

15 September 2023

Agreement

Concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations*

(Revision 3, including the amendments which entered into force on 14 September 2017)

Addendum 90: UN Regulation No. 91

Revision 4

Incorporating all valid text up to:

Corrigendum 1 to Revision 3 of the Regulation (*Erratum by the secretariat*)

Supplement 16 to the original version of the Regulation – Date of entry into force:
10 October 2017

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10 February 2018

01 series of amendments – Date of entry into force: 15 October 2019

Uniform provisions concerning the approval of side-marker lamps for motor vehicles and their trailers



UNITED NATIONS

* Former titles of the Agreement:

Agreement Concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958 (original version);

Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, done at Geneva on 5 October 1995 (Revision 2).

This document is meant purely as documentation tool. The authentic and legal binding texts are:

- E/ECE/324/Rev.1/Add.90/Rev.3/Corr.1
- ECE/TRANS/WP.29/2017/34
- ECE/TRANS/WP.29/2017/84
- ECE/TRANS/WP.29/2018/113/Rev.1

UN Regulation No. 91

Uniform provisions concerning the approval of side-marker lamps for motor vehicles and their trailers

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1. Scope

This Regulation applies to side-marker lamps for vehicles of categories M, N, O and T.¹

2. Definitions

2.1. The definitions given in UN Regulation No. 48 and the series of amendments in force at the time of application for the type of approval shall apply to this Regulation.

2.2. "*Side-marker lamp*" means a lamp used to indicate the presence of the vehicle when viewed from the side;

2.3. "*Side-marker lamps of different types*" means lamps which differ in such essential respects as:

(a) The trade name or mark:

(i) Lamps bearing the same trade name or mark but produced by different manufacturers shall be considered as being of different types;

(ii) Lamps produced by the same manufacturer differing only by the trade name or mark shall be considered as being of the same type.

(b) The characteristics of the optical system (levels of intensity, light distribution angles, category of light source, light source module, etc.);

A change of the colour of the light source or the colour of any filter does not constitute a change of type.

2.4. References made in this Regulation to standard (étalon) filament light source(s) and to UN Regulation No. 37 shall refer to UN Regulation No. 37 and its series of amendments in force at the time of application for type approval.

References made in this Regulation to standard (étalon) LED light source(s) and to UN Regulation No. 128 shall refer to UN Regulation No. 128 and its series of amendments in force at the time of application for type approval.

3. Application for approval

3.1. The application for approval shall be submitted by the holder of the trade name or mark or by his duty accredited representative.

At the choice of the applicant, it will specify that the device may be installed on the vehicle with different inclinations of the reference axis in respect to the vehicle reference planes and to the ground or rotate around its reference axis; these different conditions of installation shall be indicated in the communication form. It shall specify:

3.1.1. Whether the side-marker lamp is intended to emit amber or red light.

3.2. For each type of side-marker lamp the application shall be accompanied by:

¹ As defined in the Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.6 - <https://unece.org/transport/standards/transport/vehicle-regulations-wp29/resolutions>

- 3.2.1. Drawings in triplicate, sufficiently detailed to permit identification of the type of lamp and showing geometrically in what position(s) it may be mounted on the vehicle; the axis of observation to be taken as the axis of reference in the tests (horizontal angle $H = 0^\circ$, vertical angle $V = 0^\circ$); the point to be taken as the centre of reference in the said tests; the vertical and horizontal tangents to the illuminating surface and their distances from the centre of reference of the lamp. The drawings shall show the position intended for the approval number and the additional symbols in relation to the circle of the approval mark.
- 3.2.2. A brief technical description stating, in particular, with the exception of lamps with non-replaceable light sources:
- (a) The category or categories of filament light source(s) prescribed; this filament light source category shall be one of those contained in UN Regulation No. 37 and its series of amendments in force at the time of application for type approval; and/or
 - (b) The category or categories of LED light source(s) prescribed; this LED light source category shall be one of those contained in UN Regulation No. 128 and its series of amendments in force at the time of application for type approval; and/or
 - (c) The light source module specific identification code.
- 3.2.3. Two samples; if the application is made for side-marker lamps which are not identical but are symmetrical and suitable for mounting one on the left and one on the right side of the vehicle and/or, alternatively, one towards the front and one towards the rear, the two samples submitted may be identical and be suitable for mounting only on the right or only on the left side of the vehicle and/or, alternatively, only towards the front or only towards the rear.
- 3.2.4. 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:
- 3.2.4.1. 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;
- 3.2.4.2. Two samples bearing the new trade name or mark or equivalent documentation.
- 3.2.5. In the case of a non-replaceable filament light source(s) or light source module(s) equipped with non-replaceable filament light source(s), the documents according to paragraph 6.5. of this Regulation.

4. Markings

- 4.1. Side-marker lamps submitted for approval:
- 4.2. Must bear the trade name or mark of the applicant; this marking must be clearly legible and indelible.
- 4.3. With the exception of lamps with non-replaceable light sources must bear a clearly legible and indelible marking indicating:
- (a) The category or categories of light source(s) prescribed; and/or
 - (b) The light source module specific identification code.
- 4.4. Must comprise a space of sufficient size for the approval marking and the additional symbols prescribed in paragraph 5.4. below; this space shall be shown in the drawings mentioned in paragraph 3.2.1. above.

