

8 October 2020

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 76: UN Regulation No. 77

Revision 4

Incorporating all valid text up to:

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Uniform provisions concerning the approval of parking lamps for power-driven vehicles



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:

- ECE/TRANS/WP.29/2017/32
- ECE/TRANS/WP.29/2017/82
- ECE/TRANS/WP.29/2018/109/Rev.1

UN Regulation No. 77

Uniform provisions concerning the approval of parking lamps for power-driven vehicles

Contents

	<i>Page</i>
Regulation	
1. Scope	4
2. Definitions.....	4
3. Application for approval	4
4. Markings	5
5. Approval.....	6
6. General specifications	7
7. Photometric characteristics	8
8. Test procedure	9
9. Colour of light emitted	10
10. Remarks concerning colours	10
11. Modifications of a type of parking lamp and extension of approval	10
12. Conformity of production.....	10
13. Penalties for non-conformity of production	11
14. Production definitively discontinued.....	11
15. Names and addresses of Technical Services responsible for conducting approval tests, and of Type Approval Authorities.....	11
16. Transitional provisions	11
Annexes	
1 Communication	13
2 Examples of arrangements of the approval marks.....	15
3 Minimum angles required for the light distribution in space	16
4 Photometric measurements	18
5 Minimum requirements for conformity of production control procedures.....	20
6 Minimum requirements for sampling by an inspector.....	22

1. Scope

Regulation applies to parking lamps for vehicles of categories M, N and T.¹

2. Definitions

For the purposes of this Regulation:

- 2.1. "Parking lamp" means the lamp used to draw attention to the presence of a stationary vehicle;
- 2.2. The definitions given in UN Regulation No. 48 and its series of amendments in force at the time of application for type approval shall apply to this Regulation;
- 2.3. "Parking 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 duly 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.

¹ As defined in the Consolidated Resolution on the Construction of Vehicles (R.E.3.), document (ECE/TRANS/WP.29/78/Rev.6), para. 2. - www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html

- 3.2. For each type of parking lamp the application shall be accompanied by:
- 3.2.1. 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.
- 3.2.2. Drawings (three copies), in sufficient detail to permit identification of the type of the parking lamp and showing geometrically the position(s) in which the lamp 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 $V = 0^\circ$), and the point to be taken as the centre of reference in the said tests;
- 3.2.3. Two samples; if the parking lamps are such that they can be mounted only on one side of the vehicle, 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.
- 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 Parking lamps submitted for approval shall clearly, legibly and indelibly bear:
- 4.1.1. The trade name or mark of the applicant;
- 4.1.2. With the exception of lamps with non-replaceable light sources, 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.
- 4.1.3. In the case of lamps with non-replaceable light sources or light source module(s), the marking of the rated voltage or range of voltage.
- 4.2. Each lamp shall have a space of adequate dimensions for the approval mark and for the additional symbol prescribed in paragraph 5.5. below; this space shall be indicated in the drawings referred to in paragraph 3.2.2. above.
- 4.3. In the case of lamps with light source modules(s), the light source module shall bear:

- 4.3.1. The trade name or mark of the applicant; this marking must be clearly legible and indelible;
- 4.3.2. 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 5.5.1. below and, in the case 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 3.2.2. 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.
- 4.3.3. The marking of the rated voltage or range of voltage.

