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**~~Working Party on Brakes and Running Gear~~**

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~~Item 4 of the provisional agenda~~

**~~Regulation No. 55 (Mechanical couplings)~~**

 Proposal for amendments to Regulation No. 55 (Mechanical couplings)

 Submitted by the Chair of the informal group on Regulation No. 55[[1]](#footnote-2)\*

The text reproduced below was prepared by the experts of the informal group on UN Regulation No. 55 and introduces amendments on:

1. Requirements on remote indication;
2. Availability of information on coupling fixing points for A50X couplings;
3. On lateral strength of drawbars;
4. Includes a new class definition for fully automatic drawbar couplings.
5. Includes a redefinition of class S
6. Amendments on the test procedure and installation of couplings belonging to class K and L

The modifications to the existing text of the Regulation are marked in bold for new or strikethrough for deleted characters.

1. Proposal

*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. ~~They~~ These ~~include, for example,~~ **are** devices which do not correspond with any of the Classes A to L, ~~or~~ T **or W** listed in paragraph 2.6. ~~such as those~~ **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, ~~or~~ T **or W** ~~above~~ and which are used~~, for example,~~ for special heavy transport or are devices unique to some countries and covered by existing national standards."

*Add 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 in the vehicle cab 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 ~~paragraph 5.3. below~~ **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 ~~paragraph 5.3. below~~ **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., delete:*

"~~5.3.2.~~ ~~The information shall also include the maximum permissible masses of the towing and towed vehicles, the distribution of the maximum permissible mass of the towing vehicle between the axles, the maximum permissible axle masses, the maximum permissible vertical loading to be imposed on the rear of the towing vehicle and 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 safe attachment of the mechanical coupling device or component to the towing vehicle;~~

~~5.3.2.1. 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.~~"

*Paragraph 13., insert new numbers of subparagraphs 13.1. to 13.3.*

"**13.1**. Until the United Nations Secretary-General ….. 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 UN Regulation, no Contracting Party applying this UN Regulation shall refuse to grant or refuse to accept UN type approvals according to Supplement 5 to the 01 series of amendments.**

**13.3. Until 12 months after the date of entry into force of the Supplement 5 to the 01 series of amendments], Contracting Parties applying this UN Regulation can continue to grant UN type approvals the 01 series of amendments to this UN Regulation without taking into account the provisions of Supplement 05. "**

***Annex 1,***

*Paragraphs 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:

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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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)**:

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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***Annex 2,***

*paragraphs 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)**:

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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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)**:

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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*Insert new Appendix 1, to read:*

"**Annex 2 – Appendix 1 [[2]](#footnote-3)\***

**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.**

**3.3. For every fixing point the following shall be specified (if applicable):**

**(a) 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);**

**(b) The location and size of pre-drilled holes (specification of the diameter of the hole);**

**(c) The location and size of captive nuts or bolts (specification of the thread size, quality );**

**(d) The material to be used for attachment (e.g. securing bolts, washers etc.);**

**(e) Any additional mounting point to be used for the attachment of coupling devices (e.g. the towing eye);**

**(f) The specification of the dimensions shall be specified with an accuracy of at least ± 1mm;**

**(g) 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 | Dc | 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 ~~if necessary~~ **, 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. ± 90° horizontally about the vertical axis;**

**12.3.2. ± 20° vertically about the horizontal transverse axis;**

**12.3.3. ± 25° 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. ~~The operating controls and indicators of the remote indication devices shall be mounted within the driver's field of vision and be permanently and clearly identified.~~

**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. ~~which shall at least indicate the open condition of the coupling~~."

*Renumbered Paragraph 13.3.7., amend to read:*

"13.3.7. The ~~operating controls and indicators for 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** ~~paragraph 5.3.2.~~ of this Regulation)."

