

*List of amendments to ECE R55 to be presented in GRRF*

*1. List just with first discussion on 21.06.2012 in Bonn*

Current number	Primarily touched item of regulation	Short description	Responsible expert
2 Complex	Annex 6 item 1.5. clause 3	Use of coupling devices to other purposes than to combine vehicles	Mr. Westphäling
3 Complex	Annex 6 item 3.5.3	Static test on hook coupling (increase of test force)	Mr. Westphäling
4 Complex	Annex 6 item 3.4.2.	Adaption of test procedure regarding class L drawbar eyes	Mr. Westphäling
5 Complex	Regulation item 2.6.12	Addition of innovating products to class S	Mr. Westphäling
6 Simple	Annex 5	Requirements on movable couplings	Mr. Westphäling
7 Simple	Regulation item 4.7.	Requirement of a brake away cable also for drawbar-couplings until max. trailer weight 3,5 t	Mr. Westphäling
8 Simple	Annex 5 Headlines of Tables	Inclusion of couplings with higher characteristic values into Classes of the relating standard couplings	Mr. Westphäling
10 complex	Regulation item 2.6.13	Amended definition of class T (not only bolt couplings)	Mr. Westphäling
11 simple	Annex 1 item 2.9.	Place of mounting of remote indication shall be defined in a more clear way	Mr. Westphäling
12 simple	Annex 7 1.3.6.	Drawing 26 clearance of the drawbar coupling is not clear enough	Mr. Zander
13 complex	Annex 4 table 1	Indication of value Av and quantity of front axles (permissible load on first axle group) regarding drawbars for fulltrailer applications	Mr. Westphäling
14 complex	Annex 6, item 3.3.5	Handling of body 2. Step manufacturers, chassis-reinforcements as coupling class F	Mr. Westphäling
17 simple	Regulation item 6	indication of general value 32t is missing	Mr. Westphäling
18 Simple	Annex 5 item 12.1	remote controls shall be allowed also on couplings similar to C50-X and G50-x couplings	Mr. Conrads
19 complex	new annex 8	Addition of coupling systems for agricultural coupling systems	Mr. Schauer
20 complex		Calculation of D- value in case of heavy transport and limited speed	Mr. Svensson
21 complex		D-value on modular vehicles and combinations with more than 1 trailer	Mr. Svensson
22 complex		Introduction of a formula regarding interpolation between tested D-value and tested Dc/V/S values	Mr. Svensson
23 simple	Regulation 6.3.	The mounting instruction delivered with the coupling can link to information in the internet	Mr. Westphäling
24 complex		requirements on the mounting of king pins	Mr. Alguera
25 complex		Minimum articulation angles of couplings mounted to the vehicles	Mr. Stokreef
26 complex		Specification, how vehicle manufacturers shall indicate the fixing points of A50-X or similar couplings	Mr. Stokreef

List of items added on 10.-11.10.2012 in Garching

Current number	<i>Primarily touched Item of regulation</i>	<i>Short description</i>	Responsible expert
27 New tests required		In case of busses with air suspensions and trucks with long distance between rear tractor axle and first trailer axle, still more important with tandem or tridem axle O1 and O2 trailers or trailers with high gravity centre it seems, that a vertical dynamic force coming from braking behaviour should be taken into account.	
28 New test required		In case of low D-value combinations due to French car manufacturers, the D-value formula should be verified to be more severe.	
29		Stringent definition of when is a drawbar to be considered as an integrated part of the chassis.	Mr. Svensson
30		Definition on "simple" coupling device to be differed from "not simple"	Mr. Svensson

Item 1 is cancelled, because the relating ISO 1103:2007 standard needs to be updated first

Item 2: Use of coupling devices to other purposes than to combine vehicles

Annex 6 item 1.5. clause 3 amend to read:

**Every other use of coupling device as well as mounting of supplement devices (such as stabilizers, luggage carrier, short coupling devices, fixing points for positive steering, and else), by which supplement forces or torques are caused to the coupling devices, has to be taken into account. The permission of using this kind of devices as well as the relating B-value shall be noticed on the manufacturer's plate and in the mounting instructions.**

Justification:

The actual test procedures for mechanical coupling devices takes into account only the standard use of a coupling to tow a trailer with well-defined forces.

