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#### 1958 Agreement:

Consideration of draft amendments

to existing Regulations submitted by GRE

## **Proposal for Supplement 8 to the 01 series of amendments to Regulation No. 98 (Headlamps with gas-discharge light sources)**

### **Submitted by the Working Party on Lighting and Light-Signalling\***

The text reproduced below was adopted by the Working Party on Lighting and Light-Signalling (GRE) at its seventy-sixth session (ECE/TRANS/WP.29/GRE/76, paras. 10, 12 and 15). It is based on ECE/TRANS/WP.29/2013/90, ECE/TRANS/WP.29/GRE/2013/55/Rev.1, ECE/TRANS/WP.29/GRE/2014/3, ECE/TRANS/WP.29/GRE/2016/14 and Annex IV to ECE/TRANS/WP.29/GRE/75, ECE/TRANS/WP.29/GRE/2016/25, ECE/TRANS/WP.29/GRE/2016/32. 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 2017 sessions.

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\* In accordance with the programme of work of the Inland Transport Committee for 2016–2017 (ECE/TRANS/254, para. 159 and ECE/TRANS/2016/28/Add.1, cluster 3.1), 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.

## Supplement 8 to the 01 series of amendments to Regulation No. 98 (Headlamps with gas-discharge light sources)

*Paragraph 1.5.1.*, amend to read:

- "1.5.1. The trade name or mark:
- (a) Lamps bearing the same trade name or mark but produced by different manufacturers shall be considered as being of different types;
  - (b) Lamps produced by the same manufacturer differing only by the trade name or mark shall be considered as being of the same type."

*Insert a new paragraph 2.4.*, to read;

- "2.4. In the case of a type of lamp differing only by the trade name or mark from a type that has already been approved it shall be sufficient to submit:
- 2.4.1. A declaration by the lamp manufacturer that the type submitted is identical (except in the trade name or mark) with and has been produced by the same manufacturer as, the type already approved, the latter being identified by its approval code;
  - 2.4.2. Two samples bearing the new trade name or mark or equivalent documentation."

*Paragraph 5.*, amend to read:

### "5. General specifications

The requirements contained in sections 5. "General specifications" and 6. "Individual specifications" and in the Annexes referenced in the said sections of Regulations Nos. 48, 53 or 86, and their series of amendments in force at the time of application for the lamp type approval shall apply to this Regulation.

The requirements pertinent to each lamp and to the category/ies of vehicle on which the lamp is intended to be installed shall be applied, where its verification at the moment of lamp type approval is feasible.

- 5.1. ..."

*Paragraph 6.4.2.*, amend to read:

- "6.4.2. Additional tests are made after the reflector has been tilted vertically upwards by the angle quoted in paragraph 2.1.4. or 2 degrees, whichever is smaller, by means of the headlamp aiming devices. The headlamp is then re-aimed downwards (by means of the goniometer), and the photometric specifications shall be met at the following points:

Principal passing beam: B50L and 75 R (B 50 R and 75 L, respectively);

Driving beam:  $I_M$  and point HV (percentage of  $I_M$ ).

If the aiming devices do not allow a continuous movement, the position nearest to 2 degrees is chosen."

Paragraph 9., amend to read:

## **"9. Conformity of Production**

The Conformity of Production (CoP) procedures shall comply with those set out in the Agreement, Appendix 2 (E/ECE/324 - E/ECE/TRANS/505/Rev.2), with the following requirements:

- 9.1. Headlamps approved under this Regulation shall be so manufactured as to conform to the type approved by meeting the requirements set forth in paragraph 6.
- 9.1.2. In order to verify that the requirements of paragraph 9.1. are met, suitable controls of the production shall be carried out.
- 9.1.3. The holder of the approval shall in particular:
  - 9.1.3.1. Ensure the existence of procedures for the effective control of the quality of products;
  - 9.1.3.2. Have access to the control equipment necessary for checking the conformity to each approved type;
  - 9.1.3.3. Ensure that data of test results are recorded and that related documents shall remain available for a period to be determined in accordance with the administrative service;
  - 9.1.3.4. Analyse the results of each type of test in order to verify and ensure the stability of the product characteristics making allowance for variation of an industrial production;
  - 9.1.3.5. Ensure that for each type of product at least the tests prescribed in Annex 8 to this Regulation are carried out;
  - 9.1.3.6. Ensure that any collecting of samples giving evidence of non-conformity with the type of test considered shall give rise to another sampling and another test. All the necessary steps shall be taken to re-establish the conformity of the corresponding production.
- 9.1.4. The competent authority which has granted type approval may at any time verify the conformity control methods applicable to each production unit.
  - 9.1.4.1. In every inspection, the test books and production survey records shall be presented to the visiting inspector.
  - 9.1.4.2. The inspector may take samples at random to be tested in the manufacturer's laboratory. The minimum number of samples may be determined in the light of results of the manufacturer's own checks.
  - 9.1.4.3. When the quality level appears unsatisfactory or when it seems necessary to verify the validity of the tests carried out in the application of paragraph above, the inspector shall select samples, to be sent to the technical service which has conducted the type approval tests, using the criteria of Annex 9.
  - 9.1.4.4. The competent authority may carry out any test prescribed in this Regulation. These tests will be on samples selected at random without causing distortion of the manufacturer's delivery commitments and in accordance with the criteria of Annex 9.
  - 9.1.4.5. The competent authority shall strive to obtain a frequency of inspection of once every two years. However, this is at the discretion of the competent authority and their confidence in the arrangements for ensuring effective

