not be less than 2/32 of an inch above a rivet head. Motorcycles equipped with brake wear limit indicators shall be inspected using the replacement reference mark indicators. Motorcycle type drum brakes are not required to be disassembled for inspection unless, during a road test, a brake malfunction is indicated. Three-wheeled multipurpose vehicles and motorcycles equipped with automotive type brake systems shall be inspected utilizing the procedures required for hydraulic brake systems as detailed in these regulations.

Reject Vehicle If:
(a) The thinnest point of a riveted disc pad lining is less than 2/32 of an inch over a rivet head unless the minimum thickness is specified as greater by the manufacturer;
(b) The thinnest point of a bonded disc pad lining is less than 2/32 of an inch unless the minimum thickness is specified as greater by the manufacturer;
(c) A disc brake pad or brake shoe lining is worn excessively uneven;
(d) Drum brake wear reference marks indicate unsafe or replacement needed;
(e) The thinnest point of a bonded brake shoe lining is less than 2/32 of an inch unless the minimum thickness is specified as greater by the manufacturer;
(f) The thinnest point of a riveted brake shoe lining is less than less than 2/32 of an inch above a rivet head unless the thickness is specified as greater by the manufacturer;
(g) A bonded disc pad or shoe lining material is not firmly attached to the backing material;
(h) A rivet is loose or missing in disc pad or shoe lining material;
(i) A brake lining material is contaminated by oil, grease, brake fluid, or other friction-reducing substances; or
(j) A disc brake pad lining or brake shoe lining is cracked so that the crack can be physically felt by hand.

I. Brake Mechanical Components. Brake mechanical components include the service brake mechanical linkage, parking brake mechanical linkage, and all manual controls on vehicles equipped for physically challenged persons. Inspect for missing, damaged, rusted, inoperative, or otherwise defective linkage components. Inspect for restriction of disc brake pad or brake shoe movement. Inspect the service and parking brake pedals for missing, damaged, or worn non-slip surfaces, or rubber pads, as applicable. Inspect the pedal shaft and bushings or bearings for high friction or excessive wear. Vehicles with brake application systems other than air brakes shall have all wheels removed to inspect all brake components. Air brake systems equipped with backing plates, or without inspection ports/slots to allow for visual inspection of brake components shall have all wheels removed to inspect all brake components.

Reject Vehicle If:
(1) A brake spring, retainer, linkage, rod, cable or cable housing, pivot bushing or bearing, mount, or other mechanical brake component is missing, damaged, rusted, or otherwise inoperative or defective;
(2) The disc brake pad or brake shoe movement is restricted due to mechanical component defect;
(3) The service or parking brake pedals are missing rubber pads, or are not otherwise equipped with a non-slip contact surface when applicable; or
(4) The pedal shaft, bushings, or bearings have high friction or are worn excessively.

J. Parking Brakes. A parking brake is not an emergency brake although the two functions may use the same brake equipment. Parking brakes function to hold a vehicle stationary when the vehicle is not in motion. Set the parking brake firmly and check the ability of the parking brake to hold the vehicle. A parking brake shall hold a stopped vehicle firmly on any road grade and remain applied until released. Vehicles that are equipped with parking brake systems separate from the service brake system are not required to be disassembled for inspection. If equipped with a parking brake warning light, it shall function as designed.

Reject Vehicle If:
(1) The brake fails to hold the vehicle on any road grade on which it is operated;
(2) The parking brake does not remain applied, or will not properly release;
(3) The parking brake components are damaged, loose, or worn out;
(4) The parking brake friction components are contaminated with grease, or coated with other friction-reducing substances; or
(5) The parking brake warning lamp does not perform a self-check when the ignition system is activated or does not function as originally designed if equipped.

K. Emergency Brake Systems. Emergency brake systems are designed to stop a vehicle in motion. The emergency brake may operate using the parking brake system, the service brake system, or a separate brake system. To inspect, fully apply the operating control, or deplete the pressure from a spring brake system to actuate the emergency brake system, and observe if the emergency brake is mechanically engaging. Fully release the operating control or restore pressure to a spring brake system to release the emergency brake system and observe if the emergency brake is fully releasing. The emergency brake shall be capable of stopping the vehicle while in motion. This function may be inspected while the emergency brake is engaged and attempting to move the vehicle. If the vehicle cannot be moved, then no further inspection is required. A trailer of 3,001 pounds (1,361 kg) GVWR or more and any other trailer equipped with brakes shall be equipped with an emergency brake system to stop the vehicle in the event of a disconnect from the towing vehicle.

Reject Vehicle If:
(1) The emergency brake does not fully engage when applied;
(2) The emergency brake does not fully disengage when released;
(3) The emergency brake is not capable of stopping the vehicle;
(4) During disassembly, any emergency brake component is damaged, missing, or excessively worn;
(5) Emergency brake friction components are contaminated with grease, or coated with other friction-reducing substances;
(6) Trailer with brakes is not equipped with a functioning emergency brake; or
(7) Trailer emergency brake does not stay applied for at least 15 minutes after activation.

L. Anti-Lock Brake Systems. Anti-lock brake systems automatically control the degree of rotational wheel slip during braking by sensing the wheel rotational speed and modulates the pressure to the service brake to prevent wheel lock-up during braking. A vehicle manufactured with an anti-lock brake system in conjunction with electronic stability control under the provisions of 49 CFR §571.126 or a vehicle equipped with anti-lock brake system under the provisions of 49 CFR §393.55. Antilock brake systems for commercial vehicles shall be maintained with the system in operational condition, as designed by the manufacturer. Inspect for the presence and the operation of anti-lock brake system warning light during system self-diagnostic check. Inspect for activation of anti-lock brake system warning light during operation of the vehicle that would indicate a fault or failure in the system. Inspect anti-lock brake systems for missing, loose, damaged, worn, or improperly mounted components, or the system is disconnected, disabled, or removed.

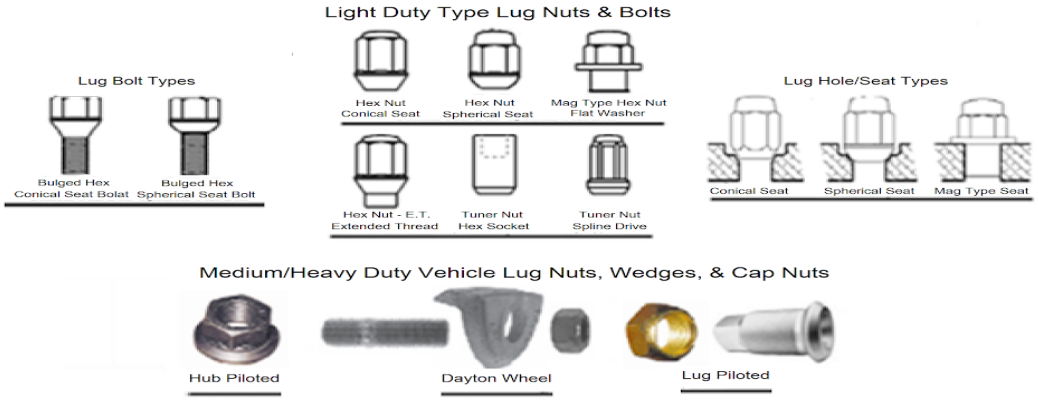
Reject Vehicle If:
(1) The anti-lock brake system warning light fails to light or function as designed during self-diagnostic check;
(2) The anti-lock brake system warning light remains lit indicating a system fault or failure;
(3) The anti-lock brake system warning light activates during operation of vehicle;
(4) The anti-lock system has missing, loose, damaged, worn, or improperly mounted components; or
(5) The anti-lock brake system is disconnected, disabled, or removed.

M. Trailer Brake System Requirements. Trailers up to 3,000 pounds (1,360 kg) GVWR are not required to be equipped with brakes. Trailers 3,001 pounds (1,361 kg) GVWR to 10,000 pounds (4,536 kg) GVWR shall be equipped with brakes on all wheel positions of at least one axle. Trailers 10,001 pounds (4,536 kg) GVWR and over shall be equipped with brakes on all wheel positions of all axles. A trailer that is equipped with brakes shall be inspected to include the entire brake system, which shall meet the standards of this regulation. A trailer 3,001 pounds (1,361 kg) GVWR and over, and any trailer equipped with brakes shall be equipped with an emergency brake system to stop the vehicle in the event of a disconnect from the towing vehicle.

Reject Vehicle If:
(1) A trailer 3,001 pounds (1,361 kg) GVWR to 10,000 pounds (4,536 kg) is not equipped with brakes on all wheel positions of at least one axle;
(2) A trailer 10,001 pounds (4,536 kg) GVWR and over is not equipped with brakes on all wheel positions of all axles; or
(3) A trailer brake system does not meet the standard of this regulation.

.07 Wheels, Tire Pressure Monitoring, and Tires.

A. Wheels. Inspect for minimum wheel rating as specified by the vehicle manufacturer. This minimum rating shall include tire type, design, rim diameter, rim width, and load rating. Inspect the wheels, nuts, studs or wheel bolts, and tire inflation valve, for missing, damaged, mismatched, or improperly installed or tightened conditions. Wheel nuts or wheel bolts shall engage the threads of the corresponding component to a depth that is at least equal to the diameter of the wheel nut or bolt. For example, a ½ inch nut shall engage the corresponding stud for at least ½ inch of depth. All wheels and associated components shall be approved for on-road usage. Wheels shall be stamped or marked with Specialty Equipment Market Association (SEMA), Japan Light Alloy Wheel (JWL), or DOT to indicate the manufacturer's compliance with federal standards for on-road usage approval. Wheel adapters stamped or marked in the same manner as approved wheels are permitted, but homemade adapters are not approved. Wheel spacers are not approved for use. Any wheel or component marked for "racing", off-highway use only", or other restricted use shall be prohibited. Wheels and rims equipped with lock ring type retainers shall also be inspected for missing, damaged, mismatched, or improperly installed or tightened conditions. Multi-piece wheel or rim locking ring gap shall meet the manufacturer's specifications, or if the specification is not available, the end gap shall not be less than 1/8 inch or 3mm.



Reject Vehicle If:
(1) The wheels are damaged, mismatched, or not size or width recommended by the manufacturer;
(2) The wheels are improperly installed or not correctly tightened;
(3) The wheel nuts, studs, or wheel bolts are missing, damaged, mismatched, not of the proper type, or improperly installed or tightened as required by this regulation;
(4) The wheel or tire inflation valve is damaged, or has any other condition that would allow tire air pressure to escape, or would prevent air pressure from being adjusted in the tire assembly;
(5) The wheel or wheel adapter, is not stamped or marked to indicate an approved component design;
(6) A wheel or rim lock ring component is missing, damaged, mismatched, or improperly installed; or
(7) Multi-piece wheel or rim locking ring gap shall meet the manufacturer's specifications, or if the specification is not available, the end gap shall not be less than 1/8 inch or 3mm.

B. Tire Pressure Monitoring. The requirements for tire pressure monitoring are set forth in 49 CFR §571.138. Vehicles manufactured with tire pressure monitoring systems shall be maintained with the system in operational condition, as designed by the manufacturer. Inspect for the presence and the operation of tire pressure monitoring system warning light during system self-diagnostic check. Inspect for activation of tire pressure monitoring system warning light during operation of vehicle that would indicate a fault or failure in the system. Inspect tire pressure monitoring system for missing, loose, damaged, worn, or improperly mounted components, or the system is disconnected, disabled, or removed.

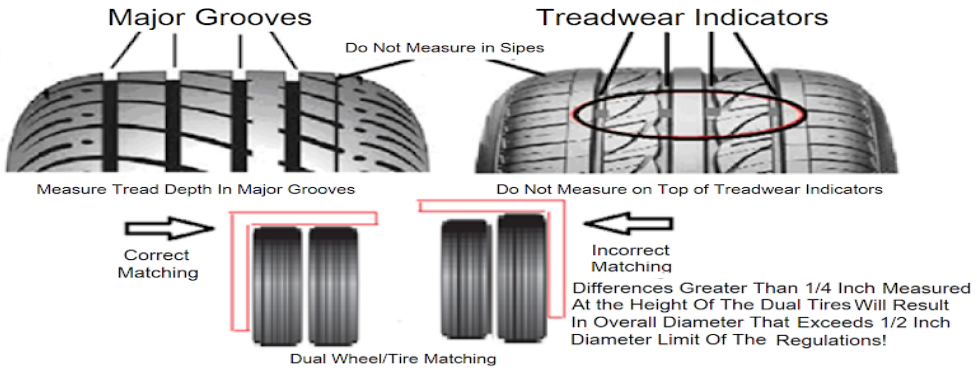
Reject Vehicle If:
(1) The tire pressure monitoring system warning light fails to function as designed during self-diagnostic check;
(2) The tire pressure monitoring system warning light is illuminated, indicating a system fault or failure;
(3) The tire pressure monitoring system warning light activates during operation of vehicle;
(4) The tire pressure monitoring system has missing, loose, damaged, worn, or improperly mounted components; or
(5) The tire pressure monitoring system is disconnected, disabled, or removed.

C. Tire Size, Construction, and Condition.

(1) Inspect for minimum tire size and type as specified by the vehicle manufacturer. This minimum size shall include required rim diameter, tread width, overall tire diameter, load range rating, and construction type as recommended by the vehicle manufacturer. Differences in brand or tread design or tread pattern by axle is not cause for rejection. Tire size changes that do not require reduction of the wheel diameter, tread width, overall tire diameter, load rating, or construction type, and are compliant otherwise may be permitted. Visually inspect for mismatching of tire construction types. Vehicle shall be equipped with tires with the same type of construction at each wheel position. Vehicles equipped with dual wheels may be equipped with tires of different construction on separate axles. Tire circumference size shall be within 85 percent of all other tires unless otherwise specified by the manufacturer of the vehicle. Dual wheel tire assemblies shall not exceed ½ inch difference in diameter of the paired tires. Dual wheel vehicles may be equipped with tires of a different construction on separate axles.

(2) Inspect for tire wear, tread cuts, cracks, bumps, bulges, fabric breaks, exposed or damaged body cords. Inspect for improperly regrooved or recut tires. Visually inspect for restricted usage marking on tire. Inspect the tire for proper size and load range and compare to the manufacturer's recommendations. Visually inspect, and measure, if necessary, the tread of all tires in at least three locations spaced equally around the circumference of the tire to locate the least amount of tread. A tire tread wear indicator that contacts the road in any major groove indicates low tread level without the necessity of performing a tire tread measurement.

(3) Inspect for UV or ozone degradation damage (weather cracking or checking) on tires. Cracks or checking on tire sidewalls may be normal with age or may be caused by the environment, improper tire maintenance, driver operating habits, cleaning or tire treatment chemicals, or other adverse actions.



Reject Vehicle If:
(a) A tire is worn as prescribed in this regulation:
(i) Less than 2/32 of an inch is measured in any major groove, or a treadwear indicator in any major groove contacts the road;
(ii) A motorcycle tire is worn so that less than 2/32 inch tread is measured at the thinnest point in any groove, or a treadwear indicator in any major groove contacts the road; or
(iii) A steering tire on a commercial vehicle over 10,000 pounds GVWR is worn so that less than 4/32 inch of tread is measured in a major groove;
(b) A tire is worn to expose cords or belts, or has cuts, cracks, or damage in excess of one inch in any direction, or that exposes the tire cords in the tread or sidewall;
(c) A tire has visible unrepaired punctures, bumps, or bulges indicating partial failure or separation of the tire structure. Tire is not mounted on the proper type or width wheel as specified by the tire or vehicle manufacturer;
(d) Weather cracking or checking is more than 1/16 inch or 2 mm in depth;
(e) A tire circumference is not within 85 percent of the diameter or circumference of all other tires unless otherwise specified by the manufacturer of the vehicle;
(f) Dual wheel tires are not within ½ inch diameter of each of the paired tires;
(g) The tires are not the same type of construction, or as specified by the vehicle manufacturer;
(h) The tires are not the same type of construction on the axle of a commercial vehicle;
(i) The tires do not meet the load range rating for the actual vehicle weight (GVWR) or axle weight (GAWR) as applicable;

(j) Equipped with a tire that has rim diameter mounting size smaller than the manufacturer's specified minimum, or equipped with a tread width, overall tire diameter, or load range rating below the manufacturer's specified minimum;
(k) A regroovable tire has been regrooved or recut below allowed groove depth, or cannot be readily identified as regroovable;
(l) A tire is marked "For farm use only"; "Off-highway use only"; "For racing use only", "For trailer use only" or any other restricted usage marking;
(m) A tire is equipped with the incorrect type inner tube or inner tube protrudes from rim;
(n) A tube type tire is equipped with the incorrect wheel liner, or the wheel liner protrudes from the rim to contact other equipment;
(o) A metal studded snow tire in Allegany, Carroll, Frederick, Garrett, and Washington counties during period when prohibited (April 1 through October 31) reject in other areas at any time; or
(p) A regrooved, recapped, or retreaded tire is on the steering axle of a bus.

.08 Fuel Systems.

A. Motor Vehicle Powertrain Fuel Systems. The fuel system includes any equipment or component that provides for refueling of the vehicle, storing the fuel, conveying the fuel to the engine, or controlling the flow of fuel into the engine. This equipment includes the fuel filler components, the fuel tank and mounting hardware, the fuel pump, and all necessary piping to carry the fuel from the tank to the engine, including all components of the injection system or carburetor. All components of the accelerator or any hand throttle or choke shall be inspected for condition and function. Any fuel leakage indication shall require visual inspection with the vehicle engine running to identify the source of the fuel system leak.