- 4.5. In the case of lamps with non-replaceable light sources or light source module(s), shall bear the marking of the rated voltage or range of voltage.
- 4.6. In the case of lamps with light source module(s), the light source module(s) shall bear:
- 4.6.1. The trade name or mark of the applicant; this marking must be clearly legible and indelible;
- 4.6.2. The specific identification code of the module; this marking must be clearly legible and indelible. This specific identification code shall comprise the starting letters "MD" for "MODULE" followed by the approval marking without the circle as prescribed in paragraph 5.4.1.1. below and, in the case of several non-identical light source modules are used, followed by additional symbols or characters; this specific identification code shall be shown in the drawings mentioned in paragraph 3.2.1. above.
- The approval marking does not have to be the same as the one on the lamp in which the module is used, but both markings shall be from the same applicant.
- 4.6.3. The marking of the rated voltage or range of voltage.

5. Approval

- 5.1. If the two side-marker lamps submitted for approval pursuant to paragraph 3.2.3. above satisfy the provisions of this Regulation, approval shall be granted.
- 5.2. An approval number shall be assigned to each type approved. Its first two digits shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party shall not assign this number to another type of side-marker lamp covered by this Regulation except in the case of the extension of the approval to a side-marker lamp differing only in the colour of the light emitted.
- 5.3. Notice of approval or of extension or of refusal of approval of a type of side-marker lamp shall be communicated to the Parties to the Agreement which apply this Regulation, by means of a form conforming to the model in Annex 2 to this Regulation.
- 5.4. Every side-marker lamp conforming to a type approved under this Regulation shall bear, in the space referred to in paragraph 4.4. above, and in addition to the markings prescribed in paragraphs 4.2. and 4.3. or 4.4. respectively:
- 5.4.1. An international approval mark consisting of:
- 5.4.1.1. A circle surrounding the letter "E" followed by distinguishing number of the country which has granted the approval,² and
- 5.4.1.2. The approval number prescribed in paragraph 5.2. above.
- 5.4.2. The additional symbol "SM1" or "SM2."
- 5.4.3. The two digits of the approval number which indicate the series of amendments in force on the date of issue of the approval may be marked close to the above additional symbol.

² The distinguishing numbers of the Contracting Parties to the 1958 Agreement are reproduced in Annex 3 to the Consolidated Resolution on the Construction of Vehicles (R.E.3), document ECE/TRANS/WP.29/78/Rev.6-
<https://unece.org/transport/standards/transport/vehicle-regulations-wp29/resolutions>

- 5.4.4. On devices with reduced light distribution in conformity to paragraph 2.5. of Annex 4 to this Regulation a vertical arrow starting from a horizontal segment and directed downwards.
- 5.5. The marks and symbols mentioned in paragraphs 5.4.1. to 5.4.3. above shall be indelible and clearly legible even when the device is mounted on the vehicle.
- 5.6. Where grouped, combined or reciprocally incorporated lamps have been found to comply with the requirements of several Regulations, a single international approval mark may be applied provided that such lamps are not grouped, combined or reciprocally incorporated with a lamp or lamps not satisfying any one of those Regulations.
- 5.6.1. The approval mark shall consist of a circle surrounding the letter "E" followed by the distinguishing number of the country which has granted the approval; an approval mark may be located anywhere on the grouped, combined or reciprocally incorporated lamps provided that:
- 5.6.1.1. It is visible after their installation;
- 5.6.1.2. No part of the grouped, combined or reciprocally incorporated lamps that transmits light can be removed without at the same time removing the approval mark.
- 5.7. The identification symbol for each lamp appropriate to each Regulation under which approval has been granted, together with the corresponding series of amendments incorporating the most recent major technical amendments to the Regulation at the time of issue of approval shall be marked:
- 5.7.1. Either on the appropriate light-emitting surface, or
- 5.7.2. In a group, in such a way that each lamp may be clearly identified (see three possible models in example 2 shown in Annex 3).
- 5.8. The size of the components of a single approval mark shall not be less than the minimum size required for the smallest of the individual marks under which the approval was granted.
- 5.9. An approval number shall be assigned to each type approved. The same Contracting Party shall not assign the same number to another type of assembly covered by this Regulation.
- 5.10. Annex 3 to this Regulation gives examples of arrangements of approval marks for a single lamp (example 1) and for an assembly (example 2).
- 5.11. Lamps grouped with a type of headlamp of which the lens is also used for another type of headlamp. The provisions laid down in paragraphs 5.6. to 5.9. above are applicable.
- 5.11.1. However, if different types of headlamps or units of lamps including a headlamp comprise the same lens, the latter may bear the different approval marks relating to these types of headlamp or units of lamps, provided that the main body of the headlamp, even if it cannot be separated from the lens, bears the approval marks of the actual functions. If different types of headlamps comprise the same main body, the latter may bear the different approval marks.
- 5.11.2. Annex 3 to this Regulation gives examples of approval marks relating to lamps which are grouped with a headlamp (example 3).
- 5.12. The approval marking shall be clearly legible and indelible. It may be placed on an inner or outer part (transparent or not) of the device which cannot be separated from the transparent part of the device emitting the light. In any case the marking shall be visible when the device is fitted on the vehicle or when a movable part such as the hood or boot lid or a door is opened.

6. General specifications

The requirements contained in sections 5. "General specifications" and 6. "Individual specifications" and in the Annexes referenced in the said sections of UN Regulations Nos. 48 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.

