

STEERING

APPLICATION

This inspection applies to all vehicles.

PROCEDURE AND STANDARDS

- A steered axle is one which has a king pin or ball joints and can be turned to a left and right lock. An axle ceases being steered when it is fixed in the straight ahead position
- Power steering may be inspected with the engine running. If vehicles are fitted with additional equipment, belt driven from the engine, where the belt may cause a hazard to the Examiner they should be tested without the engine running. Examples are belt driven refrigeration compressors and air conditioning.
- The hydraulic fluid level check only applies to those reservoirs which can be checked without removing the reservoir cap.

Exposure of structural cords on power steering hoses is acceptable provided that these cords are not damaged.

Note:

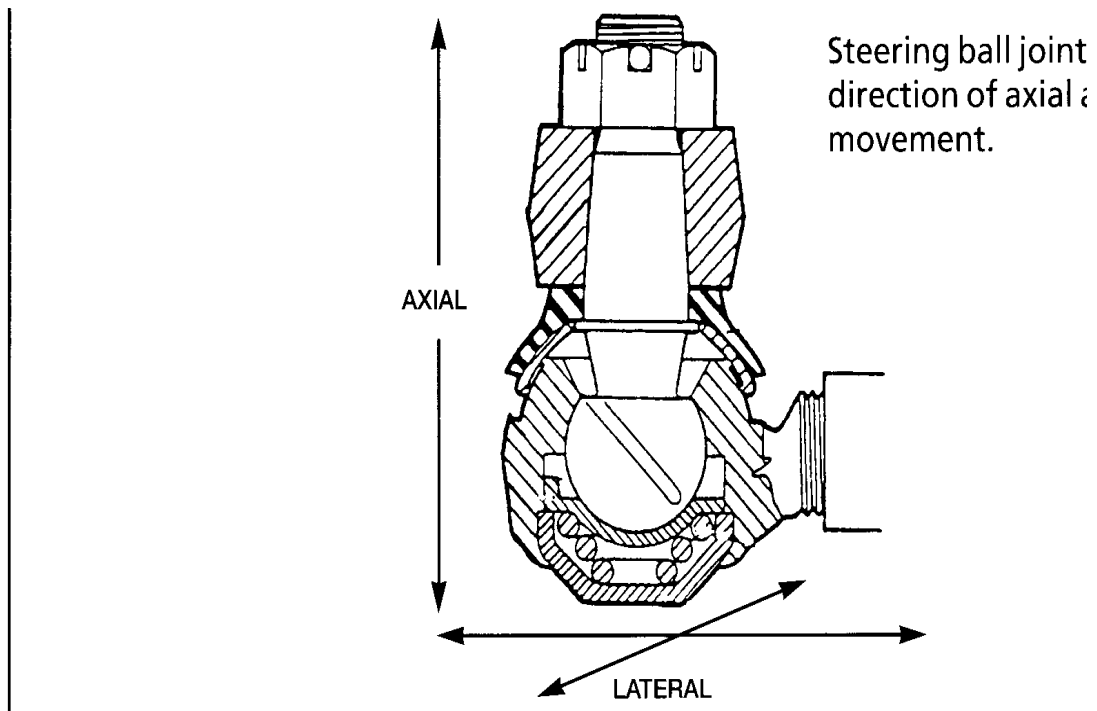
Any leakage from a power steering system is a Reason for Failure.