B. Auxiliary Equipment Fuel Systems. Auxiliary equipment systems include, but are not limited to refrigeration units, auxiliary power supply units, pumps, generators, welders, and any other fuel-powered auxiliary equipment permanently attached to a vehicle. Visually examine the entire fuel system for the condition of the components, and the use of approved components. Recreational vehicle equipment for heating or cooking shall also be inspected for occupant safety. Auxiliary equipment is not required equipment; however, fuel leakage is not acceptable for environmental and safety issues, and therefore is cause for rejection.

C. Visually examine the entire fuel system for leakage, presence of all required components, the use of approved components, damage, corrosion to the extent that pitting is visible on metal components, and proper mounting or securement of all fuel system components. Inspect for proper operation of the accelerator, and any hand choke or throttle, if equipped.

Reject Vehicle If:
(1) There is fuel leaking at any point in the fuel system;
(2) Any component of the fuel system is missing or has been replaced with any component, not of OEM design, or that is not at least equivalent to the OEM design;
(3) Any component of the fuel system is damaged, deteriorated, collapsed, or corroded to the extent that pitting or flaking is visible;
(4) Any component of the fuel system is not properly mounted or secured as designed by the manufacturer;
(5) The fuel tank cap is missing, or capless system sealing is defective;
(6) The accelerator, accelerator pedal, or other fuel control device does not function properly, is damaged, or is replaced with any component that is not of OEM design, or that is not at least equivalent to the OEM design; or
(7) The hand choke or throttle does not function properly, is damaged, or is replaced with any component that is not at least equivalent to the OEM design.

.09 Exhaust Systems.

A. Motor Vehicle Powertrain Exhaust Systems. The exhaust system includes any equipment or component that conveys vehicle exhaust gases from the engine of the vehicle away from any operator or passenger of a vehicle. Exhaust system equipment shall meet or exceed the OEM exhaust component equipment standards. Off-road, racing, or other non-road vehicle approved exhaust equipment shall not be allowed. The exhaust system must be securely fastened to the vehicle. Exhaust system clamps, hangers, supports, seals and gaskets, and any other required exhaust accessory shall be inspected for presence, function, condition, and proper installation. A flexible exhaust pipe that does not leak is permitted. Exhaust component placement regulated by emissions regulations require certain equipment to remain in the original position and configuration. Alterations to exhaust systems that affect the function or placement of emission control equipment shall be prohibited. Heat shielding shall remain in place or be replaced or repaired using shielding that meets or exceeds the OEM design. Exhaust resonators are installed to supplement muffler effectiveness in the reduction of exhaust sound levels to meet regulations and shall not be eliminated. Certain vehicles are designed and not manufactured with mufflers and meet exhaust sound levels without mufflers, and are not required to be retrofitted with mufflers.

(1) A replacement tailpipe that modifies the original discharge area of the exhaust, shall extend to at least directly in front of the rearmost tire, and discharge beyond the passenger compartment. Exhaust stacks on trucks and exhaust side pipes that are equipped with heat shielding are acceptable so long as no part of this regulation is violated.

(2) Motorcycle exhaust shall discharge exhaust as originally designed, or if not as originally designed, beyond the rearmost seating position of the vehicle, away from the rider or passenger, and be equipped with heat shielding to prevent injury to rider or passenger. Baffles inserted into exhaust piping are not suitable replacements for mufflers.

(3) Exhaust System Inspection. Visually inspect the entire exhaust system for approved equipment, secure and proper mounting, deterioration, damage, and general condition. Corroded areas shall be given particular attention. Manufacturer drainage holes are not cause for rejection. Proper, non-leaking welded, or brazed repairs are permitted. Any audible or visual indication of exhaust leakage or ineffective equipment shall require inspection with the vehicle engine running as applicable, to identify the source of the exhaust system leak.

Reject Vehicle If:
(a) The muffler is missing, not approved, or not effective;
(b) The exhaust is equipped with an exhaust cutout or similar device;

(c) Heat shielding, as originally installed by the vehicle manufacturer or required by this regulation, is missing, damaged, or not securely attached;
(d) Any exhaust component that is not original or at least equivalent to the original has damage or rust that allows exhaust gases to leak, does not properly discharge exhaust gases, or is not securely attached to the vehicle;
(e) The tailpipe does not discharge as originally designed or does not extend to at least directly in front of the rearmost tire, and discharge beyond the passenger compartment;
(f) There are loose or leaking seams or joints in any exhaust system component or coupling, or any fastener or clamp is missing or damaged;
(g) Temporary repairs have been made to any exhaust system component, or the system is not properly mounted to prevent excessive exhaust system movement;
(h) Any part of the exhaust system passes through the passenger compartment, or there are any leaks in the heat exchange system that warms the interior of the vehicle if equipped;
(i) The tailpipe end is pinched or obstructed, or any part of the exhaust system is located or exposed in a manner that a person may be burned or injured;
(j) A vehicle is equipped with exhaust stacks or exhaust side pipes without effective mufflers and heat shielding;
(k) A motorcycle exhaust has been modified from OEM design; and
(i) Does not discharge exhaust beyond the rearmost seating position of the vehicle, away from the rider or passenger;
(ii) Is not equipped with a muffler, if originally equipped;
(iii) Is equipped with baffles in exhaust piping other than as originally equipped; or
(iv) The exhaust system component is missing, not approved, or not effective;
(l) The function or the installed location of exhaust equipment has been altered to affect the function or placement of emission control equipment.

B. Commercial Vehicle Exhaust System. Commercial vehicle exhaust shall not be located where its location would likely result in burning, charring, or damaging the electrical wiring, the fuel supply, or any combustible part of the motor vehicle. No exhaust system shall discharge to the atmosphere at a location immediately below the fuel tank or the fuel tank filler pipe. No part of the exhaust system shall be temporarily repaired with wrap or patches.

(1) The exhaust of a truck or truck tractor shall discharge to the atmosphere at a location to the rear of the cab, if the exhaust projects above the cab, at a location near the rear of the cab. No part of the exhaust system shall leak or discharge at a point forward of or directly below the driver/sleeper compartment. The exhaust outlet may discharge above the cab/sleeper roofline.

(2) The exhaust of a bus powered by a gasoline engine shall discharge to the atmosphere at or within 6 inches forward of the rearmost part of the bus.

(3) The exhaust system of a bus using fuels other than gasoline shall discharge to the atmosphere either:

(a) At or within 15 inches forward of the rearmost part of the vehicle; or

(b) To the rear of all doors or windows designed to be open, except windows designed to be opened solely as emergency exits.

Reject Vehicle If:
(i) The muffler or resonator is missing, not approved, or not effective;
(ii) The exhaust is equipped with an exhaust cutout or similar device;
(iii) Heat shielding, as originally installed by the vehicle manufacturer or required by this regulation, is missing, damaged, or not securely attached;
(iv) Any exhaust component is not original or at least equivalent to the original, has damage or rust that allows exhaust gases to leak, or is not securely attached to the vehicle;
(v) Truck or truck tractor exhaust does not discharge to the rear of the cab, or discharges forward or directly below the driver/sleeper compartment;
(vi) A gasoline powered bus does not discharge within at least 6 inches of the rearmost part of the vehicle;
(vii) A bus using fuels other than gasoline does not discharge within at least 15 inches of the rearmost part of the vehicle, or discharges beneath a door or window designed to be open, except for windows solely designed as emergency exits;
(viii) There are loose or leaking seams or joints in any exhaust system component or coupling, or any fastener or clamp is missing or damaged;
(ix) Temporary repairs have been made to any exhaust system component, or the system is not properly mounted to prevent excessive exhaust system movement;
(x) Any part of the exhaust system passes through the passenger compartment, or there are any leaks in the heat exchange system that warms the interior of the vehicle if equipped;
(xi) The tailpipe end is pinched or obstructed, or any part of the exhaust system is located or exposed in a manner that a person may be burned or injured;
(xii) A vehicle is equipped with exhaust stacks or exhaust side pipes without effective mufflers and heat shielding;
(xiii) The exhaust system discharges to the atmosphere at a location immediately below the fuel tank or the fuel tank filler pipe; or
(xiv) The function or the installed location of exhaust equipment has been altered to affect the function or placement of emission control equipment.

C. Auxiliary Equipment Exhaust Systems. Auxiliary equipment systems include, but are not limited to stoves, heaters, refrigeration units, auxiliary power supply units, pumps, generators, welders, and other fuel powered auxiliary equipment permanently attached to a vehicle. Visually examine the exhaust system for the condition of the components, the use of approved components, damage, corrosion to the extent that exhaust leaking is present, and proper and secure mounting. Recreational vehicle equipment for heating or cooking shall be equipped with proper venting to the exterior of the vehicle to prevent asphyxiation of occupants. Auxiliary equipment is not required equipment;

therefore, exhaust system deficiencies are not cause for rejection. Any deficiency shall be noted during the inspection and the owner or agent for the vehicle will be advised not to operate the equipment until proper repairs have been made.

Record Equipment Deficiency and Advise the Owner or Agent if:
(1) The muffler or resonator is missing, not approved, or not effective;
(2) The exhaust is equipped with an exhaust cutout or similar device;
(3) Heat shielding, as originally installed by the equipment manufacturer or required by this regulation, is missing, damaged, or not securely attached;
(4) Any exhaust component not original or at least equivalent to the original has damage or rust that allows exhaust gases to leak, does not properly discharge exhaust gases, or is not securely attached to the equipment;
(5) There are loose or leaking seams or joints in any exhaust system component, any fastener or clamp is missing or damaged;
(6) Temporary repairs have been made to any exhaust system component, or the system is not properly mounted to prevent excessive exhaust system movement;
(7) Any part of the exhaust system leaks, or is not equipped with proper heat shielding;
(8) The tailpipe end is pinched or obstructed, or any part of the exhaust system is located or exposed in a manner that a person may be burned or injured;
(9) The function or the installed location of exhaust equipment has been altered to affect the function or placement of emission control equipment; or
(10) A stove, heater, or refrigeration unit on a recreational vehicle does not properly exhaust or vent to the exterior of the vehicle.

D. School Vehicle Exhaust Systems. The inspection of school vehicle exhaust systems requires that the additional protection and placement criteria required due to their unique use be inspected. This includes component design, placement, and heat shielding required in the school vehicle construction standards. An OEM flexible pipe or its equivalent up to 24 inches in length is allowed at the front of the exhaust system at or near the turbocharger. The exhaust system may not pass within 12 inches of a gasoline fuel tank or its connections without proper heat shielding. The exhaust system of a Type I School Vehicle may not pass within 12 inches of a flexible brake or diesel fuel line without proper shielding. The tailpipe of a Type II School Vehicle may exit behind the rear wheel or to the left or right of the rear emergency door and shall not exit under a fuel filler. Exhaust systems shall not be located under the emergency exit.

Reject Vehicle If:
(1) The exhaust pipe is not of an OEM nonflexible 16-gauge material except as authorized by this regulation;
(2) The muffler is missing, not approved, or not effective;
(3) The exhaust is equipped with a cutout or similar device;
(4) Heat shielding is not OEM or equivalent, is missing, damaged, or not securely attached;
(5) An exhaust component is not OEM or equivalent, or is not securely attached to the vehicle;
(6) The exhaust system discharges exhaust gases under an emergency exit;
(7) The tailpipe of a Type II School Vehicle exits under a fuel filler;
(8) There are loose or leaking exhaust seams or joints, or any fastener or clamp is missing or damaged;
(9) Temporary repairs have been made to any exhaust system component;
(10) Any part of the exhaust system passes through the passenger compartment;
(11) The exhaust is pinched or obstructed, or any part of the system is located or exposed in a manner that a person may be injured; or
(12) The function or the installed location of exhaust equipment has been altered to affect the function or placement of emission control equipment.

.10 Emissions Control Systems.

A. Emissions Equipment Inspection. Emissions equipment conforming to United States EPA regulations for the control of vehicle emissions originally installed by a vehicle or engine manufacturer as applicable by year, model, engine, or application, as required by 40 CFR §86 and in COMAR 11.14, shall be in its original location and configuration. Each vehicle or engine shall be inspected for the emission equipment identified by the emissions label in the engine compartment or on the engine, or by published data from the manufacturer which indicates the emissions equipment originally installed. Emission equipment replacement shall be performed using only OEM equipment during the time and mileage limitations regulated by 40 CFR §86 and in COMAR 11.14 and within the manufacturer's warranty guidelines. Emission equipment replacement beyond these specified time and mileage limitations may be performed using OEM or equivalent equipment. Fumes, smoke, or particulate matter emitted by a vehicle engine may indicate emission equipment failure or powertrain problems that may cause emission control system failure. Illumination of the Malfunction Indicator Light (MIL) may be emission failure related. Vehicles equipped with 2-cycle engines emit greater amounts of smoke from the exhaust system due to the gas/oil ratio mixture. Smoke emitted by 2-cycle engines for more than 10 seconds is excessive and does not meet the requirements of this regulation.

Reject Vehicle If:
(1) Not equipped with the required emission control equipment in its original location and installed in the original configuration;
(2) Any emission component is replaced with an aftermarket component during the time and mileage requirements described in this regulation;
(3) Any emission equipment component is replaced with an unapproved component;
(4) Fumes, smoke, or particulate matter is emitted by the engine that obscures persons or objects from a clear rear view; or
(5) A 2-cycle engine or a 2-stroke equipped vehicle emits smoke that obscures persons or objects from a clear rear view for more than 10 seconds.

B. OBD II Inspection. The On-Board Diagnostic System (OBD II) compliant vehicle MIL shall be observed for function and illumination during inspection, and the owner/agent for the vehicle advised of potential emission equipment malfunction.

Record MIL Status and Advise the Owner or Agent if:

(1) The MIL does not illuminate during "self-check" inspection; or
(2) The MIL is illuminated with the engine running.

.11 Powertrain and Powertrain Components.

A. The powertrain includes the engine, transmission, drive axles, and connecting equipment components. Any mount or attachment devices that retain or help to retain the engine, transmission, or drive axle components in their proper place on the vehicle are also components of the powertrain. Drive shafts, universal joints, constant velocity shafts and joints, carrier bearings and supports, and slip joints for connecting drive shafts to drivetrain components are also components of the powertrain. Inspect the powertrain and related components for equipment not designed and approved for on-road use, or that is missing, loose, or damaged.

B. Seals and gaskets on powertrain components are designed to prevent the loss of coolant fluids, lubrication fluids or greases, and contamination of powertrain fluids or greases from external sources. The loss of fluids or greases from any drivetrain component may cause a vehicle fire, powertrain damage, or contamination of other components or systems that would adversely affect the safe operation of the vehicle.

C. Inspect the fluid levels in powertrain equipment and related components. Advise vehicle owner/agent of any indication of leakage.

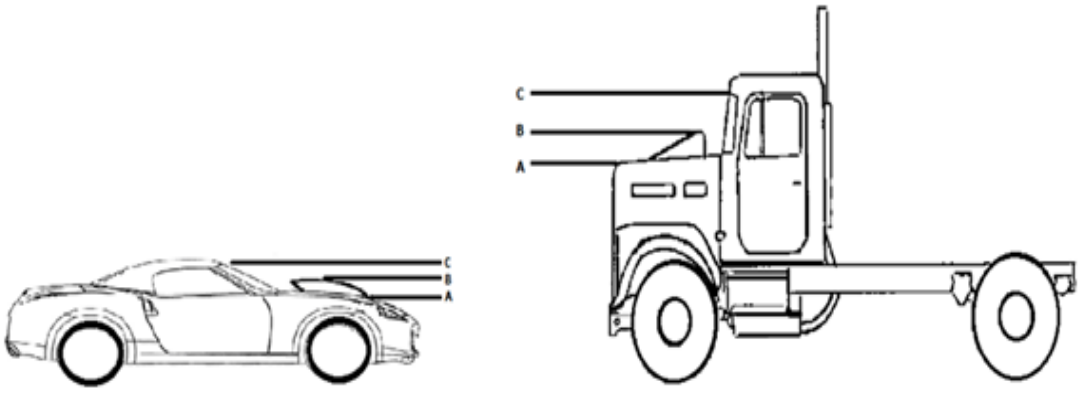
D. Powertrain Condition. Inspect engine, transmission, drive axle, or other powertrain component mounts for proper attachment, damage, dislocation, or for equipment that is not designed and approved for on-road use. Accessory drive belts and tensioners shall be inspected for excessive wear or damage, and proper tension.

E. School Vehicle Drivetrain. Each segment of the drive shaft shall be equipped with a suitable guard to prevent accident or injury in the event of fracture or disconnection.

Reject Vehicle If:
(1) The engine, transmission, drive axle, or other powertrain component mount or attachment is loose, damaged, dislocated, or is not designed and approved for on-road use;
(2) The drive shaft, universal joint, constant velocity shaft, constant velocity joint, carrier bearing or support, slip joint, drive chain or drive belt is loose, damaged, dislocated, or is not designed and approved for on-road use;
(3) The accessory drive belts are excessively worn, damaged to affect operation, or loose;
(4) The tensioner pulley, idler pulley, or other accessory drive belt pulley is excessively worn, damaged to affect operation, or loose;
(5) The engine, transmission, drive axle, or related component has any class of leakage present, and the fluid operating level is below the manufacturer's recommended minimum level;
(6) The engine, transmission, drive axle, or powertrain component has a Class-3 leakage of coolant, lubrication, grease, or other operating fluid so that fluid or grease is contaminating other components, presents a fire hazard, or is leaking onto the road surfaces;
(7) The engine, transmission, drive axle, or powertrain component is malfunctioning to the extent that the vehicle cannot be driven;
(8) Continuous fumes or smoke that obscures persons or objects from a clear rear view are being emitted by the powertrain of the vehicle; or
(9) A school vehicle drive shaft is not equipped with a suitable guard on every segment of the drive shaft as required by this regulation.

