UN Regulation No.79

Steering equipment

(Test procedures)

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Outline

Specification :

- **5.1.1. Steering handling controllability and stability**
- **5.1.2. Steering straight ahead controllability and stability**
- **6.2.1. Cornering controllability and stability**
- **6.2.2. Tendency to self-centre (half lock)**
- **6.2.4. Steering control effort (Intact condition)**
- **6.2.5. Steering control effort (Failure condition)**

- Annex 3 : Braking performance for vehicles using the same energy source to supply steering equipment and braking device
- Annex 4 : Additional provisions for vehicles equipped with ASE
- Annex 5 : Provision for trailers having hydraulic steering transmission
- Annex 6 : Special requirements to be applied to the safety aspects of complex electronic vehicle control systems

Test condition

The test shall be conducted on a level surface affording good adhesion.

Tyre pressure is adjusted to the value stated by manufacturer.

During the test(s), the vehicle shall be loaded to its technically permissible maximum mass and its technically permissible maximum load on the steered axle(s). (Both mass is stated by the manufacturer)

In the case of any systems that use electrical energy for part or all of the energy supply, all performance tests shall be carried out under conditions of actual or simulated electrical load of all essential systems or systems components which share the same energy supply. Essential systems shall comprise at least lighting systems, windscreen wipers, engine management and braking systems.

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5.1.1. Steering handling controllability and stability

The steering system shall ensure easy and safe handling of the vehicle up to its maximum design speed.

5.1.2. Steering straight ahead controllability and stability

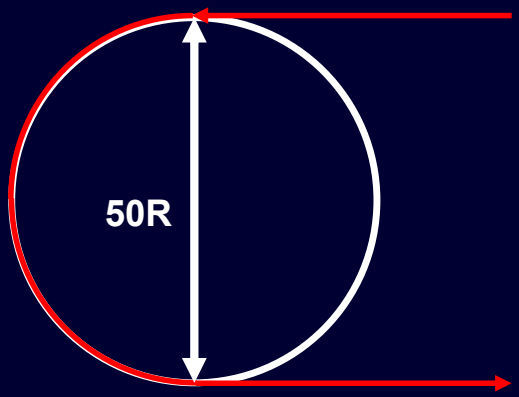
It must be possible to travel along a straight section of road without unusual steering correction by the driver and without unusual vibration in the steering system at the maximum design speed of the vehicle.

Subjective evaluation at High-speed test track

Single lane change

6.2.1. Cornering controllability and stability

- It must be possible to leave a curve with a radius of 50 m at a tangent without unusual vibration in the steering equipment at the following speed:
- Category M1 vehicles: 50 km/h



<Intact condition and failure condition>

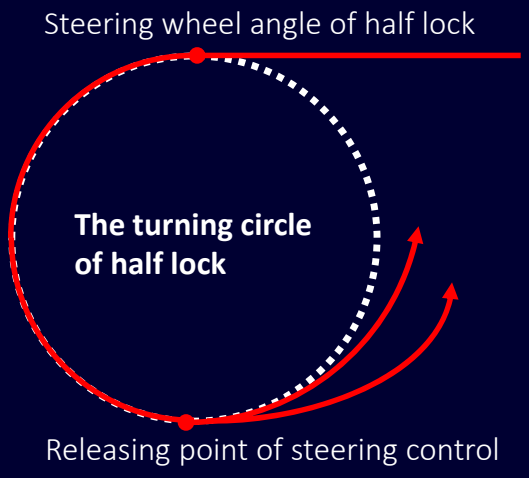
Possible to leave a curve without unusual vibration in the steering equipment.

The direction of operation of the steering control shall correspond to the intended change of direction of the vehicle and there shall be a continuous relationship between the steering control deflection and the steering angle.

Subjective evaluation
(Left and right direction)

6.2.2. Tendency to self-centre (half lock)

When the vehicle is driven in a circle with its steered wheels at approximately half lock and a constant speed of at least 10 km/h, the turning circle must remain the same or become larger if the steering control is released.



<Only intact condition>

Confirm steering wheel angle of half lock

The turning circle must remain the same or become larger under intact and failure condition.

Subjective evaluation
(Left and right direction)

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6.2.1. Steering control effort (Intact condition)
6.2.5. Steering control effort (Failure condition)

The vehicle shall be driven from straight ahead into a spiral at a speed of 10 km/h.

The steering wheel control effort shall be measured at the nominal radius of the Steering control until the position of the steering control corresponds to turning radius given in the table below.

	Intact			With a failure		
Vehicle Category	Maximum effort (daN)	Time (s)	Turning radius (m)	Maximum effort (daN)	Time (s)	Turning radius (m)
M1	15	4	12	30	4	20
M2	15	4	12	30	4	20
M3	20	4	12	45	6	20
N1	20	4	12	30	4	20
N2	25	4	12	40	4	20
N3	20	4	12	45	6	20

