

37 Stop lamps

Refer to: R07 02-S23, R50 00-S16

37.1 Effective date and Scope:

- 37.1.1 Effective date from 2006/7/1, new types of stop lamps using in vehicles of category symbols M, N and O, and from 2008/7/1 all types of stop 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 37.1.3, it shall exclude paragraph 37.2.5).
- 37.1.2 Effective date from 2009/1/1, new types of stop lamps using in vehicles of category symbols L1 and L3, and from 2011/1/1 all types of stop lamps using in vehicles of category symbols L1, L2, L3 and L5, 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 37.1.3, it shall exclude paragraph 37.2.5).
- 37.1.3 Effective date from 2017/1/1, new types of stop lamps using in vehicles of category symbols M, N , O and L, and from 2019/1/1, existing types of stop lamps using in vehicles of category symbols M, N , O and L, shall comply with 37.2.5 in addition, except the applicants applying for low volume safety approval and applying for vehicle-by-vehicle low volume.
- 37.1.4 For the vehicles imported by authorities, organizations, schools or individuals for self-use only could exempt from regulation of "stop 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 "stop lamps".
- 37.1.5 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.

37.2 Stop lamps:

- 37.2.1 Means the lamp conform to 37.2.5 Specifications marked and used to indicate to other road-users to the rear of the vehicle that its driver is applying the service brake.
- 37.2.2 Stop lamp with two levels of intensity: means the lamp with the system used to reduce illumination at night.
- 37.2.3 In case of failure of the variable intensity control of a stop lamp category S2 emitting more than the maximum value of category S1, requirements of steady luminous intensity of the respective category shall be fulfilled automatically.
- 37.2.4 An interdependent lamp system shall meet the requirements when all its interdependent lamps are operated together.
- 37.2.5 Specifications marked
 - 37.2.5.1 Apply to stop lamps of vehicles of category symbol M, N, O and L, means the marks shall be clearly legible on the outside of the marking material and shall be indelible to include below:

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- 37.2.5.1.1 Brand (or marking), type of replaceable light sources(and/or MD(or MODULE) the light source module specific identification code).
- 37.2.5.1.2 In case of lamps with an electronic light source control gear or a variable intensity control and/or non-replaceable light sources and/or light source module(s), bear the marking of the rated voltage or range of voltage and rated wattage.
- 37.2.5.1.3 Lamps operating at voltages other than the nominal rated voltages of 6 V, 12 V or 24 V respectively, by the application of an electronic light source control gear or a variable intensity control being not part of the lamp, or having a secondary operating mode, must also bear a marking denoting the rated secondary design voltage.
- 37.2.5.1.4 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.
- 37.2.5.1.5 An electronic light source control gear or a variable intensity control being part of the lamp but not included into the lamp body shall bear the name of the manufacturer and its identification number.
- 37.2.5.1.6 On devices meeting the requirements of this Regulation in respect of the stop-lamps, the letter "S" followed by the figure (figure as below , "a" is at least 5 mm):
- When the device produces steady luminous intensity;
- When the device produces variable luminous intensity;

S1 

- 37.2.5.1.7 On devices comprising both a rear position lamp and a stop- lamp meeting the requirements of this Regulation in respect of such lamps, the letters "R" or "R1" or "R2" and "S1" or "S2" as the case may be, separated by a horizontal dash.

R2D - S2 D

- 37.2.5.1.8 On devices which may be used as part of an assembly of two lamps, the additional letter "D" to the right of the symbol mentioned in paragraphs 37.2.5.1.7;
- 37.2.5.1.9 On devices with reduced light distribution in conformity to paragraph 37.4.2 to this Regulation a vertical arrow starting from a horizontal segment and directed downwards.
- 37.2.5.1.10 On interdependent lamps, which may be used as part of an interdependent lamp system, the additional letter "Y" to the right of the symbol mentioned in paragraph 37.2.5.1.6 and 37.2.5.1.7 shall be marked on each device.
- 37.2.5.1.11 The marks and symbols referred to in paragraphs 37.2.5.1.6. to 37.2.5.1.10. above shall be clearly legible and

indelible even when the device is fitted in the vehicle.

37.2.5.2 Apply to stop lamps of vehicles of category symbol L in paragraph 37.4.4.2, means the marks shall be clearly legible on the outside of the marking material and shall be indelible to include below:

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

37.2.5.2.2 Lamps with non-replaceable light sources or light source module(s) shall bear the marking of rated voltage or the range of voltages, and the rated wattage.

37.2.5.2.3 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.

