

SCHOOL BUS STEERING COMPONENTS

ITEM AND METHOD OF INSPECTION DESCRIPTION	POINT VALUE REQUIREMENT
(#) DESIGNATES POINTS TO BE DEDUCTED	
IV. Steering	(15) A. A king pin with more than 1/2 inch of free play.
A. One kingpin defective	
B. Two kingpins defective	(25) B. Two kingpins with more than 1/2 inch of free play.
Kingpins should be inspected on all high mileage buses.	
Procedure for inspecting kingpins. See Appendix A.	
C. Defective Steering	(25) C.1. The steering gear must be approved by the chassis manufacturer and designed to insure safe and accurate performance when the vehicle is operated with maximum load and at maximum speed.
1-6. Requirements	
	(25) 2. Changes not approved by the chassis manufacturer must not be made in the steering apparatus.
	CFR 49/570.60 M.S. 169.4501
	(25) 3. There must be a clearance of at least 2 inches between the steering wheel and the cowl, instrument panel, windshield, or any other surface.
	(25) 4. The steering system must be designed for means for lubrication of all wear-points if wear-points are not permanently lubricated.
	(25) 5. Power steering is required and must be of the integral type with integral valves.

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6. Steering wheel lash procedure for testing.	(25)	6. Lash or freeplay in the steering system shall not exceed: a. 2" on a 16" steering wheel. b. 2 1/4" on an 18" steering wheel. c. 2 1/2" on a 20" steering wheel. d. 2 3/4" on a 22" steering wheel.
a. Start engine and turn steering wheel left until there is a perceptible movement of the wheels.		
b. Mark that point on the wheel and move wheel right until there is a perceptible movement of the wheels. Mark that point.		
c. Measure the distance between the two points and compare to item 7.a,b,c, or d depending on steering wheel size.		
7. With the engine running on vehicles with power steering, or the steerable wheels elevated on a vehicle without power steering, turn the steering wheel through the limit of travel in both directions. Feel for binding or jamming on the steering gear mechanism.	(25)	7. Steering wheel shall turn freely through the limit of travel in both the limit of travel directions. CFR 49 570.60 M.S. 169.4501
8. Unsafe equipment. M.S. 169.47	(25)	8. Check for loose or missing nuts and bolts, and the positioning and integrity of steering column, column input shaft and joints, and gear box.

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9. Linkage Play Procedure
for Inspection.

- a. Set parking brake and chock rear wheels.
- b.1) If the bus is equipped with a straight axle, jack up the front of the bus
- 2) If the bus is equipped with upper and lower control arms, jack under the lower control arm to load the ball joints.
- c. Make sure that the wheel bearings are correctly adjusted.
- d. Grasp the front and rear of a tire and attempt to move the wheel assembly left and right.
- e. If movement at the front or rear tread of the tire exceeds the applicable valves shown under 10. a,b,c.

NOTE: Steering columns that appear to be out of adjustment on Ford and International vehicles may be checked by the following procedure: Place a 1/4 inch drill bit in hole under boot (with wheel down, bit will go in if adjustment is proper, bit will not go in if out of adjustment or worn.)

- (25) 9. Tie rod ends, drag links, idler arms, and pitman arms shall not have more than:
 - a. 1/4" of play on vehicles with rims less than 16" diameter.
 - b. 3/8" of play on vehicles with rims 16" to 18" in diameter.
 - c. 1/2" of play on vehicles with rims greater than 18" in diameter.

10. Power Steering System
Inspection Procedure:

- a. Examine fluid reservoir, hoses and pump belts for the conditions indicated.

(5) 10. The power steering system shall not have cracked, frayed or slipping belts, chafed or abraded hoses, show signs of leakage or have insufficient fluid in the reservoir.

49 CFR 570.60

11. Tie rod and tie rod end
*check by hand - do not use pry bar.

(25)11. Axial movement (vertical) of 1/8" or more - must be replaced no lateral movement allowed.