.12 Body Components.

A. Hood, Hinges, and Latches. Inspect for the presence and operation of hinges, latches, safety latches, and hood latch release mechanisms. Stud and safety pin-type latches are acceptable provided force is necessary to overcome the retention feature of the pin to remove it from the stud. The hood shall cover the engine compartment. If equipped with a hood air scoop or hood bubble, the maximum height shall not extend higher than 1/3 of the vertical height of the windshield. On cab-over-engine vehicles inspect the cab floor, hinges, and latches as hood components, as they provide the engine coverage in place of a hood.



HEIGHT (A - B) MAY NOT EXCEED 1/3 THE HEIGHT OF (A - C)

Reject Vehicle If:
(1) The hood/engine cover does not fully close and latch;
(2) The hood/engine cover hinge, latch or hood safety latch is missing, loose, or otherwise not functioning as designed;
(3) The hood/engine cover remote release is missing, or damaged to the extent that it does not function as designed;
(4) The hood/engine cover does not cover the engine compartment; or
(5) The hood air scoop or bubble is higher than 1/3 the vertical height of the windshield.

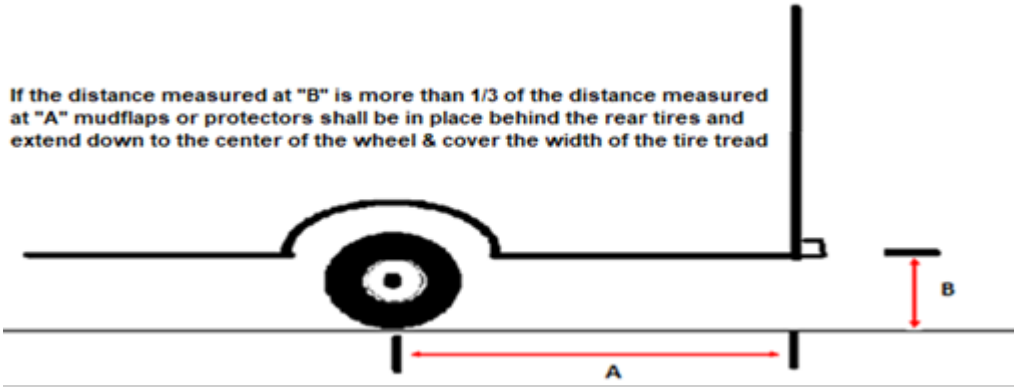
B. Fenders and Flaps.

(1) Fender inspection shall include condition, mounting, and coverage of wheels and tires. Vehicles shall be equipped with fenders that provide at least the same wheel and tire coverage as originally designed by the manufacturer. Modifications of fenders to accommodate tire, wheel, or suspension changes are permitted provided that modifications provide coverage of wheels and tires equal to or exceeding that provided by the vehicle manufacturer and do not violate any part of this regulation otherwise. The top of all fenders shall extend outward from the body to cover the top of wheels and tires. A rear fender is required on a motorcycle, but a front fender is not required unless the motorcycle was originally manufactured with a front fender.

(2) Many vehicles provide coverage of wheels and tires with fender coverage being augmented by the bumper covers, OEM fender extensions or flaps, or a combination of components. Rear fenders are defined as the rear quarter panel of a vehicle from the rearmost door opening rearward and from the window or trunk, or both, opening downward to the extreme bottom edge, and shall include OEM components that augment wheel and tire coverage.

(3) Protectors or flaps required for rear coverage of wheels and tires shall have a ground clearance of not more than 1/3 of the horizontal distance from the bottom edge of the protector or flap to the centerline of the axle, provided, however, that no protector or flap need be closer to the ground than 6 inches under any condition of loading.

(4) Fender and Flap Inspection. Inspect fenders for condition, presence, attachment, and damage. A mere hole in a fender is not cause for rejection, however, any hole in a fender that will allow exhaust fumes to enter the occupant compartment or is such that jagged or sharp edges present a hazard to a pedestrian or passenger is cause for rejection. Inspect for coverage of wheels and tires by fenders and related components as required. The fenders and any augmented coverage shall be constructed of substantial materials and shall be securely attached to the vehicle. All edges shall be rolled or capped to eliminate sharp or jagged edges. Fenders may not contact the tires during different vehicle attitudes. If the bed of a light truck or van body has been changed, and wheel and tire coverage is not provided by a fender or body, the vehicle shall be equipped with flaps behind the rear tires. Uneven fitment or body lines may be indications of improper attachment or hidden body damage present.



Reject Vehicle If:
(a) The fender is not OEM or equivalent to OEM, is missing, not securely attached, or is missing components;
(b) The fender has tears, sharp or jagged edges, or any hole or opening which would allow exhaust fumes to enter the occupant compartment, or is jagged or has sharp edges that present a hazard to persons;
(c) The fender coverage does not equal or exceed the specifications provided by the vehicle manufacturer;
(d) The fender contacts tire during different vehicle attitudes; or
(e) The protector or flap does not cover the width of the wheel and tire or extend to at least the horizontal centerline of the wheel.

C. Doors, Hinges, Handles, Latches, and Locks.

(1) Door Equipment Inspection. Inspect the presence and operation of doors, hinges, latches, safety latches, door latch release mechanisms, and door locks. Doors designed for occupants to enter and exit a vehicle shall be equipped with safety latches, interior door latch release mechanisms, and if equipped with door locks, functioning interior lock mechanisms. Inspect all doors, hinges, handles, latches, and interior locks for broken or missing, parts, equipment, or components not certified for use with on-road vehicles, proper operation, and improper adjustment. Electric push button or ring and cable means of opening the door are acceptable provided they are readily accessible to operate the door from both the interior and exterior of the vehicle. Electric door locks that do not work, may be approved if the interior manual locks function to lock and unlock passenger doors.

(2) Vehicles equipped with both manual and electrical lock mechanisms may be certified as compliant with this regulation if the interior manual lock functions without impediment by the electrical mechanism. An electric lock mechanism is not required to function if the manual lock is functional.

(3) Other doors for storage or transportation of cargo, goods, or equipment shall be inspected to ensure that the doors are securely attached to the vehicle and shut and latch securely.

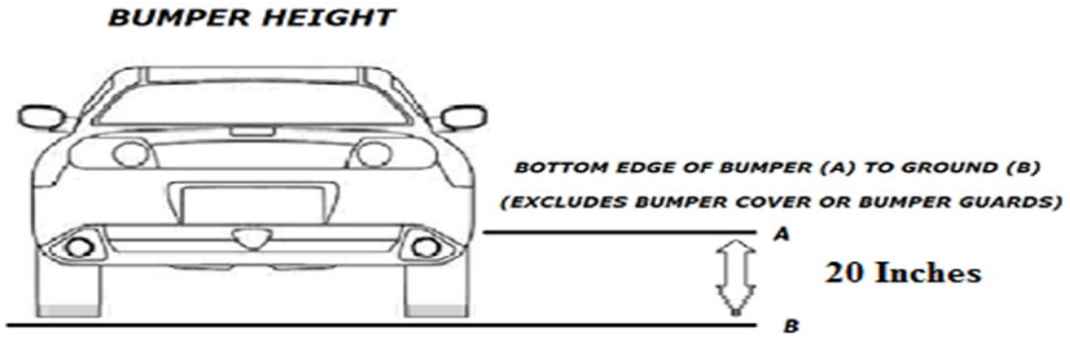
Reject Vehicle If:
(a) The passenger door or door part is missing, has been modified from the original design, or has been modified with components not certified for use with on-road vehicles;
(b) The passenger door is damaged, loosely attached, or latched and adversely affects the operation of the door;
(c) The passenger door handle or latch does not provide a means of readily opening the door from both the interior and exterior of the vehicle;
(d) The passenger door, hinge, handle, latch, or lock mechanism is not original equipment or equivalent;
(e) The passenger door interior lock does not lock and unlock;

(f) The passenger door secondary or safety catch does not function properly;
(g) The passenger door electric lock mechanism impedes the manual operation of a lock; or
(h) A cargo area door or door part is missing, worn, or damaged so that the door is not securely attached or will not securely close.

.13 Bumpers and Rear Metal Frame.

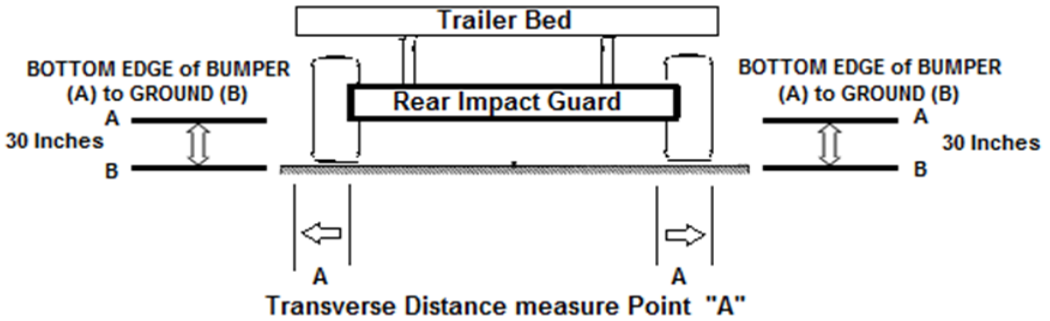
A. Front bumper, rear bumper, and rear metal frame shall be inspected for presence, broken or missing components, abnormal protrusions or sharp edges, or other conditions that could be hazardous to persons. Bumpers may be external and visible or hidden by bumper covers. The bumpers shall be securely mounted to the vehicle and be capable of absorbing a degree of impact equal to, or greater than the OEM design. If equipped with any bumper that is not OEM, it shall be of equivalent or greater strength than the OEM bumper. Inspect bumper height by measuring from the level surface on which the vehicle stands to the bottom edge of the main horizontal bar of the bumper, exclusive of any horizontal or vertical extension bars or bumper guards. On vehicles equipped with soft bumper covering, the measurement will be made on the reinforcing horizontal bar.

B. Passenger Vehicle. Bumper shall be the original equipment or equivalent. Bumper covers are not impact protection but may provide coverage of sharp edges or other hazardous conditions and may also provide fender coverage for tires and therefore shall be inspected as required by the regulations contained in this chapter, as applicable.



Reject Vehicle If:
(1) The bumper is missing, loose, has abnormal protrusions or sharp edges, or other conditions that could be hazardous to persons;
(2) The bumper cover, if equipped, is missing, loose, has abnormal protrusions or sharp edges, or other conditions that could be hazardous to persons;
(3) The bumper is not OEM or equivalent to OEM, or is not capable of absorbing a degree of impact equal to, or greater than the OEM design;
(4) The bumper on a passenger vehicle is higher than 20 inches from the road surface to the lower edge of the major portion of the bumper; or
(5) The bumper extends beyond the widest part of the vehicle.

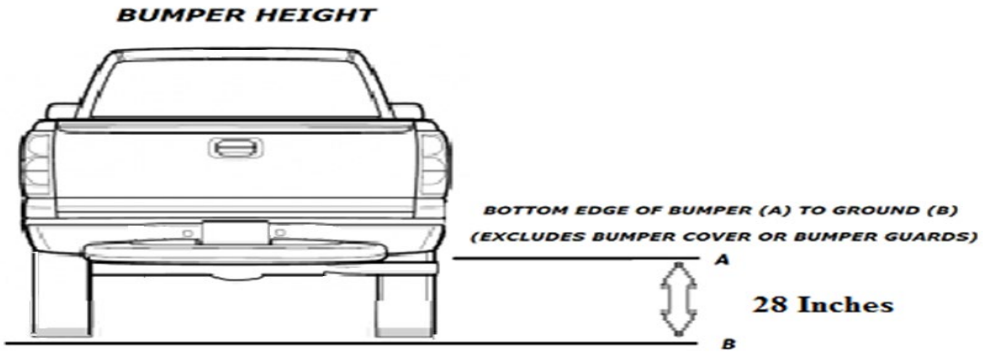
C. Trailer or Semitrailer 3,000 pounds (1,360 kg) GVWR or greater. Vehicle shall be equipped with a permanent metal frame or bumper attached to the underside of the rear of the trailer. The metal frame or bumper may not be wider than the body of the vehicle and shall extend outward to the left and right sides of the vehicle as required in this regulation. Low chassis vehicles, special purpose vehicles, or wheels back vehicles constructed and maintained so that the body, chassis, or other parts of the vehicle provide the rear end protection shall be considered to be in compliance with this regulation. Pole trailers and pulpwood trailers are not required to meet this regulation.



Reject Vehicle If:
(1) The bumper, major body assembly, or rear metal frame of a trailer 3,000 pounds (1,361 kg) GVWR or more, exceeds the height for design model year as follows:
(a) A trailer constructed after December 31, 1952 – exceeds 30 inches to the lower edge of the frame or bumper; or
(b) A trailer constructed on or after January 26, 1998 – exceeds 22 inches to the lower edge of the frame or bumper.
(2) The bumper, major body assembly, or rear metal frame of a trailer 3,000 pounds (1,361 kg) GVWR or more, does not extend transversely towards the left and the right outermost sides of the vehicle as follows:
(a) A trailer constructed after December 31, 1952 – within 18 inches of the left and the right sides of the vehicle; or
(b) A trailer constructed on or after January 26, 1998 – within 4 inches of the left and the right sides of the vehicle.

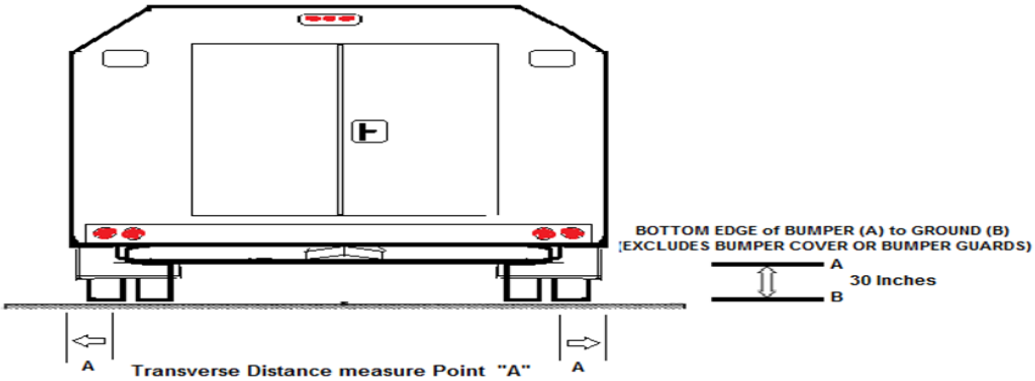
(3) The bumper, major body assembly, or rear metal frame is missing, loose, has abnormal protrusions or sharp edges, or other conditions that could be hazardous to persons;
(4) The bumper, major body assembly, or rear metal frame is not capable of absorbing a reasonable degree of impact; or
(5) The bumper, major body assembly, or rear metal frame extends beyond the widest part of the vehicle.

D. Truck Chassis Vehicle, Bus, and Multipurpose Vehicle 10,000 pounds (4,536 kg) GVWR and under. The bumper shall be the original equipment or equivalent. A vehicle manufactured with a reinforced body assembly to provide rear impact protection shall be considered to be in compliance with this regulation, otherwise, the vehicle shall be equipped with a rear bumper. Bumper covers are not impact protection but may provide coverage of sharp edges or other hazardous conditions, may also provide fender coverage for tires, and therefore shall be inspected as required by the regulations contained in this chapter.



Reject Vehicle If:
(1) The bumper, body or if the body provides impact protection, is missing, loose, has abnormal protrusions or sharp edges, or other conditions that could be hazardous to persons;
(2) The bumper cover, if equipped, is missing, loose, has abnormal protrusions or sharp edges, or other conditions that could be hazardous to persons;
(3) The bumper, body or if the body provides impact protection, is not capable of absorbing a reasonable degree of impact;
(4) The bumper, body or if the body provides impact protection, is higher than 28 inches from the road surface to the lower edge of the major portion of the impact protection or bumper; or
(5) The bumper, body or if the body provides impact protection, extends beyond the widest part of the vehicle.

E. Truck Chassis Vehicle, Bus, and Multipurpose Vehicle 10,001 – 18,000 pounds GVWR. Exceptions: truck tractors and vehicles engaged in drive-away or tow-away operations are not subject to this regulation due to the specific design and purpose of the vehicle which prevents compliance. A vehicle manufactured with a reinforced body assembly to provide rear impact protection shall be considered to be in compliance with this regulation, otherwise, the vehicle shall be equipped with a rear bumper or rear metal frame. The rear bumper, major body assembly, or rear metal frame may not be any wider than the width of the truck and may not be more than 30 inches above the ground. The maximum transverse distance from the widest part of the vehicle at the rear to the bumper or metal frame may not exceed 18 inches. The provisions of this section do not apply to vehicles where the installation of the required bumper or metal frame would prevent operation of the vehicle for its designated purpose.