5. Approval

- 5.1. If the two samples of a parking lamp type submitted in accordance with paragraph 3.2.3. above meet the requirements of this Regulation, approval shall be granted.
- 5.2. An approval number shall be assigned to each type approved. Its first two digits (at present 00 for the Regulation in its original form)² shall indicate the series of amendments incorporating the most recent major technical amendments to the Regulation at the time of issue of the approval. The same Contracting Party may not assign the same number to another type of parking lamp.
- 5.3. Where approval is requested for a type of lighting and light-signalling device comprising a parking lamp and other lamps a single approval mark may be issued provided that the lamp in question complies with the requirements of this Regulation and that each of the other lamps forming part of the lighting and light-signalling device for which approval is requested, comply with the specific Regulation applying to them.
- 5.4. Notice of approval or refusal or extension or withdrawal of approval or production definitively discontinued shall be communicated to the Parties to the Agreement which apply this Regulation by means of a form conforming to the model in Annex 1 to this Regulation.
- 5.5. Every parking lamp conforming to a type approved under this Regulation shall bear in the spaces referred to in paragraph 4.2. above, in addition to the marking prescribed in paragraph 4.1. above an international approval mark consisting of:
- 5.5.1. A circle surrounding the letter "E" followed by the distinguishing number of the country which has granted approval;³
- 5.5.2. The number of this Regulation followed by the letter "R", a dash and the approval number;

² The 01 series of amendments does not require changes in the approval number (TRANS/WP.29/815, para. 82).

³ 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) Annex 3 - www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html

- 5.5.3. When a lamp emits a light of amber colour towards the front and rear, the lamp must be marked with an arrow indicating its orientation, the arrow showing the front of the vehicle;
- 5.5.4. Where a single approval number is issued, as under paragraph 5.3. above, for a type of lighting and light-signalling device comprising a parking lamp, and other lamps, a single approval mark may be affixed, consisting of the additional symbols prescribed by the various Regulations under which approval has been granted;
- 5.5.5. On devices with reduced light distribution in conformity to paragraph 2.3. of Annex 4 to this Regulation a vertical arrow starting from a horizontal segment and directed downwards.
- 5.6. The marking according to paragraphs 4.1.1. and 5.5. above shall be clearly legible and be indelible even when the parking lamps are fitted on the vehicles.
- 5.7. 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.
- 5.8. Annex 2 to this Regulation gives an example of an arrangement of the approval mark.

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 sample shall conform to the specifications of paragraphs 7. and 9. of this Regulation.
- 6.2. Parking lamps shall be so designed and constructed that in normal use, despite the vibrations to which they may 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 cannot 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 parking 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. Photometric characteristics

- 7.1. In the reference axis, the light emitted by each of the two samples shall be of not less than the minimum intensity and of not more than the maximum intensity specified below:

	Minimum	Maximum
	(cd)	(cd)
7.1.1. Intensity of forward facing parking lamps	2	60
7.1.2. Intensity of rearward facing parking lamps	2	30
7.1.3. In the case of a single lamp containing more than one light source when all light sources are illuminated the maximum intensities shall not be exceeded.		
7.1.4. Failure of a single lamp containing more than one light source:		
7.1.4.1. 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.		
7.1.4.2. 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 6.12.8. 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 3 to this Regulation, the intensity of the light emitted by each of the two samples shall:

- 7.2.1. In each direction corresponding to the points in the luminous intensity distribution table reproduced in Annex 4 to this Regulation be not less than the value shown in the said table for the direction in question, expressed as a percentage of the minimum specified in paragraph 7.1. above;
- 7.2.2. In any direction within the space from which the light in question is visible, not exceed the maximum specified in paragraph 7.1. above;
- 7.2.3. However, a luminous intensity of 60 cd shall be permitted for parking lamps directed to the rear incorporated with stop lamps (see paragraph 7.1.2. above) below a plane forming an angle of 5° with and downward from the horizontal plane;
- 7.2.4. Moreover,
 - 7.2.4.1. Throughout the fields defined in Annex 3 the intensity of the light emitted shall be not less than 0.05 cd,
 - 7.2.4.2. The requirements of paragraph 2.2. of Annex 4 on local variations of intensity shall be observed.
- 7.3. Annex 4 to this Regulation to which reference is made in paragraph 7.2.1. above, gives particulars of the methods of measurement to be used.

8. Test procedure

- 8.1. 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 lamp⁴ 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.
- 8.2. The test laboratory shall require from the manufacturer the light source control gear needed to supply the light source and the applicable functions.
- 8.3. The voltage to be applied to the lamp shall be noted in the communication form in Annex 1 to this Regulation.
- 8.4. The limits of the apparent surface in the direction of the reference axis of a light-signalling device shall be determined.