More and more coupling devices are used to fulfil further tasks up to carrying a respective number of bicycles. This task can cause damages to the device, so that the towing of a trailer cannot be done in a secure way. Supplement tests can show supplement security factors.

To make sure the coupling device will not undertaken the described misuse, the driver or the user of the device should be informed of uses covered by relating tests

Item 3 Static test on hook coupling (increase of test force)

Annex 6 Item 3.5.3 amend 0,25 to read **0,6**:

Justification:

The actual static value ( $0,25 * D$ ) is based of experiences with standard drawbar couplings, where the forces in opening direction are caused by friction between pin and drawbar eye, according to former research. With hook coupling is presented a different situation.

The drawbar-eye has direct force application on the keeper.

With hook couplings all experiences are showing a higher practical force in opening direction caused directly by the drawbar eye (class L) in on-road condition.

The actualised value is taken from German national regulation, here it was based on research projects with good experience in national German approvals.

Item 4 Adaption of test procedure regarding class L drawbar eyes

Annex 6 item 3.4.2. amend to read

**Toroidal eyes of class L shall be subjected to the same dynamic testing as hook couplings. For toroidal eyes 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;**

**For toroidal eyes intended for use with centre axle trailers the test force shall represent the resultant of the horizontal and vertical forces on the coupling and shall be applied along an angle,  $-\alpha$ , 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,  $F_{hres}$  shall be calculated as:**

$$F_{hres} = (F_h^2 + F_s^2)^{1/2}$$

**The applied force shall vary between 0.05  $F_{hres}$  and 1,0  $F_{hres}$**

Justification:

Actually the drawbar-eye is to be tested according to a two component test. The stressed zone and relating damage load sum between the actual test is different from the reality of hook couplings.

Item 5: Addition of innovating products to class S

Regulation item 2.6.12 after the first sentence add the following sentence:

**Innovative devices in phase of standardization shall also be classified in class S**

***????????? (may be better to introduce a new class in order to describe a Possible limited duration of validity, a very narrow application range during field testing and any prescription to test procedures) ??????????***

Justification:

In case of Innovative devices (for example fully automatic coupling device) in phase of standardization actually it is not possible to get any approval, also when most requirements of similar devices are fulfilled.

These devices in the same moment, when requested standardization, are validated for practical use in field tests.

This field tests are under monitoring of the manufacturer.

Actually the approval of these innovative devices is under national interpretation with help of exceptional procedures or completely impossible. The approval shall not be different over national requirements.

## Item 6 Requirements on movable ball couplings

Annex 5 Insert new item

### 1.4. movable ball coupling devices

A movable coupling device shall be designed for positive mechanical engagements in service position.

Renumber annex 5 old item 1.4. to 1.5 until 1.7. to 1.8

#### Justification:

Today an increasing number of coupling types (especially ball-couplings, which are movable, retractable, bendable and else are developed due to esthetic requirements. The minimum requirement this kinds of ball coupling devices shall be stated. This is in order to avoid accidents, when a trailer is coupled.

## Item 7 Requirement of a brake away cable also for drawbar-couplings

In the regulation item 4.7. after the first sentence add to read:

**Manufacturers of towing brackets shall incorporate attachment points to which either secondary couplings or devices necessary to enable the trailer up to 3,5 t total weight to be stopped automatically in the event of separation of the main coupling, may be attached. Annex 5, item This requirement is necessary to enable the vehicle to comply with the requirements of paragraph 5.2.2.9. of UNECE Regulation No. 13 – Uniform Provisions concerning the approval of vehicles of categories M, N and O with regard to braking.**

Annex 5 delete sentence of 1.5, new 1.5 is renumbered 1.4

#### Justification:

Inertia braked trailers up to 3,5 t are not only equipped with coupling heads class but also with drawbar eyes class S (38 mm, 40 mm, and others). This can be found especially in combination with light trucks for commercial use as so also for the relating drawbar-couplings (class s) must be requested the possibility to fix a brake away cable.