37.2.5.2.4 On devices with reduced light distribution in conformity to paragraph 37.4.2 a vertical arrow starting from a horizontal segment and directed downwards.



37.2.5.2.5 On interdependent lamps, which may be used as part of an interdependent lamp system, the additional symbol shall be marked "MSY"

37.2.5.2.6 The approval mark referred to in paragraph 37.2.5.2.4 and 37.2.5.2.5. above shall be clearly legible and be indelible. It may be placed on an inner or outer part (transparent or not) 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, trunk's lid which belong to vehicle's liftable panel) is opened.

37.3 Stop lamps shall according to suitable variants and range of principle :

37.3.1 The same brand.

37.3.2 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.

37.3.3 The variable intensity control, if any.

37.4 Photometric measurements:

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- 37.4.1 Within the field of light distribution schematically shown as a grid in Figure 1, the light pattern should be substantially uniform. The intensities shall be measured with the filament lamp(s) continuously alight. In the case of devices of categories S2, that elapses between energising the light source(s) and the light output on the reference axis to reach 90 per cent of the value measured shall be measured for the extreme levels of luminous intensity produced by the device. The time measured for the lowest luminous intensity shall not exceed the time measured for the highest luminous intensity.
- 37.4.2 In each direction corresponding to the points in the light distribution be not less than the product of the minimum specified in Table 1 by the percentage specified in the said figure of the direction in question. In no direction within the space from which the light-signaling device is visible, exceed the maximum specified in Table. In the case where a device is intended to be installed at a mounting height of equal to or less than 750 mm above the ground, the photometric intensity is verified only up to an angle of 5 degrees downwards.
- 37.4.2.1 For an assembly of two or more lamps the total intensity shall not exceed the maximum value prescribed for a single lamp.
- 37.4.2.2 When an assembly of two independent lamps to be type approved as "D" lamps having the same function is deemed to be a single lamp, it shall comply with the requirements for:
- 37.4.2.2.1 Maximum intensity if all lamps together are lit;
- 37.4.2.2.2 Minimum intensity if either lamp has failed.
- 37.4.2.3 In case of failure of a single lamp containing more than one light source the following provisions shall apply:
- 37.4.2.3.1 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.
- 37.4.2.3.2 The lamp shall comply with the minimum intensity required when any one light source has failed (refer to figure 1). However, for lamps designed for only two light sources, 50 per cent of the minimum intensity in the axis of reference of the lamp shall be considered sufficient, provided that a note in the communication form states that the lamp is only for use on a vehicle fitted with an operating tell-tale which indicates when any one of these two light sources has failed;
- 37.4.3 Intensity of the light emitted (The vehicles of category symbols L shall comply with either 37.4.3.1 or 37.4.3.2 of this regulation):
- 37.4.3.1 In case of vehicles of category symbols M, N, O and L:
Throughout the fields defined in the diagram of angles required for light distribution in space of the categories S1 stop lamps, the intensity of the light emitted must be not less than 0.3 cd for devices of categories S1 and for those of categories S2 by day; it shall not be less than 0.07 cd for devices of categories S2 by night;
- 37.4.3.2 This requirement only suitable for the vehicles of category symbols L:
Throughout the fields defined in the diagram of angles required for light distribution in space of the lamps, the intensity of the light emitted must be not less than 0.3 cd

37.4.4 Angles required for light distribution in space of the lamps (The vehicles of category symbols L shall comply with either 37.4.4.1 or 37.4.4.2 of this regulation):

37.4.4.1 In the case of rear position (side) lamps used on the vehicles of M, N, O and L categories, horizontal angles are shown in Figure 2. The minimum vertical angles of light distribution in space are 15 degrees above and 15 degrees below the horizontal except

37.4.4.1.1 for lamps with a permissible mounting height not more than 750 mm above the ground, for which they are 15 degrees above and 5 degrees below the horizontal.

37.4.4.1.2 for lamps intended to be installed with their H plane at a mounting height more than 2,100 mm above the ground, for which they are 5 degrees above and 15 degrees below the horizontal;

37.4.4.2 In the case of stop lamps only used on the vehicles of L categories, horizontal angles are shown in Figure 2. However, in the case of a pair of lamps, the inboard geometric visibility requirement is deemed to be satisfied if the lamps conform to the photometric values prescribed in the field of light distribution for the approval of the device.

Vertical angles are $+15^{\circ}$ / -10° . 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 angle of 10 deg. below the horizontal may be reduced to 5 deg.

37.4.5 The variable intensity control shall not generate signals which cause luminous intensities as below:

37.4.5.1 outside the range specified in Figure 1. above and

37.4.5.2 exceeding the respective steady luminous intensity maximum specified in Figure 1. for the specific device

(a) for systems depending only on daytime and night time conditions: under night time conditions

(b) for other systems: under standard conditions.