- 6.1. Each side-marker lamp submitted for approval shall conform to the specifications set out in paragraphs 7. and 8. of this Regulation.
- 6.2. Side-marker lamps shall be so designed and made that, in normal use, despite the vibrations to which they may then be subjected, their satisfactory operation continues to be ensured and they retain the characteristics prescribed by this Regulation.
- 6.3. In the case of light source modules, it shall be checked that:
 - 6.3.1. The design of the light source module(s) shall be such as:
 - (a) That each light source module can only be fitted in no other position than the designated and correct one and can only be removed with the use of tool(s);
 - (b) If there are more than one light source module used in the housing for a device, light source modules having different characteristics can not be interchanged within the same lamp housing.
 - 6.3.2. The light source module(s) shall be tamperproof.
 - 6.3.3. A light source module shall be so designed that regardless of the use of tool(s), it shall not be mechanically interchangeable with any replaceable approved light source.
- 6.4. In the case of replaceable light source(s):
 - 6.4.1. The side-marker lamp shall only be equipped with light source(s) approved according to UN Regulation No. 37 and/or UN Regulation No. 128, provided that no restriction on the use is made in UN Regulation No. 37 and its series of amendments in force at the time of application for type approval or in UN Regulation No. 128 and its series of amendments in force at the time of application for type approval.
 - 6.4.2. The design of the device shall be such that the light source can be fixed in no other position but the correct one.
 - 6.4.3. The light source holder shall conform to the characteristics given in IEC Publication 60061. The holder data sheet relevant to the category of light source used, applies.
- 6.5. In the case of non-replaceable filament light source(s) or light source module(s) equipped with non-replaceable filament light source(s), the applicant shall annex to the type approval documentation a report (by the light source manufacturer indicated in the type approval documentation), acceptable to the Type Approval Authority, that demonstrates compliance of these non-replaceable filament light source(s) with the requirements as specified in paragraph 4.11. of IEC 60809, Edition 3.

7. Intensity of light emitted

7.1. The intensity of the light emitted by each of the two samples submitted shall be:

| <i>Side-marker lamp category</i> | | <i>SM1</i> | <i>SM2</i> | |
|----------------------------------|-------------------|--|------------|----------|
| 7.1.1. | Minimum intensity | In the axis of reference | 4.0 cd | 0.6 cd |
| | | Within the specified angular field, other than above | 0.6 cd | 0.6 cd |
| 7.1.2. | Maximum intensity | Within the specified angular field ¹ | 25.0 cd | 25.0 cd |
| 7.1.3. | Angular field | Horizontal | ±45 deg. | ±30 deg. |
| | | Vertical | ±10 deg. | ±10 deg. |

¹ In addition, for red side-marker lamp, in the angular field from 60° to 90° in horizontal direction and ±20° in vertical direction towards the front of the vehicle, the maximum intensity is limited to 0.25 cd.

7.1.4. In the case of a lamp containing more than one light source when all light sources are illuminated the maximum intensity specified may not be exceeded.

7.1.5. Failure of a single lamp containing more than one light source:

7.1.5.1. In a single lamp containing more than one light source, a group of light sources, wired so that the failure of any one of them causes all of them to stop emitting light, shall be considered to be one light source.

7.1.5.2. In case of failure of any one light source in a single lamp containing more than one light source, at least one of the following provisions shall apply:

- (a) The light intensity complies with the minimum intensity required in the table of standard light distribution in space as shown in Annex 4; or
- (b) A signal for activation of a tell-tale indicating failure, as indicated in paragraph 6.18.8. of UN Regulation No. 48, is produced, provided that the luminous intensity in the axis of reference is at least 50 per cent of the minimum intensity required. In this case a note in the communication form states that the lamp is only for use on a vehicle fitted with a tell-tale indicating failure.

7.2. Outside the reference axis and within the angular fields defined in the diagrams in Annex 1 to this Regulation, the intensity of the light emitted by each of the two side-marker lamps supplied must:

7.2.1. In each direction corresponding to the points in the light distribution table reproduced in Annex 4 to this Regulation, be not less than the product of the minimum specified in paragraph 7.1. above by the percentage specified in the said table for the direction in question;

7.2.2. In no direction within the space from which the side-marker lamp is visible, exceed the maximum specified in paragraph 7.1. above;

7.2.3. The provisions of paragraph 2.2. of Annex 4 to this Regulation on local variations of intensity must be observed.

7.3. Annex 4, to which reference is made in paragraph 7.2.1. above, gives particulars of the measurement methods to be used.

8. Colour of light emitted

The colour of the light emitted inside the field of the light distribution grid defined at paragraph 2. of Annex 4 shall be amber. However it can be red, if the rearmost side-marker lamp is grouped or combined or reciprocally incorporated with the rear position lamp, the rear end-outline marker lamp, the rear fog lamp, the stop lamp, or is grouped with or has part of the light emitting surface in common with the rear retro-reflector. To check these colorimetric characteristics, the test procedure described in paragraph 9. of this Regulation shall be applied. Outside this field no sharp variation of colour shall be observed.

However, for lamps equipped with non-replaceable light sources (filament light sources and other), the colorimetric characteristics should be verified with the light sources present in the lamp, in accordance with relevant subparagraphs of paragraph 9.1. of this Regulation.

9. Test procedure

- 9.1. All measurements, photometric and colorimetric shall be carried out with an uncoloured or coloured standard light source of the category prescribed for the device, supplied with the voltage:
- (a) In the case of filament light sources, that is necessary to produce the reference luminous flux required for that category of filament light source;
 - (b) In the case of LED light sources of 6.75 V or 13.5 V; the luminous flux value produced shall be corrected. The correction factor is the ratio between the objective luminous flux and the mean value of the luminous flux found at the voltage applied;
 - (c) In the case of lamps with non-replaceable light sources: 6.75 V and 13.5 V respectively;
 - (d) In the case of a system that uses an electronic light source control gear being part of the lamp³ applying at the input terminals of the lamp the voltage declared by the manufacturer or, if not indicated, 6.75 V, 13.5 V or 28.0 V, respectively;
 - (e) In the case of a system that uses an electronic light source control gear not being part of the lamp, the voltage declared by the manufacturer shall be applied to the input terminals of the lamp.
- 9.2. The test laboratory shall require from the manufacturer the light source control gear needed to supply the light source and the applicable functions.
- 9.3. The voltage to be applied to the lamp shall be noted in the communication form in Annex 2 of this Regulation.
- 9.4. The limits of the apparent surface in the direction of the reference axis of a light-signalling device shall be determined.

