

Technical requirements of Regulation No 87 of the United Nations' Economic Commission for Europe referred to in Article 3 and in Annex III, item 2.1 of Commission Directive 97/30/EC<sup>(1)</sup> adapting to technical progress Council Directive 76/758/EEC relating to the end-outline marker lamps, front position (side) lamps, rear position (side) lamps, stop lamps, daytime running lamps and side marker lamps for motor vehicles and their trailers

## 2. DEFINITIONS

For the purpose of this regulation:

- 2.1. 'Daytime running lamp' means a lamp facing in a forward direction used to make the vehicle more easily visible when driving during daytime;
- 2.2. The definitions given in 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. Daytime running lamps of different 'types' are daytime running lamps which differ in such essential respects as:
  - 2.3.1. the trade name or mark,
  - 2.3.2. the characteristics of the optical system,
  - 2.3.3. the category of filament lamp.

## 6. GENERAL SPECIFICATIONS

- 6.1. Each lamp shall conform to the specifications set forth in the paragraphs below.
- 6.2. Daytime running lamps shall be so designed and constructed that in normal use, despite the vibration to which they may then be subjected, they continue to function satisfactorily and retain the characteristics prescribed by this Regulation.

## 7. INTENSITY OF LIGHT

- 7.1. The intensity of the light emitted by each lamp shall be not less than 400 cd in the axis of reference.
- 7.2. Outside the reference axis, in each direction corresponding to the points in the light distribution table reproduced in annex 3 to this Regulation, the intensity of the light emitted by each lamp shall 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.
- 7.3. The intensity of the light emitted shall be not more than 800 cd in any direction.
- 7.4. In the case of a 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 intensity shall not be exceeded.

## 8. ILLUMINATING SURFACE

The area of the illuminating surface shall be not less than 40 cm<sup>2</sup>.

## 9. COLOUR OF LIGHT

The colour of the light shall be white. It shall be measured by using a source of light at a colour temperature of 2 856° K (corresponding to illuminant A of the International Commission on Illumination, CIE). 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, in accordance with paragraph 10.2 of this Regulation. The colour must be within the limits of the trichromatic co-ordinates prescribed in annex 4 to this Regulation.

<sup>(1)</sup> OJ No L 171, 30. 6. 1997, p. 25.

## 10. TEST PROCEDURE

- 10.1. All measurements shall be carried out with a colourless standard filament lamp of the category indicated for the daytime running lamp adjusted to produce the reference luminous flux specified for this category of filament lamp.
- 10.2. All measurements on lamps equipped with non-replaceable light sources (filament lamps and other) shall be made at 6.75 V, 13.5 V or 28.0 V respectively.

In the case of light sources supplied by a special power supply, the above test voltages shall be applied to the input terminals of that power supply. The test laboratory may require from the manufacturer the special power supply needed to supply the light sources.