- For Articulated buses with steered wheels on trailers and on any self steered axle, visually check joints and components for wear and condition.
- With the road wheels on the ground rock the steering and check all steering joints and fixings.
- Visually check for axial and lateral movement of all ball joints. Where a ball joint is fitted with a spring to take up such movement, the compression of the spring must not be mistaken for excessive wear. If excessive wear is suspected check by using hand pressure.
- With road wheels off the ground, instruct the driver to rotate the steering wheel through its full working range. If a lock stop, which is known to be a standard fitment, is missing this is a Reason for Failure. It should be noted however that in some cases

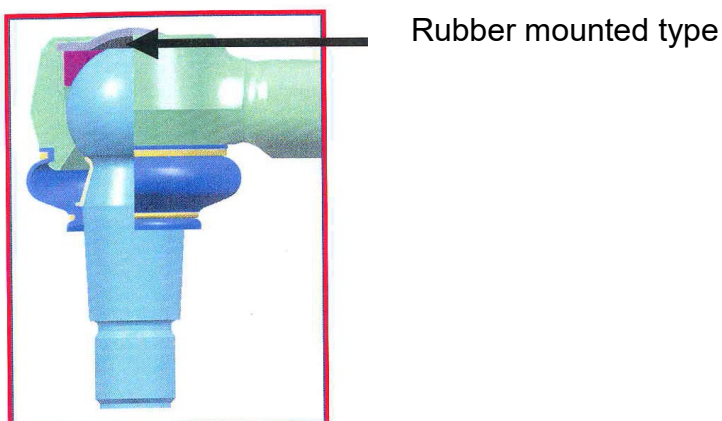
there is provision for extra lock stops which are not a standard item. Where two are fitted only one needs to fulfil the function on each lock. They may be integral with the steering mechanism.

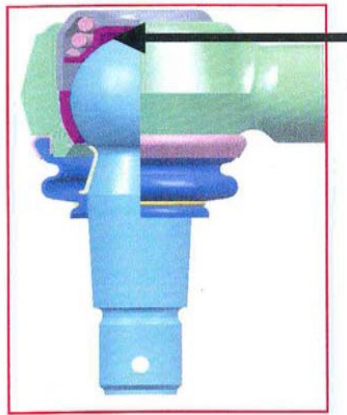
Note: Common means of acceptable locking devices are:
Anti-rattle washers, Split pins, lock wire, spring washers, nyloc nuts and liquid locking compounds.

Note:
Vehicles with independent front suspension should be checked with the suspension in the normal running position.



An increasing number of vehicles are now fitted with different types of ball joint, spring loaded or rubber mounted type each having different wear limits (some vehicle may be fitted with both types of joint). The rubber mounted type has a smaller wear limit than the spring loaded type.





Spring loaded type

Certain ball joints are designed only to swivel fore and aft and not side to side (front drag link ball joints only, fitted on Volvo and Renault Magnum Dxi, Premium Dxi and Kerax Dxi). In an attempt to swivel the joint you may hear a knocking sound this is normal as this is the device to stop it swivelling. The only wear limits that should be taken into account for the annual test is axial movement. Where lateral movement is evident in the ball joint it must be confirmed that axial movement in excess of 2mm exists before failure is justified. **Other manufacturers with conventional ball joints** have also stated that axial movement up to 2mm is acceptable.

REASONS FOR FAILURE

**Deficiency
Category**

1. Power steering:

- | | | |
|----|--|-----------|
| a. | Not working correctly. | MAJOR |
| b. | Not working correctly and obviously affects steering control. | DANGEROUS |
| c. | Removed or disconnected when a standard fitment. | MAJOR |
| d. | Removed or disconnected when a standard fitment which obviously affecting steering control. | DANGEROUS |
| e. | With an air/fluid leak from any part of the system. | MAJOR |
| f. | Reservoir is below minimum level | MINOR |
| g. | Reservoir is empty | MAJOR |
| h. | Pump insecure or its drive system missing or defective. | DANGEROUS |
| i. | Pipe or hose excessively corroded, damaged, bulging or fouling other parts of the vehicle. | MAJOR |
| j. | Pipe or hose excessively corroded, damaged, bulging or fouling other parts of the vehicle which obviously affects steering control. | DANGEROUS |
| k. | With a cracked or damaged ram and/or ram body anchorage, any excessive free play at ram anchorage. | MAJOR |
| l. | With a cracked or damaged ram and/or ram body anchorage, any excessive free play at ram anchorage, which obviously affects steering control. | DANGEROUS |
| m. | With excessive free play between ball and valve to the extent that separation is likely. | DANGEROUS |
| n. | With cables damaged, excessively corroded. | MAJOR |
| o. | With cables damaged, excessively corroded to such an extent that the steering is affected. | DANGEROUS |
| p. | With an inappropriate repair. | MAJOR |
| q. | With an inappropriate repair which obviously affects steering control. | DANGEROUS |