³ For the purpose of this Regulation "being part of the lamp" means to be physically included in the lamp body or to be external, separated or not, but supplied by the lamp manufacturer as part of the lamp system. The functioning and installation conditions of these additional systems will be defined by special provisions.

10. Modification of side-marker lamp type and extension of approval

- 10.1. Any modification of a side-marker lamp type shall be notified to the Type Approval Authority which approved the lamp. The Type Approval Authority may then either:
- 10.1.1. Consider that the modifications are unlikely to have an appreciable adverse effect and that, in any case, the side-maker lamp still meets the requirements; or
- 10.1.2. Require a further test report from the Technical Service responsible for conducting the tests.
- 10.2. Confirmation or refusal of approval, specifying the alterations, shall be communicated by the procedure specified in paragraph 5.3. of this Regulation to the Parties to the Agreement which apply this Regulation.
- 10.3. The Type Approval Authority issuing the extension of approval shall assign a series number to each communication form drawn up for such an extension and inform thereof the other Contracting Parties to the Agreement applying this Regulation by means of a communication form conforming to the model in Annex 2 to this Regulation.

11. Conformity of production

The conformity of production procedures shall comply with those set out in the Agreement, Schedule 1 (E/ECE/TRANS/505/Rev.3), with the following requirements:

- 11.1. Any side-marker lamp shall be so manufactured as to conform to the type approved under this Regulation.
- The compliance with the requirements set forth in paragraphs 7. and 8. above shall be verified as follows:
- 11.1.2. The minimum requirements for conformity of production control procedures set forth in Annex 5 to this Regulation shall be complied with.
- 11.1.3. The minimum requirements for sampling by an inspector set forth in Annex 6 to this Regulation shall be complied with.
- 11.2. The Type Approval Authority which has granted type approval may at any time verify the conformity control methods applied in each production facility. The normal frequency of these verifications shall be once every two years.
- 11.3. In the case of non-replaceable filament light source(s) or light source module(s) equipped with non-replaceable filament light sources, a report (by the light source manufacturer indicated in the type approval documentation) shall demonstrate compliance of these non-replaceable filament light source(s) with lifetime requirements and, in the case of colour coated filament light sources, also with colour endurance requirements, as specified in paragraph 4.11. of IEC 60809, Edition 3.

12. Penalties for non-conformity of production

- 12.1. The approval granted in respect of a side-marker lamp may be withdrawn if the foregoing conditions are not satisfied.
- 12.2. If a Contracting Party to the Agreement applying this Regulation withdraws an approval it has previously granted, it shall forthwith so notify the other

Contracting Parties applying this Regulation, by means of a communication form conforming to the model in Annex 2 to this Regulation.

13. Production definitively discontinued

If the holder of an approval completely ceases to manufacture a side-marker lamp approved in accordance with this Regulation, he shall so inform Type Approval Authority which granted the approval. Upon receiving the relevant communication, that Authority shall inform the other Parties to the Agreement applying this Regulation, by means of a communication form conforming to the model in Annex 2 to this Regulation.

14. Names and addresses of Technical Services responsible for conducting approval tests, and of Type Approval Authorities

The Contracting Parties to the Agreement applying this Regulation shall communicate to the United Nations secretariat the names and addresses of the Technical Services responsible for conducting approval tests and of the Type Approval Authorities which grant approval and to which communication forms certifying approval or extension or refusal or withdrawal of approval, issued in other countries, are to be sent.

15. Transitional provisions⁴

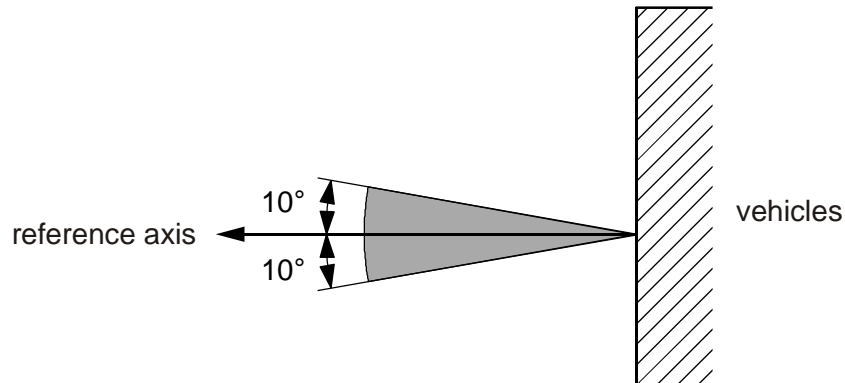
- 15.1. As from 24 months after the official date of entry into force of UN Regulation No. 148, Contracting Parties applying this Regulation shall cease to grant approvals to this Regulation.
- 15.2. Contracting Parties applying this Regulation shall not refuse to grant extensions of approval to this and any previous series of amendments of this Regulation.
- 15.3. Contracting Parties applying this Regulation shall continue to grant approvals for devices on basis of this and any previous series of amendments to this Regulation, provided that the devices are intended as replacements for fitting to vehicles in use.
- 15.4. Contracting Parties applying this Regulation shall continue to allow fitting or use on a vehicle in use of a device approved to this Regulation as amended by any previous series of amendments, provided that the device is intended for replacement.

⁴ The 01 series of amendments does not require changes in the approval number (TRANS/WP.29/815, para. 82).

