33 Reversing lamps

Refer to: R23 00-S19

33.1 Effective date and Scope:

33.1.1 Effective date from 2006/7/1, new types of reversing lamps using in vehicles of category symbols M, N and O, and from 2008/7/1, all types of reversing lamps using in vehicles of category symbols M, N and O, shall comply with this regulation and shall be use bulbs that is conform with ”Filament lamps“ and/or “LED light sources” of this Direction (according to paragraph 33.1.2, it shall exclude paragraph 33.2.1).

33.1.2 Effective date from 2017/1/1, new types of reversing lamps using in vehicles of category symbols M, N and O, and from 2019/1/1, existing types of reversing lamps using in vehicles of category symbols M, N and O, except the applicants applying for low volume safety approval and applying for vehicle-by-vehicle low volume, shall provide documents declared to conform to 33.2.1 of this regulation, and certification institution may do a reality check when necessary.

33.1.3 For the vehicles imported by authorities, organizations, institutes or individuals for self-use only could exempt from Regulation of “reversing lamps”. Effective date from 2017/1/1, for the vehicles imported by authorities, organizations, institutes or individuals for self-use, if the vehicle registered and owned by the importer for more than six months from abroad, it could exempt from the regulation of "Reversing lamps ".

33.1.4 For the low volume type safety approval, maximum 20% deviation of the levels of intensity standard of this test is allowed, and if the light source is LED, it can omit the failure conditions test.

33.2 Reversing lamp means the lamp conform to 33.2.1 Specifications marked of the vehicle designed to illuminate the road to the rear of the vehicle and to warn other road users that the vehicle is reversing or about to reverse.

33.2.1 Specifications marked

33.2.1.1 Means the marks shall be clearly legible on the outside of the marking material and shall be indelible to include below:

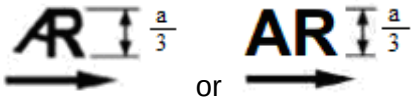
33.2.1.1.1 Brand (or marking), type of replaceable light sources(or MD(or MODULE) the light source module specific identification code).

33.2.1.1.2 The "TOP" marked horizontally on the uppermost part of the illuminating surface to help correct the installation of lamps.

33.2.1.1.3 In the case of lamps with non-replaceable light sources or light source module(s), bear the marking of rated voltage or the range of voltage and the rated wattage.

33.2.1.1.4 The light source module must to mark Brand (or marking), MD(or MODULE) the light source module specific identification code, rated voltage (or ranged voltage)and rated wattage. However this provision does not apply to the LED is non-replaceable.

33.2.1.1.5 An additional symbol consisting of letters A and R(figure as below , “a” is at least 5 mm).



33.2.1.1.6 On reversing lamps of which the visibility angles are asymmetrical with regard to the reference axis in a horizontal direction, an arrow pointing towards the side on which the photometric specifications are met up to an angle of 45 deg.

33.2.1.1.7 The mark and symbol referred to in paragraphs 33.2.1.1.5. and 33.2.1.1.6. shall be indelible and shall be clearly legible even when the reversing lamp is mounted on the vehicle.

33.3 Reversing lamps shall according to suitable variants and range of principle：

33.3.1 The same trade name

33.3.2 The same characteristics of the optical system (levels of intensity, light distribution angles, category of light source, light source module, etc.), however，if bulbs or filter’s color is change that it doesn’t mean to change the variants.

33.3.3 The inclusion of components capable of altering the optical effects by reflection, refraction, absorption and/or deformation during operation.

33.3.4 In the case of light source modules, it shall be checked that:

33.3.4.1 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 that 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.

33.3.4.2 The light source module(s) shall be tamperproof.

33.3.4.3 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.

33.4 Photometric measurements：

33.4.1 The intensity along the axis of reference shall be not less than 80 candelas.

33.4.2 The intensity of the light emitted in all directions in which the light can be observed shall not exceed：300 candelas in directions in or above the horizontal line, or 600 candelas between horizontal line and 5 degrees D, and 8,000 candelas below 5 degrees D.

33.4.3 In every other direction of measurement shown in Table1 the luminous intensity shall be not less than the minima specified in that Table. In the case where the reversing lamp is intended to be installed on a vehicle exclusively in a pair of devices, the photometric intensity may be verified only up to an angle of 30° inwards where a photometric value of at least 25 cd shall be satisfied.

33.4.4 In the case of a single lamp containing more than one light source, the lamp shall comply with the minimum intensity required when any one light source has failed and when all light sources are illuminated the maximum intensities shall not be exceeded.

33.4.5 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.

33.5 Trichromatic coordinates: In the case of reversing lamp, the light emitted shall be white defined in “The installation of lighting and light-signaling devices” of “Directions”. Outside this field no sharp variation of colour shall be observed. These requirements shall apply within the range of variable luminous intensity produced by testing conditions. However, for lamps equipped with non-replaceable light sources (filament lamps and other), the colorimetric characteristics should be verified with the light sources present in the lamp.

