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**1958 Agreement – Consideration of draft amendments
to existing Regulations submitted by GRRF**

Proposal for Supplement 5 to the 01 series of amendments to Regulation No. 55 (Mechanical couplings)

Submitted by the Working Party on Brakes and Running Gear*

The text reproduced below was adopted by the Working Party on Brakes and Running Gear (GRRF) at its eightieth session (ECE/TRANS/WP.29/GRRF/80, para. 18). It is based on Annex III to the session report. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee AC.1 for consideration at their March 2016 sessions.

* In accordance with the programme of work of the Inland Transport Committee for 2014–2018 (ECE/TRANS/240, para. 105 and ECE/TRANS/2014/26, 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.

Paragraph 2.5., amend to read:

- "2.5. Non-standard miscellaneous mechanical coupling devices and components do not conform to standard dimensions and characteristic values as given in this Regulation and cannot be connected to standard coupling devices and components. These are devices which do not correspond with any of the Classes A to L, T or W listed in paragraph 2.6. and are intended for special heavy transport use or miscellaneous devices conforming to existing national standards."

Paragraph 2.6.12., amend to read:

- "2.6.12. Class S Devices and components which do not conform to any of the Classes A to L, T or W and which are used for special heavy transport or are devices unique to some countries and covered by existing national standards."

Add a new paragraph 2.6.14., to read:

- "2.6.14. Class W Non-standard miscellaneous, automatic drawbar coupling clevis type, including its adapted trailer part, with an integrated automated electric and pneumatic connector between the towing vehicle and towed vehicle. The both mechanical parts shall be approved as a matched pair."

Paragraph 2.9., amend to read:

- "2.9. Remote indicators are devices and components which give an indication that coupling has been affected and that the locking devices have been positively engaged."

Paragraph 3.2.8., amend to read:

- "3.2.8. In the case of a mechanical coupling device or component designed for a specific vehicle type, the manufacturer of the device or component shall also submit the installation data, according to Annex 2, Appendix 1, given by the vehicle manufacturer. The approval authority or technical service may also request that a vehicle representative of the type be submitted."

Paragraph 4.7., amend to read:

- "4.7. For devices and components of Class A, Class K or Class S, if applicable, for use with trailers of maximum permissible mass not exceeding 3.5 tons, and which are produced by manufacturers not having any association with the vehicle manufacturer and where the devices and components are intended for fitting in the after-market, the height and other installation features of the coupling shall, in all cases, be verified by the type approval authority or technical service in accordance with Annex 7, paragraph 1."

Paragraph 5.1., amend to read:

- "5.1. Where a vehicle manufacturer applies for approval of a vehicle fitted with a mechanical coupling device or component or authorizes the use of a vehicle for towing any form of trailer, then, at the request of a bona fide applicant for possible type approval for a mechanical coupling device or component, or of the type approval authority or technical service of a Contracting Party, the vehicle manufacturer shall readily make available to that inquirer or authority or technical service, such information as required in Annex 2, Appendix 1, to enable a manufacturer of a coupling device or component to properly design and manufacture a mechanical coupling device or component for that vehicle. At the request of a bona fide applicant for possible type approval for a

mechanical coupling device or component, any information given in Annex 2, Appendix 1 which is held by the type approval authority shall be released to that applicant."

Paragraph 5.3., amend to read:

- "5.3. It shall be accompanied by the following information to enable the type approval authority to complete the communication form given in Annex 2.
- 5.3.1. A detailed description of the vehicle type according to Annex 2, Appendix 1 and of the mechanical coupling device or component and, at the request of the type approval authority or technical service, a copy of the approval form for the device or component;"

Paragraphs 5.3.2. and 5.3.2.1. shall be deleted and replaced by the following:

- "5.3.2. Deleted
- 5.3.2.1. Deleted"

Paragraph 13., amend to read:

- "13.1. Until the United Nations Secretary-General is notified otherwise, Contracting Parties applying this Regulation that are Member States of the European Union declare that, in relation to mechanical coupling devices and components, they will only be bound by the obligations of the Agreement to which this Regulation is annexed with respect to such devices and components intended for vehicles of categories other than M₁.
- 13.2. As from the official date of entry into force of Supplement 5 to the 01 series of amendments to this Regulation, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approvals according to Supplement 5 to the 01 series of amendments.
- 13.3. Until twelve months after the date of entry into force of the Supplement 5 to the 01 series of amendments, Contracting Parties applying this Regulation can continue to grant type approvals according to the 01 series of amendments to this Regulation without taking into account the provisions of Supplement 5."