⁴ 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.

9. 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 red, white or amber. To check these colorimetric characteristics, the test procedure described in paragraph 8. 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 8.1. of this Regulation.

10. Remarks concerning colours

Every approval under this Regulation is, by virtue of paragraph 5. above, granted for a type of device emitting light of a particular colour or uncoloured light; the Contracting Parties to the Agreement to which this Regulation is annexed are accordingly not precluded by article 3 of that Agreement from prohibiting, for devices fitted on the vehicles registered by them certain colours provided for in this Regulation.

11. Modifications of a type of parking lamp and extension of approval

- 11.1. Every modification of the type of parking lamp shall be notified to the Type Approval Authority which approved the type of parking lamp. The Type Approval Authority may then either:
 - 11.1.1. Consider that the modifications made are unlikely to have an appreciable adverse effect and that in any case the parking lamp still complies with the requirements; or
 - 11.1.2. Require a further test report from the Technical Service responsible for conducting the tests.
- 11.2. Confirmation or refusal of approval, specifying the modification shall be communicated by the procedure specified in paragraph 5.4. above.
- 11.3. The Type Approval Authority issuing the extension of approval shall assign a series number to each communication form drawn up for such an extension.

12. 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:

- 12.1. Parking lamps 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 9. above shall be verified as follows:

 - 12.1.1. The minimum requirements for conformity of production control procedures set forth in Annex 5 to this Regulation shall be complied with.
 - 12.1.2. The minimum requirements for sampling by an inspector set forth in Annex 6 to this Regulation shall be complied with.

- 12.2. 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.
- 12.3. 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.

13. Penalties for non-conformity of production

- 13.1. The approval granted in respect of a type of parking lamp pursuant to this Regulation may be withdrawn if the requirements set forth above are not complied with or if a parking lamp bearing the approval mark does not conform to the type approved.
- 13.2. If a Party to the Agreement which applies 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 1 to this Regulation.

14. Production definitively discontinued

If the holder of the approval completely ceases to manufacture a parking lamp under this Regulation, he shall so inform the Type Approval Authority which granted the approval. Upon receiving the relevant communication that Type Approval Authority shall inform thereof the other Parties to the Agreement applying this Regulation by means of a communication form conforming to the model in Annex 1 to this Regulation.

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

The Contracting Parties to the Agreement which apply 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 forms certifying approval or extension or refusal or withdrawal of approval, issued in other countries, are to be sent.

16. Transitional provisions⁵

- 16.1. 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.
- 16.2. Contracting Parties applying this Regulation shall not refuse to grant extensions of approval to this and any previous series of amendments of this Regulation.

⁵ The 01 series of amendments does not require changes in the approval number (TRANS/WP.29/815, para. 82).

- 16.3. 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.
- 16.4. 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.

Annex 1

Communication

(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 parking lamp pursuant to UN Regulation No. 77

Approval No..... Extension No.....

1. Designation of the type of parking lamp:
2. Trade name or mark:
3. Manufacturer's name and address:
4. If applicable, name and address of manufacturer's representative:
5. Submitted for approval on:
6. Technical Service responsible for conducting approval tests:
7. Date of report issued by that Service:
8. Number of report issued by that Service:.....
9. Concise description:
Colour of light emitted: red / white /amber²
Number and category(ies) of light source(s):
- Light source module: Yes /No²
Light source module specific identification code:
- 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

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

² Strike out which does not apply.

gear/variable intensity control:.....