33.6 In the case of replaceable light source(s):

33.6.1 Any category or categories of light source (s) approved according to “Filament lamps” and/or “LED light sources” may be used, it’s shall concern about relevant special restriction.

33.6.2 The design of the device shall be such that the filament lamp can be fixed in no other position but the correct one.

33.6.3 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.

33.7 Test Procedures

33.7.1 All measurements, photometric and colorimetric, shall be made:

33.7.1.1 In the case of a lamp with replaceable light source, if not supplied by an electronic light source control gear, with an uncolored standard light source of the category prescribed for the device, supplied with the voltage;

(a) In the case of filament lamp(s), that is necessary to produce the reference luminous flux required for that category of filament lamp;

(b) In the case of LED light sources of 6.75 V, 13.5 V or 28.0 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) When equipped with light source(s) at 6.75 V, 13.5 V or 28.0 V, the luminous intensity values produced shall be

corrected. For filament lamps 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 filament lamp and/or LED light source used shall not deviate more than 5 per cent from the mean value.Alternatively and in case of filament lamps only, a standard filament lamp 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.

33.7.1.2 In the case of a lamp equipped with non-replaceable light sources (filament lamps and other), at 6.75 V, 13.5 V or 28.0 V respectively.

33.7.1.3 In the case of a system that uses an electronic light source control gear, being part of the lamp 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.

33.7.1.4 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.

33.7.2 The Technical Service shall require from the manufacturer the light source control gear needed to supply the light source and the applicable functions.

33.7.3 The voltage to be applied to the lamp shall be indicated in the communication form, specified in Annex 1 of this Regulation.

33.7.4 For any lamp, except those equipped with filament lamps, the luminous intensities measured after one minute and after 10 minutes of operation, shall comply with the minimum and maximum requirements. The luminous intensity distribution after one and after 10 minutes of operation shall be calculated from the luminous intensity distribution measured after photometric stability has occurred by applying at each test point the ratio of luminous intensities measured at HV.

(a) After one minute;

(b) After 10 minutes; and

(c) After photometric stability has occurred"

Photometric stability has occurred" means the variation of the luminous intensity for the specified test point is less than 3 per cent within any 15 minute period.

33.7.5 The limits of the apparent surface in the direction of the reference axis of a light-signalling device shall be determined.

33.8 Colour of Light Emitted

The colour of the light emitted inside the field of the light distribution grid defined at paragraph 2. of Annex 3 shall be white. For testing see paragraph 4. to this Regulation.

Outside this field no sharp variation of colour shall be observed.

33.8.1 Measured and recorded photometric characteristics

The sampled lamp shall be subjected to photometric measurements for the minimum values at the points listed in Annex 3 and the required chromaticity coordinates.

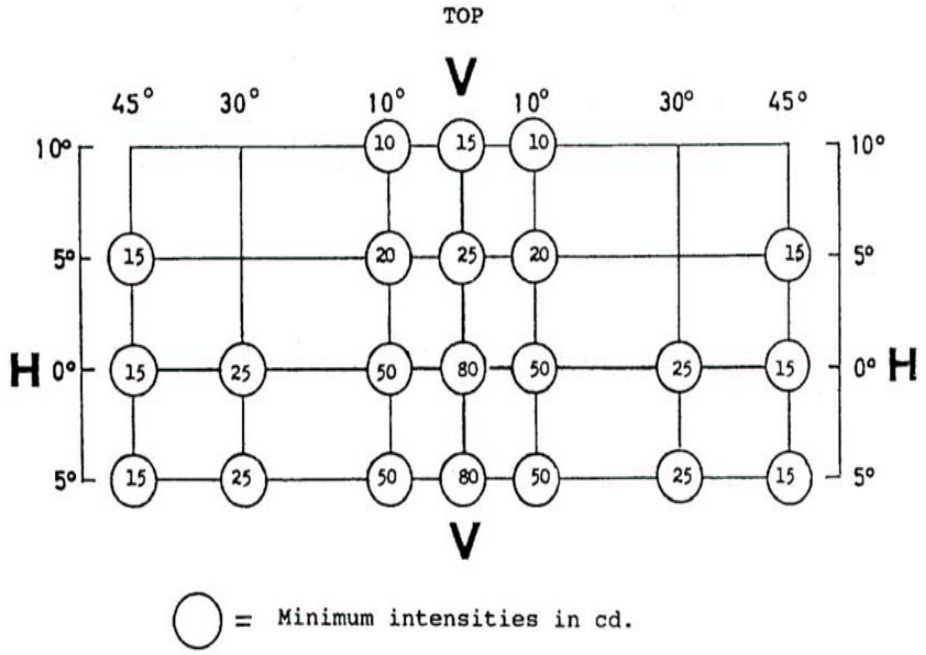


Table 1. Measuring points expressed in degrees of angle with the axis of reference and values of the minimum intensities (candelas) of the light emitted