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Item 9(a) of the provisional agenda
Steering equipment – Regulation No. 79

Proposal for amendments to Regulation No. 79 (Steering equipment)

Submitted by the International Association of the Body and Trailer Building Industry*

The text reproduced below was prepared by the International Association of the Body and Trailer Building Industry (CLCCR) to introduce into UN Regulation No. 79 an amendment that removes a design restriction and enables the vehicle manufacturer the freedom to utilise new technologies that would have previously been prohibited. The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106 and ECE/TRANS/2010/8, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

I. Proposal

Under the section "Contents", add a new Annex 7 to read:

"Annex 7 - Special provisions for the powering of trailer steering systems from the towing vehicle."

Introduction, amend to read:

Introduction

The intention of the Regulation …

… have been defined as "Autonomous Steering Systems.

This Regulation also prevents the approval of positive steering of trailers **by means of** ~~using energy supply and~~ electrical control from the towing vehicle as there are **currently** ~~not any~~ **no** standards applicable to **this application** ~~energy supply connectors or to control transmission digital information interchange~~. It is expected that at some time in the future ~~the International Standards Organization (ISO) Standard,~~ ISO 11992 will be amended to ~~take account of~~ **include messages associated with the** transmission of steering control data.

Paragraph 1.2.3., to be deleted.

Paragraph 1.2.4., renumber as paragraph 1.2.3.

Paragraph 2.5.2.2., amend to read:

"2.5.2.2. "Articulated steering" means equipment in which the steering forces are produced by a change in direction of the towing vehicle and in which the movement of the steered trailer wheels is ~~firmly~~ linked to the relative angle between the longitudinal axis of the towing vehicle and that of the trailer;"

Paragraph 5.1.3., amend to read:

"5.1.3. 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. These requirements do not apply to systems that incorporate an automatically commanded or corrective steering function, or to auxiliary steering equipment.

These requirements may also not necessarily apply in the case of full power steering when the vehicle is stationary, **during low speed manoeuvres** and when the system is not energised."

Add a new paragraph 5.4.3., to read:

"**5.4.3. Failure warning requirements for trailers**

5.4.3.1. Until uniform requirements have been defined to enable the trailer steering system to transmit steering system failure information to the towing vehicle the following general provisions shall be fulfilled:

(a) The trailer shall be installed with [green] warning signal mounted on the head board of the trailer which is visible to the driver in his rear view mirror(s).

(b) The warning signal shall illuminate when the system is first powered and shall be extinguished when no electrical faults are present.

(c) In the event of a failure of the trailer steering system the warning signal shall illuminate and remain illuminated as long as the failure persists.

(d) The warning signal shall be visible even by daylight.

(e) A failure of a component of the warning device shall not entail any loss of steering systems performance."

Paragraph 5.4.3., renumber as paragraph 5.4.4.

Annex 1,

Add a new item 7. to read:

"**7. Applicable only to towing vehicles**

7.1. The towing vehicle is/is not 2/ authorised to tow a trailer with a steering control system utilising electrical energy from the towing vehicle by fulfilling the relevant requirements of Annex 7."

Add a new item 8. to read:

"**8. Applicable only to trailers**

8.1. The steering system of the trailer fulfils the relevant provisions of Annex 7 ..... Yes/No 2/"

Renumber subsequent items.

Annex 5,

Paragraph 2.1.1., amend to read:

"2.1.1. The hydraulic lines of hydraulic transmission shall be capable of a burst pressure at least four times the maximum normal service pressure (T) specified by the vehicle manufacturer. Hose assemblies shall comply with ISO Standards 1402:1994, 6605:1986 and 7751:1991. **However hydraulic lines having a different specification to that defined above may be used provided it can be demonstrated to the Technical Service at the time of type approval that the specification and burst pressure of hydraulic lines and hoses is compatible with the operating characteristics of the steering system installed on the vehicle.**"

Paragraph 2.3.1., amend to read:

"2.3.1. The steering transmission ~~must~~ **shall** be protected from excess pressure by a pressure limiting valve which operates at between ~~1.5~~ **1.1** T and 2.2 T. **The operating pressure of the pressure limiting valve shall be of a value that is compatible with the operating characteristics of the steering system installed on the vehicle. This shall be confirmed by the vehicle manufacturer at the time of type approval.**"

Add a new Annex 7, to read:

"**Annex 7**

Special provisions for the powering of trailer steering systems from the towing vehicle.

