**Section 438.APPENDIX D Seat Belts through Suspension System**

a) SEAT BELTS

PROCEDURES/SPECIFICATIONS:

When seat belts are present, they must be securely attached and adjustable and must function properly. Seat belts must not be cracked, broken, frayed or torn.

REJECT VEHICLE IF:

Seat belts are:

Not secured;

Not adjustable;

Cracked, broken, frayed, torn; or

Do not function properly.

b) STEERING SYSTEM

1) GENERAL REQUIREMENTS

PROCEDURES/SPECIFICATIONS:

All steering system components must be capable of free movement.

Instruct a second person to move the steering mechanism from one extreme position to the other while observing the movement.

Inspect all steering system components for any modification or other condition that interferes with free movement.

REJECT VEHICLE IF:

Any modification or other condition exists that interfered with the free movement of any steering component.

2) Steering Wheel Free Play

PROCEDURES/SPECIFICATIONS:

Steering wheel free play must be maintained within specified limits.

When testing for steering wheel free play on vehicles equipped with power steering, the engine must be running.

Complete the following procedures to determine amount of steering wheel free play:

Move the steering wheel one direction until movement of tires is detected.

Make a chalk mark on the steering wheel at the 12 o'clock position.

Move the steering wheel in the opposite direction until movement of the tires is again detected and then make a second chalk mark at the 12 o'clock position.

Measure the distance between the two marks to determine the steering wheel free play, using the table below to determine if the vehicle is within specified limit.

The steering wheel free play will be maintained in accordance with the following table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Steering Wheel Diameter |  | Manual Steering System |  | Power Steering System |
|  |  |  |  |  |
| 16" |  | 2" |  | 4½" |
| 18" |  | 2¼" |  | 4¾" |
| 20" |  | 2½" |  | 5¼" |
| 22" |  | 2¾" |  | 5¾" |

REJECT VEHICLE IF:

Steering wheel freeplay is beyond specified limits listed above.

3) Steering Column

PROCEDURES/SPECIFICATIONS:

The steering wheel and column must be in good condition and properly secured.

Inspect U-bolts and positioning parts for looseness or absence. Tilt-type column must lock in at least one position.

If visible, inspect universal joints for faulty or worn condition or obvious repair welding.

Inspect steering wheel for secure attachment.

REJECT VEHICLE IF:

Steering column has any missing or loose U-bolts or positioning parts.

Tilt-type column does not lock in at least one position.

Steering column has worn, faulty or obviously repair-welded universal joints.

Steering wheel is not properly secured.

4) Front Axle Beam and all Steering Components Other Than Steering Column

PROCEDURES/SPECIFICATIONS:

Front axle beam and all steering components, other than steering column, must be free of any cracks or any obvious welded repairs.

Inspect beam and components for any cracks.

Inspect beam and components for any obvious welded repairs.

REJECT VEHICLE IF:

Any cracks are present on the front axle beam or any steering component, other than steering column.

Any obvious welded repairs on front axle beam or on any steering component, other than steering column.

5) BALL JOINTS

PROCEDURES/SPECIFICATIONS:

Raise vehicle to unload the ball joints (brakes should be applied to eliminate wheel bearing looseness). Either grasp wheel at top and bottom or use a bar for leverage. Attempt to rock wheel in and out. Check movement at extreme top or bottom of tire.

REJECT VEHICLE IF:

Wheel bearing movement exceeds ¼ inch.

Ball joints or fasteners are damaged, loose or missing.

AGENCY NOTE: Do not confuse wheel bearing movement with ball joint movement.

6) king pins AND WHEEL BEARINGS

PROCEDURES/SPECIFICATIONS:

Raise vehicle to unload the king pins (brakes should be applied to eliminate wheel bearing looseness). Either grasp wheel at top and bottom or use a bar for leverage. Attempt to rock wheel in and out. Check for movement at extreme top or bottom of tire. Measure movement.

REJECT VEHICLE IF:

Wheel bearing movement exceeds ¼ inch.

King pin movement exceeds:

|  |  |
| --- | --- |
| Wheel Size(in inches) | Max. Allowed(in inches) |
|  |  |
| 16 or less | ¼ |
| 16.1 to 18 | ⅜ |
| over 18 | ½ |

King pins are damaged.

Fasteners are damaged, loose or missing.

7) STEERING GEAR BOX

PROCEDURES/SPECIFICATIONS:

The steering gear box and mounting brackets must be free of any cracks. All steering gear box mounting bolts must be present and securely attached.

Inspect mounting bolts for their presence and secure attachment.

Inspect gear box and mounting brackets for any cracks.

REJECT VEHICLE IF:

Any mounting bolts are loose or missing.

Any cracks in gear box or mounting brackets.

8) PITMAN ARM

PROCEDURES/SPECIFICATIONS:

The pitman arm on the steering gear output shaft must be securely attached.

Inspect the pitman arm on the steering gear output shaft for any looseness.

REJECT VEHICLE IF:

Pitman arm on the steering gear output shaft is loose.

9) POWER STEERING

PROCEDURES/SPECIFICATIONS:

Inspect power steering lines and steering gear box for severe leakage (not slight dampness) and proper fill level (i.e., manufacturer's designated indicator line).