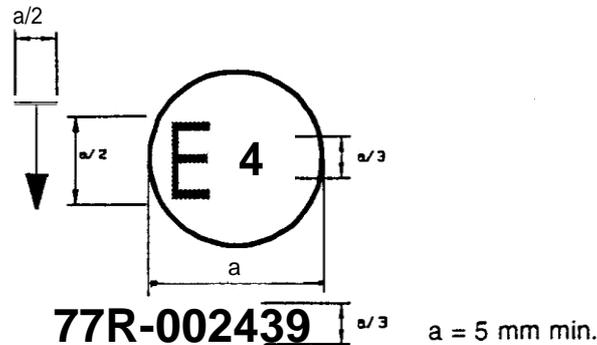
Electronic light source control gear/variable intensity control manufacturer and identification number (when the light source control gear is part of the lamp but is not included into the lamp body):

The lamp is only for use on a vehicle fitted with a tell-tale indicating failure: yes/no²

10. Only for limited mounting height of equal to or less than 750 mm above the ground Yes/No²
11. Approval granted/refused/extended/withdrawn²
12. Place:
13. Date:
14. Signature:
15. The attached drawing No. shows the geometrical position in which the device is to be mounted on the vehicle and the axis of reference and centre of reference of the device.

Annex 2

Examples of arrangements of the approval marks



The lamp bearing the above approval mark has been approved in the Netherlands (E 4) pursuant to UN Regulation No. 77 under the approval number 002439. The first two digits of the approval number indicate that the approval was granted according to the requirements of UN Regulation No. 77 in its original form.¹ 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.

Light source modules

MD E3 17325

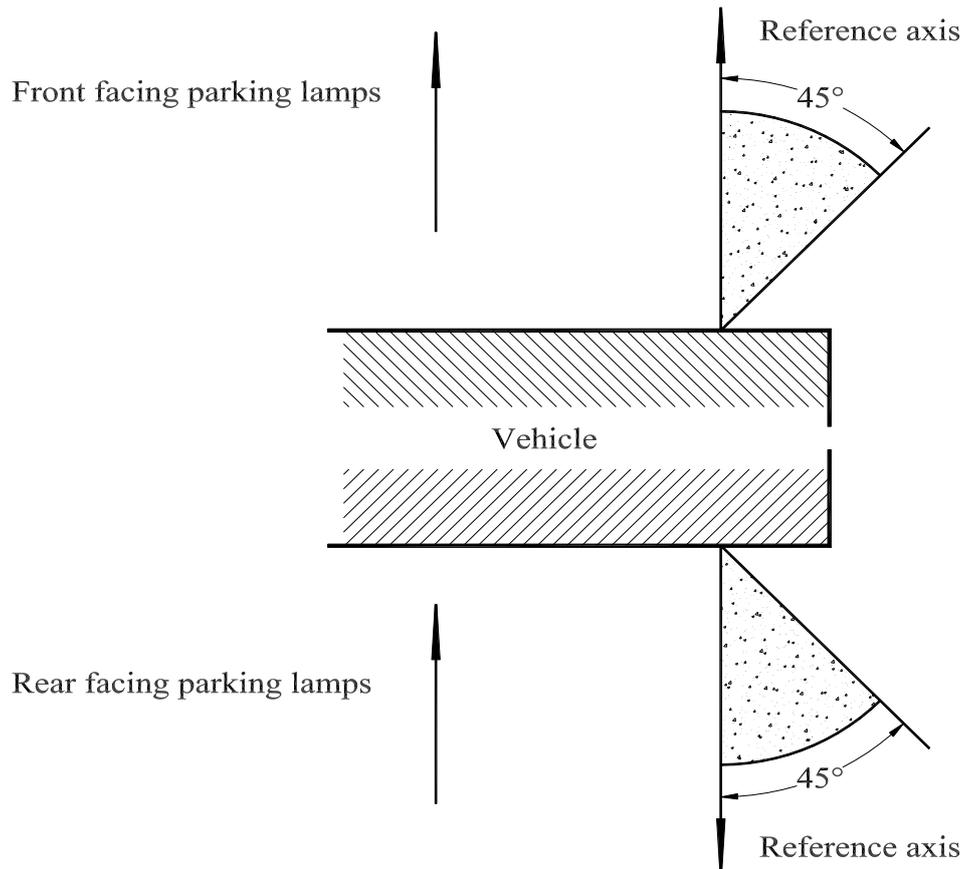
The light source module bearing the identification code shown above has been approved together with a lamp approved in Italy (E 3) under approval number 17325.