control of the conformity of production. In the case where negative results are recorded, the competent authority shall ensure that all necessary steps are taken to re-establish the conformity of production as rapidly as possible.

- 9.2. Headlamps with apparent defects are disregarded.
- 9.3. The reference mark is disregarded.
- 9.4. The measuring points 14 to 21 from paragraph 6.2.6. of this Regulation are disregarded."

*Annex 1,*

*The line after "production definitively discontinued", amend to read:*

"of a type of headlamp pursuant to Regulation No. 98."

*Item 1., amend to read:*

"1. Trade name or mark of the headlamp: ....." "

*Item 2., amend to read:*

"2. Manufacturer's name for the type of device: ....." "

*Item 9.1., amend to read:*

"9.1. Headlamp submitted for approval as type: ....." "

*Item 9.4., amend to read:*

"9.4. Category (or categories) of light source(s): ....." "

*Item 9.8., shall be deleted.*

*Items 9.9. and 9.10., renumber as 9.8. and 9.9.*

*Footnotes 3 and 4, shall be deleted.*

*Annex 2,*

*Figure 10 including the explanatory text, delete.*

*Figures 11, 12 and 13, renumber as Figures 10, 11 and 12.*

*Annex 4,*

*Introductory part, amend to read:*

"Test on complete headlamps

Once the photometric values have been measured according to the prescriptions of this Regulation, in the point for  $I_{max}$  for driving beam and in points 25 L, 50 R and B 50 L for passing beam (or 25 R, 50 L, B 50 R for headlamps designed for left-hand traffic) a complete headlamp sample shall be tested for stability of photometric performance in operation. "Complete headlamp" shall be understood to mean the complete lamp itself including ballast(s) and those surrounding body parts and lamps which could influence its thermal dissipation.

The tests shall be carried out:

- (a) ...
- (b) In case of light sources: using mass production filament light sources, ..."

*Paragraph 1.1.1.2., amend to read:*

"1.1.1.2. Test voltage

The voltage shall be applied to the terminals of the test sample as follows:

- (a) In case of filament light source(s) operated directly under vehicle voltage system conditions: the test shall be performed at 6.3 V, 13.2 V or 28.0 V as applicable except if the applicant specifies that the test sample may be used at a different voltage. In this case, the test shall be carried out with the filament light source operated at the highest voltage that can be used.
- (b) In case of gas discharge light source(s): The test voltage for the electronic light source control-gear is  $13.2 \pm 0.1$  volts for 12 V vehicle voltage system, or otherwise specified in the application for approval.
- (c) In the case of light sources being operated independently from vehicle supply voltage and fully controlled by the system, or, in the case of light sources supplied by a supply and operating device, the test voltages as specified above shall be applied to the input terminals of that device ..."

*Paragraph 1.2.1.1.2., amend to read:*

"1.2.1.1.2. For headlamp with outside lens in plastic material:

The mixture of water and polluting agent to be applied to the headlamp shall be composed of:

- (a) 9 parts by weight of silica sand with a particle size of 0-100  $\mu\text{m}$ ,
- (b) 1 part by weight of vegetal carbon dust produced from beech wood with a particle size of 0-100  $\mu\text{m}$ ,
- (c) 0.2 part by weight of NaCMC<sup>3</sup>,
- (d) 5 parts by weight of sodium chloride (pure at 99 per cent),
- (e) 13 parts by weight of distilled water with a conductivity of  $\leq 1$  mS/m,
- (f)  $2 \pm 1$  drops of surfactant.<sup>4</sup>

The mixture shall not be more than 14 days old."