*Paragraph 3.4.2., amend to read:*

"3.4.2. Toroidal eyes of Class L shall be tested ~~in the same manner~~ ~~as standard drawbar eyes~~ **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:*

"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. ~~For~~ ~~h~~**H**ook type couplings intended for use with hinged drawbar trailers, where the imposed vertical load on the coupling, S, is zero~~, the test force shall be applied in a horizontal direction simulating a tensile force on the hook and varying between 0.05 D and 1.00 D.~~**shall be tested in the same manner as described in paragraph 3.3.2.**

3.5.2.3. ~~For~~ ~~h~~**H**ook type couplings intended for use with center axle trailers **(S>0):**  ~~the test force shall represent the resultant of the horizontal and vertical forces on the coupling and shall be applied along an angle, -a , that is, from top front to bottom rear (see Figure 21), and equivalent to the calculated angle of the resultant between the horizontal and vertical forces on the coupling. The force, Fhs res shall be calculated as:~~

~~~~

**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.*

~~3.5.2.4. The applied force shall vary between 0.05F and hs res 1.00Fhs res~~

*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 × Av × 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.

~~However, in the case where the steered axles form a twin, tandem, axle front carriage (steered bogie) the moment shall be increased to 0.95 × Av × g (kNm).~~"

***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 M1, M2 (below 3.5t maximum permissible mass) and N1 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) ~~(document TRANS/WP.29/78/Rev.1/Amend.2).~~

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 ~~300 mm~~/**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, Appendix1** ~~paragraph 5.3.2.~~ 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 cent**er** line of the coupling ball/**hook coupling** and mounting:

is rotated horizontally 60° to right or left, (β = 60°, see Figure 25);

is rotated vertically 10° up or down (α= 10°, 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 toroïdal 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 **toroïdal drawbar eyes** shall be fitted so that the cent**er** 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 ± 1°.

1.2.2. It shall be possible to operate the coupling heads/ **toroïdal 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° and b = 60°.

1.2.3. The design of the drawbar including the coupling head/**toroïdal drawbar eyes** for use on O1 and O2 center axle trailers shall be such as to prevent the coupling head/**toroïdal 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.**"

1. Justification

1 Requirements for remote indication

1.1. The intention of amending paragraph 2.9. is to redefine "remote indicators" to allow some systems currently on the market, where the remote indication is not in the vehicle cab but on the side of the vehicle (on the chassis), close to the remote control.

1.2. Paragraph 12.2.9. becomes consistent with the amended definition of "remote indicators".

1.3. Paragraph 12.2.1. is slightly modified for clarification.

1.4. Paragraph 12.3.1. is clarified by removing an existing contradiction with paragraph 12.2.1. Moreover, a simple reference to paragraph 12.2. in paragraph 12.3.1. is sufficient to avoid duplication of requirements about remote indicators in several places of the Regulation.

1.5. Paragraph 12.3.7. has been made simpler just to avoid misinterpretation.

1.6. New or changed paragraphs concerned:

§2.9.;Annex 5 §13.2.1., §13.2.9., §13.3.1., §13.3.7.

2. Availability of information on coupling fixing points for A50X couplings

2.1. Tow bar manufacturers noted problems in obtaining the clear, unmistakable drawings with correct fixing points from the vehicle manufacturer. For technical services it is difficult to interpret the drawings of the fixing points. This resulted in several examples of type-approved tow bars on the market (designed for the same vehicle type) which use different fixing points. Some examples are shown in the working paper R55-02-07 of the informal group (IWG) on UN Regulation No. 55. To minimize the problems resulting from unclear fixing points, UN Regulation No. 55 should specify more in detail the requested information.

2.2. The place where to put the requirements on the fixing points is not simple to define. In a first proposal requirements were put in a new paragraph 5.3.3. In a second proposal the requirements were put in an Appendix to Annex 7 (installation) analogous to the information for the purpose of a UN Regulation No. 90 approval (replacement brake pads, etc.) asked for in regulation UN Regulation No. 13 (braking systems).

2.3. However the situation in UN Regulation No. 55 differs from the situation in UN Regulation No. 13 and UN Regulation No. 90. Every vehicle manufacturer needs an approval according UN Regulation No. 13 and the vehicle information necessary for the UN Regulation No. 90 approval can be petitioned easily using the Appendix to the UN Regulation No. 13 approval communication. Unfortunately not every vehicle manufacturer applies for a UN Regulation No. 55 approval. In the European Union (EU) the information of the fixing point for tow bars is obtained via the directive masses and dimensions. UNECE does not provide such a Regulation. Nevertheless, with appropriate requirements on the fixing points for tow bars (and the like) in UN Regulation No. 55, the goal (better information for the coupling manufacturer and the technical services) will be achieved.