## 11. HEAT RESISTANCE TEST

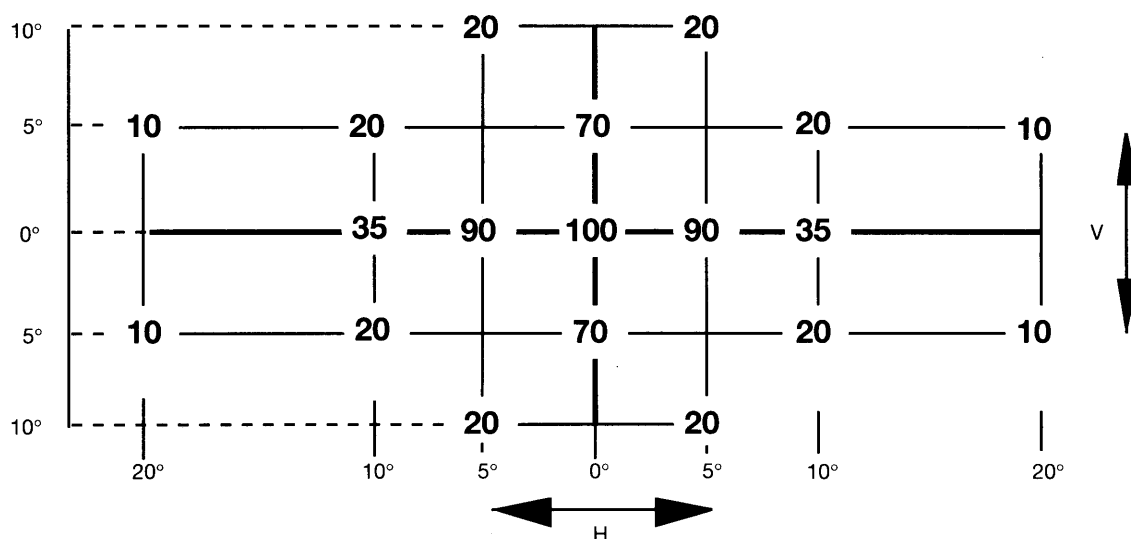
- 11.1. The lamp must be subjected to a one-hour test of continuous operation following a warm-up period of 20 minutes. The ambient temperature shall be  $23^{\circ}\text{C} \pm 5^{\circ}$ . The filament lamp used shall be a filament lamp of the category specified for the lamp, and shall be supplied with a current at a voltage such that it gives the specified average power at the corresponding test voltage. However, for lamps equipped with non-replaceable light sources (filament lamps and other), the test shall be made with the light sources present in the lamp, in accordance with paragraph 10.2. of this Regulation.
- 11.2. Where only the maximum power is specified, the test shall be carried out by regulating the voltage to obtain a power equal to 90 % of the specified power. The specified average or maximum power referred to above shall in all cases be chosen from the voltage range of 6, 12 or 24 V at which it reaches the highest value; for lamps equipped with non-replaceable light sources (filament lamps and other) the test conditions set in paragraph 10.2. of this Regulation shall be applied.
- 11.3. After the lamp has been stabilized at the ambient temperature, no distortion, deformation, cracking or colour modification shall be perceptible. In case of doubt the intensity of light according to paragraph 7 above shall be measured. At that measurement the values shall reach at least 90 % of the values obtained before the heat resistance test on the same device.

## ANNEX 3

## Photometric measurements

1. When photometric measurements are taken, stray reflections shall be avoided by appropriate masking.
2. In the event that the results of measurements are challenged, measurements shall be taken in such a way as to meet the following requirements:
  - 2.1. the distance of measurement shall be such that the law of the inverse of the square of the distance is applicable;
  - 2.2. the measuring equipment shall be such that the angle subtended by the receiver from the reference centre of the light is between  $10'$  and  $1'$ ;
  - 2.3. the intensity requirement for a particular direction of observation shall be satisfied if the required intensity is obtained in a direction deviating by not more than one-quarter of a degree from the direction of observation.

## 3. TABLE OF STANDARD LIGHT DISTRIBUTION



- 3.1. 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 measurement, the minimum intensities as a percentage of the minimum required in the axis for each lamp (in the direction  $H = 0^\circ$  and  $V = 0^\circ$ ).
- 3.2. Within the field of light distribution of paragraph 3 above schematically shown as a grid, the light pattern should be substantially uniform, i.e. in so far as the light intensity in each direction of a part of the field formed by the grid lines shall meet at least the lowest minimum value being shown on the grid lines surrounding the questioned direction as a percentage.

## ANNEX 4

## Colour of light

## TRICHROMATIC COORDINATES

## WHITE

Limit towards blue	$X \geq 0,310$
Limit towards yellow	$X \leq 0,500$
Limit towards green	$Y \leq 0,150 + 0,640 X$ $Y \leq 0,440$
Limit towards purple	$Y \geq 0,050 + 0,750 X$
Limit towards red	$Y \geq 0,382$

CORNER POINTS	X	Y
	0,310	0,348
	0,310	0,283
	0,443	0,382
	0,500	0,382
	0,500	0,440
	0,453	0,440