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

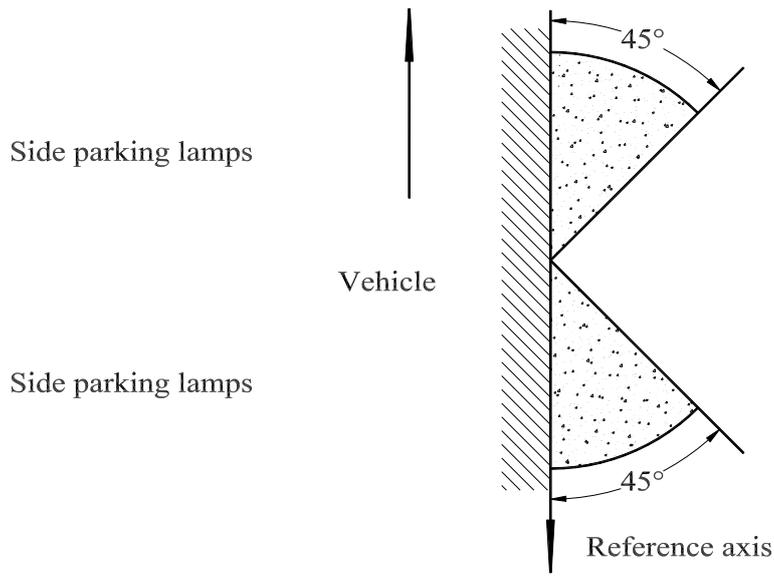
Annex 3

Minimum angles required for the light distribution in space*

In all cases, the minimum vertical angles of light distribution in space are 15° above and 15° below the horizontal except for lamps intended to be installed with their H plane at a mounting height less than 750 mm above the ground, for which they are 15° above and 5° below the horizontal.



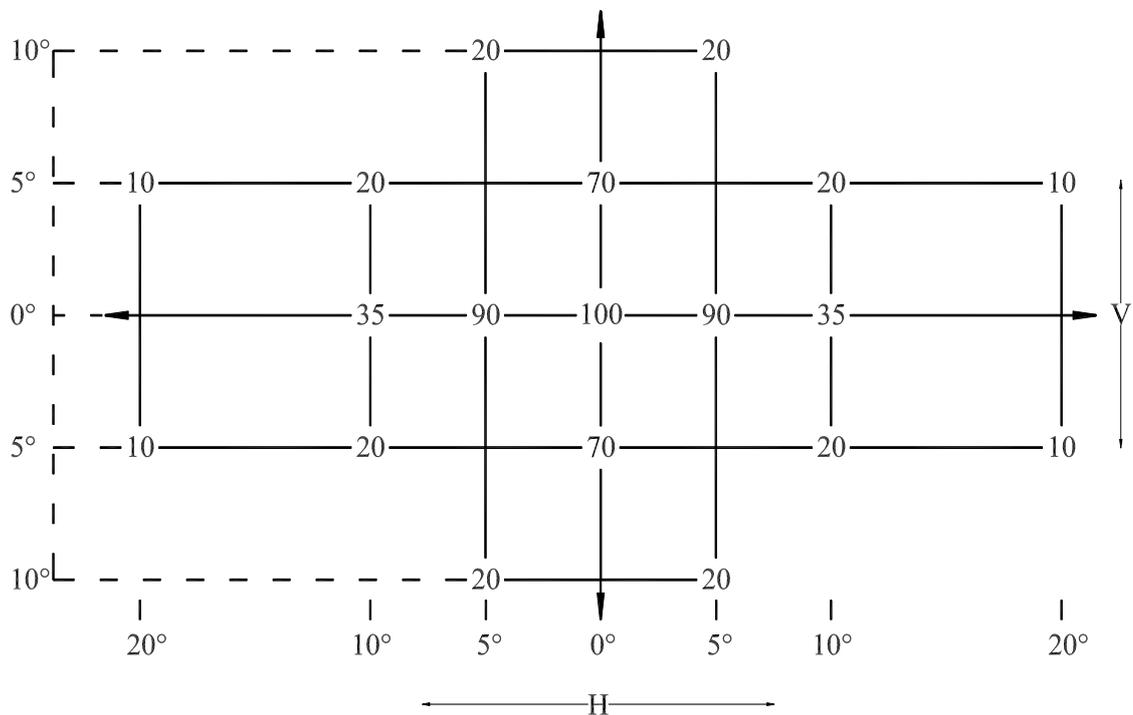
* The angles shown in these diagrams are correct for devices to be mounted on the right side of the vehicle. The arrows point to the front of the vehicles.