*Paragraphs 2.2.1. and 2.2.2, amend to read:*

"2.2.1. The result expressed in milliradians (mrad) shall be considered as acceptable for a passing beam headlamp when the absolute value  $\Delta r_1 = | r_3 - r_{60} |$  recorded on the headlamp is not more than 1.0 mrad ( $\Delta r_1 \leq 1.0$  mrad) upward and not more than 2.0 mrad ( $\Delta r_1 \leq 2.0$  mrad) downwards.

2.2.2. However, if this value is:

| <i>Movement</i> |  |
|-----------------|--|
| Upward          | more than 1.0 mrad but not more than 1.5 mrad<br>( $1.0 \text{ mrad} < \Delta r_1 \leq 1.5 \text{ mrad}$ ) |
| Downward        | more than 2.0 mrad but not more than 3.0 mrad<br>( $2.0 \text{ mrad} < \Delta r_1 \leq 3.0 \text{ mrad}$ ) |

a further sample of a headlamp mounted on a test fixture representative of the correct installation on the vehicle shall be tested as described in paragraph 2.1. above after being subjected three consecutive times to the cycle as described below, in order to stabilize the position of mechanical parts of the headlamp:

- (a) Operation of the passing beam for one hour (the voltage shall be adjusted as specified in paragraph 1.1.1.2.);
- (b) One hour period with the lamp switched off.

After these three cycles, the headlamp type shall be considered as acceptable if the absolute values  $\Delta r$  measured according to paragraph 2.1. above on this further sample meet the requirements in paragraph 2.2.1. above."

*Annex 5,*

*Paragraph 1.2., amend to read:*

"1.2. The two samples of complete lamps supplied pursuant to paragraph 2.2.4. of this Regulation and incorporating lenses of plastic material shall, with regard to the lens material, satisfy the specifications below."

*Paragraph 2.6.1.2., amend to read:*

"2.6.1.2. Results

After the test, the results of photometric measurements carried out on the headlamp in accordance with this Regulation shall not exceed:

- (a) By more than 30 per cent the maximum values prescribed at points B 50 L and by more than 10 per cent below the minimum values prescribed at point 75 R (in the case of headlamps intended for left-hand traffic, the points to be considered are B 50 R and 75 L)

or

- (b) By more than 10 per cent below the minimum values prescribed for HV in the case of a headlamp producing driving-beam only."

*Annex 8,*

*Paragraphs 1.2. to 1.2.2.2., amend to read:*

"1.2. With respect to photometric performance, the conformity of mass-produced headlamps shall not be contested if, when testing photometric performance of any headlamp chosen at random and measured at  $13.2 \pm 0.1$  volts or as otherwise specified and:

Either

Equipped with a standard gas-discharge light source according to paragraph 6.1.3. The luminous flux of this gas-discharge light source may differ from the reference luminous flux specified in Regulation No. 99. In this case, the luminous intensities shall be corrected accordingly.

Or

Equipped with the serial production gas-discharge light source and the serial ballast. The luminous flux of this light source may deviate from the nominal luminous flux due to light source and ballast tolerances as specified in

Regulation No. 99; accordingly the measured luminous intensities may be corrected by 20 per cent in the favourable direction.

- 1.2.1. No luminous intensity value, if measured and corrected according to paragraph 1.2. above, deviates unfavourably by more than 20 per cent from the values prescribed in this Regulation. For values B 50 L (or R) and in Zone A, the maximum unfavourable deviation may be respectively:
- |                             |                                |
|-----------------------------|--------------------------------|
| B 50 L (or R): <sup>1</sup> | 170 cd equivalent 20 per cent  |
|                             | 255 cd equivalent 30 per cent  |
| Zone A                      | 255 cd equivalent 20 per cent  |
|                             | 380 cd equivalent 30 per cent. |
- 1.2.2. Or if
- 1.2.2.1. For the passing beam, the values prescribed in this Regulation are met at one point within a circle of 0.35 degrees around points B 50 L (or R)<sup>1</sup> (with a tolerance of 85 cd), 75 R (or L), 50 V, 25 R1, 25 L2, and on segment I;
- 1.2.2.2. And if, for the driving beam, HV being situated within the isocandela line 0.75 I<sub>max</sub>, a tolerance of +20 per cent for maximum values and -20 per cent for minimum values is observed for the photometric values at any measuring point specified in paragraph 6.3. of this Regulation.

<sup>1</sup> Letters in brackets refer to headlamps intended for left-hand traffic."