Reject Vehicle If:
(1) The bumper, major body assembly, or rear metal frame is missing, loose, has abnormal protrusions or sharp edges, or other conditions that could be hazardous to persons;
(2) The bumper, major body assembly, or rear metal frame is not capable of absorbing a reasonable degree of impact;
(3) The bumper, major body assembly, or rear metal frame extends beyond the widest part of the vehicle; or
(4) The bumper, major body assembly, or rear metal frame does not extend to within 18 inches of the left and right sides of the vehicle.

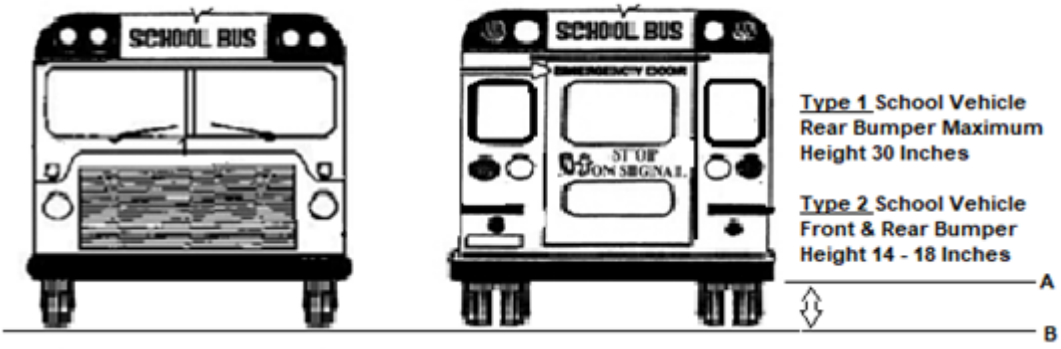
F. School Vehicle Bumpers and Rear Metal Frame. Bumpers are regulated on Type I and Type II school vehicles for material size, height, width, and color. Rear bumpers shall extend beyond the rearmost part of the body surface at least 1 inch, measured at the floor line.

(1) Type I School Vehicle. The front bumper shall be of heavy-duty steel channel or equivalent, at least 3/16 inch thickness and not less than a 9 inch face, painted black, and shall extend around the outer edges of the fender. Bumper and bumper supports shall be of sufficient

strength to permit towing or pushing by another vehicle without damage. The rear bumper shall be of 3/16 inch pressed steel channel or equivalent and shall have not less than a 9 inch face. It shall wrap around the back corners of the bus and shall extend forward at least 12 inches measured from the rearmost point of the body at the floor line. The maximum height of the rear bumper shall be no more than 30 inches when measured from the bottom edge to the level surface upon which the unloaded vehicle stands.

(2) Type II School Vehicle. The front bumper shall extend to protect the outer edges of the fenders. The front bumper shall measure between 14 and 18 inches when measured from the bottom edge to the level surface on which the unloaded vehicle stands. The rear bumper shall be of 3/16 inch-thick steel, or equivalent material, and have at least a 7 inch face. The rear bumper shall be attached directly to the chassis frame at a height between 14 and 18 inches from the bottom edge to the level surface upon which the unloaded vehicle stands.

SCHOOL VEHICLE BUMPER SHALL BE FULL BODY WIDTH



Reject Vehicle If:
(a) The bumper is not constructed of an approved material, or is not mounted to the vehicle as required;
(b) The bumper is any color other than black;
(c) The bumper is not constructed and maintained using the required dimensions by type of vehicle, or has sharp edges that could injure persons;
(d) The bumper is missing, damaged, or otherwise not structurally able to absorb an impact, or is not able to be towed or pushed by another vehicle;
(e) A Type I School Vehicle rear bumper measured height exceeds 30 inches from the level surface upon which the unloaded vehicle stands, or the bumper does not extend at least 12 inches forward from the rearmost point of the body at the floor line;
(f) A Type II School Vehicle front or rear bumper measured height is not between 14 and 18 inches when measured from the bottom of the bumper to the level surface upon which the unloaded vehicle stands; or
(g) The rear bumper of a school vehicle does not extend beyond the rearmost part of the body at least 1 inch, measured at the floor line.

.14 Floor, Trunk, Bulkhead, and Interior Engine Covers.

A. Enclosed motor vehicle floor, trunk, and bulkhead shall be inspected for holes or corroded or weakened conditions. Loose floor covering may present a hazard to occupants of the vehicle and may expose electrical wiring to damage. Engine covers within the occupant compartment of the vehicle shall be sealed against the entry of exhaust gases or other fumes and firmly fastened down.

B. Open cockpit autocycles are not required to meet the requirements to be sealed against the entry of exhaust gases or other fumes.

Reject Vehicle If:
(1) The floor (underside of vehicle and bulkhead), is cracked, has holes, or is corroded through or weakened to cause a hazard to an occupant, affect the secure mounting of seats, or permit exhaust gases or engine fumes to enter the occupant compartment;
(2) The trunk/underside of vehicle or cargo area is corroded out, contains holes or openings, or permits exhaust gases or engine fumes to enter the occupant compartment;
(3) The floor covering is missing, cracked, curled, or worn, not properly sealed or attached, presents a tripping hazard or exposes wiring to damage; or
(4) The interior engine cover in the occupant compartment of the vehicle is not sealed against the entry of exhaust gases or fumes or is not firmly fastened down.

C. School Vehicle Interior Floor. Covering shall be the required thickness of fire-resistant, nonskid rubber, permanently bonded to the floor. There shall be a heavy-duty, white-nosed rubber wear plate where the floor covering meets the steps.

Reject Vehicle If:
(1) The school vehicle floor covering is not comprised of the proper material;
(2) The school vehicle floor covering is missing, damaged, or not permanently bonded to the floor;
(3) The school vehicle floor joints or seams are not bonded, welded, or not covered by approved strips or moldings; or
(4) The school vehicle floor to step area is not equipped with heavy-duty white-nosed wear plates as required.

D. Cargo Area Floor, Sides, and Bulkhead. Cargo areas shall be constructed of substantial materials and able to support the specified or rated payload of the vehicle for cargo and prevent cargo from falling or spilling from the vehicles. The floor of a vehicle designed to carry cargo that is separate from a passenger compartment shall be inspected for holes, corroded, or weakened conditions to ensure that cargo transported on or within the vehicle does not fall or spill through the surface. Bulkheads and sides designed to contain cargo or protect vehicle occupants shall be inspected for hazardous or unsafe conditions. The supporting equipment to include the cross members and bracing shall also be inspected.

Reject Vehicle If:

(1) The floor (underside of vehicle) of cargo area contains holes or openings that could allow cargo to fall or spill through, or is damaged or weakened to the extent that the load-carrying capacity is adversely affected;
(2) The cross member or bracing is missing, cracked, corroded, or has other unsafe or hazardous condition;
(3) The bulkhead separating the occupant compartment of the vehicle from the cargo area is not sealed against the entry of exhaust gases or fumes, or is damaged or weakened so as to allow cargo to fall or spill from the vehicle;
(4) The bulkhead is damaged, weakened, or has holes that would allow cargo to fall or spill from the vehicle, or allow cargo to impact a motor vehicle towing the trailer; or
(5) The sidewall, sideboard, or other body equipment that is designed to contain cargo is damaged, weakened, or has holes that would allow cargo to fall or spill from the vehicle.

.15 Rearview Mirrors.

A. All motor vehicles shall be equipped, as applicable, with rearview mirrors. Enclosed vehicles shall be equipped with an inside rearview mirror and a driver's side rearview mirror providing a view of the highway for a distance of at least 200 feet to the rear. If the interior rearview is obstructed by design, a vehicle shall be equipped with an outside passenger side rearview mirror. From the driver's position, visually inspect all rearview mirrors for a clear and reasonably unobstructed view to the rear. Look for the correct location, stable mounting, cracks, ease of adjustment, and ability to hold an adjustment. Intersecting cracks or other damage or condition that result in multiple images being reflected shall not be permitted.

B. Motorcycle Mirrors. Inspect for proper size, secure mounting, visibility, and condition of mirror and its mounting hardware. The mirror shall be securely mounted and sufficiently stable to provide a readily distinguishable image to the rider under normal conditions. The mirror shall be regular in shape (circular, oval, rectangular, or square) and may not contain sharp edges, projections, or irregular indents capable of producing injury.Motorcycles shall be equipped with two rearview mirrors, one on each side of the vehicle with a reflective area of at least 12.5 square inches of reflective surface or, if convex, at least 10 square inches of reflective surface.

***Agency Note:** Mirrors on 1977 and earlier motorcycles were only required to have at least 7 square inches of reflective surface.*

Reject Vehicle If:
(1) A motorcycle is not equipped with both a left-side and a right-side rearview mirror meeting size requirements of this regulation;
(2) A mirror is cracked or discolored, causing a distorted view;
(3) A mirror is improperly installed or loosely mounted;
(4) A minimum 200-foot visibility cannot be achieved; or
(5) A mirror has intersecting cracks or other damage or condition that distort or result in multiple images being reflected.

C. Exterior Mirrors. All motor vehicles shall be equipped with an outside rearview mirror on the driver's side providing a view of the highway for a distance of at least 200 feet to the rear. From the driver's position, visually inspect all exterior mirrors for a clear and reasonably unobstructed view to the rear. Look for correct location, stable mounting, ease of adjustment, and ability to hold an adjustment. Cracks or other damage or condition that result in multiple images being reflected shall not be permitted. Vehicles equipped with AS-3 glazing material, add-on tinting material, or approved stickers shall be equipped with outside mirrors on both the left and the right side.

Reject Vehicle If:
(1) The exterior rearview mirror is missing (when required);
(2) The exterior rearview mirror mounting is loose so that rear vision does not provide visibility at least 200 feet to the rear, or is otherwise impaired;
(3) The exterior rearview mirror cannot be adjusted or will not hold an adjustment;
(4) The exterior rearview mirror does not provide an unobstructed view to the rear;
(5) The exterior rearview mirror is obscured by windshield pillar;
(6) The exterior rearview mirror is pitted, or discolored to the extent that rear vision is obscured; or
(7) The exterior rearview mirror has intersecting cracks, other damage, or conditions that distort or result in multiple images being reflected.

D. Interior Mirrors. Vehicles shall be equipped with an inside rearview mirror as designed. A vehicle designed or constructed where the view through an inside rearview mirror is obstructed shall be equipped with outside rearview mirrors on both sides. The inside rearview mirror shall be adjustable and provide a clear, stable reflected view 200 feet to the rear. From the driver's position, visually inspect the interior mirror for proper mounting, location, sharp edges, ease of adjustment, and ability to hold an adjustment. Cracks or other damage, or condition that distort or result in multiple images being reflected shall not be permitted.

Reject Vehicle If:
(1) The interior rearview mirror is missing (when required);
(2) The interior mirror cannot be adjusted, or will not hold an adjustment;
(3) The interior mirror is pitted, or discolored to the extent that rear vision is obscured;
(4) The interior mirror has sharp edges that could be hazardous to occupants of the vehicle;
(5) The interior mirror does not provide an unobstructed view at least 200 feet to the rear;
(6) The interior mirror view is obstructed by vehicle design, and vehicle is not equipped with outside rearview mirrors on both the left and right exterior sides of the vehicle; or
(7) The interior rearview mirror has intersecting cracks, other damage, or conditions that distort or result in multiple images being reflected.

E. School Vehicle Mirrors.

(1) Type I School Vehicle interior rearview mirror size shall be at least 6 by 30 inches with rounded corners and protected edges. If the mirror is not metal backed and framed, the mirror shall be of laminated safety glass; and

(2) Type II School Vehicle interior rearview mirror shall be at least 5 by 15 inches with rounded corners and protected edges. If the mirror is not metal backed and framed, the mirror shall be of laminated safety glass.

Reject Vehicle If:
(a) The interior rearview mirror is missing or not of the proper size by type of vehicle;
(b) The interior mirror cannot be adjusted or will not hold an adjustment;
(c) The interior mirror is pitted or discolored to the extent that rear vision is obscured;
(d) The interior mirror has sharp edges that could be hazardous to occupants of the vehicle;
(e) The interior mirror does not provide an unobstructed view at least 200 feet to the rear; or
(f) The interior mirror has intersecting cracks or other damage, or condition that distort the view or result in multiple images being reflected.

(3) School vehicle exterior mirrors shall include two adjustable exterior clear view mirrors with black housings, one installed on each side of the vehicle. Fender mounted mirrors may be mounted using a tripod or solid piece mirror brackets. A convex mirror shall be mounted on each front fender. A single mirror of a type approved by the administration in conjunction with the State Department of Education may be used in place of the convex mirrors in this regulation.

Reject Vehicle If:
(a) The exterior rearview mirror is missing or not of an approved type;
(b) The exterior rearview mirror is loose, so the rear vision is impaired;
(c) The exterior rearview mirror cannot be adjusted or will not hold an adjustment;
(d) The exterior rearview mirror does not provide visibility at least 200 feet to the rear, or is otherwise impaired;
(e) The exterior rearview mirror is obscured by windshield pillar;
(f) The exterior rearview mirror is pitted or discolored to the extent that rear vision is obscured;
(g) The exterior rearview mirror has intersecting cracks or other damage, or conditions that distort vision, or result in multiple images being reflected; or
(h) The convex mirror on a front fender does not provide a close infield of vision to eliminate blind spots.

.16 Equipment for Operator and Passengers.

A. Front Driver's Seat and Passenger Seats. The front driver's seat adjusting mechanisms shall operate as designed to provide adjustment for the driver. The front driver's seat and all other seats provided for passengers while the vehicle is being operated shall be securely and properly anchored to the vehicle and shall not have damage or other conditions that may be hazardous to occupants of the vehicle.

(1) Inspect for the presence of the front driver's seat and its condition. Inspect seat adjustment for proper function. Inspect all seat anchor bolts. Inspect all seating for protruding springs or other objects that could catch clothing or cause injury.

Reject Vehicle If:
(a) The front driver's seat is missing or unsafe;
(b) The front driver's seat position adjusting mechanisms do not adjust to all positions, slips out of position, or does not provide for adjustment;
(c) Any seat is not securely and properly fastened to the floor;
(d) The driver or other occupant seat has protruding springs or other objects that could catch clothing or cause injury;
(e) The headrest is damaged, or is missing from a seat that was originally equipped with a headrest;
(f) A motorcycle passenger handhold device is missing or unsafe; or
(g) The motorcycle foot pegs are missing or unsafe.

(2) School Vehicle Upholstery and Covers. Seat, crash barrier, padding, and other covered or upholstered interior equipment procured for use in this State as of January 1, 2014, are required to be constructed with materials that enable them to meet all the criteria of the school vehicle upholstery fire block test established by the National School Transportation specifications and procedures adopted at the most recent national congress on school transportation.

Reject Vehicle If:
(a) The upholstery or cover for a seat, crash barrier, inner liner, paneling, or other covered interior equipment is missing, damaged, or not securely attached; or
(b) The upholstery, cover, or padding is not constructed with fire block material as required.

B. Defroster. Inspect the defroster system to ensure that the defroster discharges air onto the windshield, and the windows to the left and right of the driver, if so designed.

Reject Vehicle If:
(1) Discharged air from the defroster is not warm when the engine is at operating temperature; or
(2) Air does not discharge from the defroster vents, or it is not directed onto the windshield, and windows to the left and right of the driver, if so designed.

C. Driver Sun Visor. Visually inspect visor for presence, function, and stable adjustment.

Reject Vehicle If:
(1) The visor is missing on driver's side;
(2) The visor does not restrict light as designed; or
(3) The visor cannot be maintained in a set position.

D. School Vehicle Visor. Type I School Vehicle visor shall be at least 6 inches wide and 30 inches long. Type II School Vehicle visor shall be at least 5 inches wide and 30 inches long.

Reject Vehicle If:
School vehicle visor does not meet the minimum OEM size requirement for the type of vehicle.

E. School Vehicle Heater. The heating system shall be capable of maintaining at least a 50°F interior temperature.

Reject Vehicle If:
Vehicle heater cannot maintain a temperature of at least 50°F.

F. Motorcycle Rider and Occupant Safety Equipment. This includes seating, passenger handhold devices, and footrest assemblies. A motorcycle seat that provides for a passenger seat position that cannot be utilized by a passenger due to other installed equipment is not required to be equipped with passenger handhold devices or passenger footrest assemblies. If the passenger seat is made accessible, then all passenger safety devices shall be in place. Motorcycles built before 1975 were not required to be equipped with retractable footrest assemblies.

(1) Rider and passenger seats shall be properly attached. Seat locking device shall function where applicable;

(2) If a passenger is to be transported, a properly attached handhold device shall be provided on the motorcycle and shall be of sufficient strength and size to provide adequate support to any passenger. A strap or bar device is acceptable; and

(3) For each designated seating position, or if a passenger is to be transported, the motorcycle shall be equipped with a footrest assembly on each side of the motorcycle. The passenger footrest shall not extend more than 1 inch beyond the widest part of the motorcycle and shall be retractable.

Reject Vehicle If:
(a) The seat is improperly attached to the motorcycle, or seat locking device does not function where applicable;
(b) The seat has protruding springs or other objects that could catch clothing or cause injury;
(c) The passenger seat is not equipped with a handhold device, or the handhold is damaged, loose, or otherwise defective;
(d) A required footrest is missing, damaged, or loose;
(e) A passenger is capable of being transported and passenger footrests are not present;
(f) The passenger footrests extend more than 1 inch beyond the widest part of the motorcycle excluding handlebars; or
(g) The passenger footrest does not retract.

.17 Seat Belts, and Supplemental Restraint Systems.