Annex 1

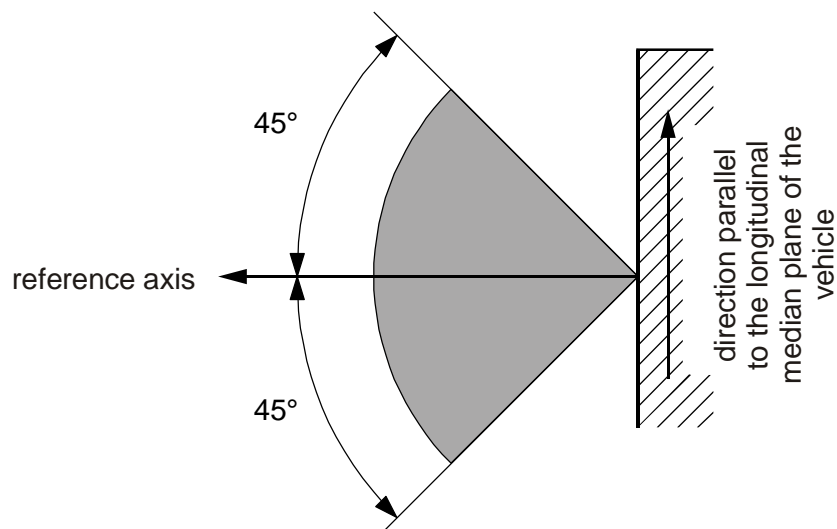
Minimum angles required for light distribution in space

Minimum vertical angles, SM1 and SM2:

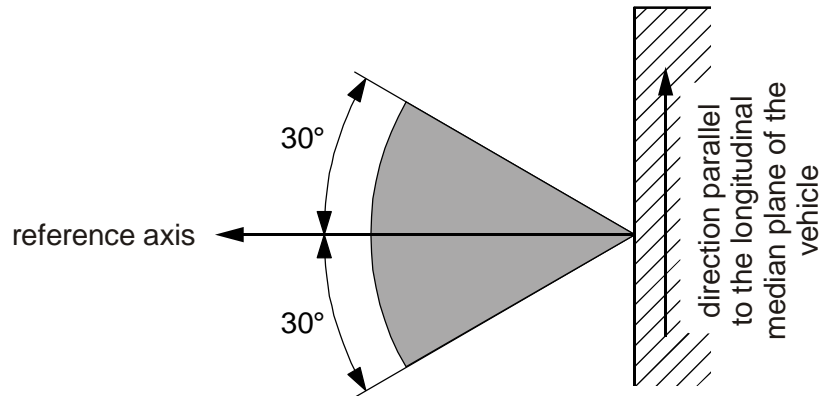


The angle of 10° below the horizontal may be reduced to 5° in case of lamps intended to be installed with their H plane at a mounting height less than 750 mm above the ground.

Minimum horizontal angles, SM1:



Minimum horizontal angles, SM2:



Annex 2

Communication concerning the approval or refusal or extension or withdrawal of approval or production definitively discontinued of a type of side-marker lamp marked SM1/SM2

(Maximum format: A4 (210 x 297 mm))



issued by : Name of administration:

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

concerning:² Approval granted
 Approval extended
 Approval refused
 Approval withdrawn
 Production definitively discontinued

of a type of side-marker lamp marked SM₁/SM₂² pursuant to UN Regulation No. 91

Approval No. Extension No:.....

1. Trade name or mark of the side-marker lamp:.....
2. Manufacturer's name for the type of side-marker lamp:
.....
3. Manufacturer's name and address:
.....
4. If applicable, name and address of the manufacturer's representative:
.....
5. Submitted for approval on:
6. Technical Service responsible for conducting approval tests:
7. Date of test report:
8. Number of test report:.....

¹ Distinguishing number of the country which has granted/extended/refused/withdrawn approval (see approval provisions in the Regulation).

² Strike out what does not apply.

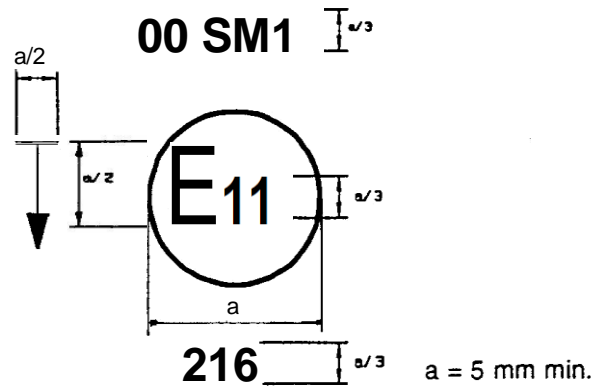
9. Concise description:³
Colour of light emitted: amber / red²
Number and category(ies) of light source(s):
Light source module: yes/no²
Light source module specific identification code:
Only for limited mounting height equal to or less than 750 mm above the ground: yes/no²
Geometrical conditions of installation and relating variations, if any:
Application of an electronic light source control gear/variable intensity control:
(a) Being part of the lamp: yes/no/not applicable²
(b) Being not part of the lamp: yes/no/not applicable²
Input voltage(s) supplied by an electronic light source control gear/variable intensity control:
Electronic light source control gear/variable intensity control manufacturer and identification number (when the light source control gear is part of the lamp but is not included into the lamp body):
The lamp is only for use on a vehicle fitted with a tell-tale indicating failure: yes/no²
10. Position of the approval mark:.....
11. Reason(s) for extension (if applicable):.....
12. Approval granted/refused/extended/withdrawn:²
13. Place:
14. Date:
15. Signature:.....
16. The list of documents deposited with the Type Approval Authority which has granted approval is annexed to this communication and may be obtained on request.

³ For lamps with non-replaceable light sources indicate the number and the total wattage of the light sources.