Annex 1,

Items 10. and 11., amend to read:

- "10. Instructions for the attachment of the coupling device or component type to the vehicle and photographs or drawings of the mounting points (see Annex 2, Appendix 1) given by the vehicle manufacturer:
- 11. Information on the fitting of any special reinforcing brackets or plates or spacing components necessary for the attachment of the coupling device or component (see Annex 2, Appendix 1):

Annex 2,

Items 8. and 9., amend to read:

- "8. Instructions for the attachment of the coupling device or component type to the vehicle and photographs or drawings of the mounting points (see Appendix 1 to this annex):.....

9. Information on the fitting of any special reinforcing brackets or plates or spacing components necessary for the attachment of the coupling device or component (see Appendix 1 to this annex):.....
....."

Insert new Appendix 1, to read:

"Annex 2 – Appendix 1 *

List of installation data for a mechanical coupling device or a component designed for a specific vehicle type

1. Description of the vehicle type:
 - 1.1. Trade name or mark of the vehicle;
 - 1.2. Models or trade names of vehicles constituting the vehicle type, if available.
2. Masses of the towing and towed vehicles:
 - 2.1. Maximum permissible masses of the towing and towed vehicles;
 - 2.2. the distribution of the maximum permissible mass of the towing vehicle between the axles;
 - 2.3. the maximum permissible vertical loading to be imposed on the coupling ball/hook of the towing vehicle;
 - 2.4. the loading condition at which the height of the tow ball of M₁ category vehicles is to be measured - see paragraph 2. of Annex 7, Appendix 1.
3. Specification of fixing points:
 - 3.1. Details and/or drawings of the installation mounting points for the device or component and of any additional reinforcing plates, support brackets and so on, necessary for reliable attachment of the mechanical coupling device or component to the towing vehicle;
 - 3.2. The vehicle manufacturer shall specify:
 - (a) The number and location of the fixing points of the coupling device on the motor vehicle;
 - (b) The maximum permissible overhang of the coupling point;
 - (c) The height of the coupling point above the road surface as specified in Annex 7, paragraph 1.1.1. and the height of the coupling point in relation to the fixing points of the coupling.

* On the request of (an) applicant(s) for a mechanical coupling device or component designed for a specific vehicle type, the information shall be provided by the vehicle manufacturer either directly or via the type approval authority as listed in this Annex 2 which has issued the approval according to Regulation No. 55, if available. In this last case, the vehicle manufacturer shall beforehand communicate to the coupling device manufacturer the approval number certificate corresponding to its request.

However, this information shall not be provided for purposes other than Regulation No. 55 approvals.

- 3.3. For every fixing point the following shall be specified (if applicable):
- The location of each hole to be drilled in the chassis or the body of the vehicle (specification of the maximum diameter to be drilled);
 - The location and size of pre-drilled holes (specification of the diameter of the hole);
 - The location and size of captive nuts or bolts (specification of the thread size, quality);
 - The material to be used for attachment (e.g. securing bolts, washers etc.);
 - Any additional mounting point to be used for the attachment of coupling devices (e.g. the towing eye);
 - The specification of the dimensions shall be specified with an accuracy of at least $\pm 1\text{mm}$;
 - The vehicle manufacturer may specify other specifications with regard to the fitting of the coupling device (e.g. size and thickness of back plates).
4. Vehicle manufacturer's name and address."