2.4. The set-up of the proposed Annex 2, Appendix 1 is similar to UN Regulation No. 13-H Annex 1, Appendix 1 (list of vehicle data for the purpose of UN Regulation No. 90 approvals). This proposal is basically the same as the proposal in working paper R55-05-12 of the IWG however the place for the appendix with the information about the fixing points is changed from Annex 7 (installation) to Annex 2 (communication) to be more in line with UN Regulation No. 13-H and UN Regulation No. 90. The data asked for is copied from the current paragraph 5.3.2.

2.5. The introduction of an Appendix is preferred above putting the requirements in the existing text. In the form of an appendix the information can be easily referred to and the information can be easily supplied to the coupling-manufacturer by the vehicle manufacturer or by the Approval Authority.

2.6. New or changed paragraphs concerned:

§3.2.3., §5.1., §5.3.; Annex 1§10., §11.; Annex 2 §8., §9., new Appndix 1.; Annex 5 §1.2., §3.1.3.; Annex 7 §1.1.2.

3. On lateral strength of drawbars

3.1. Annex 6, paragraph 3.6.3. concerns the test criteria for the lateral strength of drawbars for vehicles with steered front axle. The factor of 0.95 in the formula given for tandem axle in this regulation UN Regulation No. 55 represents a much higher load criterion than the factor 0.6, specified in Directive 94/20/EU for the same or similar vehicle configurations.

3.2. This excessive requirement of 0.95, would lead to disproportionally heavier and much more expensive drawbars than those being homologated according to Directive 94/20/EU for the same applications. The Directive 94/20/EU strength level has been operated in the field without any technical problems over the last decades. Also for vehicles with very high Av values and even in combination with short drawbars, representing a worst case for the lateral forces.

3.3. The high factor of 0.95 given in this regulation UN Regulation No. 55 for tandem axle has no real technical justification and should be eliminated.

3.4. The working paper R55-09-02 contains, at the end, calculations for different vehicle configurations operated under extreme adverse conditions, showing that even under these worst case circumstances a load factor of 0.6 is sufficient.

3.5. This document helps to understand why drawbars, being homologated with a 0.6 factor, have been successfully used in severe applications and confirms the correctness of Directive 94/20/EU. Calculations based on measured forces, as shown in R55‑05‑03, lead to a load factor of 0.43 and supports the results.

3.6. New or changed paragraphs concerned:

Annex 4 Table 1 Footnote; Annex 6 §3.6.3.

4. Definition of the Class W for fully automatic drawbar couplings

4.1. Fully automatic couplings may be envisioned in different topologies. It is possible to have a topology where the automated electric and pneumatic connector is embodied completely outside a standard mechanical coupling, e.g. class G and class H or class C and D. In these cases, the coupling from the perspective of UN Regulation No. 55, will be the original class, e.g. class G and class H or class C and D. In other cases the embodiment is such that the electric and pneumatic connector is fully integrated into the interface of the mechanical coupling. In such cases drawbar couplings are classified in class W. In those cases special requirements apply. These requirements resemble those applied to Class T couplings. Hence a specific class is justified. The class W text draws on the text of Class T. Class S is commonly used for a large variety of coupling designs. Introducing the Class W cleans some of the odd usages of Class S away.

4.2. Comment on new paragraph 2.6.14.: The proposed wording is based on definition class T and definition "automated connector" in the proposal for an amendment of UN Regulation No. 13 (brakes) from Informal Working Group on Modular Vehicles Combination (MVC).

(i) From UN Regulation No. 55:

2.6.13. Class T Non-standard, non-automatic dedicated drawbar type couplings which are able to be separated only by the use of tools and are typically used for trailers of car transporters. They shall be approved as a matched pair.

(ii) From UN Regulation No. 13:

2.40. "*Automated Connector*" means a system through which at least the brake electric and brake pneumatic connection, between the towing vehicle and towed vehicle is made automatically without direct intervention of a human operator.

4.3. Comment on Annex 5, new paragraph 12.1.2.: In analogy to class T.

4.4. Comment on Annex 5, new paragraph 12.2.: In the draft proposal for UN Regulation No. 13 with regard to ACV the electric and pneumatic connections must be combined.

4.5. Comment on Annex 5, new paragraph 12.2.: In Annex 5 paragraph 11.5. for class T, paragraph 3.3.4. is excluded because there is no locking device in a class T coupling. However a class W has a locking device and there should be a similar general requirement. The text in Annex 5 paragraph 12.2. is derived from the text of Annex 6 paragraph 3.3.4. in the following way:

"3.3.4. ~~Static test on~~ ~~coupling pin locking device~~ ~~With drawbar couplings it is also necessary to test~~ 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 and it shall not cause any damage. A test force of 0.1 D is sufficient in the case of cylindrical coupling pins."

4.6. Comment on Annex 5, new paragraph 12.5.: This paragraph makes it clear that a class W coupling shall with respect to indication be treated as a remotely operated standard coupling.

4.7. New or changed paragraphs concerned:

§ 2.6.14., Annex 5 new §12,

5. Redefinition of Class S

5.1. At the time of drafting the original Regulation, a wide range of different couplings were in use. Often the use of a certain type was limited to a certain region with only few harmonization. One of the objectives of this Regulation was to harmonize the couplings. Therefore only a limited number of couplings were in this Regulation. To address this when switching from national standards to this UN Regulation, the class S was introduced. The idea was that over the years the couplings according old national standards would disappear. However the definition leaves room for interpretation due to the wording "for example" and as a consequence the class S is in practice misused for all kind of new developed couplings.

5.2. The consequence is that signatories to this Regulation do not know which safety level they can expect of the class S couplings, though they are bound to accept the couplings for the use on their public roads. It is uncertain if they would agree with the testing and approval of such a class S coupling. A Technical Service looks for the closest standard or non-standard device for the requirements and the tests (paragraph 4.8). Approval Authorities and Technical Services may not all have the same opinion and that leads to uncertainty. Also class S coupling users do not know against which safety level the class S coupling is tested. And the manufacturers are sure about the requirements.

5.3. One of the objectives of a Regulation is to clarify the safety level and the requirements and tests. This objective was not met so far in the case of class S couplings. For old national types of couplings, already used regionally for a long time with a proven safety level, the drawbacks have been acceptable, especially because export of those so called "national"-couplings it is not much expected. Nevertheless class S couplings should not be used for completely new developed couplings.

5.4. The intention of the proposed text is to retain the original intention of the class S and to exclude the misuse, noting that another option could be to delete class S completely because presumably all relevant national standardized couplings will have an approval according Regulation No. 55 if there is any interest in such an approval. The regulation and class S have been in existence for about 13 years. New couplings can be inserted in the regulation when there is a market for such couplings.

5.5. New or changed paragraphs concerned:

§ 2.5., § 2.6.12,

6. Amendments on the test procedures and installation of couplings belonging to class K and L

6.1. There are some products belonging to several classes, it is proposed to take into account these multiple applications to inform the final user with the relevant characteristic values of each class (see Table 1 of Annex 4)

6.2. The current methods of tests for Class K hook type couplings being not representative of the real conditions in service when coupled with toroïdal drawbar eyes of class L. The stresses and the damage zone resulting from the only positive test force are different with those of the real conditions in service.

6.3. In order to take into account this kind of configuration the provisions have been reviewed and adapted by introducing it in test methods (Annex 6, paragraphs 3.4.2. and 3.5.2.)

6.4. The proposal consists of replacing the only positive test force by an alternating test force as it specified for testing the drawbars eyes.

6.5 Furthermore, hook couplings being mounted on vehicles of categories M1, M2 (<= 3.5 t) and N1, are subject to the provisions in the Annex 7 (on to the installation) in order to apply the same requirements as the coupling balls (see paras 1.1.1. to 1.1.4.).

6.6. Likewise, toroïdal drawbar eyes can be mounted on some kind of trailers, then they have been introduced in the annex 7 relative to the installation in order to apply the same requirements as the coupling heads(see paras 1.2.1. to 1.2.3.).

6.7. Finally hook couplings mounted on vehicles of categories M1/M2 (≤ 3.5t) and N1 shall also fulfill paragraph 1.1.3. In order to be consistent between the different specifications for each Class of couplings, Classes A/B/K ≤ 3.5t, and Classes of attachment for vehicles > 3.5t, the scope of the paragraph 1.3.4. shall be limited to the vehicle of permissible mass above 3.5t.

6.8. New or changed paragraphs concerned:

§ 4.7.; Annex 5 Table 1 footnote; Annex 6 §3.4.2., §3.5.2.; Annex 7 § 1.1., §1.2., §1.3.4.

1. \* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, 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. [↑](#footnote-ref-2)
2. \* **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 ECE R55 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 UN Regulation No. 55 approvals.** [↑](#footnote-ref-3)