A. Seat Belts. A motor vehicle transporting passengers shall be equipped with seat belts for each occupant position of the vehicle, as required by 49 CFR §571.208 and 49 CFR §571.209. A vehicle registered as a taxicab or as a school bus shall be equipped with a driver's seat belt but is not required to be equipped with passenger seat belts under this regulation.

***Agency Note:** Vehicles manufactured or assembled before June 2, 1969, were not required to be equipped with rear seat belts, and vehicles manufactured or assembled before June 2, 1964, were not required to be equipped with front seat belts, but if equipped with seat belts, they shall comply with the standards of this regulation.*

B. Inspect seat belts for presence, mounting, function, and damage that obstructs the correct operation of the belt or significantly weakens the webbing. Fraying on edges that does not result in fabric separation of the webbing is not a cause for rejection. Damaged webbing shall be replaced, repairs to webbing shall not be permitted.

Reject Vehicle If:
(1) A seat belt is not OEM or equivalent;
(2) A seat belt is missing or does not function properly. (Each passenger seating position shall be equipped with seat belts);
(3) A seat belt is not properly secured;
(4) A seat belt is damaged to affect safe operation;
(5) A seat belt webbing is frayed resulting in fabric separation of the webbing, has incomplete or loose stitching;
(6) A seat belt webbing has been repaired;
(7) A seat belt buckle does not operate properly;
(8) A seat belt mounting surface is badly deformed, damaged, corroded, or inadequate; or
(9) A seat belt retracting/inertia mechanism does not operate properly.

C. Passenger Airbag Restraint Systems. FMVSS 49 CFR §571.208 requires certain vehicles to be equipped with front driver and passenger airbags. All 1998 model year or newer passenger vehicles are required to be equipped with front driver and passenger airbags. All 1999 model year or newer trucks, buses, or multipurpose passenger vehicles with a GVWR of 8,500 pounds (3,855 kg) or less are required to be equipped with front driver and passenger airbags.

Reject Vehicle If:
(1) An airbag is deployed on any vehicle;
(2) An airbag is not present if originally required to be equipped;
(3) The airbag warning indicator does not self-check if originally required to be equipped; or
(4) The airbag warning indicator is illuminated during operation if originally required to be equipped.

.18 Automatic Transmission Gear Indicator and Neutral Safety Switch for Starter.

A. The transmission gear indicator and a neutral safety switch are required for a vehicle with an automatic transmission. Inspect the gear selector for proper indication of the engaged gear/transmission position with engine running. Test the park, neutral, forward, and reverse positions for accuracy.

B. Inspect neutral safety switches for proper function and condition for automatic transmissions.

Reject Vehicle If:
(1) The gear selection indicator is missing or does not accurately indicate the correct position or direction of travel; or
(2) The neutral safety switch allows the engine to start in any gear or will not start in park or neutral with automatic transmission.

.19 Manual Transmission Neutral Safety and Clutch Safety Starter Switches.

Manual transmission clutch or neutral safety switch shall be inspected for proper function and condition, if so equipped.

Reject Vehicle If:
(1) The manual transmission clutch safety switch allows the starter to operate without depressing clutch pedal, as applicable to a vehicle so equipped when originally manufactured; or

(2) The neutral safety switch allows the engine to start in any gear, as applicable to a vehicle so equipped when originally manufactured.

.20 Speedometer and Odometer.

Motor vehicle speedometer and odometer shall be present and operate with a degree of accuracy. The dial and calibration shall be legible and calibrated in miles or kilometers. Speedometer shall register speed, and odometer shall register and retain the total distance traveled but are not subject to certification for accuracy.

Reject Vehicle If:
(1) The speedometer, odometer, or both, are disconnected, inoperable, or operate without a degree of accuracy;
(2) The dial and calibrations are not legible;
(3) The speedometer does not register speed in miles per hour, kilometers, or both; or
(4) The odometer does not register distance traveled.

.21 Windshield Wipers and Washers.

A. Windshield wipers shall operate as originally designed to clear the windshield for a safe view by the driver of the vehicle from the driver's position. Inspect for function, proper size of wiper blades, hardened rubber elements of wiper blades, and damaged or loose wiper blades or wiper arms. Inspect for proper contact of the wiper blades to the windshield by raising the wiper arm and observing that the arm returns and contacts the windshield firmly. Inspect for proper operation of the windshield wiper control switch on all speeds. Windshield shall be free of insects, oil film, or other foreign matter, and should be continuously wet when tested. School vehicle wiper blades shall be at least 14 inches long. Intermittent wipers that do not function may be certified if high and low wiper speeds are functioning properly.

B. Vehicles manufactured with windshield washers, and vehicles that are equipped with windshield washers shall have operational systems capable of containing washer fluid and distributing washer fluid onto the windshield from the driver's position to aid in clearing and cleaning the windshield.

Reject Vehicle If:
(1) The windshield wipers do not function, or cannot be controlled or operated from the driver's position;
(2)A wiper blade is missing, is not the proper size or the rubber element is hardened or damaged;
(3) A windshield wiper arm is missing, loose, or damaged;
(4) A windshield wiper arm does not have sufficient tension to hold the wiper blade against the windshield;
(5) The wiper control switch does not function as originally designed;
(6) The windshield wipers do not clear the windshield properly, (Full clearing of the wiper sweep area);
(7) The windshield wiper arms do not return to park position when the windshield wipers are turned off;
(8) The windshield washers do not function properly, or are not directed onto the windshield wiper sweep area;
(9) A windshield washer system leak impedes proper operation;
(10) The windshield washer reservoir has damage or other conditions that cause loss of washer fluid; or
(11) A school vehicle wiper blade is less than 14 inches.

.22 Glazing.

A. In this regulation, the following terms have the meanings indicated.

(1) "Acute area" means the windshield area 8 inches wide by 5 inches high, located directly in front of the driver, centered vertically on the steering wheel, and horizontally in the center of the critical area.

(2) "Cloudiness" means any degree of visible discoloration or separation, except tinting that does not affect clear vision.

(3) "Critical area" means the normal windshield wiper sweep, excluding the acute area, and any area obscured by the hood, fenders, or rearview mirror.

(4) "Damage" means cracks, nicks, pits, chips, star breaks, half-moons or bullseye fractures, discoloration, sharp edges, wiper blade scratches, or other obstructions to driver's view, or other broken or exposed sharp edges.

(5) "Discoloration" means a condition that impairs the transparency of the glazing.

(6) "Medical exemption" means a written certification from a physician licensed to practice medicine in the State of Maryland. This must remain in the vehicle for presentation to law enforcement personnel, upon request.

(7) "Non-critical area" means all windshield area outside the critical area.

(8) "Normal windshield wiper sweep" means the area of the windshield cleaned by the windshield wiper, excluding the return position on both passenger's and driver's sides.

(9) "Post Manufacture Window Tint Medical Exemption Form" means a form completed by the Division after examination of a vehicle owner's medical exemption from a physician licensed to practice medicine in the State of Maryland. The form authorizes a licensed inspection mechanic to exempt the vehicle's windows, equipped with post manufacture window tint, from meeting the light transmittance requirement during a vehicle inspection or during certification of a SERO.

B. Markings for Glazing.Safety glazing material is marked with the letters "AS" followed by a number from 1 through 16B, which indicates where the glazing may be used on the vehicle. Safety glazing material also has the symbol DOT and a manufacturer's code mark that the NHTSA, assigns to the manufacturer. Windows located to the rear of the driver position of passenger vehicles, trucks, tractors, buses, vans, and multipurpose passenger vehicles may be equipped with AS-3. A vehicle shall be equipped with properly marked and utilized glazing. Glazing shall be clear of foreign matter and load obstructions when presented for inspection.

Reject Vehicle If:
Glazing material is not marked to indicate type or improper glazing is used in any vehicle window.

C. Side and Rear Windows.

(1) Driver's side window operation. Inspect operation of window on driver's side. Window shall open and close, except driver's side windows equipped with AS-10 glazing.

(2) Passenger side windows and rear windows. Inspect for presence of passenger windows or rear windows as applicable.

(3) School vehicle side and rear windows. Window and door glazing material to the left and right sides of the driver shall be AS-2 laminated safety sheet, and the passenger compartment windows shall be AS-2 or AS-3 material. Passenger compartment windows shall open from the top at least 9 inches by 22 inches to provide an emergency exit.

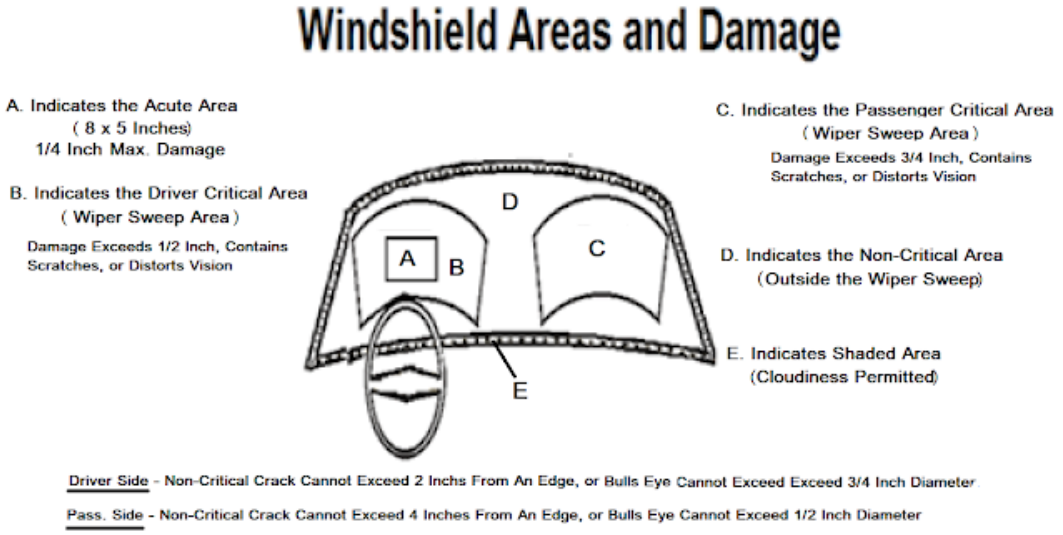
Reject Vehicle If:
(a) A driver's side window does not open and close to permit hand signals;
(b) A window crank handle is loose, damaged, or contains sharp edges hazardous to occupants;
(c) A passenger window is missing or not of an approved glazing material;
(d) A rear window is missing or not of an approved glazing material;
(e) A school vehicle window is not of an approved material, or is missing;
(f) A school vehicle passenger window does not open from the top at least 9 inches by 22 inches; or
(g) A school vehicle window has missing or damaged banding resulting in exposed edges.

D. Glazing Damage.

(1) Windows. Inspect for damage as defined in §A(4) of this regulation, or unapproved modification.

Reject Vehicle If:
(a) Any window is modified, or has exposed sharp edges;
(b) There is damage, foreign matter obstruction, or conditions that interfere with the driver's view to the left and right outside of the vehicle through vehicle side window glazing;
(c) There is damage, foreign matter obstruction, or conditions that interfere with the driver's clear view 200 feet to the rear of the vehicle through vehicle rear window glazing; or
(d) There is permanent equipment installed or other condition which obstruct the driver's view to the rear, and the vehicle is not equipped with an outside rearview mirror on each side.

(2) Windshield. Inspect windshield for any damage as defined in §A(4) of this regulation, unapproved modifications, discoloration, wiper blade scratches, or other obstructions to driver view. Motorcycles are not required to be equipped with windshields or windscreens. If a motorcycle is equipped with a windshield or windscreen, it shall be of an approved type with the appropriate markings indicating type and approved usage. A motorcycle windshield shall be inspected for foreign matter obstructions, damage, and proper installation. A motorcycle windscreen is not subject to inspection for light transmittance, view, or color.



(a) Windshield Driver's Side Inspection.

Reject Vehicle If:
(i) Cloudiness exceeds 1 inch from the top or side or 1 inch into the critical area from the bottom. If the windshield is divided, the cloudiness may not exceed ½ inch from the center divider;
(ii) Acute area contains any damage in excess of ¼ inch in diameter or length or any combination of damage which cumulatively exceeds ¼ inch in diameter or length or any condition which significantly interferes with the driver's vision;
(iii) Critical area contains wiper blade scratches which are severe enough to distort vision, or any damage in excess of ½ inch in diameter or length, or any combination of individual damage, which cumulatively exceeds ½ inch in diameter or length or any condition which significantly interferes with the driver's vision except in the permitted cloudy area;
(iv) Non-critical area contains any individual or combination of intersecting damage extending inward more than 2 inches separately or cumulatively from the outer frame on flat or curved windshields or over 4 inches on wraparound windshields. Damage in excess of ¾ inch in diameter or length, or any combination of damages which cumulatively exceed ¾ inch in diameter or length or any permanent condition which significantly interferes with the driver's vision except in the permitted cloudy area may not be present; or
(v) Any part of the windshield is missing, has an unapproved modification, or has damage or other condition that is prohibited in this regulation.

(b) Windshield Passenger Side Inspection.

Reject Vehicle If:
(i) Cloudiness exceeds 2 inches from the top or side or extends more than 2 inches into the critical area from the bottom. If the windshield is divided, the cloudiness may not exceed ½ inch from the center divider;
(ii) Critical area contains wiper blade scratches that are severe enough to distort vision, or any damage in excess of ¾ of an inch in diameter or length, or any combination of individual damage, which cumulatively exceeds ¾ of an inch in diameter or length or other condition which significantly interferes with the driver's vision except in the permitted cloudy area; or
(iii) Non-critical area contains any individual or combination of intersecting damage extending inward more than 4 inches separately or cumulatively from the outer frame on flat or curved windshields, or over 6 inches on wraparound windshields. Damage in excess of 1½ inch in diameter or length, combination of damages which cumulatively exceed 1½ inch in diameter or length, or permanent condition that significantly interferes with the driver's vision except in the permitted cloudy area shall not be present.

(c) Motorcycle Windshield or Windscreen. A windshield is defined as being in the operator's line of vision and therefore is required to have at least 70 percent light transmittance in the viewable area. Windshield areas in front of vehicle equipment, which are not in the operator's line of vision, may have tinting or stickers applied. A windscreen is defined as not in the operator's line of vision and therefore is not required to have at least 70 percent light transmittance, but shall be of an approved material with the appropriate AS marking.

Reject Vehicle If:
(i) The windshield or windscreen is not of an approved type, or is improperly installed;
(ii) The windshield or windscreen is damaged;
(iii) The windshield viewable area is obstructed, or equipped with tinting material of any kind; or
(iv) The windscreen or fairing extends into the operator's line of vision.

E. Signs and Materials on Windshield or Windows. Glazing shall not be equipped with unauthorized material or have conditions that obscure the driver's vision.

(1) Except as provided in §F(2) of this regulation, a vehicle may not be equipped with any sign, poster, card, sticker, or other nontransparent material on the windshield, side wings, or side or rear windows of the vehicle;

(2) This does not apply to:

(a) Materials placed on the windshield sun band above the AS-1 line, or 5 inches from the top edge of the windshield, whichever is less, if the material does not interfere with the driver's clear view;

(b) Materials placed on the windshield or rear window, within a 7 inch square area in the lower corner, or on the side windows of the vehicle to the rear of the driver, if the materials are placed as not to interfere with the driver's clear view;

(c) Direction, destination, or termini signs on any passenger common carrier motor vehicle;

(d) An electronic toll collection device placed in the windshield of a vehicle in accordance with guidelines established by the Maryland Transportation Authority;

(e) Security stickers authorized by a federal or state government agency that measure not more than 2 inches high and not more than 4 inches long, and are placed as required by the issuing agency; or

(f) Materials placed on AS-3 glazing to the rear of the driver on trucks, vans, and multipurpose vehicles.

(3) All vehicles equipped with permitted signs, posters, cards, stickers, or other nontransparent materials on windows to the rear of the driver shall be equipped with an outside rearview mirror on each side.

Reject Vehicle If:
(a) Glazed surfaces contain any sign, poster, card, decal, sticker, or other nontransparent material in violation of this regulation;
(b) The driver's vision through glazing is obscured by any material or condition;
(c) Equipped with authorized toll collection device or security sticker in violation of placement or size as required in this regulation; or
(d) Equipped with permitted signs, posters, cards, stickers, or other nontransparent materials on windows to the rear of the driver and not equipped with an outside rearview mirror on each side.

F. Post Manufacture Window Tint Material, Color, and Light Transmittance. All glazing shall be inspected for the application of post manufacture window tint (add-on tint). Post manufacture window tint is prohibited that has a mirrored or one-way vision, or a sparkling effect, is red, yellow, or amber in color, or changes to a red, yellow, or amber color.

(1) A commercial vehicle or a for-hire limousine (Class Q) may not be equipped with any color of post manufacture window tint on a side window to the immediate right and left of the driver, however, clear tint material may be applied to the glazing.

(2) A school vehicle may not be equipped with post manufacture window tint on any glazing material.

Reject Vehicle If:
(a) Glazing is equipped with post manufacture window tint that causes a mirrored or one-way vision effect, or a sparkling effect, or is equipped with tint that changes to a prohibited effect;
(b) Glazing is equipped with red, yellow, or amber colored tint or tint that changes to a prohibited color;
(c) A commercial vehicle is equipped with a colored post manufacture window tint on a windshield or side windows to the immediate right and left of the driver;
(d) A for-hire limousine (Class Q) is equipped with a colored post manufacture window tint on a windshield or side windows to the immediate right and left of the driver; or
(e) A school vehicle is equipped with post manufacture window tint on any glazing material.