Annex 4,

Table 1, amend to read:

Description of mechanical coupling device or component	Relevant characteristic values to be marked					
	Class	D	D _c	S	U	V
Coupling balls and towing brackets – see Annex 5 para. 1 of this regulation	★	★		★		
Coupling heads	★	★		★		
Drawbar couplings	★	★	★	★		★
Drawbar eyes**	★	★	★	★		★
Drawbars*	★	★	★	★		★
Drawbeams	★	★	★	★		★
Fifth wheel couplings	★	★			★	
Fifth wheel pins	★	★				
Fifth wheel mounting plates	★	★			★	
Hook type couplings	★	★	★	★		★

* Hinged drawbars shall in addition have the Av-value marked on the type plate

** For coupling devices or components which belong to more than one class, the relevant characteristic values of each class shall be specified."

Annex 5,

Paragraph 1.2., amend to read:

"1.2. The shape and dimensions of towing brackets shall meet the requirements of the vehicle manufacturer concerning the attachment points and additional mounting devices or components, see Annex 2, Appendix 1."

Insert new paragraph 12., to read:

- "12. Drawbar type couplings - Class W
- 12.1.1. Class W couplings shall as part of an automated sequence of actions automatically mechanically connect the two vehicles and establish the electric and pneumatic braking transmission connection.
- 12.1.2. Class W couplings shall, as part of an automated sequence of actions, automatically break the electric and pneumatic braking transmission connection and mechanically disconnect the two vehicles.
- 12.2. Class W couplings shall satisfy the relevant test requirements given in Annex 6, paragraph 3.3., with the exception of paragraph 3.3.4. The closure and any locking devices shall be tested by means of a static force of 0.25 D acting in the direction of opening. The test shall not cause the closure to open. The locking device shall be fully functional after the test. A test force of 0.1 D is sufficient in the case of cylindrical coupling pins.
- 12.3. The following minimum and simultaneous angles of articulation shall be possible with the coupling not fitted to a vehicle but assembled, coupled, and in the same normal position as when fitted to a vehicle:
- 12.3.1. $\pm 90^\circ$ horizontally about the vertical axis;
- 12.3.2. $\pm 20^\circ$ vertically about the horizontal transverse axis;
- 12.3.3. $\pm 25^\circ$ axial rotation about the horizontal longitudinal axis.
- 12.4. Class W coupling equipped with a remote control shall fulfil requirements of paragraph 13. of this annex.
- 12.5. Class W coupling shall have a remote indication according to paragraph 13. of this annex."

Renumber former paragraphs 12. to 12.3.7. as 13. to 13.3.7.

Renumbered paragraph 13.2.1., amend to read:

"13.2.1. For an automatic coupling procedure, remote indication devices shall indicate the closed and doubly locked position of the coupling in an optical manner according to paragraph 13.2.2. Additionally the open position may be indicated. In this case, the indication shall be performed as in paragraph 13.2.3.

The remote indication device shall be automatically activated and reset during every opening and closing of the coupling."

Renumbered paragraph 13.2.9., amend to read:

"13.2.9. When installed in the vehicle cab, the remote indication devices shall be mounted within the driver's direct field of vision, and be clearly identified.

When installed on the side of the vehicle, the remote indication devices shall be permanently and clearly identified."

Renumbered paragraph 13.3.1., amend to read:

"13.3.1. If a remote control device, as defined in paragraph 2.8. of this Regulation, is employed, there shall also be a remote indication device as described in paragraph 13.2."

Renumbered paragraph 13.3.7., amend to read:

"13.3.7. The remote control devices shall be permanently and clearly identified."

Annex 6,

Paragraph 3.1.3., amend to read:

"3.1.3. The positions of the fixing points for attaching the coupling ball and towing bracket are specified by the vehicle manufacturer (see Annex 2, Appendix 1 of this Regulation)."

Paragraph 3.4.2., amend to read:

"3.4.2. Toroidal eyes of Class L shall be tested as described in paragraphs 3.4.2.1. and 3.4.2.2.

3.4.2.1. They shall be submitted to a pulsating test in the configuration of mounting equivalent to the vehicle installation. The test shall be performed by using the Class K coupling. Alternatively the coupling device may be replaced by a jig representing the same environment with the agreement of the Type Approval Authority or Technical Service.