Annex 3

Examples of arrangements of the approval marks

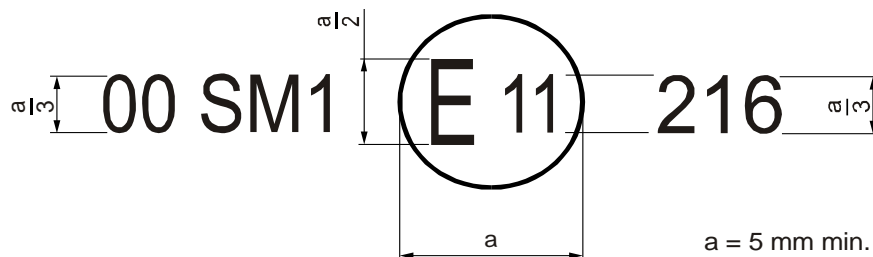
Example 1 (a)



The device bearing the approval mark shown above is a side-marker lamp, approved in the United Kingdom (E 11) pursuant to UN Regulation No. 91 under the number 216. The vertical arrow starting from a horizontal segment and directed downwards indicates a permissible mounting height of equal to or less than 750 mm from the ground for this device.

Note: The number mentioned close to the symbol "SM1" indicates that the approval was granted in accordance with the requirements of this Regulation in its original form.¹

Example 1 (b)



¹ The 01 series of amendments does not require changes in the approval number (TRANS/WP.29/815, para. 82).

Example 2

Simplified marking for an assembly of several lamps that are part of the same unit

Model A

| | | | | | |
|--|------------------------|----------|----------|----------|-----------|
| | 3333 Ⓔ ₄ | IA 02 | 2a 01 | A 01 | SM1 00 |
| | | F 01 | AR 01 | S1 01 | IA 02 |

Model B

| | | | | |
|--|--|---|--|--|
| | | IA 2a A SM1 02 01 01 00 F AR S1 IA 01 01 01 02 3333 | | |
| | | Ⓔ ₄ | | |

Model C

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|--|----|----|----|-----|----|----|----|----|---|----|----|----|----|----|----|----|--|--|--|--|
| <table border="1"> <tr> <td>IA</td> <td>2a</td> <td>A</td> <td>SM1</td> </tr> <tr> <td>02</td> <td>01</td> <td>01</td> <td>00</td> </tr> <tr> <td>F</td> <td>AR</td> <td>S1</td> <td>IA</td> </tr> <tr> <td>01</td> <td>01</td> <td>01</td> <td>02</td> </tr> </table> <p>3333 Ⓔ₄</p> | IA | 2a | A | SM1 | 02 | 01 | 01 | 00 | F | AR | S1 | IA | 01 | 01 | 01 | 02 | | | | |
| | IA | 2a | A | SM1 | | | | | | | | | | | | | | | | |
| 02 | 01 | 01 | 00 | | | | | | | | | | | | | | | | | |
| F | AR | S1 | IA | | | | | | | | | | | | | | | | | |
| 01 | 01 | 01 | 02 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

Notes: The three examples of approval mark, models A, B, and C represent three possible variants of marking of a light-signalling device when two or more lamps are part of the same unit of grouped, combined or reciprocally incorporated lamps.

The approval mark shows that the device was approved in the Netherlands (E 4) under 3333 and comprises:

A rear and a side retro-reflector of a class IA approved in accordance with UN Regulation No. 3, 02 series of amendments;

A rear direction indicator lamp of category 2a approved in accordance with UN Regulation No. 6, 01 series of amendments;

A rear position lamp (R) approved in accordance with UN Regulation No. 7, 01 series of amendments;

A rear fog lamp (F) approved in accordance with UN Regulation No. 38, 01 series of amendments;

A reversing lamp (AR) approved in accordance with UN Regulation No. 23, 01 series of amendments;

A stop lamp (S1) approved in accordance with UN Regulation No. 7, 01 series of amendments;

A side-marker lamp (SM1) approved in conformity with the present Regulation in its original form.¹

Lamp reciprocally incorporated as grouped with a headlamp

Example 3



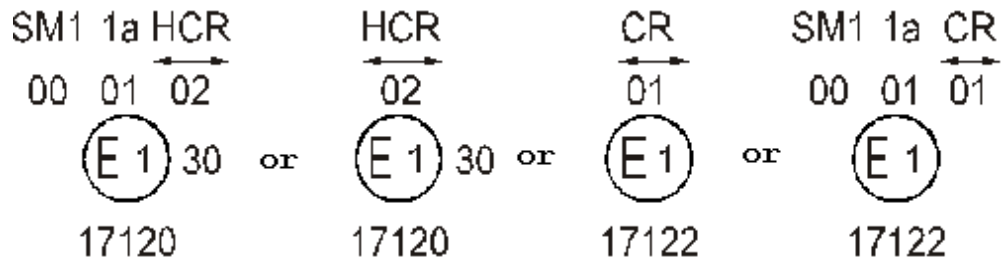
The above example corresponds to the marking of a lens intended to be used in different types of headlamps, namely:

Either: A headlamp with a passing-beam designed for right-hand and left-hand traffic and a driving-beam with a maximum intensity comprised between 86,250 and 101,250 candelas, approved in Germany (E 1) in accordance with the requirements of UN Regulation No. 8 as amended by the 02 series of amendments; which is reciprocally incorporated with a front direction indicator approved in accordance with the 01 series of amendments to UN Regulation No. 6 and grouped with a side-marker lamp in accordance with this Regulation in the original form.¹

or: A headlamp with a passing-beam designed for right-hand and left-hand traffic and a driving-beam approved in Germany (E 1) in accordance with the requirements of UN Regulation No. 1 as amended by the 01 series of amendments, which is reciprocally incorporated with the same front direction indicator and the same side-marker lamp as above.

or even: Either of the above-mentioned headlamps approved as a single lamp.