Annex 4

Photometric measurements

1. Measurement methods
 - 1.1. During photometric measurements, stray reflections shall be prevented by appropriate masking.
 - 1.2. Should the results of measurements be challenged, measurements shall be carried out in such a way as to meet the following requirements:
 - 1.2.1. The distance of measurements 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 light is between 10' and 1°;
 - 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 15' 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.
2. Standard luminous intensity distribution table



- 2.1 The direction $H = 0^\circ$ and $V = 0^\circ$ corresponds to the reference axis. (On the vehicle it is horizontal, parallel to the median longitudinal plane of the vehicle and oriented in the required direction of visibility.) It passes through the centre of reference. The values shown in the table give, for the various directions of measurements, the minimum intensities as a percentage of the minimum required in the axis for each lamp (in the direction $H = 0^\circ$ and $V = 0^\circ$).
- 2.2. Within the field of light distribution of paragraph 2. above, schematically shown as a grid, the light pattern should be substantially uniform in so far as the light intensity in each direction of a part of the field formed by the grid lines meets at least the lowest minimum percentage value being shown (available) on the grid lines surrounding the questioned direction.
- 2.3. 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 8.1. 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 lamps shall not be contested if, when testing according to paragraph 8. of this Regulation, the photometric performances as set forth in paragraph 7. of this Regulation of any lamp chosen at random and equipped with a standard light source, or when the 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.

For the minimum values required throughout the fields specified in Annex 3 the respective maximum deviations of the measured values shall correspond to the values shown in the table below:

<i>Required minimum value</i>	<i>Equivalent 20 per cent</i>	<i>Equivalent 30 per cent</i>
<i>cd</i>	<i>cd</i>	<i>cd</i>
0.05	0.02	0.03

- 1.2.2. In the case of a lamp equipped with a replaceable light source, if results of the test described above do not meet the requirements, tests on lamps shall be repeated using another standard light source.
- 1.3. The chromaticity coordinates shall be complied with when the 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 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 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 lamps shall be selected at random from the production of a uniform batch. A uniform batch means a set of 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 12.1. 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 performances, the conformity of mass-produced parking lamps shall not be contested if, when testing according to paragraph 8. of this Regulation, the photometric performances as set forth in paragraph 7. to this Regulation of any lamp chosen at random and equipped with a standard light source, or when the 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. According to the requirements in paragraph 1.2.1. of Annex 5 to this Regulation are met.
 - 1.2.2. In the case of a lamp equipped with a replaceable light source, if results of the test described above do not meet the requirements, tests on lamps shall be repeated using another standard light source.
 - 1.2.3. Lamps with apparent defects are disregarded.
 - 1.3. The chromaticity coordinates shall be complied with when the 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 lamp.
2. First sampling

In the first sampling four parking 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 parking 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 parking lamps shall be contested if the deviation of at least one specimen of sample 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 parking 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 parking lamps shall be contested if the deviation of at least:
- 3.2.1. One specimen of sample 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 sample 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 parking 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 parking lamps shall be contested if the deviation of at least one specimen of sample 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 13. of this Regulation.
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