3.4.2.2. They shall be subjected to a dynamic testing as described in paragraph 3.4.1. in respect to the corresponding characteristic values of the coupling device Class K specified by the manufacturer."

Paragraph 3.5.2., amend to read (including the deletion of the formula for $F_{hs\ res}$):

"3.5.2. Dynamic test:

3.5.2.1. The dynamic test shall be a pulsating test using a Class L toroidal eye and with the coupling mounted as it would be on a vehicle and with all of the necessary parts for vehicle installation. However, any flexible components may be neutralized with the agreement of the Type Approval Authority or Technical Service;

3.5.2.2. Hook type couplings intended for use with hinged drawbar trailers - where the imposed vertical load on the coupling S is zero - shall be tested in the same manner as described in paragraph 3.3.2.

3.5.2.3. Hook type couplings intended for use with center axle trailers ($S > 0$):

3.5.2.3.1. Hook type couplings intended for use with centre axle trailers ≤ 3.5 tons shall be tested in the same way as described in 3.1 of this annex.

3.5.2.3.2. Hook type couplings intended for use with centre axle trailers above 3.5 tons shall be tested in the same way as described in paragraph 3.3.3.2 of this annex."

Delete paragraph 3.5.2.4.

Paragraph 3.6.3., amend to read:

"3.6.3. In the case of steered axles, the resistance to bending shall be verified by theoretical calculations or by a bending test. A horizontal, lateral static force shall be applied in the center of the coupling point. The magnitude of this force shall be chosen so that a moment of $0.6 \times A_v \times g$ (kNm) is exerted

about the front axle center. The permissible stresses shall be in accordance with paragraph 5.3. of ISO 7641/1:1983."

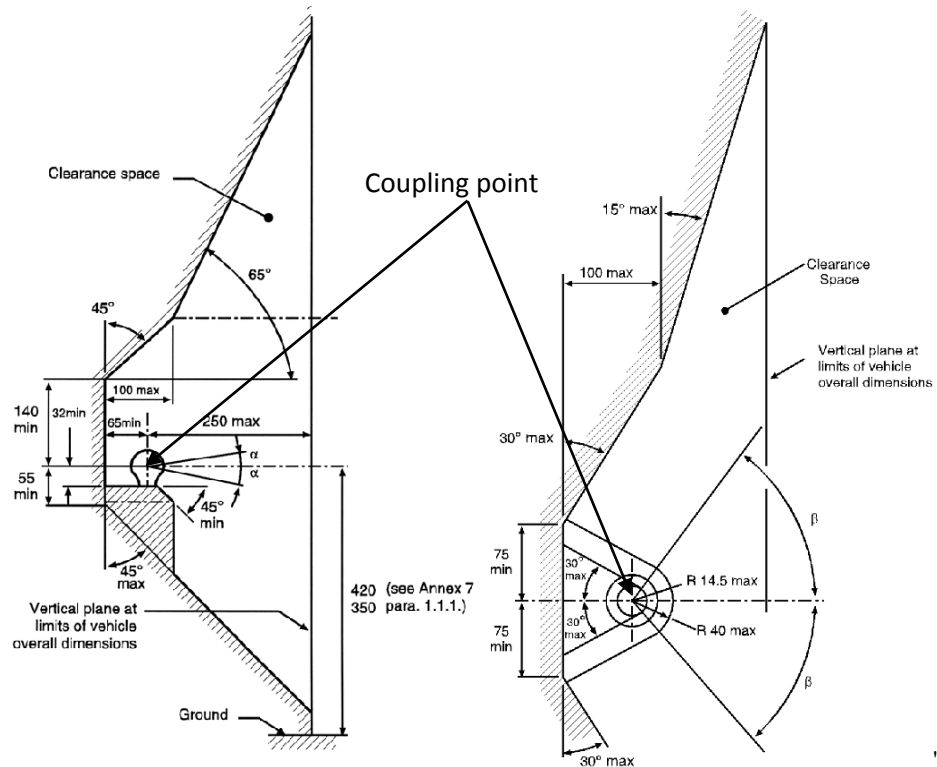
Annex 7,

Paragraph 1.1., amend to read:

- "1.1. Attachment of coupling balls, hook couplings and towing brackets
- 1.1.1. Coupling balls, hook coupling and towing brackets shall be attached to vehicles of categories M_1 , M_2 (below 3.5t maximum permissible mass) and N_1 in a manner which conforms to the clearance and height dimensions given in Figure 25. The height shall be measured at the vehicle loading conditions given in Appendix 1 to this annex.
- The height requirement shall not apply in the case of category G off-road vehicles, as defined in Annex 7 of the Consolidated Resolution on the Construction of Vehicles (R.E.3)
- 1.1.1.1. The clearance space shown in Figures 25a and 25b may be occupied by non-demountable equipment, such as a spare wheel, provided that the distance from the centre of the ball or the centre of the hook on a vertical plane at the extreme rearmost point of the equipment does not exceed 250 mm. The equipment shall be mounted to allow adequate access for coupling and uncoupling without risk of injury to the user and without affecting articulation of the coupling.
- 1.1.2. For coupling balls or hook coupling and towing brackets the vehicle manufacturer shall supply mounting instructions and state whether any reinforcement of the fixing area is necessary (see Annex 2, Appendix 1 of this Regulation).
- 1.1.3. It shall be possible to couple and uncouple ball couplings/hook coupling when the longitudinal axis of the ball coupling/hook coupling in relation to the center line of the coupling ball/hook coupling and mounting:
- is rotated horizontally 60° to right or left, ($\beta = 60^\circ$, see Figure 25);
- is rotated vertically 10° up or down ($\alpha = 10^\circ$, see Figure 25);
- is rotated axially 10° to right or left.
- 1.1.4. When the trailer is not coupled to the towing vehicle, the mounted towing bracket and coupling ball/hook coupling shall not obscure the mounting space provided for the rear registration plate or affect the visibility of the rear registration/ license plate of the towing vehicle. If the coupling ball/hook coupling or other items do obscure the rear registration plate they shall be removable or repositionable without the use of tools except, for example, an easily operated (i.e. an effort not exceeding 20 Nm) release key which is carried in the vehicle.

Figure 25 a

Figure 25 b



Paragraph 1.2., amend to read:

1.2. Attachment of coupling heads or toroidal drawbar eyes.

1.2.1. Class B coupling heads are permitted for trailers of maximum mass up to and including 3.5 tons.

With the trailer horizontal and carrying the maximum permitted axle load, coupling heads or toroidal drawbar eyes shall be fitted so that the center line of the spherical area into which the ball fits is 430 ± 35 mm above the horizontal plane on which the wheels of the trailer rest.

In the case of caravans and goods trailers, the horizontal position is regarded as when the floor or loading surface is horizontal. In the case of trailers without such a reference surface (e.g. boat trailers or similar) the trailer manufacturer shall give an appropriate reference line defining the horizontal position. The height requirement shall apply only to trailers intended to be attached to vehicles mentioned in paragraph 1.1.1. of this annex. In all cases the horizontal position shall be determined to within $\pm 1^\circ$.

1.2.2. It shall be possible to operate the coupling heads/ toroidal drawbar eyes safely within the free space of the coupling ball/hook coupling given in figures 25a and 25b, up to angles of $a = 25^\circ$ and $b = 60^\circ$.

1.2.3. The design of the drawbar including the coupling head/toroidal drawbar eyes for use on O_1 and O_2 center axle trailers shall be such as to prevent the coupling head/toroidal drawbar eyes from digging into the ground in the event of separation from the main coupling."

Paragraph 1.3.4., amend to read:

"1.3.4. Minimum angle for coupling up and uncoupling

Coupling and uncoupling of the drawbar eye shall be possible when the longitudinal axis of the drawbar eye in relation to the center line of the jaw is simultaneously rotated:

50° horizontally to right or left;

6° vertically up or down;

6° axially to right or left.

This requirement shall also apply to Class K hook type couplings for vehicles having maximum permissible mass above 3.5t."