37.4.6 In the case of stop lamps used on the vehicles of category symbols L1 and L3:

37.4.6.1 In the case of stop lamps used on the vehicles of category symbols L1 and L3:

(a) Minimum intensity if one lamp has failed (see Figure 1).

(b) 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.

37.5 Trichromatic coordinate: The colour of the light emitted inside the field shall be red defined in "The installation of lighting and light-signaling devices" of "Directions" that is fitting for categories M, N,O and L1. Outside this field, no sharp variation of colour shall be observed (see Figure 1) . These requirements shall also apply within the range of variable luminous intensity produced by stop lamps of category S2. The source of light is according to each testing measure conditions to proceed. 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.

37.6 In the case of replaceable light source(s) lamp of the vehicles of category symbols M,N,O and L shall apply to 37.4.4.1 only:

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- 37.6.1 Any category or categories of light source(s) approved according to "Filament lamps" and/or "LED light sources" of VSTD may be used, it's shall concern about relevant special restriction.
- 37.6.2 The design of the device shall be such that the light source(s) can be fixed in no other position but the correct one.
- 37.6.3 The light source(s) holder shall conform to the characteristics given in IEC Publication 60061, and the holder data sheet relevant to the category of light source used, applies.
- 37.7 In the case of replaceable light source(s) of the vehicles of category symbols L shall apply to 35.4.4.2 only:
- 37.7.1 Any category or categories of light source(s) approved according to "Directions" of "Filament lamps" and/or "LED light sources" may be used, it's shall concern about relevant special restriction.
- 37.7.2 The design of the device shall be such that the light source(s) can be fixed in no other position but the correct one.
- 37.7.3 The light source(s) holder shall conform to the characteristics given in IEC Publication 60061, and the holder data sheet relevant to the category of light source used, applies.
- 37.8 Test conditions for each measuring (Vehicles of category symbols L shall either 37.4.4.1 or 37.4.4.2 conform to 37.8.1 or 37.8.2):
- 37.8.1 Vehicles of category symbols M, N, O and L :
- 37.8.1.1 Testing voltage
- 37.8.1.1.1 All measurements, photometric and colorimetric, on lamps equipped with non-replaceable light sources (filament lamps and others) shall be made at 6.75 V, 13.5 V or 28.0 V, respectively, the categories L1 and L3 are follow the manufactories' specification.
- 37.8.1.1.2 In case of a lamp with replaceable light source, if not supplied by an electronic light source control gear or a variable intensity control, with an uncolored or colored 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 source(s) 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 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 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

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reference flux, the individual measurements in each position being added together.

37.8.1.1.3 In the case of a system that uses an electronic light source control gear or a variable intensity control, being part of the lamp 6/ 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.

37.8.1.1.4 In the case of a system that uses an electronic light source control gear or a variable intensity control, not being part of the lamp the voltage declared by the manufacturer shall be applied to the input terminals of the lamp.

37.8.1.2 However, in the case of light sources operated by a variable intensity control to obtain variable luminous intensity, photometric measurements shall be performed according to the applicant's description.

37.8.1.3 The test laboratory shall require from the manufacturer the light source control gear or a variable intensity control needed to supply the light source and the applicable functions.

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

37.8.2 This requirement only suitable for the vehicles of category symbols L:

37.8.2.1 Testing voltage

37.8.2.1.1 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 lamps, 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 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) When equipped with light sources at 6.75 V or 13.5 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 or 13.5 V). The actual luminous fluxes of each light sources 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.

37.8.2.1.2 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;

37.8.2.1.3 In the case of a system that uses an electronic light source control gear being part of the lamp 3/ applying at the input

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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;

37.8.2.1.4 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.

37.8.2.2 The test laboratory shall require from the manufacturer the light source control gear needed to supply the light source and the applicable functions.

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

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

37.9.1 In the case of light source module(s) of the vehicles of category symbols M,N,O and L shall apply to 35.4.4.1 only. The design of the light source module(s) shall be such as:

37.9.1.1 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);

37.9.1.2 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.

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

37.9.3 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.