Inspect the power steering cylinder for secure attachment.

Inspect the auxiliary power assist cylinder for any looseness.

REJECT VEHICLE IF:

Power steering fluid leaks severely (not slight dampness) or fluid level does not meet indicator line.

Power steering cylinder is not securely attached.

Auxiliary power assist cylinder is loose.

10) TIE ROD ENDS, DRAG LINK ENDS, STEERING DAMPER AND IDLER ARMS

PROCEDURES/SPECIFICATIONS:

All clamps, bolts and threaded joints of tie rod and drag links must be securely tightened.

While the vehicle is on the ground (not jacked up) inspect the tie rod ends, drag link ends, steering damper and idler arms while a second person moves the steering wheel from side to side.

Inspect clamps and clamp bolts for loose condition.

Inspect all threaded joints for loose condition.

Inspect ball and socket joints for movement.

REJECT VEHICLE IF:

Loose clamps or clamp bolts are not present.

Any threaded joint is loose.

Any movement under steering load of a ball and socket joint (i.e., tie rod ends and drag link ends). Any motion, other than rotational, between any linkage member and its attachment point of more than ¼ inch.

11) NUTS

PROCEDURES/SPECIFICATIONS:

All component nuts must be properly located on the tie rods, pitman arm, drag link, steering arm or tie rod arm and must be securely tightened.

Inspect nuts on tie rods, pitman arm, drag link, steering arm and tie rod arm for their presence and secure attachment.

REJECT VEHICLE IF:

Nuts are loose or missing on tie rods, pitman arm, drag link, steering arm or tie rod arm.

12) Toe-In/Toe-Out

PROCEDURES/SPECIFICATIONS:

AGENCY NOTE: Vehicles with an independent suspension on the front axle should not be driven over the wheel alignment indicator immediately after the front end has been raised. A false reading may occur if the vehicle front end is lowered and then within a few feet driven across the alignment indicator. The front wheels will not have had sufficient distance to resume their normal tracking. The vehicle should either be raised after crossing the wheel alignment indicator or should be backed up 10 feet or more before being driven forward across the indicator.

With wheels held in a straight ahead position, drive vehicle slowly over the approved drive-on side slip indicator (i.e., wheel alignment indicator).

Excessive toe-in or toe-out is a general indication that a complete check should be made of all front wheel alignment factors (caster, camber, steering axis inclination).

REJECT VEHICLE IF:

More than 30 feet per mile on the approved side slip indicator.

c) SUSPENSION SYSTEM

1) SHOCK ABSORBERS AND STRUTS

PROCEDURES/SPECIFICATIONS:

If vehicle is equipped, inspect the following components:

Shock absorbers;

Struts;

Mounts;

Mounting bolts; and

Rubber bushings.

REJECT VEHICLE IF:

Shocks or struts are missing, broken or have severe leakage (not slight dampness) (if vehicle is so equipped).

Mounts or mounting bolts are broken or loose.

Rubber bushing is partially or completely missing.

2) SPRINGS

A) Coil

PROCEDURES/SPECIFICATIONS:

Visually inspect:

Spring;

Control arms; and

Torque arms.

REJECT VEHICLE IF:

Coil is:

 Missing;

 Disconnected;

 Broken;

 Has loose bushings;

 Is welded; or

 Is damaged.

B) Leaf

PROCEDURES/SPECIFICATIONS:

With the vehicle on the ground (not jacked up), instruct a second person to rock the steering wheel and observe the side to side movement of the leaf spring, shackles and bushings from under the vehicle's hood.

The front of the vehicle must be jacked up on chassis for checking front suspension. With the use of a pry bar and using frame as a pivot, attempt to pry front and rear spring attachments and check for movement.

Inspect the following:

Bushings or pivot;

Center bolts;

Hangers;

Shackles;

Springs; and

U-bolts.

REJECT VEHICLE IF:

Springs are missing or broken (i.e., up and down movement is found);

Shackle, shackle pins, hangers, bushings or U-bolts are worn, loose or missing;

Center bolt in springs are sheared or broken;

Steering stops allow tire to rub on frame or metal; or

Any leaves are cracked or missing.

C) Torsion Bar

PROCEDURES/SPECIFICATIONS:

If vehicle is so equipped, visually inspect:

Torsion bar (includes bushings);

Mounting brackets;

Control arm;

Torque arm; and

Stabilizer bars.

REJECT VEHICLE IF:

Components are:

 Missing;

 Disconnected;

 Broken;

 Loose;

 Welded; or

 Damaged.

Bushings are worn or missing.

D) Air Suspension

PROCEDURES/SPECIFICATIONS:

Visually inspect:

Air bag/bellows;

Mountings;

Air lines; and

Leveling devices.

REJECT VEHICLE IF:

Air leaks are present.

Air bag/bellows are not properly inflated.

Vehicle is resting on one or both axles.

Vehicle is not level (tilting to either side).

Air bag/bellow belting is exposed.

Air lines are excessively worn.

Mountings are loose.

AGENCY NOTE: Pressure regulator valve should not allow air into the system until at least 55 p.s.i. is in braking system.