The main body of the headlamp shall bear the only valid approval number, for instance:



Example 4

Light source modules

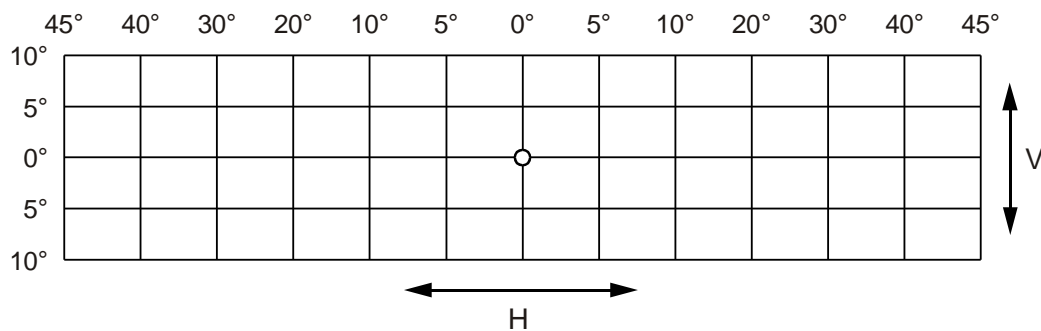
MD E3 17325

The light source module bearing the identification code shown above has been approved together with a lamp approved in Italy (E 3) under approval number 17325.

Annex 4

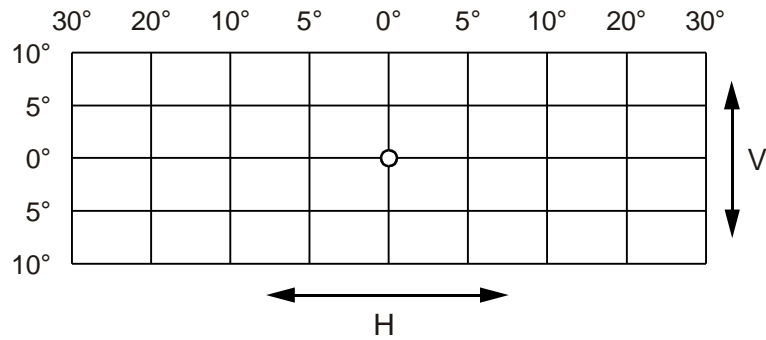
Photometric measurements

1. Measurement methods
 - 1.1. During photometric measurement stray reflections shall be avoided by appropriate marking.
 - 1.2. In case the results of measurements should be challenged, measurements shall be carried out in such a way as to meet the following requirements:
 - 1.2.1. The distance of measurement shall be such that the law of the inverse of the square of the distance is applicable;
 - 1.2.2. The measuring equipment shall be such that the angular aperture of the receiver viewed from the reference centre of the lamp is comprised between 10 minutes and 1 degree;
 - 1.2.3. The intensity requirement for a particular direction of observation shall be deemed to be satisfied if that requirement is met in a direction deviating by not more than one-quarter of a degree from the direction of observation.
 - 1.3. In the case where the device may be installed on the vehicle in more than one or in a field of different positions the photometric measurements shall be repeated for each position or for the extreme positions of the field of the reference axis specified by the manufacturer.
 - 1.4. The direction $H = 0^\circ$ and $V = 0^\circ$ corresponds to the reference axis. (On the vehicle it is horizontal, perpendicular to the median longitudinal plane of the vehicle and oriented in the required direction of visibility.) It passes through the centre of reference.
2. Tables of light distribution
 - 2.1. SMI category of side-marker lamps



- 2.1.1. Minimum values:
0.6 cd at any point other than the reference axis, at which it shall be 4.0 cd.
- 2.1.2. Maximum values:
25.0 cd at any point

2.2. SM2 category of side-marker lamps



2.2.1. Minimum values:

0.6 cd, at any point

2.2.2. Maximum values:

25.0 cd, at any point

2.3. For SM1 and SM2 category of side-marker lamps it may be sufficient to check only five points selected by the Type Approval Authority.

2.4. Within the field of light distribution shown above as a grid the light pattern should be substantially uniform, i.e. the light intensity in every direction within a part of the field formed by the grid lines shall meet at least the lowest minimum value applicable to the respective grid lines.

2.5. However in the case where a device is intended to be installed with its H plane at a mounting height less than 750 mm above the ground, the photometric intensity is verified only up to an angle of 5° downwards.

3. Photometric measurement of lamps

The photometric performance shall be checked:

3.1. For non-replaceable light sources (filament light sources and other): with the light sources present in the lamp, in accordance with the relevant subparagraph of paragraph 9.1. of this Regulation.

3.2. For replaceable light sources:

When equipped with light sources at 6.75 V, 13.5 V or 28.0 V, the luminous intensity values produced shall be corrected. For filament light sources the correction factor is the ratio between the reference luminous flux and the mean value of the luminous flux found at the voltage applied (6.75 V, 13.5 V or 28.0 V).

For LED light sources the correction factor is the ratio between the objective luminous flux and the mean value of the luminous flux found at the voltage applied (6.75 V, 13.5 V or 28.0 V).

The actual luminous fluxes of each light source used shall not deviate more than ± 5 per cent from the mean value. Alternatively and in case of filament light sources only, a standard filament light source may be used in turn, in each of the individual positions, operated at its reference flux, the individual measurements in each position being added together.

3.3. For any signalling lamp except those equipped with filament light source(s), the luminous intensities, measured after one minute and after 30 minutes of operation, shall comply with the minimum and maximum requirements. The luminous intensity distribution after one minute of operation can be calculated from the luminous intensity distribution after 30 minutes of operation by applying at each test point the ratio of luminous intensities measured at HV after one minute and after 30 minutes of operation.