(3) Post Manufacture Window Tint Light Transmittance. Glazing materials, regulated for the transmittance of light, shall have at least 35 percent light transmittance. Post manufacture window tint may not be applied to the windshield below the AS-1 line or below 5 inches from the top of the windshield, whichever is less. A vehicle equipped with post manufacture window tint or authorized AS-3 glazing shall be equipped with an outside rearview mirror on each side. A commercial vehicle or a for-hire limousine (Class Q) may not be equipped with post manufacture window tint which reduces the transmittance of light through the glazing to less than 70 percent. Windows to the rear of the driver may be tinted to any degree of darkness.

Reject Vehicle If:
(a) Post manufacture window tint is applied to the windshield below the AS-1 line or below 5 inches from the top of the windshield, whichever is less;
(b) The light transmittance through a side or rear window of a passenger car, convertible, or station wagon, is less than 35 percent;
(c) The light transmittance through a side window to the immediate right or left of the driver on a non-commercial truck, tractor, bus, van, or multipurpose passenger vehicle is less than 35 percent;
(d) The vehicle is equipped with permitted post manufacture window tint on any side or rear window and is not equipped with an outside rearview mirror on each side of the vehicle;
(e) A truck, tractor, bus, van, or multipurpose passenger vehicle equipped with post manufacture window tint to the rear of the driver is not equipped with outside rearview mirrors on each side of the vehicle; or
(f) A commercial vehicle or a for-hire limousine (Class Q) has post manufacture window tint applied to the side windows to the immediate right and left of the driver which is not clear or reduces the transmittance of light through the glazing to less than 70 percent.

(4) Window Tint Application with Center High Mount Stop Lamp. Vehicles equipped with a center high mounted stop lamp mounted inside the vehicle may not be equipped with post manufacture window tint in the area of the rear window that would obscure the stop lamp.

Reject Vehicle If:
Post manufacture window tint is applied to the area of the rear window that would obscure the stop lamp.

G. Medical Exemption for Post Manufacture Window Tint Light Transmittance. Transportation Article, §22-406, Annotated Code of Maryland, provides an exemption for a person who must be protected from the sun for medical reasons from having a light transmittance of at least 35 percent on regulated windows equipped with post manufacture window tint. The law requires the owner to have in the vehicle, at the time the vehicle is stopped by a police officer, a written certification that details the owner's medical need for tinted windows, from a physician licensed to practice medicine in the State of Maryland. A vehicle owner whose vehicle is undergoing inspection or has been issued a safety equipment repair order for defect #61 "TINT" and indicates to the authorized inspection station their possession of a medical exemption, shall be referred to the ASED of the State Police for examination of the vehicle owner's medical documentation and the vehicle's post manufacture window tint. If the owner meets the requirements specified in Transportation Article, §22-406, Annotated Code of Maryland, for the medical exemption and the vehicle is compliant with all post manufacture window tinting regulations in this chapter, excluding the light transmittance requirement of regulated windows equipped with post manufacture window tint, the Division, when applicable, shall be authorized to:

(1) Issue a post manufacture window tint medical exemption form to be provided to the authorized inspection station performing an inspection of the vehicle which shall permit the registered inspection mechanic to exempt the vehicle's windows equipped with post manufacture window tint from meeting the light transmittance requirement; or

(2) Certify the safety equipment repair order for defect #61 "TINT".

Reject Vehicle If:
The vehicle is equipped with post manufacture window tint with less than 35 percent light transmittance on glazing regulated for the transmittance of light, and the owner/agent for the vehicle does not present a Post Manufacture Window Tint Medical Exemption issued by ASED to the inspection mechanic at time of inspection.

.23 Lighting.

A. Definitions. In this regulation, the following terms have the meanings indicated.

(1) "Auxiliary lamp" means a lamp that supplements the main headlamps of a vehicle.

(2) "Back-up lamp" means a lamp used to provide illumination behind the vehicle and to provide an indicator when the vehicle is in reverse gear.

(3) "Center high mount stop lamp" means a red high mounted stop lamp as required by 49 CFR §571.108, and as identified by the year of manufacturer, shall be equipped and function as originally designed, including any means provided to minimize reflections from the light of the lamp upon the rear window glazing that might be visible to the driver when viewed directly, or indirectly, in the rearview mirror.

(4) "Composite headlamp assembly" means a lamp assembly consisting of a plastic housing and reflector bonded to a plastic or glass lens and fitted with a bulb equipped with a seal used to provide illumination ahead of the vehicle.

(5) "Cornering lamp" means a steadily burning lamp used when the turn signal system is operating to supplement the headlamps by providing additional road illumination in the direction of the turn.

(6) "Daytime running lamp" means any pair of lamps on the front of a passenger car, multipurpose passenger vehicle, truck, or bus, other than parking lamps, driving lamps, or fog lamps, which may be wired to be automatically activated in a steady burning state, and are automatically deactivated when the headlamp control is in any "on" position, and as otherwise determined by the manufacturer of the vehicle:

(7) "Driving lamp" means an auxiliary lamp that may be used to supplement the upper beam of the headlamps.

(8) "Emergency warning lamp" means a lamp that provides a flashing light to identify an authorized vehicle on an emergency mission. The emergency signal may be an oscillating lamp, a rotating beacon, or pairs of alternating or simultaneously flashing lamps.

(9) "Fog lamp" means a lamp that may be used with the lower beam headlights to provide illumination under condition of rain, snow, dust, or fog.

(10) "Hazard warning lamps" means turn signal lamps that flash simultaneously to warn of the presence of a hazard.

(11) "Headlamp" means an adjustable lamp that projects white light to the front of a vehicle to illuminate the roadway and shoulder to permit the operation of a vehicle during periods of low visibility such as darkness, fog, rain, or other conditions. Headlamps may be sealed beam units or composite units with replaceable bulbs providing a low beam distribution of light, an upper beam distribution of light, or a combination of both lower and upper beams.

(12) "Headlamp low beam" means a distribution of white light directed to avoid glare in the eyes of oncoming drivers while providing illumination ahead of the vehicle.

(13) "Headlamp high beam" means a distribution of white light intended primarily for distant illumination and for use on the open highway when not meeting other vehicles.

(14) "Indicator lamp" means a lamp visible to the operator of a vehicle that indicates appropriate electrical circuits are in operation.

(15) "Lane changer" means a device, usually incorporated in the turn signal switch, which will actuate the turn signal lamps when held by the driver. It is intended for momentary use for signaling a lane change. When released by the operator, it will return to neutral and deactivate the signal lamp.

(16) "License-plate lamp" means a lamp used to illuminate the license plate on the rear of a vehicle.

(17) "Off-road lamp" means a lamp designed and manufactured solely for off-road use that does not meet DOT or SAE requirements for beam color, pattern, or luminosity.

(18) "Operating units or switches" means devices by which the functioning of lamps are controlled.

(19) "Parking lamp" means lamps used to designate the front of a parked vehicle.

(20) "Rear fog lamp" means a single, or pair of high-intensity red rear position lamps to be turned on by the driver in conditions of poor visibility to make the vehicle more visible from the rear.

(21) "Reflective device" means a device used on vehicles to indicate to an approaching driver by reflected light from the headlamps of approaching vehicles.

(22) "SAE Lighting Identification Code" means a series of standardized North American lighting and signaling function markings for lighting devices that a manufacturer or a supplier may use to mark his product to indicate the SAE lighting standard or standards to which the device is designed to conform. The code is not intended to limit the manufacturer or supplier in applying other markings to the devices.

(23) "Sealed beam unit" means an integral and hermetically sealed optical assembly with the name "Sealed Beam" molded in the lens.

(24) "Sealed headlamp assembly" means a major lighting device used to provide general illumination ahead of the vehicle. It consists of the following:

(a) Housing containing a reflector designed for specific bulb types, and a sealed lens;

(b) One or more beam units (bulbs) with seals;

(c) Means for mounting securely to the vehicle; and

(d) Means to permit required aim adjustment.

(25) "Side marker lamp" means a lamp on the left and right sides, visible to the side, and intended to indicate vehicle length. They are located near the front and rear on each side, and for vehicles 30 feet or more in length, they are located at the midpoint (intermediate side marker).

(26) "Stop lamp" means a lamp giving a steady warning light to the rear of the vehicle, to indicate the intention of the operator of the vehicle to reduce speed or stop.

(27) "Tail lamp" means a lamp used to designate the rear of a vehicle.

(28) "Turn signal lamp" means a lamp that provides a flashing warning light to indicate the intended direction of the turn.

(29) "VOL" means a headlamp that is designed to be visually optically aligned left. VOL systems have a vertical aiming plane 0.6° below the vertical reference point on the alignment screen or image. VOL headlamps are aimed using the vertical aiming plane 0.6° below the left side top of the sharp cutoff of the beam as the reference to the measured height of the headlamp at the center of the lamp beam.

(30) "VOR" means a headlamp that is designed to be visually optically aligned right. VOR headlamps are aimed using the right portion of the beam as the reference. VOR headlamps are aimed using the top right portion of the beam as the reference to the measured height of the headlamp at the center of the beam.

B. North American SAE Lighting and Signaling Function Markings.

Lighting and Signaling Device	***SAE Code***
Retro-reflector	*A*
Wide-angle retro-reflectors (reflex reflectors)	*A2*
Motorcycle auxiliary "passing" lamp	*C*
Motorcycle turn signal lamp	*D*
Side turn signal lamps – vehicles at least 12 m (39.3701 ft.) in length	*E*
Side turn signal lamps – vehicles less than 12 m (39.3701 ft.) in length	*E2*
Front Fog lamps	*F*
Rear Fog lamps	*F2*
Front fog lamp (to updated and increased performance requirements)	*F3*
Cargo lamp	*G*
Sealed beam headlamps (marking applies to housing or unit)	*H*
Gas-discharge (HID "Xenon") headlamp	*HG*
Sealed beam headlamp housing	*HH*

LED (Light-emitting diode) headlamp	*HL*
Halogen replaceable-bulb headlamp	*HR*
Turn signal lamp – front	*I*
Turn signal lamp – front, spaced from 75mm to 99mm from low beam headlamp	*I3*
Turn signal lamp – front, spaced from 60mm to 74mm from low beam headlamp	*I4*
Turn signal lamp – front, spaced less than 60mm from low beam headlamp	*I5*
Turn signal lamp – front (also front for vehicles at least 80 inches wide)	*I6*
Lighting and Signaling Device	***SAE Code***
Turn signal lamp – front, vehicle 80 inches wide, spaced less than 100mm from the headlamp	*I7*
Front cornering lamp	*K*
Rear cornering lamp	*K2*
License plate lamps	*L*
Motorcycle headlamp	*M*
Moped headlamp	*N*
Spot lamp	*O*
Parking lamp – front	*P*
Clearance or side marker or identification lamp	*P2*
Clearance or side marker or identification lamp, vehicles at least 80 inches wide	*P3*
Combination clearance and side marker lamps	*PC*
Combination clearance and/or side marker lamp for vehicles at least 80 inches wide	*PC2*
Back-up lamps	*R*
Stop lamp	*S*
Stop lamp, vehicles at least 80 inches wide	*S2*
Tail lamp	*T*
Tail lamp (Tail lamps for use on vehicles 2032mm or more in overall width)	*T2*
Supplemental high mounted stop and turn signal lamp	*U*
Supplemental high mounted stop and turn signal, vehicle at least (78.74 inches) wide	*U2*
Central high-mounted brake lamp (CHMSL), for passenger cars	*U3*
Warning lamps for emergency, maintenance, and service vehicles	*W or W1*
Warning lamps for school buses	*W2*
360 – degree emergency warning lamps	*W3*
Emergency warning device	*W4*
Electric emergency lanterns	*X*
Driving lamp	*Y*
Daytime Running lamp	*Y2*
Auxiliary low beam lamp	*Z*

C. General Lamps and Reflectors. Vehicles shall be equipped with lamps and reflectors as originally required by 49 CFR §571.108. This includes all exterior lighting, interior dash lamps, interior indicator lamps, and driver warning lamps. Actuate all general lamps on the vehicle and inspect the condition, mounting, and function of any authorized or allowed lamp. Reflectors may be incorporated into lamp assemblies or be separate equipment. Inspect the reflectors for condition and mounting. All lamps and reflectors shall be approved and marked with the proper code letter. The table in §B of this regulation lists many of the common North American lighting codes for reference but is not all-inclusive regarding lighting codes. Lamps to the front of a vehicle shall either emit white or amber color. A lamp that is not functioning properly or is improperly marked for use shall be rejected. Light Emitting Diode (LED) lamps emit light from multiple LEDs in the lamp. At least 50 percent of the LEDs shall illuminate when the lamp is activated. Off-road lamps shall not illuminate when required or approved lighting is operated.

(1) Lamps to the front of a vehicle shall be white or amber. Tail lamps and reflectors at the rear of a vehicle shall be red. Stop lamps and turn signals to the rear of a vehicle shall be red or amber. Center high mount stop lamp shall be red only. Back-up and license plate lighting shall be white only. Side marker lamps and reflectors shall be red to the rear of the vehicle, and amber at all positions forward of the rear of the vehicle. Variations of colors used in OEM lighting such as daytime running lamps may appear to be red or blue to the front of some vehicles which are shaded to a range of color chromaticity that does not meet the federal definition for red or blue light which is incorporated from 49 CFR §571.108, and have therefore been certified by the manufacturer as approved on-road lighting are acceptable.

(2) Aftermarket replacement lighting shall emit or display the same color as the OEM lamp. Authorized optional or auxiliary lighting is not required to be present, but shall meet the same requirements as required lighting, including proper color as required by design or placement on the vehicle, or shall be removed from the vehicle.

Reject Vehicle If:

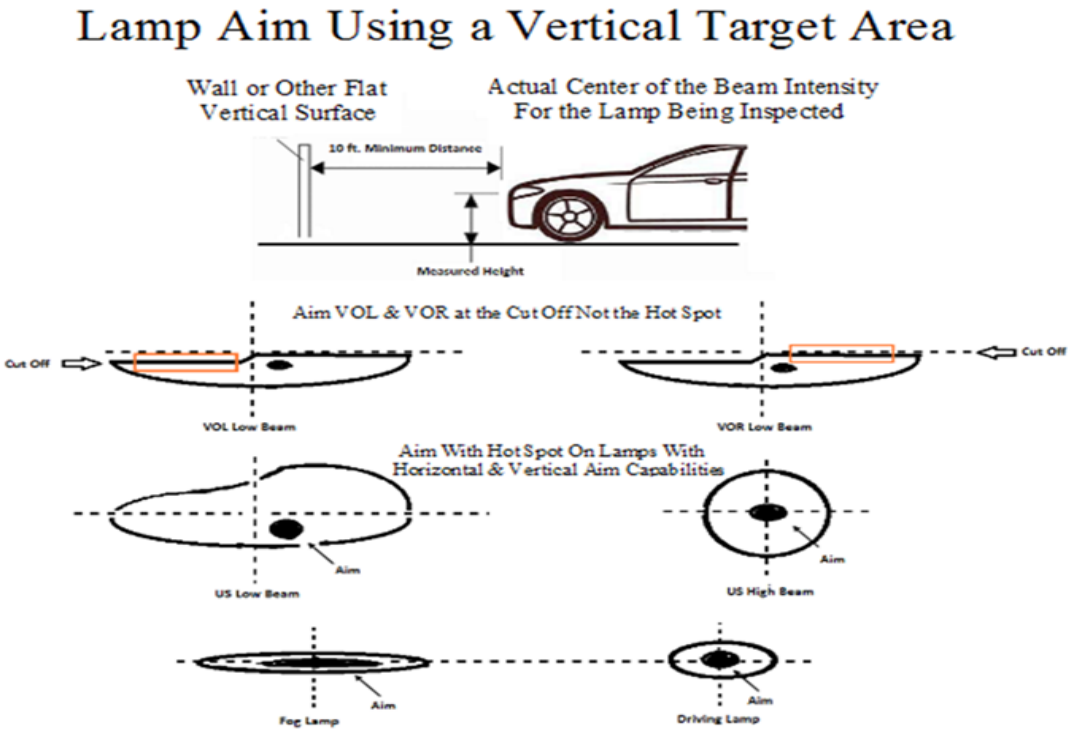
(a) Not equipped with a required lamp, or a required or authorized lamp is obscured by any non-transparent material or object, not mounted to operate as designed:
(i) Is damaged;
(ii) Is not functioning properly;
(iii) Shows a different color than as originally equipped;
(iv) Is equipped with any exterior aftermarket lamp that shows a color contrary to Maryland law; or
(v) Additional lighting has been added which interferes with any required lamp, reflector, or other regulated equipment;
(b) Equipped with an unauthorized lamp that does not comply with this regulation;
(c) A required or approved optional lamp shows color contrary to Maryland law, excluding OEM lighting with approved variations or shading of colors:
(i) License plate lighting and back-up lighting is any color other than white;
(ii) Reflector on the rear or the rear side of a vehicle is not red;
(iii) Reflector mounted forward of the rear of the vehicle is not amber;
(iv) Side marker lamp is not red to the rear and rear sides of the vehicle;
(v) Side marker lamp mounted forward of the rear of the vehicle is not amber;
(vi) Clearance and identification lamp is not red to the rear and rear sides of the vehicle, or not amber mounted forward of the rear of the vehicle;
(vii) Front park lamp is not amber or white;
(viii) Headlamp does not emit white light only;
(ix) Fog lamp is not amber or white; or
(x) Driving lamp is not white;
(d) A turn signal is designed to self-cancel and does not self-cancel, is missing, is not properly mounted, is damaged to affect function, is not visible, or does not match the color of the other lamp to the front or the rear as applicable, or otherwise does not function as designed;
***Agency Note:** Motorcycles built before January 1, 1973, were not required to be equipped with turn signal lamps.*
(e) A hazard signal lamp is missing, not properly mounted, damaged, or otherwise does not function as designed;
(f) A stop lamp is missing, not properly mounted, is damaged, does not match the color of the other stop lamps, or otherwise does not function as designed, including the center high mount stop lamp; *(i) High center mounted stop lamps on passenger vehicles manufactured on or after September 1, 1985, but before September 1, 1986, may flash when the hazard warning system is activated;* *(ii) High mounted center stop lamps on multipurpose passenger vehicles, trucks, and buses, whose overall width is less than 80 inches, whose GVWR is 10,000 pounds or less, which were manufactured on or after September 1, 1993, shall be equipped with a high-mounted stop lamp.*
***Agency Note:** Vehicles built before September 1, 1985, were not required to be equipped with center high mount stop lamps.*
(g) A reflector is missing, is the incorrect color, is not properly mounted, is damaged, or otherwise does not function as designed;
(h) A side marker is missing, not properly mounted, damaged, or otherwise does not function as designed;
***Agency Note:** Motorcycles are not required to be manufactured with side marker lamps.*
(i) A tail lamp is not red or is missing, not properly mounted, damaged, or otherwise does not function as designed;
(j) A park lamp is missing, not properly mounted, damaged, or otherwise does not function as designed;
(k) A license plate light is missing, is not the correct color, is improperly mounted, damaged, or otherwise does not function as designed;
(l) Clearance or identification lamps are not properly mounted, are damaged, are not the correct color, or otherwise do not function as designed;
(m) Backup lamp is missing if the vehicle was originally equipped with a backup lamp, is not the correct color, does not come on when vehicle is in reverse gear or comes on in any other gear position, or not properly mounted, damaged, or otherwise does not function as designed;
(n) A lamp is not located or mounted to operate in accordance with its intended function, as indicated by the SAE/DOT markings on the lamp;
(o) Daytime running lamp is missing, non-functioning, damaged, or otherwise rendered inoperative;
(p) More than 50 percent of the LEDs in any general lamp are not illuminated when the lamp is activated; or
(q) An off-road lamp illuminates when any required or approved on-road lamp is activated.