Item 4.7. deals with both drawbeams for class A50 and for class s drawbar couplings So the requirement on fixings for brake away cables and secondary coupling is no more a specific requirement to A50-X class

## Item 8 Inclusion of couplings with higher characteristic values into classes of standard couplings

Headlines Table 3, table 5, table 7, table 9, table 13 amend to read **Minimum** characteristic values,

#### Justification:

if every partner of a coupling combination fulfills minimum requirement a safe combination is given. Any device being tested against higher characteristic values does still comply with every requirement of the standard device, but with a higher security for the whole coupled combination.

## Item 9 (was proposal for resistance calculation on drawbars for trailers more than 3,5 tons. This item will be exposed, because DEKRA missing capacity to collaborate )

Item 10 Amended definition of class T (not only bolt couplings)

Regulation item 2.6.13 amend to read

2.6.13. Class T Non-standard, non-automatic dedicated drawbar type couplings **-with or without jaw, with or without coupling pin-** 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.

Annex 5 item 11 amend to read:

11. DEDICATED DRAWBAR TYPE COUPLINGS **-with or without jaw, with or without coupling pin-** - CLASS T

11.1. Class T dedicated drawbar type couplings **-with or without jaw, with or without coupling pin-** are intended for use on specific vehicle combinations, for example, car transporters.

These vehicles have special structures and may need particular and unusual location of the coupling.

Annex 6 the note to table 14

Note: In the case of Class T dedicated drawbar couplings **-with or without jaw, with or without coupling pin-** these values shall be reduced to  $\pm 0.5D_c$  and  $\pm 0.5V$ .

Justification:

the international interpretation of the expression “drawbar type coupling” is the coupling similar to the class C50 couplings. In fact most of approved class T couplings have neither a coupling jaw nor a coupling pin. This needs to be clarified. More than this is it hard to construct couplings without play with pin couplings, this kind of couplings are constructed and tested as having less play than other couplings. The coupling type is foreseen for couplings where the trailer and the truck are not uncoupled in their daily business, so a device to guide a drawbar under the pin position in order to perform a fast and safe coupling procedure is dispensable, the connection will be done at the manufacturer or in work shops

Item 11: Place of mounting of remote indication shall be defined in a more clear way

Annex 1 item 2.9. delete the wording  
...**in the vehicle cab**...

~~Annex 5 substitute **driver** by **operator**~~

Justification:

The remote indication devices are mentioned in 2 different places in the regulation. This may be caused by 2 different applications of remote indication:

1. OEM equipment just foreseen by the truck manufacturer as a comfort and safety feature. Here the remote control and remote indication can be placed in the cabin using the prescriptions of the vehicle manufacturers.
2. After market equipment: In this case it is hardly possible to use the electronic connections of the vehicle manufacturer. Very often a low coupling system is mounted in the second step of the vehicle manufacturing, when the closed and safe coupling cannot be controlled directly in a visual way. Apart from fully automatic couplings the driver must connect the electrical and pneumatic connectors anyway. It is not necessary for the remote indication to be placed in the vehicle cab. In annex 5 item 12.2.8 this restriction is not given.

Item 12 Drawing 26 free space of the drawbar coupling is not clear enough

(Mr. Zander agreed to provide an amended drawing)

Item 13: Indication of value  $A_v$  and quantity of front axles (permissible load on first axle group) regarding drawbars for fulltrailer applications

2.12. Amend to read

Symbols and definitions used in annex 6 of this Regulation.

$A_{v1}$  = maximum permitted axle mass of a **single** steered axle in tonnes.

$A_{v2}$  = maximum permitted axle mass of a **twin or tandem** steered axle in tonnes.

Annex 4 table 1: add note:

**Note: In case of drawbars for full trailers with free movement in the vertical plane the maximum permissible axle mass of the steered axle  $A_{v1}$  and  $A_{v2}$  shall be indicated.**

Justification:

Some drawbars are calculated against lateral forces assuming a single steered fulltrailers. There have been found damaged drawbars calculated for fulltrailers with single steered axles (9 tons) but mounted on full trailers with tandem steered axle 18 tons. Only with D-value indication this problem is not covered. With the indication of the quantity of front axles and the assumed  $A_v$  value the possible application range can easily be checked.