Annex 5

Minimum requirements for conformity of production control procedures

1. General
 - 1.1. The conformity requirements shall be considered satisfied from a mechanical and geometric standpoint, if the differences do not exceed inevitable manufacturing deviations within the requirements of this Regulation.
 - 1.2. With respect to photometric performances, the conformity of mass-produced side-marker lamps shall not be contested if, when testing photometric performances of any side-marker lamp chosen at random and equipped with a standard light source, or when the side-marker lamps are equipped with non-replaceable light sources (filament light sources or other), and when all measurements are made at 6.75 V, 13.5 V or 28.0 V respectively:
 - 1.2.1. No measured value deviates unfavourably by more than 20 per cent from the values prescribed in this Regulation.
 - 1.2.2. If, in the case of a side-marker lamp equipped with a replaceable light source and if results of the test described above do not meet the requirements, tests on side-marker lamps shall be repeated using another standard light source.
 - 1.3. The chromaticity coordinates shall be complied with when the side-marker lamp is equipped with a standard light source, or for lamps equipped with non-replaceable light sources (filament light sources or other), when the colorimetric characteristics are verified with the light source present in the side-marker lamp.
 - 1.4. In the case of non-replaceable filament light source(s) or light source module(s) equipped with non-replaceable filament light sources, at any conformity of production check:
 - 1.4.1. The holder of the approval mark shall demonstrate the use in normal production and show the identification of the non-replaceable filament light source(s) as indicated in the type approval documentation;
 - 1.4.2. In the case where doubt exists in respect to compliance of the non-replaceable filament light source(s) with lifetime requirements and/or, in the case of colour coated filament light sources, with colour endurance requirements, as specified in paragraph 4.11. of IEC 60809, Edition 3, conformity shall be checked (by the light source manufacturer indicated in the type approval documentation) as specified in paragraph 4.11. of IEC 60809, Edition 3.
2. Minimum requirements for verification of conformity by the manufacturer

For each type of side-marker lamp the holder of the approval mark shall carry out at least the following tests, at appropriate intervals. The tests shall be carried out in accordance with the provisions of this Regulation.

If any sampling shows non-conformity with regard to the type of test concerned, further samples shall be taken and tested. The manufacturer shall take steps to ensure the conformity of the production concerned.

 - 2.1. Nature of tests

Tests of conformity in this Regulation shall cover the photometric and colorimetric characteristics.
 - 2.2. Methods used in tests

- 2.2.1. Tests shall generally be carried out in accordance with the methods set out in this Regulation.
- 2.2.2. In any test of conformity carried out by the manufacturer, equivalent methods may be used with the consent of the Type Approval Authority responsible for approval tests. The manufacturer is responsible for proving that the applied methods are equivalent to those laid down in this Regulation.
- 2.2.3. The application of paragraphs 2.2.1. and 2.2.2. above requires regular calibration of test apparatus and its correlation with measurements made by a Type Approval Authority.
- 2.2.4. In all cases the reference methods shall be those of this Regulation, particularly for the purpose of administrative verification and sampling.
- 2.3. Nature of sampling
- Samples of side-marker lamps shall be selected at random from the production of a uniform batch. A uniform batch means a set of side-marker lamps of the same type, defined according to the production methods of the manufacturer.
- The assessment shall in general cover series production from individual factories. However, a manufacturer may group together records concerning the same type from several factories, provided these operate under the same quality system and quality management.
- 2.4. Measured and recorded photometric characteristics
- The sampled lamp shall be subjected to photometric measurements for the minimum values at the points listed in Annex 4 and the required chromaticity coordinates.
- 2.5. Criteria governing acceptability
- The manufacturer is responsible for carrying out a statistical study of the test results and for defining, in agreement with the Type Approval Authority, criteria governing the acceptability of his products in order to meet the specifications laid down for verification of conformity of products in paragraph 11.1. of this Regulation.
- The criteria governing the acceptability shall be such that, with a confidence level of 95 per cent, the minimum probability of passing a spot check in accordance with Annex 6 (first sampling) would be 0.95.

Annex 6

Minimum requirements for sampling by an inspector

1. General
 - 1.1. The conformity requirements shall be considered satisfied from a mechanical and a geometric standpoint, in accordance with the requirements of this Regulation, if any, if the differences do not exceed inevitable manufacturing deviations.
 - 1.2. With respect to photometric performance, the conformity of mass-produced side-marker lamps shall not be contested if, when testing photometric performances of any side-marker lamp chosen at random and equipped with a standard light source, or when the side-marker lamps are equipped with non-replaceable light sources (filament light sources or other), and when all measurements are made at 6.75 V, 13.5 V or 28.0 V respectively:
 - 1.2.1. No measured value deviates unfavourably by more than 20 per cent from the values prescribed in this Regulation.
 - 1.2.2. If, in the case of a side-marker lamp equipped with a replaceable light source and if results of the test described above do not meet the requirements, tests on side-marker lamps shall be repeated using another standard light source.
 - 1.2.3. Side-marker lamps with apparent defects are disregarded.
 - 1.3. The chromaticity coordinates shall be complied with when the side-marker lamp is equipped with a standard light source, or for side-marker lamps equipped with non-replaceable light sources (filament light sources or other), when the colorimetric characteristics are verified with the light source present in the side-marker lamp.
2. First sampling

In the first sampling four lamps 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 lamps 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 lamps 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 Conformity of Production 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 lamps 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 lamps 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 Conformity of Production process is finished.
- 3.2.2. One specimen of samples C and 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 lamps 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 lamps 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 12. of this Regulation.
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