D. Headlamps. Headlamps shall project white light only and shall not have any damage to the lamp assembly or lens that adversely affects the operation of the lamp. Sealed beam lamps may not contain cracks or holes. Composite lamp units shall be maintained in a sealed condition or may be re-sealed with products designed to permanently repair automotive lamps. LED headlamps shall illuminate fully and shall not have any non-functioning LEDs when activated. Lamp descriptions and lens code markings are listed in §§A and B of this regulation. Headlights shall not be obscured or covered by any non-transparent material or object or equipped with a colored lens cover. Clear DOT approved impact covers may be acceptable, provided they do not affect the operation of the headlamp. Headlights shall be mounted at a height no lower than 22 inches, or higher than 54 inches from the center of the lamp to the surface the vehicle is operated upon. Lamp assemblies designed for use with replaceable bulbs (composite headlights), shall be equipped with the proper type of bulb, as indicated by the SAE/DOT markings on the lamp.

(1) Headlamp Inspection. Headlamps shall be inspected to ensure that the lamps illuminate from left to right sides with approximately the same intensity of light. Noticeable differences in illumination may indicate improper or defective lamps. Auto-adjusting headlamps do not need to be aimed. These headlamps are equipped with a malfunction indicator light, which will illuminate if they fail the self-test. In the event of a headlamp malfunction, the owner/agent shall be referred to a dealer or qualified repair shop for repairs. Headlamps federally

designated and marked as VOL, or VOR, are prohibited from having horizontal adjustment capability. Other earlier headlamps were designed with both horizontal and vertical aim requirements and capabilities. Manually adjusted headlamps found out of alignment shall be properly aligned using the inspection mechanic's experience, training, and knowledge to properly align the headlamps. Those headlamps with both low and high beam lamps located in the same assembly shall be aimed on low beam unless specified otherwise by the manufacturer, or the Division.

(2) Headlamp Aiming. Headlamps shall be aimed at the same height left and right. The height of the center of the headlamp beam intensity zone shall be referenced to establish the aiming height of the vehicle. Headlamp aiming may be performed using aiming equipment meeting SAE standards or may be performed at not less than 10 feet from a vertical flat surface. VOL and VOR headlamp patterns shall be observed and adjusted, if necessary, to within 2 inches up or down of the height measured as described in this regulation, while ensuring the heights of the lights are the same side to side. Headlamps with horizontal and vertical aim capability shall also be aimed vertically within 2 inches of the center of the headlamp left to right. (See Diagram)



Headlamp and Auxiliary lamp aim patterns

Reject Vehicle If:
(a) The headlamp has an excessively clouded lens which adversely affects the operation of the lamp;
(b) The headlamp is obscured or covered by a non-transparent material or object, is equipped with an unapproved lens cover, or has a hole in the lens;
(c) The headlamp is mounted lower than 22 inches, or higher than 54 inches when measured from the center of the lamp to the level surface the vehicle is operated upon;
(d) The headlamp is improperly mounted, or is equipped with the incorrect bulb type in a composite headlight assembly;
(e) The headlamp does not illuminate or is noticeably dim;
(f) The aim point of a headlamp beam, as applicable to headlamp design, is more than 2 inches left or right of the vertical centerline of the lamp, or is more than 2 inches above or below the horizontal centerline of the lamp;
(g) The auto-adjusting headlamp malfunction indicator light is illuminated indicating a system fault;
(h) A sealed beam headlamp has a crack or defect compromising the lamp;
(i) A composite headlamp assembly has an unrepaired, or improperly repaired hole, which could allow contamination of the interior of the lamp surfaces;
(j) A LED headlamp does not illuminate fully or has non-functioning LEDs when activated; or
(k) A composite lamp is equipped with a bulb or other illuminating device not specified for use with the lamp.

E. Fog and Driving Lamps.

(1) Front-mounted fog and driving lamps are designed to illuminate the driver's view to the front of the vehicle and emit beam patterns that meet FMVSS for on-road operation. If a vehicle is equipped with either front fog lamps or driving lamps they shall activate with the appropriate headlamp beam, and be properly aimed using the same procedure for aiming headlamps. The mounting heights of driving lamps do not apply to emergency vehicles. A motor vehicle equipped with required headlamps and also equipped with any auxiliary lamp, or any other lamp on its front, shall not be capable of illuminating more than four of these lamps at any one time when on a highway. A utility spot lamp mounted on the side or roof of a vehicle and controlled by a vehicle occupant is not considered a driving lamp, therefore is not subject to inspection. Work lighting for commercial vehicles shall not operate on the same circuit as regulated lighting. Fog and driving lamps are optional but shall illuminate with the proper color if operational.

(2) Front Fog Lamps. Front fog lamps supplement low beam headlamps and shall not illuminate with high beam headlamps. Fog lamps shall be mounted on the front of the vehicle at a height, not more than 30 inches or less than 12 inches above the level surface on which a vehicle stands when measured from the center of the lamp. Only two front-mounted fog lamps are allowed by law. Fog lamps may be white or amber but shall match color side to side.

Reject Vehicle If:
(a) A front fog lamp is mounted higher than 30 inches above, or lower than 12 inches above the surface on which a vehicle stands;
(b) Equipped with more than two front-mounted fog lamps;
(c) The front fog lamp is not white or amber, or is mismatched in color side to side;
(d) The front fog lamp can be operated while the high beam headlamps are illuminated;
(e) The front fog lamp does not display the proper asymmetrical beam pattern or the center of the intensity zone of a fog lamp beam is more than 2 inches left or right of the vertical centerline of the lamp or is more than 2 inches above or below the horizontal centerline of the lamp; or
(f) The front fog lamp is equipped with the incorrect bulb type in a composite assembly.

(3) Rear Fog Lamps. Rear fog lamps are permitted to be mounted on the rear of a vehicle either singularly or in pairs and supplement tail lamps and serve as high-intensity rear position lamps to be turned on by the driver in conditions of poor visibility to make the vehicle more visible from the rear.

Reject Vehicle If:
(a) A rear fog lamp is not mounted as required by this regulation;
(b) A rear fog lamp is any color other than red; or
(c) More than two rear fog lamps are installed on a vehicle.

(4) Driving Lamps. Driving lamps supplement high beam headlamps and shall not illuminate with low beam headlamps. Driving lamps shall be mounted on the front of the vehicle at a height, not more than 42 inches or less than 16 inches above the level surface on which the vehicle stands when measured from the center of the lamp. Only two driving lamps are allowed by law. Driving lamps shall be white.

Reject Vehicle If:
(a) A driving lamp is mounted higher than 42 inches above, or lower than 16 inches above the surface on which a vehicle stands;
(b) Equipped with more than two driving lamps;
(c) A driving lamp is not white;
(d) A driving lamp can be operated while the low beam headlamps are illuminated;
(e) A driving lamp does not display the proper symmetrical beam pattern or the center of the intensity zone of a driving lamp beam is more than 2 inches left or right of the vertical centerline of the lamp or is more than 2 inches above or below the horizontal centerline of the lamp; or
(f) A driving lamp is equipped with the incorrect bulb type in a composite assembly.

F. Driver Information Lamps. Dash lamps, driver warning lights, and driver indicator lamps for regulated safety equipment shall be inspected for presence and function. Dash lamps shall illuminate the speedometer and odometer, fuel gauge, oil gauge, alternator gauge, temperature gauge, and any other gauge that provides vehicle operating information to the driver. Driver indicator lamps for turn signal and hazard lamps, high beam headlamps, or the indicator lamp or any authorized lamp shall illuminate when the specific lamp is actuated.

Reject Vehicle If:
(1) Dash lamps do not illuminate fuel, oil, alternator, and temperature gauges, speedometer, odometer, or any other gauge that provides vehicle operating information to the driver; or
(2) Indicator lamps do not properly illuminate to indicate the operation of the turn and hazard signal lamps, the high beam headlamps, the fog/driving lamps, or the indicator lamp for any other authorized lamp does not illuminate to indicate the operation of the associated lamp.

G. Emergency Lamps. Certain lamp colors and uses are restricted by Maryland law. Blue emergency lamps are only authorized for use on law enforcement vehicles, which may also be equipped with red, white, and amber lights. Red, white, and amber emergency lamps are authorized for use on fire department vehicles, rescue vehicles, ambulances, and State vehicles used for hazardous material spills. Amber service emergency lamps may be used by maintenance vehicles, tow trucks, escorts, experimental test vehicles, and slow-moving farm and rural letter carrier vehicles. Rural letter carrier vehicles may use two bi-directional lights on each side of the vehicle on the roof. Green emergency lamps may be used by taxi cabs as hold up alert lights. Work lamps are permitted to be installed on service and emergency vehicles. A vehicle privately owned by an officer of a volunteer fire company may be equipped with red and green, or red and white lights or signal devices as authorized in Transportation Article, §22-218, Annotated Code of Maryland.

Reject Vehicle If:
(1) Equipped with an unauthorized emergency lamp that does not comply with this regulation;
(2) An authorized emergency lamp is obscured by any non-transparent material or object, is damaged or not mounted to operate as designed, is not mounted securely or is not functioning when required; or
(3) Authorized emergency lamp shows color contrary to Maryland law and this regulation.

H. School Vehicle Warning Lamps. A school vehicle shall be equipped with four red flashing warning lights and four amber flashing warning lights, installed so that each amber flashing warning light shall be located near each red flashing warning light, at the same level, but closer to the vertical centerline of the vehicle. The red flashing lights shall be equipped with an override switch which shall function with the master switch on or off. Shields shall be installed on warning lights, except those equipped by the manufacturer with halogen lights, or LEDs. Shields may be of a single type to cover both color lights and shall be painted black, with a minimum depth of 4 inches. The system shall be wired so that the amber flashing warning lights are activated only by hand operation, and if activated, are automatically deactivated when the entrance door is opened. There shall be red and amber warning light switches and pilot lights mounted to the right and within reach of the seated driver in a panel or specific area in the dash, and may not be incorporated with other switches. The appropriate pilot

lights shall either go out or flash at an obvious altered rate to indicate malfunction. A school vehicle may be equipped with an approved flashing white strobe light no further than 1/3 of the body length forward from the rear edge of the roof. A manual switch and pilot light shall be installed in the driver's compartment if equipped with a flashing white strobe light.

Reject Vehicle If:
(1) Not equipped with required alternating flashing warning lights;
(2) The amber flashing light and pilot light do not illuminate when the momentary switch is depressed with the master switch on and the door closed;
(3) The amber flashing light or pilot light stays illuminated when the door is opened;
(4) The red flashing light and pilot light do not illuminate, or the stop arm and crossing arm, if equipped, does not automatically extend;
(5) The red flashing light and pilot light stay illuminated, or the stop arm and crossing arm, if equipped, does not immediately retract when the door is closed;
(6) The red flashing light and pilot light do not illuminate, or the stop arm and crossing arm, if equipped, does not automatically extend when the door is opened without depressing the momentary switch;
(7) Depressing the momentary switch with the master switch off activates the amber flashing lights;
(8) Opening the door activates the red flashing light or stop arm with the master switch off;
(9) An override switch is not provided, or does not function to activate the red warning lights and pilot light without opening the service door;
(10) The vehicle is equipped with a flashing white strobe light which does not comply with this regulation;
(11) The vehicle is not equipped with the required functioning manual switch or pilot light if equipped with a flashing white strobe light; or
(12) Less than 33 percent of the LEDs in any warning lamp are not illuminated when the lamp is activated.

.24 Electrical Systems.

A. Inspect alternator or generator mounting, and the drive belt condition. Inspect electrical wiring and components for proper connections, insulation of wiring, and secure mounting to protect equipment from damage. Control switches for regulated equipment shall be inspected for proper function and condition. Regulated equipment that can be operated manually in the event of an electrical control system failure shall be certified as compliant. The battery, or batteries, shall be inspected for condition, secure mounting, and proper cable connections. The horn shall be inspected for proper function, condition, secure mounting, and horn button location. Inspect the electrical system for improper wire type or other electrical components that are not designed for use with automotive on-road vehicles. Industrial or residential type electrical components shall not be permitted.

Reject Vehicle If:
(1) Alternator, or generator, is loose, damaged, not charging properly, or is incorrect for the vehicle;
(2) The drive belt for alternator or generator is missing, loose, damaged, or is incorrect for the vehicle;
(3) The ignition switch does not function to allow the engine to start, run, and apply power to electric systems as designed, or does not function to allow the engine to be turned off and remove power from electric systems as designed;
(4) The horn is loose, fails to function, or produces loud or harsh sound;
(5) The horn button is missing, or is not within arm's reach of driver;
(6) The wiring insulation is missing, cracked, or broken;
(7) The wiring shows evidence of burning or short-circuiting;
(8) The electrical connections are loose or show signs of excessive corrosion;
(9) The electrical systems that control regulated equipment fail to function, and equipment cannot be manually controlled;
(10) The electrical wiring or other components are not designed for automotive use;
(11) The battery case is cracked or broken;
(12) The battery connections are loose or show signs of excessive corrosion;
(13) The battery is not held down securely;
(14) The battery is not covered by the vehicle body or is not equipped with a cover when the vehicle body does not provide coverage;
(15) The battery vents are not open if equipped, or battery is low on fluid, if applicable; or
(16) The battery is not capable of holding a charge.

B. School Vehicle Electrical Systems. Type I and Type II school vehicles shall comply with the electrical standards in §A of this regulation. Due to the unique function of school vehicles, the Administration has other specific additional requirements for battery ratings. Type I School Vehicle shall be equipped with a graduated voltmeter.

Reject Vehicle If:
(1) The Type I school vehicle battery is not rated for at least 1,000 cold cranking amperes measured at 0°F; or
(2) The Type II school vehicle battery is not rated for at least 650 cold cranking amperes measured at 0°F.

.25 Load Covers.

A. This regulation applies for issuance of a safety equipment repair order to a:

(1) Vehicle registered or capable of being registered under Transportation Article, §13-917, Annotated Code of Maryland, on which the manufacturer's original design specifications for bed enclosures have been altered to increase the vehicle's load;

(2) Part of a load touching a bed enclosure which is within 6 inches of the top of the enclosure that it touches; or

(3) Part of the load which is higher than any of the enclosures.

B. This regulation does not apply for issuance of a safety equipment repair order to a:

(1) Class K (farm area) vehicle as defined in Transportation Article, §13-935, Annotated Code of Maryland; or

(2) Class E (truck) vehicle registered or capable of being registered under Transportation Article, §13-917, Annotated Code of Maryland if the vehicle manufacturer's original design specifications for bed enclosures have not been altered to increase the vehicle's load-carrying capacity.

(3) A construction vehicle working within the confines of a public works construction work project site as outlined in the construction project's plans and specifications, provided the distance traveled does not exceed 1 mile or the distance specified in an extension granted by the Maryland Department of Transportation;

(4) A construction vehicle or mining equipment crossing a highway between construction or mining sites; or

(5) Vehicle, within the Port of Baltimore for a distance not to exceed 1 mile, carrying a load of loose material between a stockpile or storage facility and a vessel docked at the Port.