1 General

The requirements of this Annex shall apply to towing vehicles and trailers where electrical energy is supplied from the towing vehicle to facilitate operation of the steering system installed on the trailer.

2. Requirements for towing vehicles

2.1. The energy supply of the towing vehicle shall have the capacity to provide the electric steering system of the trailer with the energy required for its operation.

2.1.1. With the engine running at the idling speed recommended by the manufacturer and all electrical devices installed by the manufacturer as standard equipment on the vehicle switched on, the voltage in the electrical lines shall at a continuous current consumption of [50A] not fall below the value of [19.2V] measured at the connector interface.

2.2. The nominal operating voltage is 24V.

2.3. Protection of the electrical system.

2.3.1. The electrical system of the towing vehicle shall be protected from an overload or short circuit in the supply to the trailer steering system.

2.4. Wiring and Connectors

2.4.1. The cables used to supply the trailer steering system with electrical energy shall have a conductor cross sectional area compatible with the continuous current defined in paragraph 2.1.1. above.

2.4.2. Until a uniform standard has been defined the connector used to connect to the trailer shall fulfil the following:

(a) The pins shall have a current carrying capacity compatible with the maximum continuous current defined in paragraph 2.1.1. above.

(b) Environmental protection shall be a minimum of IP 54

(c) The connector shall not be interchangeable with an existing electrical connector currently used on the towing vehicle i.e. ISO 7638, ISO 12098, etc.

2.5. Marking

2.5.1. The towing vehicle shall be marked to indicate the maximum current available for the trailer steering system. The marking shall be indelible and visible to the driver when standing on the ground adjacent to the vehicle

3. Requirements for trailers

3.1. The continuous current consumption of the trailer steering system shall not exceed [50A].

3.2. The electrically controlled steering system of the trailer shall continue to function at a voltage of [19.2V] measured at the connector interface.

3.3. The nominal operating voltage is 24V

3.4. Wiring and Connectors

3.4.1. The cables used to supply the trailer steering system with electrical energy shall have a conductor cross sectional area compatible with the energy requirements of the steering system installed on the trailer.

3.4.2. Until a uniform standard has been defined the connector used to connect to the trailer shall fulfil the following:

(a) The pins shall have a current carrying capacity compatible with the maximum current defined by the vehicle manufacturer in paragraph 3.1. above.

(b) Environmental protection shall be a minimum of IP 54

(c) The connector shall not be interchangeable with an existing electrical connector currently used on the towing vehicle i.e. ISO 7638, ISO 12098 etc.

3.5. Demonstration of the operation of the steering system

3.5.1. At the time of type approval the trailer manufacturer shall demonstrate to the Technical Service the functionality of the steering system by fulfilling the relevant performance requirements specified within the Regulation and it Annexes.

3.5.2. If the trailer steering system utilises hydraulic transmission to operate the steering the requirements of Annex 5 shall apply."

II. Justification

1. At the seventy-fourth session of GRRF, CLCCR presented GRRF-74-37, which did not make any proposals to amend UN Regulation No. 79 but sought to bring to the attention of GRRF that, currently, a design restriction is applied which prevents trailers from utilising any form of energy from the towing vehicle. Following discussion, a number of delegates indicated their support for an amendment to UN Regulation No. 79 by removing this restriction.

2. The above proposal introduces amendments that removes the design restriction but enables the vehicle manufacturer the freedom to utilise new technologies that would have previously been prohibited. Although no uniform provisions are defined, as none are currently available, the vehicle manufacturer is required to provide information to the Technical Service associated with the installation and operation of the steering system and to demonstrate a safe mode of operation by assessment of the control system in accordance with Annex 6.