Item 14 Handling of body 2. Step manufacturers, chassis-re-inforcements as coupling class F

Annex 6, add new item 3.3.5

**Body parts and supplement frame parts between the coupling devices and the main frame, which are not provided under responsibility of the basic vehicle manufacturer, shall be tested in the same way or together with the coupling device they are destined for.**

**Parts of this devices, which are not constructed as reinforcement parts and as such mounted in the flow of forces may be cut-off for the test samples or cracks in this parts may not be taken into account. This crack may not cause a lost of trailers anyway.**

Justification: semi-frames or body works sometimes carry a coupling device. The provisions for the coupling devices given by the original vehicle manufacturer cannot be respected. The dynamic test of this parts is difficult, because of great dimensions, high flexibility, supplement parts needed for the purpose of the whole vehicle and more reasons. For this reason often this parts are not tested or the interpretation of main frame is bended in order to avoid the test. If it is allowed to cut-off this parts or to have cracks in uncritical positions the safety of the devices is not in question. The safety of critical parts within the force flow will be increased.

Item 17 indication of general value 32t is missing (indeed the whole chapter is missing!)

Regulation chapter 6: add new items 6.4., 6.5., 6.6., 6.7.

- 6.4. The vehicle manufacturer shall state which types and classes of coupling devices may be fitted to the vehicle type giving the values of D, V (<sup>1</sup>), S or U (if applicable) which are based on the construction of the vehicle type in combination with the type(s) of the coupling device(s) intended to be used. The characteristics D, V, S or U of the coupling devices approved in accordance with this Directive shall be equal or greater than the characteristics given for the combination concerned.
- 6.5. The coupling device shall be attached to the vehicle type according to the installation instructions, given by the vehicle manufacturer in agreement with the coupling manufacturer and the Technical Service. The vehicle manufacturer shall state the appropriate attachment points for the coupling device on the vehicle type and, if necessary, mounting brackets, mounting plates, etc. to be fitted on the specific vehicle type.
- 6.6. Only automatic coupling devices which allow an automatic coupling procedure on motor vehicles shall be employed for the coupling of trailers having a maximum mass of more than 3,5 tonnes.
- 6.7. When mounting coupling devices of Classes B, D, E, H and L on trailers, a value of 32 tonnes for the maximum mass T of the towing vehicle must be taken into account for D-value calculation. If the D-value of the coupling device is not sufficient for T = 32 tonnes, the resulting restriction on the mass T of the towing vehicle or the mass of the vehicle combination must be stated in the vehicle type-approval certificate of the trailer.

Justification:

Annex 7 of the regulation is copied from 94/20/EC. It was cancelled the 1 paragraph "General requirements..." of the 94/20/EC, because there was just a paragraph in the regulation R55. In this paragraph is referred to detailed requirements in annex 6 and 7, but now this detailed requirements are cancelled. This detailed requirements are needed for the approval of vehicles with regard to the fitting as well as for a basic of D-value calculation. The new items are exactly copied from 94/20/EC annex 7 chapter 1.

Item 18: remote controls shall be allowed also on couplings similar to C50-X and G50-X couplings

Annex 5

12.1 **amend to read:**

Devices for remote indication and remote control are permitted only on automatic **drawbar couplings and automatic fifth wheel couplings** ~~coupling devices of Classes C50-X and G50-X.~~

Justification:

Remote indications may help the driver to assure safe coupling procedures. It is much more safety and innovative to use couplings with remote control and remote indication, in particular if remote indication is integrated in the dashboard. In the today`s version the safety feature of remote control and remote indication is only permitted to C50-X, so that C50-1 until C50-7 and also G50-X, but also class S automatic pin couplings with a 40 mm bolt and the very common automatic 5<sup>th</sup>

wheel coupling for 90 mm King pin is excluded. There is no reason to exclude these coupling types

Item 23: The mounting instruction delivered with the coupling can link to information in the Internet

Regulation item ~~6.3~~ after 4.6. after the third ~~the first~~ sentence insert the following:

**installation- and operation instructions shall be provided by handbook or electronic data record or else.**

Justification:

Internet based delivery of installation-, operation- and maintenance instructions is level of art. In case of loss of paperwork or further needs updated versions can be obtained at any time.