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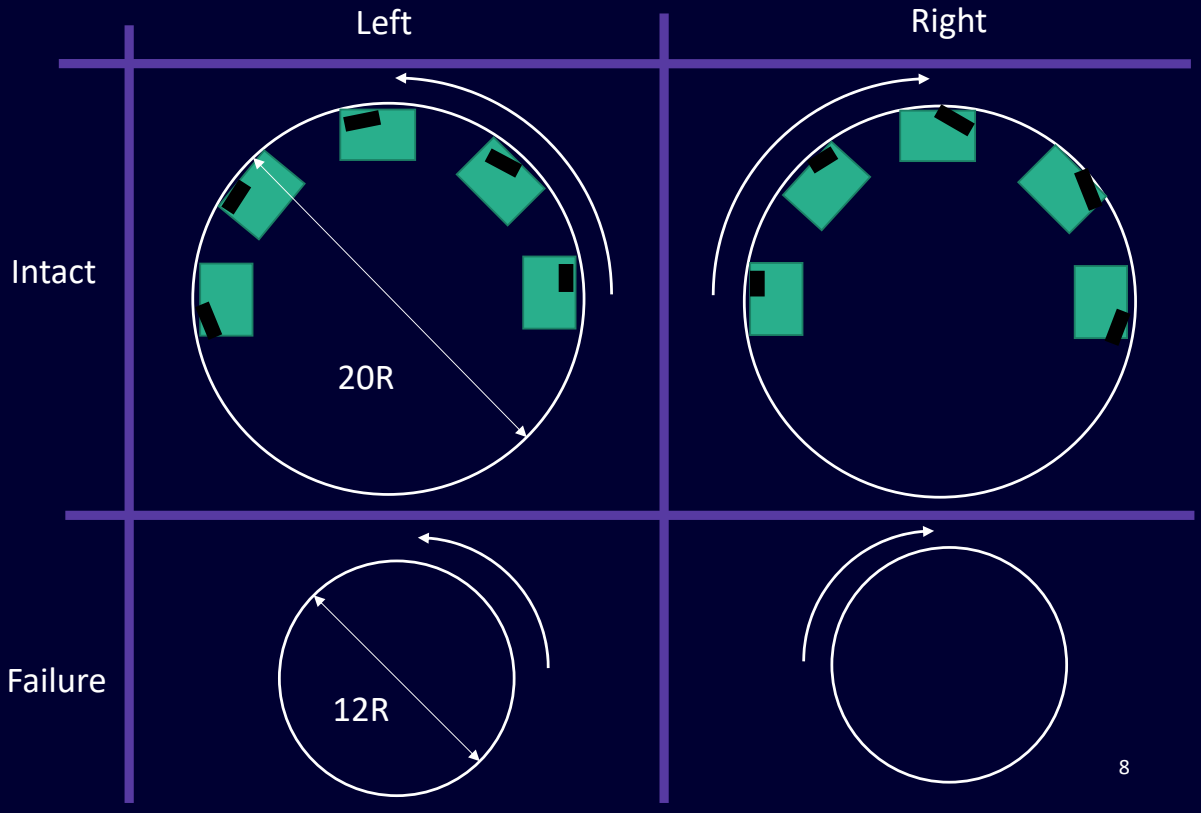
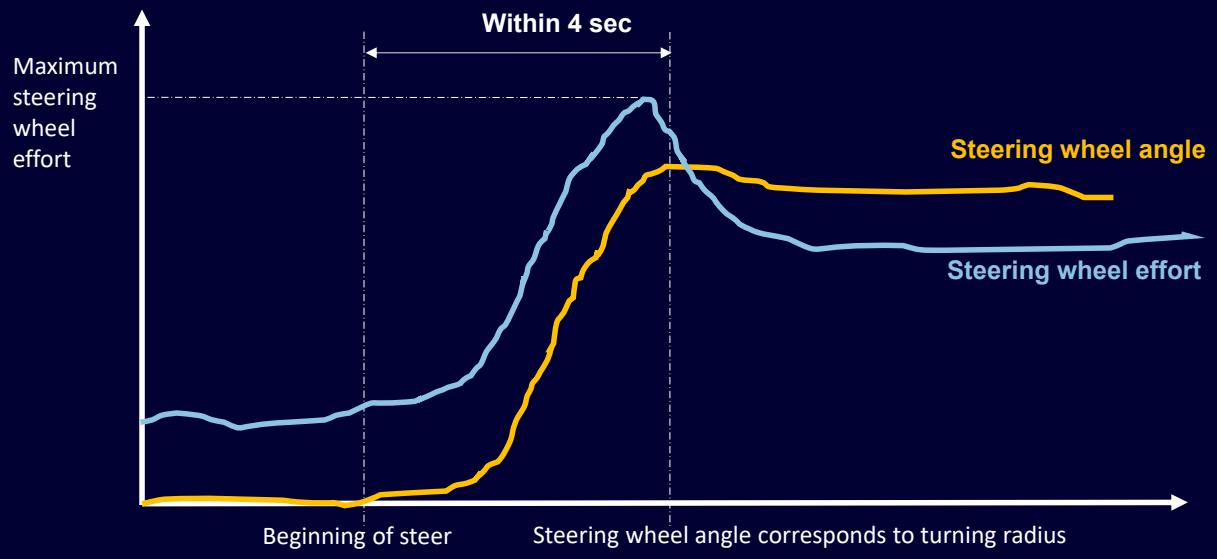
Wheel steering angle corresponding to turning radius



Evaluation of steering wheel effort



	Intact			With a failure		
Vehicle Category	Maximum effort (daN)	Time (s)	Turning radius (m)	Maximum effort (daN)	Time (s)	Turning radius (m)
M1	15	4	12	30	4	20

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Thank you for your attention !