C. After January 1, 1992, any vehicle on which the manufacturer's original design specification for bed enclosures has been altered to increase the vehicle's load capacity shall have the load covered with a firmly attached canvas or similar type covering regardless of how the vehicle is loaded.

D. Vehicles undergoing safety inspection that are equipped with load covers shall be inspected for proper installation and operation of the load cover, and all associated components of the load cover system. Inspect cover, if equipped, for holes, rips, tears, or broken mesh that would permit any part of the load to blow, fall, or spill from the bed, and for proper attachment to the vehicle.

Reject Vehicle If:
(1) The cover does not fully cover the top of the vehicle bed if equipped;
(2) The cover contains holes, rips, tears, or broken mesh which would permit any part of the load to blow, fall, or spill from the bed; or
(3) The cover is not securely attached to the bed, or securement hardware is missing, broken, or damaged.

.26 School Vehicle Color and Identification (Lettering).

A. School vehicle color and identification is regulated in COMAR 11.19.

Reject Vehicle If:
(1) The main vehicle body color is not National School Bus Yellow;
(2) The hood is not National School Bus Yellow (non-reflective paint may be used on the hood);
(3) The vehicle's grill is not chrome or manufacturer's grey;
(4) The vehicle's main roof is not National School Bus Yellow or white (excludes the front and rear roof caps which shall be National School Bus Yellow only);
(5) Exterior body trim or bumper is not black;
(6) The rub rails, seat lines, or snow rails are not painted gloss black;
(7) The painted wheel rims are not gray, silver, or black; or
(8) The Type I School Vehicle is equipped with accessories that cover the axle nuts, wheels, or lug nuts.

B. Lettering. Lettering and emergency door arrow shall be painted black or applied using vinyl die-cut self-adhering material, (yellow numbers on front bumper are acceptable).

Reject Vehicle If:
(1) The lettering is not painted black or applied using vinyl die-cut self-adhering black letters and numbers;
(2) The lettering is not block type or located as shown in the diagrams in this regulation;
(3) The school vehicle does not have the words "School Bus" in letters, 8 inches high by 1 inch on both the front and rear of the vehicle body;
(4) The lettering is not placed as high as possible without impairment of its visibility;
(5) The lettering is mounted on a reflective area that exceeds 12 inches high by 49 inches wide, however, area may be reduced in size to conform to the contours of the vehicle body;
(6) The emergency exit door or push-out window is not labeled at the top of, or directly above with the words "Emergency Exit Door" or "Emergency Exit" using 2 inches high lettering, both inside and outside of the vehicle;
(7) A Type I School Vehicle rear emergency door is not equipped with a 6 inches high by ¾ inch wide black arrow applied both inside and outside the vehicle that indicates the direction to release the exit;
(8) The school vehicle identification number is not located and visible on all four sides using letters 6 inches high by ¾ inch wide;
(9) The rear number is not located above the rear bumper and below the window line. (Excludes temporary numbers placed in the second window on the lower glass on each side);
(10) The applicable local school system name is not located on both sides of the vehicle or is not properly centered, using letters 6 inches high by ¾ inch wide; or
(11) The applicable contractor's or private owner's or operator's names is not located to the rear of the entrance door and on the left side of the vehicle in the same approximate location using lettering 2 ½ – 3 inches high by ¼ – ½ inches wide in a 16 by 30 inches area.

C. Additional Lettering.

(1) Only signs and lettering approved by State law or regulation, and any numbers necessary for identification shall appear on school vehicles. Bumper stickers are not permitted. The fleet number may be on the front bumper, yellow numbers on the front bumper are acceptable. The following lettering may be used if required or desired:

(a) ICC number, if applicable, to the rear of the entrance door in lettering 2 ½ – 3 inches high by ¼ – ½ inch wide;

(b) Address and telephone number of the owner to the rear of the entrance door in lettering 2 ½ – 3 inches high by ¼ – ½ inch wide;

(c) "Stop on Signal" when required, 4 inches high lettering below the rear window.

(d) "Drug-Free School Zone" lettering; and

(e) If desired, "Drug-Free School Zone" may be on the exterior of the vehicle.

(2) The lettering, if used shall be:

(a) Located under the first window on the service door side or at another location near the service door as approved for each individual school vehicle;

(b) Using letters 2 inches high by ⅜ inch wide; or

(c) A decal may be used provided the background is National School Bus Yellow and the decal is not larger than 8 by 18 inches.

Reject Vehicle If:
The school vehicle is equipped with lettering or numbers in violation of this regulation.

D. Yellow Reflective Tape.

(1) Reflective tape at least 1 inch wide and not wider than 6 ½ inches may be used to form a:

(a) Single horizontal line on each side of the school vehicle immediately below the upper rub rail or at the floor line; or

(b) Rectangular figure on the rear of the school vehicle body;

(i) The vertical lines of the rectangle shall be as close to the sides of the school vehicle as possible without extending over the sides of the vehicle; and

(ii) The horizontal lines of the rectangle shall consist of one straight line above and near the rear bumper and one straight line at or near the roofline.

(2) The reflective tape specified may be applied in a discontinuous fashion so as to not cover any existing or required lettering.

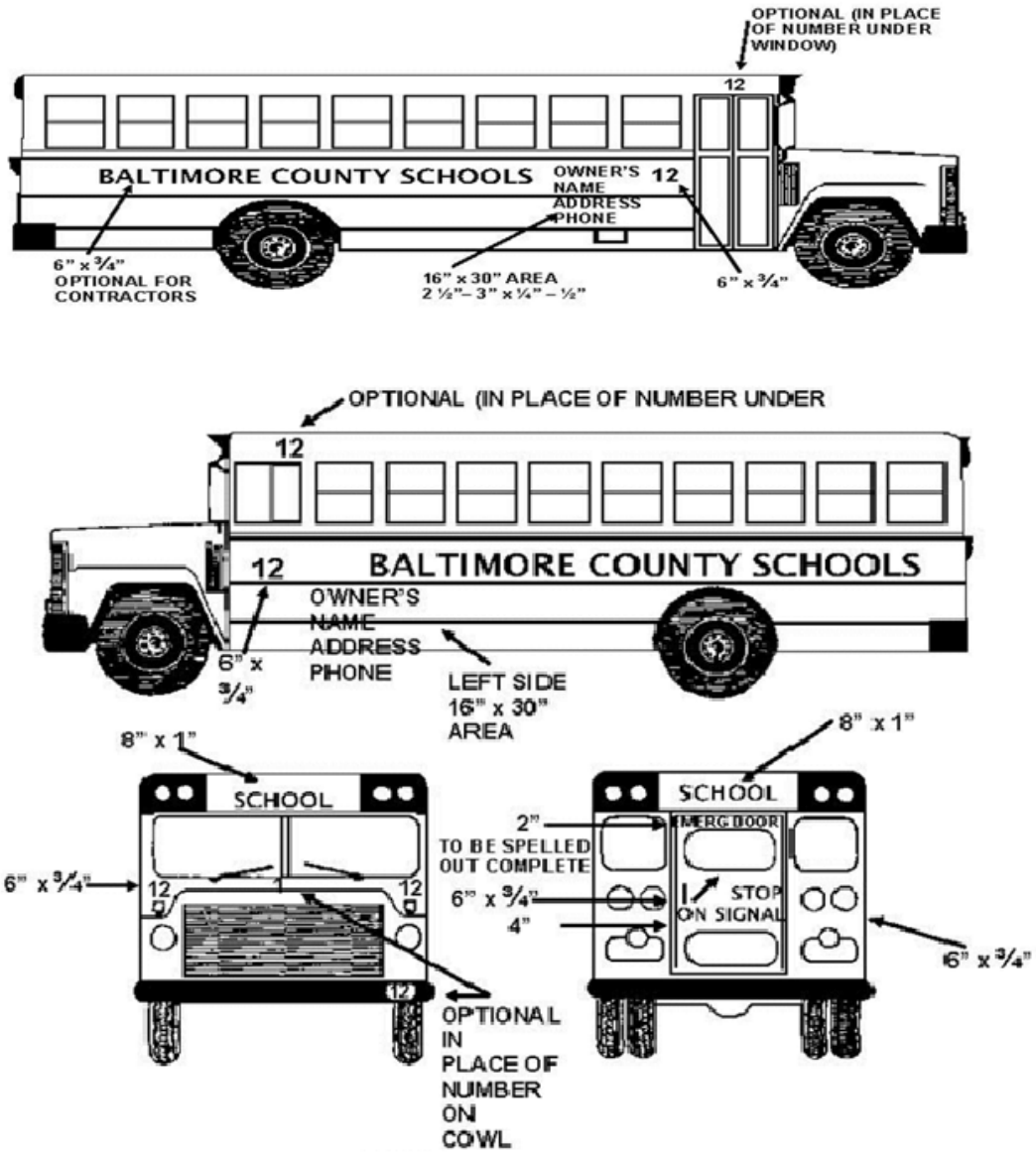
E. Roof Identification Number. ID numbers may be used on the roof. If so equipped, they shall be:

(1) Located in the most forward section of the roof as possible;

(2) Lettered from the left side to the right side of the school vehicle; and

(3) Letters shall be 18 inches high by 10 inches wide, with a 2 ¾ inch stroke.

Reject Vehicle If:
The school vehicle is not equipped with required reflective tape, or tape is not compliant with this regulation.



TYPE 1 SCHOOL VEHICLE

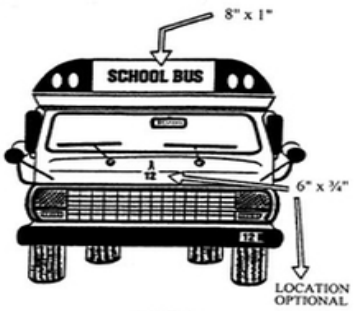


FIGURE 1

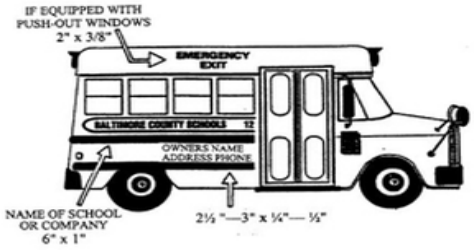


FIGURE 3

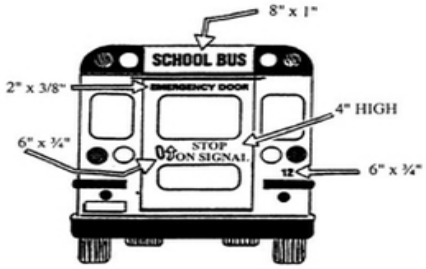


FIGURE 2

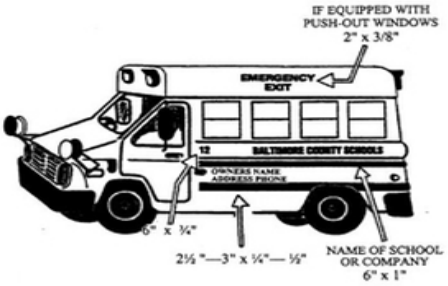


FIGURE 4

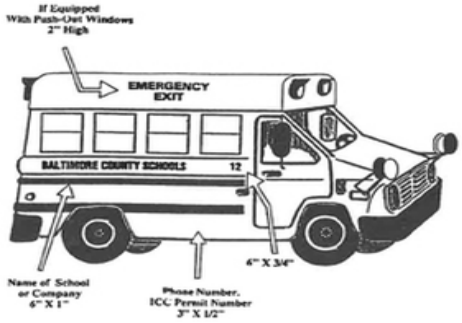


Figure 5

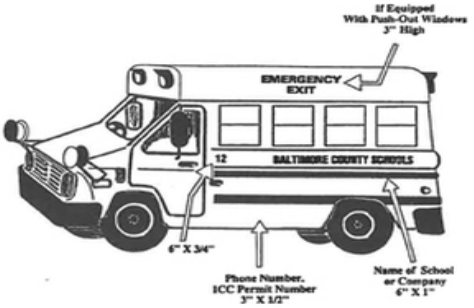


Figure 6

TYPE 2 SCHOOL VEHICLE

.27 School Vehicle Emergency Equipment.

A. Fire Extinguisher. A school vehicle shall be equipped with at least one 5-pound capacity, pressurized, dry chemical fire extinguisher complete with hose. The extinguisher shall:

(1) Be mounted in a bracket located below the window line in the driver's compartment and shall be readily accessible;

(2) Be equipped with a pressure gauge that shall be easily read without removal of the fire extinguisher from its mounted position;

(3) Be of a type with a total rating of 2A 10 BC or greater; and

(4) Have an operating mechanism sealed with a type of seal that does not interfere with the use of the fire extinguisher.

B. First Aid Kit. A school vehicle shall carry a weatherproof first aid kit, removable and readily identifiable, mounted in an accessible, non-enclosed location in the driver's compartment. The kit shall contain at a minimum, the contents suggested by the national standards for school transportation specifications and procedures.

C. Reflectors and Flares.

(1) A school vehicle shall be equipped with three red triangular emergency reflectors in a suitable holder located in the driver's area; or

(2) A school vehicle shall be equipped with three 30-minute stand-up flares stored in a red canister in the driver's area.

D. Body Fluid Clean-Up Kit. A school vehicle shall have a removable and moisture-proof fluid clean-up kit. The kit shall be properly mounted in the driver's compartment and identified as a body fluid clean-up kit.

E. Storage. The emergency equipment may be stored in a non-locking compartment that is permanently labeled "Safety Equipment Inside".

Reject Vehicle If:
(1) Not equipped with a fire extinguisher of the required type, rating, and capacity;
(2) The fire extinguisher is not mounted as required;
(3) Not equipped with a first aid kit, or kit does not contain the proper contents;
(4) The first aid kit is not identified and mounted as required;
(5) Not equipped with three red triangular reflectors;

(6) The reflectors are not stored as required;
(7) Not equipped with three 30-minute flares, or flares are not stand-up or lean-to flares;
(8) Flares are not stored as required;
(9) Not equipped with a body fluid clean-up kit as required; or
(10) The body fluid clean-up kit is not identified or mounted as required.

.28 School Vehicle Approved Optional Systems.

A. Video Cameras. Video cameras may be installed in a school vehicle if:

(1) The camera system has been approved by the administration;

(2) The system is installed in an area of the school vehicle with no sharp edges or an area not likely to cause student injury; and

(3) The system is outside the federal head impact zone.

B. A safety detection system approved by the Federal Communications Commission (FCC) may be installed to warn drivers of moving objects, such as children, within areas around a school vehicle considered to be most dangerous.

Reject Vehicle If:
(1) The video camera system is not an approved type;
(2) The video camera system is installed in a prohibited manner;
(3) The safety detection system is not an approved type;
(4) The safety detection system does not operate automatically, and when the stop arm is extended;
(5) The safety detection system is not equipped with audible and visual alarms with volume adjustment to compensate for background noise;
(6) The safety detection system is not located in the driver's compartment, visible from the driver's seat; or
(7) The safety detection system is not equipped with a delay feature to operate the detection system unit for a brief period of time after the school vehicle resumes motion.

.29 Type I School Vehicles for Transporting Special Needs Children.

A. School vehicles constructed for transporting special needs children shall comply with vehicle equipment standards, but because of the use of specialized equipment installed, may have certain modifications that result in alterations in vehicle equipment configurations.

B. Special Service Doors (Wheelchair Door). If equipped, the special service door shall be manually operated, padded over the door header, and equipped with a functioning audible signal in the driver's compartment to warn if the door is not securely closed. Double doors shall overlap where they meet, and all doors shall be equipped with weather seals. A light shall be inside the vehicle to illuminate the area of the special service door, operated from the door area. Aisles leading to the doors shall be maintained with a minimum of 30 inches width to permit passage of wheelchairs. Door panels shall extend below the floor line when ramps are used and cover the ramp container opening.

C. Ramp. A ramp shall be of sufficient strength to support at least 600 pounds and at least 88 inches long and of the same width as the door opening at the floor level, and be equipped to secure to the vehicle. A ramp shall be equipped with a protective flange on each side to keep wheels on the ramp, and the floor of the ramp shall be of nonskid material.

D. Power Lift (Elevator and Fold-Up Platform). A power lift shall have at least a 660 pound working capacity with power up capability. A lift platform shall be at least 26 inches wide and 40 inches long with a ramp with nonskid surface material and safety stops at both ends. The power lift shall be controlled from a panel within the vehicle adjacent to the lift, operational by an attendant standing on the lift. The lift shall not operate unless the door is opened. A manual backup system shall be provided in the event of power failure of the lift.

E. Wheelchairs. Forward-facing wheelchairs shall be secured by a four-point fastening system.

F. Grab Handles. May be used on each side of the front service doors.

G. Book Racks. May be installed on residential special education vehicles above the side windows from the front cross seat to the rear transverse seat, except across or above an emergency door. Bookrack shall be padded and cover the edges and lower surfaces of the rack.

Reject Vehicle If:
(1) A school vehicle service door is not in compliance with this regulation;
(2) The aisles leading to the door are not at least 30 inches wide;
(3) The header over door area is not padded, or padding is damaged;
(4) A special door is not equipped with a functioning audible signal in the driver's compartment to warn if the door is not securely closed;
(5) A school vehicle ramp is not in compliance with this regulation;
(6) A school vehicle power lift is not in compliance with this regulation;
(7) The wheelchair fastening system is not a four-point system or is damaged;
(8) The bookrack is installed across or above an emergency door; or
(9) The bookrack is not padded to prevent impact injuries as required.

CHRISTINE NIZER
Administrator