2. Electronic power steering:

a.	Malfunction indicator lamp indicates a fault	MAJOR
b.	Unsafe modification	MAJOR
c.	Unsafe modification which is obviously effecting the steering	DANGEROUS
3.	Steering with:	
a.	A ball pin shank loose.	MAJOR
b.	A ball pin shank loose to such an extent that separation is likely.	DANGEROUS
c.	A sharp or deep groove at the neck of a ball pin.	MAJOR
d.	A track rod or drag link end insecure.	MAJOR
e.	A track rod or drag link end insecure to such an extent that separation is likely.	DANGEROUS
f.	Any abnormal movement in a joint.	MAJOR
g.	Any abnormal movement in a joint to such an extent that separation is likely.	DANGEROUS
h.	Movement between sector shaft and drop arm.	MAJOR
i.	Movement between sector shaft and drop arm to such an extent that separation is likely.	DANGEROUS
j.	Excessive wear in a pivot point (e.g. an intermediate drop arm).	MAJOR
k.	A part fixed to the chassis insecure (e.g. an intermediate drop arm, pivot housing, steering box, ram arm).	MAJOR
l.	A part fixed to the chassis insecure (e.g. an intermediate drop arm, pivot housing, steering box, ram arm) to such an extent that separation is likely.	DANGEROUS
m.	Movement between a steering arm and its fixings.	MAJOR
n.	Movement between a steering arm and its fixings to such an extent that separation is likely.	DANGEROUS
o.	A component fractured or so cracked, damaged, misaligned, deformed or so worn that it is likely to fail.	DANGEROUS

p.	A retaining or locking device not fitted or insecure.	MAJOR
q.	A steering lock stop insecure or missing or not fulfilling its function	MAJOR
r.	A component repaired by welding or showing signs of excessive heat being applied.	MAJOR
s.	A component repaired by welding and or showing signs of excessive heat being applied, which obviously affects the steering control.	DANGEROUS
t.	Any steering component, road wheel or tyre fouling any part of the vehicle.	MAJOR
u.	Track rod excessively deformed.	MAJOR
v.	Track rod excessively deformed and obviously affects steering control.	DANGEROUS
w.	Roughness or undue stiffness in the operation of the steering.	MAJOR
x.	Excessive lift or end float of sector shaft.	MAJOR
y.	Excessive lift or end float of sector shaft to such an extent that functionality is affected.	DANGEROUS
z.	Excessive wear in steering rack	MAJOR
aa.	Excessive wear in steering rack to such an extent that functionality is affected.	DANGEROUS
bb.	Excessive movement of rack housing in mounting bushes.	MAJOR
cc.	Excessive movement of rack housing in mounting bushes to such an extent that steering control is obviously affected.	DANGEROUS
dd.	A rack gaiter (if rack originally fitted with gaiters) split, damaged, missing or displaced.	MAJOR
ee.	A ball joint cover damaged or deteriorated but not to the extent that it would no longer prevent the ingress of dirt etc.	MINOR
ff.	A ball joint cover missing, insecure, excessively damaged or severely deteriorated to the extent that	MAJOR

it would no longer prevent the ingress of dirt etc.

- | | | |
|-----|--|-----------|
| gg. | Leak of oil or grease. | MAJOR |
| hh. | Gear casing fractured. | MAJOR |
| ii. | Gear casing fractured and obviously affects steering control or the casing is likely to become detached. | DANGEROUS |
| jj. | Unsafe modification. | MAJOR |
| kk. | Unsafe modification which obviously affects steering function. | DANGEROUS |