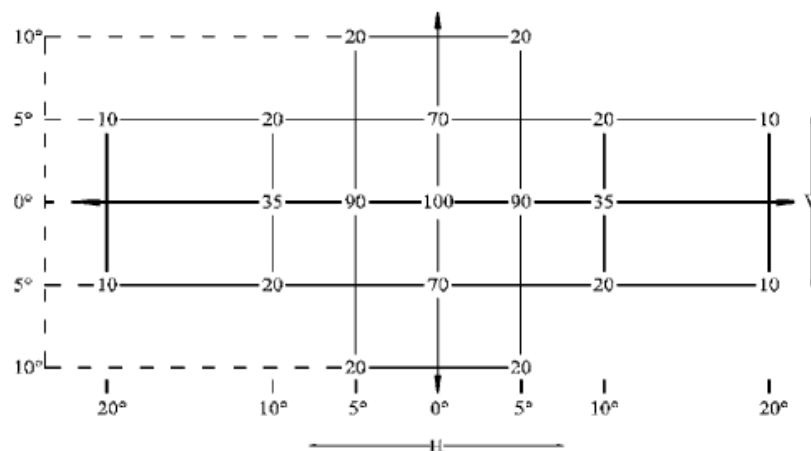


Fig 1. Light intensity distribution in percentage

Table 1. In the reference axis, the light emitted shall be at least equal to the minimum values and not exceed the maximum values specified below :

Light Intensity (Candelas)	Minimum intensities cd	Maximum values in cd when used as	
		Single lamp	Lamp (single) marked "D"
Stop lamp			
S1 (steady)	60	260	130
S2 (variable)	60	730	365
Lumination (cd)		Minimum intensities	Maximum intensities
Braking lamp			
Category L1 & L3 vehicle		40	260

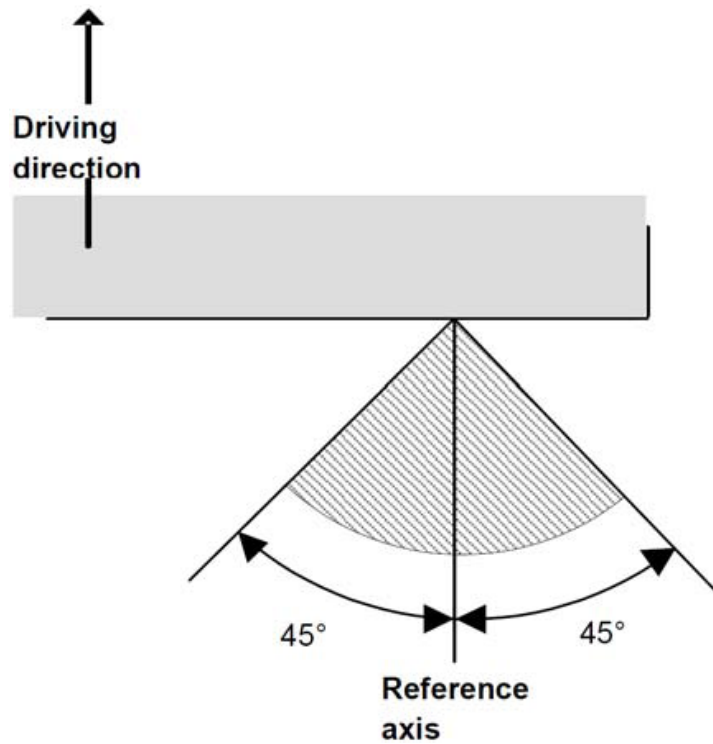


Fig 2. Stop lamps (S1 and S2) (apply to the vehicles of category symbols M/N/O/L of paragraph 37.4.4.1 and the vehicles of category symbols L of paragraph 37.4.4.2).

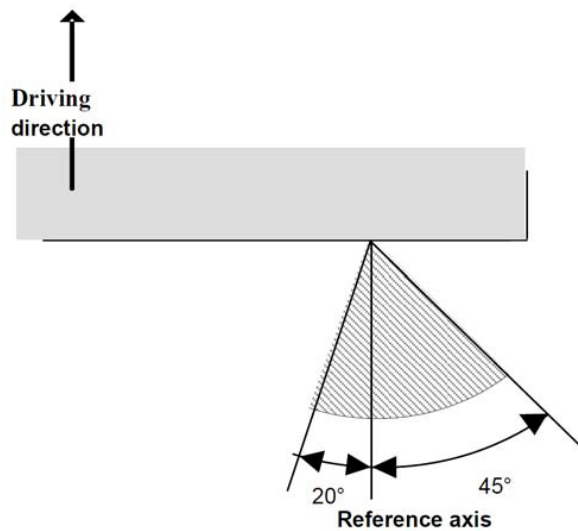


Fig 2-1. Under the H plane for stop lamps (S1 and S2) intended to be installed with this plane at a mounting height less than 750 mm above ground (apply to the vehicles of category symbols M/N/O/L of paragraph 37.4.4.1).