*Paragraph 2.4.*, amend to read:

"2.4. Measured and recorded photometric characteristics

The sampled headlamps shall be subjected to photometric measurements at the points provided for in the Regulation, the reading being limited to points I<sub>max</sub>, HV<sup>1</sup>, HL, HR<sup>2</sup> in the case of the driving beam, and to points B 50 L (or R)<sup>1</sup>, 50L (or R), 50 V, 75 R (or L) and 25 L2 (or R2) in the case of the passing beam (see figure in Annex 3)."

*Annex 9,*

*Paragraph 1.2.*, amend to read:

"...

Either

Equipped with a standard gas-discharge light source according ..."

*Paragraph 1.2.2.1.*, amend to read:

"1.2.2.1. For the passing beam, the values prescribed in this Regulation are met at one point within a circle of 0.35 degrees around points B 50 L (or R) 1/ (with a tolerance of 85 cd), 75 R (or L), 50 V, 25 R1, 25 L2, and on segment I;"

*Paragraphs 2. to 4.*, replace and amend to read:

"2. First sampling

In the first sampling four headlamps are selected at random. The first sample of two is marked A, the second sample of two is marked B.

- 2.1. The conformity of mass-produced headlamps shall not be contested if the deviation of any specimen of samples A and B (all four lamps) is not more than 20 per cent.
- In the case, that the deviation of both lamps of sample A is not more than 0 per cent the measurement can be closed.
- 2.2. The conformity of mass-produced headlamps shall be contested if the deviation of at least, one specimen of samples A or B is more than 20 per cent.
- The manufacturer shall be requested to bring his production in line with the requirements (alignment) and a repeated sampling according to paragraph 3. below shall be carried out within two months' time after the notification. The samples A and B shall be retained by the Technical Service until the entire CoP process is finished.
3. First repeated sampling
- A sample of four lamps is selected at random from stock manufactured after alignment.
- The first sample of two is marked C, the second sample of two is marked D.
- 3.1. The conformity of mass-produced headlamps shall not be contested if the deviation of any specimen of samples C and D (all four lamps) is not more than 20 per cent.
- In the case, that the deviation of both lamps of sample C is not more than 0 per cent, the measurement can be closed.
- 3.2. The conformity of mass-produced headlamps shall be contested if the deviation of at least:
- 3.2.1 One specimen of samples C or D is more than 20 per cent but the deviation of all specimen of these samples is not more than 30 per cent.
- The manufacturer shall be requested again to bring his production in line with the requirements (alignment).
- A second repeated sampling according to paragraph 4. below shall be carried out within two months' time after the notification. The samples C and D shall be retained by the Technical Service until the entire CoP process is finished.
- 3.2.2 One specimen of samples C or D is more than 30 per cent.
- In this case the approval shall be withdrawn and paragraph 5. below shall be applied.
4. Second repeated sampling
- A sample of four lamps is selected at random from stock manufactured after alignment.
- The first sample of two is marked E, the second sample of two is marked F.
- 4.1. The conformity of mass-produced headlamps shall not be contested if the deviation of any specimen of samples E and F (all four lamps) is not more than 20 per cent.
- In the case, that the deviation of both lamps of sample E is not more than 0 per cent the measurement can be closed.
- 4.2. The conformity of mass-produced headlamps shall be contested if the deviation of at least one specimen of samples E or F is more than 20 per cent.



In this case the approval shall be withdrawn and paragraph 5. below shall be applied.

5. Approval withdrawn

Approval shall be withdrawn according to paragraph 10. of this Regulation.

6. Change of the vertical position of the cut-off line

With respect to the verification of the change in vertical positions of the cut-off line under the influence of heat, the following procedure shall be applied:

One of the headlamps of sample A shall be tested according to the procedure described in paragraph 2.1. of Annex 4 after being subjected three consecutive times to the cycle described in paragraph 2.2.2. of Annex 4.

The headlamp shall be considered as acceptable if  $\Delta r$  does not exceed 1.5 mrad upwards and does not exceed 2.5 mrad downwards.

If this value exceeds 1.5 mrad but is not more than 2.0 mrad upwards or exceeds 2.5 mrad but is not more than 3.0 mrad downwards, the second headlamp of sample A shall be subjected to the test after which the mean of the absolute values recorded in both samples shall not exceed 1.5 mrad upwards and shall not exceed 2.5 mrad downwards.

However, if this value of 1.5 mrad upwards and 2.5 mrad downwards on sample A is not complied with, the two headlamps of sample B shall be subjected to the same procedure and the value of  $\Delta r$  for each of them shall not exceed 1.5 mrad upwards and shall not exceed 2.5 mrad downwards."

*Figure 1*, shall be deleted.

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